SPECIAL PROVISIONS
FOR
BUS RAPID TRANSIT PROJECT
PHASE III ON HAMMER LANE

Federal Project CML-5008 (106)
City Project 11-12
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SECTION 1 - SPECIFICATIONS AND PLANS

1-1.01 Specifications
The work described herein shall be done in accordance with the current City of Stockton, Department of Public Works Standard Specifications and Plans, and the latest Editions of the State of California, Department of Transportation Standard Specifications and Standard Plans, California MUTCD, as referenced therein, and in accordance with the following Special Provisions. To the extent the California Department of Transportation Standard Specifications implement the STATE CONTRACT, they shall not be applicable since the City of Stockton is not subject to said ACT.

In case of conflict between these Special Provisions and the City Standard Specifications and Plans, the Special Provisions shall take precedence. In case of conflict between the City Standard Specifications and Plans and the State of California, Department of Transportation Standard Specifications and Standard Plans, the City Standard Specifications and Plans shall take precedence. In the event of a conflict between the governing codes, the State and City Standard Specifications, and these Special Provisions, the governing code requirements shall take precedence.

1-1.02 Plans
The bidder's attention is directed to the provisions in Section 1-1.29, "Plans", of the Standard Specifications.

Attention is directed to the intersection of Hammer Lane and Pershing Avenue as shown on the plans. Contractor shall provide written notification to the property owner(s) in the vicinity of the Hammer Lane and Pershing Avenue intersection thirty (30) calendar days prior to any work being done, specifically in the southwest corner of the intersection. Refer to the Plans for more details on the specific work area at the intersection. Failure to properly notify the property owner(s) in the designated amount of time may result in delays to the project as Contractor will not be granted a schedule extension as such.

1-1.03 Terms and Definitions
Wherever in the Standard Specifications, Special Provisions, Notice to Contractors, Proposal, Contract, or other contract documents the following terms are used, the intent and meaning shall be interpreted as follows:

City or Owner - City of Stockton
1-1.04 Disadvantaged Business Enterprise
Special rules apply to DBE contractors and subcontractors. Refer to “Disadvantaged Business Enterprise (DBE) Instructions to Bidders.”

SECTION 2 – FEDERAL REQUIREMENTS

The Contractor shall refer to the Instructions to Bidders in these Contract Documents for applicable Federal Requirements.

SECTION 3 – BLANK

SECTION 4 – PROSECUTION AND PROGRESS
Attention is directed to the provisions in Section 8, “Prosecution and Progress” of the Caltrans Specifications and these Special Provisions.

4-1.01 Beginning of Work
Attention is directed to the provisions in Section 8-1.03, "Beginning of Work", of the Standard Specifications and these Special Provisions.

At no time shall construction begin without receiving notice that the contract has been approved by the City Attorney or an authorized representative. The Contractor shall follow the sequence of construction and progress of work as specified in Section 10-1.01, "Order of Work", of these Special Provisions.

The Contractor shall diligently prosecute all work items to completion.

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

**Understanding of Conditions**

Bidders will be required to carefully examine these special provisions and attachments to judge for themselves as to the nature of the work to be done and the general conditions relative thereto and the submission of a proposal hereunder shall be considered prima-facie evidence that the bidder has made the necessary investigation and is satisfied with respect to the conditions to be encountered, the character, quantity and quality of the work performed. For work to be completed, contractors are advised to visit and review the job site prior to the submission of their bid. Bids not presented on the City forms shall be cause for considering the bid as non-responsive.

Bidders must be thoroughly competent and capable of satisfactorily performing the work covered by the proposal, and when requested shall furnish such statements relative to previous experience on similar work, the plan or procedure proposed, and the organization and the equipment available for the contemplated work, and any other as may be deemed necessary by the City Engineer in determining such competence and capability.

It shall be understood that the Contractor shall be required to perform and complete the proposed work in a thorough and workmanlike manner, and to furnish and provide in connection therewith all necessary labor, tools, implements, equipment, materials and supplies. The contractor is responsible to take all necessary precautions and use best practices in the industry to perform all work require completing the project.

**4-1.02 Time of Completion**

Attention is directed to the provisions in Section 8-1.06, "Time of Completion", of the Standard Specifications and these Special Provisions.

The contract for the performance of the work and the furnishing of materials shall be executed within ten (10) days after the approval thereof by the City Attorney. The City will issue the Notice to Proceed following execution of the contract.

Submittals shall be delivered to the Engineer within twenty (20) calendar days of execution of contract. Contract shall not start any work on the job site until the Engineer approves the submittals. Refer to section 4-1.04, “Submittals” of these Special Provisions. The Contractor shall only enter the jobsite prior to approval of the above submittals for purposes of measuring field dimensions and locating utilities.

**The Contractor shall diligently prosecute the contract work to completion within sixty (60) working days.** The days to finish the punch list, provided by the City, are included in the Working Days.

Notice to Proceed will not be issued until all complete submittals have been reviewed at least once. Correction indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis for changes to the contract requirements. The Engineer’s review of Contractor Shop Drawing
Submittals shall not relieve the contractor of the entire responsibility for the correctness of details and dimensions. The Contractor shall assume all responsibility and risk for any misfits due to error in Contractor submittals. The Contractor shall be responsible for the dimension and the design of adequate connections and details.

Prior to Notice to Proceed, the contractor shall indicate in writing when all the traffic signal hardware and equipment, which makes the traffic signal and communication system operational, will be delivered to the project site. Based on the indicated delivery date, the date to commence the work will be issued by the City. If by any unforeseen action, the established delivery date cannot be made, the contractor shall provide the City with a letter from the manufacturer indicating the reason why the delivery date cannot be met. The letter shall also indicate the revised delivery date. The City reserves the right to either accept the reason or to reject it. A letter from vendor is not acceptable.

Should the Contractor choose to work on a Saturday, Sunday, City furlough days or on a holiday recognized by the labor unions, the Contractor shall reimburse the City of Stockton the actual cost of engineering, inspection, testing, superintendent, and/or other overhead expenses, which are directly chargeable to the contract. Should such work be undertaken at the request of the City, reimbursement will not be required.

4-1.03 Liquidated Damages
Attention is directed to the provisions in Section 8-1.10, "Liquidated Damages", of the Caltrans Specifications and these Special Provisions.

Working days shall commence from the effective date of the Notice to Proceed, unless otherwise approved by the City. Full compensation for any costs required to comply with the provisions in this section shall be considered to be included in the prices paid for the various contract items of work, and no additional compensation will be allowed therefore.

The Contractor shall pay liquidated damages to the City of Stockton in the amount of $3400 (three thousand four hundred dollars) per day for each and every calendar day that the work remains incomplete after the expiration of the contract working days specified in these Special Provisions.

4-1.04 Submittals
The following is a list of anticipated submittals for the project. The list is provided to aid the Contractor in determining the scope of work, but is not intended to be all inclusive and additional submittals may be required:

1) Baseline Progress Schedule (Critical Path Method)
2) Stormwater Pollution Prevention Plan
3) Approved Notice of Intent from State Water Resources Control Board
4) Funding Sign Installed (if applicable)
5) Pre-construction survey
6) Temporary Traffic Control
7) Contractor Safety Plan
8) Portland Cement Concrete Mix Design
9) Staging Agreement with private property owners (if applicable)
10) City of Stockton Encroachment Permit
11) City’s Construction and Demolition Debris Recycling Report
12) List of submittals
13) Product submittals

The Contractor shall submit three (3) copies of the submittal to the Engineer. The Engineer will have ten (10) working days to review the submittal. If revisions are required, as determined by the Engineer, the Contractor shall revise and resubmit the submittal within five (5) working days of receipt of the Engineer’s comments. The Engineer will then have ten (10) working days to review the next set of revisions. Upon the Engineer’s approval of the submittal, three (3) additional copies of the submittal, incorporating the required changes, shall be submitted to the Engineer. In order to allow construction activities to proceed, the Engineer may conditionally approve the submittal while minor revisions are being completed.

The submittal will be reviewed and returned to the Contractor with the following designations:

- Approved
- Approved with Minor Corrections
- Rejected: Revise and Resubmit
- Rejected

SECTION 5 - GENERAL

5-1.01 Contract Bonds
This contract contains two distinct, separate portions of work - roadway improvements and traffic signal system installations. Roadway improvements will be accepted upon satisfactory completion of those items of work. Traffic signal system improvements will be accepted upon satisfactory completion of signal system testing.

Contract Bonds shall conform to the requirements set forth in Section 3-1.02, "Contract Bonds", of the Standard Specifications, excepting the following: the second paragraph shall be replaced with the following: "The Faithful Performance bond will be retained by the City of Stockton for twelve (12) months following recordation of the Notice of Completion (or partial completion) to guarantee correction of failure attributed to workmanship and materials. Upon recordation of the Notice of Completion (or partial completion), the amount of the Faithful Performance bond may be reduced to ten percent (10%) of the actual cost of the constructed improvements”.

As a condition precedent to the completion of this contract, the Contractor shall furnish a Defective Material and Workmanship Bond, of surety company acceptable to the Engineer, and payable to the City of Stockton, in a sum not less than ten percent (10%) of the total construction contract for the roadway and traffic signal improvements, as this sum is set forth in the agreement. This bond shall cover a period of one (1) year from and after the
completion and acceptance of the work to protect the City against the results of defective material, workmanship, or equipment which become apparent during that time. This bond shall be delivered to the Engineer before the final payment under this contract will be made.

5-1.02 Project Appearance
The Contractor shall maintain a neat appearance to the work.

Broken concrete and debris developed during clearing and grubbing shall be disposed of concurrently with its removal. Contractor shall pay to the City of Stockton the sum of Two Hundred Fifty Dollars ($250) for every calendar day where debris has remained on the job site overnight.

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

5-1.03 Maintaining Public Convenience and Safety
Attention is directed to Sections 7-1.03, "Public Convenience", 7-1.04, "Public Safety", of the Caltrans Specifications, Section 12, "Temporary Traffic Control", of the Caltrans Specifications, and the Maintaining Traffic section of these Special Provisions. Attention is directed to Part six (6) of the California MUTCD. Nothing in these Special Provisions shall be construed as relieving the Contractor from his responsibility as provided in said sections and part 6 of California MUTCD.

5-1.04 Trench Safety
The Contractor shall furnish all labor, equipment, and materials required to design, construct, and remove all shoring, lagging, cribbing, piling, and/or other types of support for the wall of any open excavation required for the construction of this project.

In making excavations for the project, the Contractor shall be fully responsible for providing and installing adequate sheeting, shoring, and bracing, as may be necessary as a precaution against slides or cave-ins and to fully protect all existing improvements of any kind from damage.

Wherever applicable, the Contractor shall obtain a permit from the Division of Industrial Safety and shall submit a copy of the approved permit to the Engineer prior to the start of excavations. The cost of the permit shall be included in the total bid costs. The criteria given by the California Department of Industrial Relations are MINIMUM for the conditions shown thereon. In addition to shoring the excavation as specified, it shall be the Contractor's responsibility to provide any and all additional shoring required to support the sides of the excavation against the effects of loads, which may exceed those derived by using the criteria set forth by said governing agency.

The Contractor shall be solely responsible for any damages which may result from his failure to provide adequate shoring to support the excavations under any or all of the conditions of loading which may exist or which may arise during the construction project. Nothing herein shall be deemed to allow the use of shoring, sloping, or protective system
less effective than that required by the Construction Safety Orders of the Division of Industrial Safety.

5-1.05 Public Convenience
Contractor's attention is directed to the Maintaining Traffic section of these Special Provisions.

The Contractor shall notify San Joaquin Regional Transit District (RTD) a minimum of five (5) working days prior to beginning work. The Contractor shall coordinate with RTD if any bus stops and bus routes are affected.

The Contractor shall inform the City Fire Department, City Police Department, City Traffic Department, Municipal Utilities District (MUD), and all affected utilities no later than seventy-two (72) hours before work is to begin.

The Contractor shall provide the City with the name and telephone number (business, home, mobile, and pager) of three (3) representatives available at all times during the duration of the contract. Said names and telephone numbers shall be provided to the City of Stockton Public Works, Fire, and Police Departments.

The Contractor shall circulate printed form letters, approved by the Engineer, explaining the project to be done and the length of time inconvenience will be caused by the project and deliver same to the residents and businesses to be affected at least seventy-two (72) hours before work is to commence on their street. In addition, the Contractor shall provide temporary "No Parking" signs posted seventy-two (72) hours in advance of the work. Such signs shall be placed no further than fifty (50) feet apart. The additional "No Parking" signs shall be removed upon completion of the work and the opening of the street to traffic. It shall be the Contractor's responsibility to remove any vehicles obstructing his operations.

Full compensation for conforming to the provisions in this section shall be included in the prices paid for various bid items, and no additional compensation will be made therefore.

5-1.06 Public Safety
Contractor's attention is directed to the Maintaining Traffic section of these Special Provisions. Nothing in the specifications voids the contractor’s public safety responsibilities.

All safety devices, their maintenance, and use shall conform to the latest requirements of OSHA and shall conform to the applicable provisions of the Part six (6) "Temporary Traffic Control", of the California MUTCD. It shall be the complete responsibility of the Contractor to protect persons from injury and to avoid property damage. Adequate barricades, construction signs, flashers, and other such safety devices, as required, shall be placed and maintained during the progress of the construction work, until the project is completed. Whenever required, flaggers shall be provided to control traffic.

The Contractor shall install temporary railing (Type K) between a lane open to public traffic and an excavation, obstacle, or storage area when the following conditions exist:
A. Excavations - the near edge of the excavation is twelve (12) feet or less from the edge of the lane, except:

1. Excavations covered with sheet steel or concrete covers of adequate thickness to prevent accidental entry by traffic or the public.
2. Excavations less than one (1) foot deep.
3. Trenches less than one (1) foot wide for irrigation pipe or electrical conduit, or excavations less than one (1) foot in diameter.
4. Excavations parallel to the lane for the purpose of pavement widening or reconstruction.
5. Excavations in side slopes, where the slope is steeper than 1:4 (vertical:horizontal).
6. Excavations protected by existing barrier or railing.

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

C. Storage Areas - material or equipment is stored within twelve (12) feet of the lane and the storage is not otherwise prohibited by the provisions of the Standard Specifications and these Special Provisions.

The approach end of temporary railing (Type K), installed in conformance with the provisions in this section, "Public Safety", and in Section 7-1.04, "Public Safety", of the Standard Specifications and Caltrans Specification, shall be offset a minimum of fifteen (15) feet from the edge of the traffic lane open to public traffic. The temporary railing shall be installed on a skew toward the edge of the traffic lane of not more than one (1) foot transversely to ten (10) feet longitudinally with respect to the edge of the traffic lane.

If the fifteen (15) feet minimum offset cannot be achieved, the temporary railing shall be installed on the 10 to 1 skew to obtain the maximum available offset between the approach end of the railing and the edge of the traffic lane, and an array of temporary crash cushion modules shall be installed at the approach end of the temporary railing.

Temporary railing (Type K) shall conform to the provisions in Section 12-3.08, "Type K Temporary Railing", of the Caltrans Specifications. Temporary railing (Type K), conforming to the details shown on 2006 Standard Plan T3, may be used.

The Contractor shall provide for the proper routing of vehicles and pedestrian traffic in a manner that will hold congestion and delay of such traffic to practicable minimum by furnishing, installing, and maintaining all necessary temporary signs, barricades, and other devices and facilities, as approved by the City Traffic Engineer. As the work progresses,
the Contractor shall relocate, subject to the City Traffic Engineer's approval, such devices and facilities as necessary to maintain proper routing. The Contractor shall notify the City Traffic Engineer a minimum of seventy-two (72) hours prior to the relocation of any traffic control devices.

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

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

Full compensation for furnishing, installing, moving, and removing of all necessary traffic control devices including, but not limited to, signing, striping, barricades, and flagging shall be included in the bid item for "Traffic Control System", as shown on the bid schedule, and no additional compensation will be allowed therefore. Section 12-2.02, "Flagging Costs", of the Caltrans Specifications is deleted.

5-1.07 Sound Control Requirements
The Contractor shall comply with all local sound control and noise level rules, regulations and ordinances which apply to any work performed pursuant to the contract.

Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without the muffler.

The noise level from the Contractor's operations, between the hours of 9:00 p.m. and 6:00 a.m., shall not exceed 86 dba at a distance of fifty (50) feet. This requirement shall not relieve the Contractor from responsibility for complying with other ordinances regulating noise level.

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

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

5-1.08 Indemnification and Insurance
Indemnification and Insurance shall conform to an Exhibit, which is attached to this project bid package and incorporated by this reference, and the following:
"The Contractor shall indemnify and hold harmless the City of Stockton and all officers and employees thereof connected with the work, including, but not limited to, the Director of Public Works and the City Engineer from all claims, suits, or actions of every name, kind, and description brought forth on account of injuries to or death of any person, including, but not limited to, workmen and the public, or damage to property resulting from the performance of the Contractor, except as otherwise provided by statute. The duty of the Contractor to indemnify and hold harmless includes the duties to defend as set forth in Section 2778 of the Civil Code.

The Contractor waives any and all rights to any type of expressed or implied indemnity against the City, its officers, or employees. It is the intent of the parties that the Contractor shall indemnify and hold harmless the City, its officers, and employees from any and all claims, suits, or actions as set forth above regardless of the existence or degree of fault or negligence on the part of the City, the Contractor, the subcontractor, or employee of any of these, other than the active negligence of the City, its officers, and employees."

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

5-1.09 Rights in Land
Nothing in these specifications shall be construed as allowing the Contractor to make any arrangements with any person to permit occupancy or use of any land, structure, or building within the limits of the contract for any purpose whatsoever, either with or without compensation, in conflict with any agreement between the State and any owner, former owner, or tenant of the land, structure, or building.

The Contractor shall not occupy State-owned property outside the right of way as shown on the plans or maps available in the office of the district in which the work is situated, unless the Contractor enters into a rental agreement with the Department. The agreement will be based on the fair rental values.

All work, equipment parking, or any other activity associated with the project shall be confined to the project limits within the street rights-of-way. The Contractor's use of any other property exclusively in connection with this project shall be by a written agreement between the property owner and the Contractor. A certified copy of any such agreement shall be furnished to the Engineer prior to the use of such property by the Contractor.

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

5-1.10 Staging Area
Attention is directed to the requirements specified in Section 5-1.09, "Rights in Land", of these Special Provisions.
The street right-of-way shall be used only for activities 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 material storage or other purposes that are not necessary to perform the required work.

The Contractor shall secure at his own expense any area required for plant sites, storage of equipment or materials, or for other purposes.

5-1.11 Construction Staking
Section 5-1.07, "Lines and Grades", of the Standard Specifications is deleted, and replaced with the following:

1. The Contractor shall be responsible for all construction survey stakes necessary to construct the project in accordance to the lines, grades, sections, stage construction/traffic handling, and traffic signalization, pavement delineation plan described in the plans and specifications. The costs of any such construction survey stakes shall be included in the various unit prices bid by the Contractor.

2. Contractor shall be responsible referencing all existing monumentation within the limits of the project prior to removal of any existing monuments. Monument referencing shall be reviewed and approved by the engineer prior to commencing of the work.

3. The Contractor shall employ a Land Surveyor registered in the State of California or an appropriately registered Civil Engineer to perform such survey work. All stakes and marks set by the Contractor’s Land Surveyor or Civil Engineer shall be carefully preserved by the Contractor. In case such stakes and marks are destroyed or damaged, they will be promptly replaced, at the direction of the Engineer at no additional cost to the City. Copies of all field notes and cut sheets shall be provided to the City at no additional cost to the City.

4. Full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in establishing the lines and grades, as specified in these Special Provisions, shall be included in the contract prices paid for various items of work, and no additional compensation will be made therefore.

5-1.12 Increased or Decreased Quantities
The City reserves the right to make such alterations, deviations, additions to, or omissions from the plans and specifications, including the right to increase or decrease the quantity of any item or portion of the work or to omit any item or portion of the work, as may be deemed by the Engineer to be necessary or advisable and to require such extra work as may be determined by the Engineer to be required for the proper completion or construction of the whole work contemplated, without adjustment in the unit price as bid.
Section 4-1.03B, "Increase or Decreased Quantities", of the Standard Specifications, shall not apply.

Any such changes will be set forth in a contract change order, which will specify, in addition to the work to be done in connection with the change made, adjustment of contract time, if any, and the basis of compensation for such work. A contract change order will not become effective until approved by the City Manager and/or City Council.

5-1.13 Extra Work
New and unforeseen work will be classed as extra work when determined by the Engineer that the work is not covered by any of the various items for which there is a bid price or by combinations of those items. In the event portions of this work are determined by the Engineer to be covered by some of the various items for which there is a bid price or combinations of those items, the remaining portion of the work will be classed as extra work. Extra work also includes work specifically designated as extra work in the plans or specifications.

The Contractor shall do the extra work and furnish labor, material and equipment therefore upon receipt of an approved contract change order or other written order of the Engineer, and in the absence of an approved contract change order or other written order of the Engineer, the Contractor shall not be entitled to payment for the extra work.

If, in the opinion of the Engineer, such work cannot reasonably be performed concurrently with other items of work, and if a controlling item of work is delayed thereby, an adjustment of contract time will be made.

Payment for extra work required to be performed pursuant to the provisions in this Section 5-1.13, in the absence of an executed contract change order, will be made by force account as provided in Section 9-1.03; or as agreed to by the Contractor and the Engineer.

5-1.14 Stop Notice Withholds
Section 9-1.16E(4), “Stop Notice Withholds”, of the Caltrans Specifications is amended to read as follows:

"The City of Stockton, by and through the Department of Public Works, may at its option and at any time retain out of any amounts due the Contractor, sums sufficient to cover claims, filed pursuant to Section 3179 et seq. of the Code of Civil Procedures."

5-1.15 Dust Control, Watering, Site Maintenance, and Cleanup
Dust control shall conform to the provisions in Section 14-9.03, "Dust Control" of the Caltrans Specifications and these Special Provisions. The first paragraph of Section 10 of the Caltrans Specifications shall have the following sentence added: "Use of water except for recycled, reclaimed, or other non-potable water for the purpose of dust control or other construction uses unless for health or safety purposes is prohibited." The second paragraph of Section 10 of the Standard Specifications is deleted and the following substituted: "All dust control operations shall be performed by the Contractor at the time,
location and in the amount ordered by the Engineer. The application of either water or dust palliative shall be under the control of the Engineer at all times." Watering shall conform to the provisions of Section 17 "Watering," of the Caltrans Specifications and these Special Provisions.

During construction, the Contractor shall remove all rubbish and debris as it is generated. Upon completion of the work, the Contractor shall remove all equipment, debris, and shall leave the site in a neat, clean condition all to the satisfaction of the Engineer. A permit shall be obtained from the Municipal Utilities Department, or California Water Service, as applicable, for construction water obtained from City hydrants. This permit shall be approved by the City of Stockton Fire Department.

The Contractor shall conduct and cause all working forces at the site to maintain the site in a neat, orderly manner throughout the construction operations. The work shall be conducted in a manner that will control the dust. When ordered to provide dust control, the Contractor shall use water to reduce the dusty conditions all to the satisfaction of the Engineer. During construction, the Contractor shall remove all rubbish and debris as it is generated. The Contractor shall pay to the City of Stockton the sum of Two Hundred Fifty Dollars ($250) for every calendar day where debris has remained on the job site overnight. Upon completion of the work, the Contractor shall remove all equipment and debris, and shall leave the site in a neat, clean condition all to the satisfaction of the Engineer.

5-1.16 Pre-Construction Meeting
The City of Stockton Public Works Department will schedule a pre-construction meeting with the Contractor following award of the contract and prior to commencing work (Contact 937-8381). The City will issue the Notice to Proceed following execution of the Contract. This meeting will be held in the City of Stockton, Public Works Department.

5-1.17 Post-Construction Meeting
The Contractor shall attend a post-construction meeting that will be arranged by the Public Works Department (Contact 937-8381) after completion of work and prior to acceptance and final payment. The project Design Engineer and the project Inspector will also attend this meeting. The purpose of the meeting will be to discuss the project and any related issues that can help improve future Public Works construction projects. This meeting will be held in the City of Stockton, Public Works Department.

5-1.18 As-Built/Record Drawings
The Contractor shall maintain a complete set of drawings on-site for the purpose of keeping up to date all field modifications. This plan set shall be available for review by the project Inspector and the Engineer. These plans shall be provided to the Inspector after the completion of construction at the Post-Construction Meeting and prior to the final payment. All revisions, modifications, and/or changes shall be marked clearly. Notes and dimensions shall be in red and be clear and legible. These plans will be used by the Engineer to mark up the original plan sheets with the revisions made during construction.
A list shall be maintained of any trees removed during the course of construction by the Contractor or his Subcontractor, identifying the location, size, and species (common name). This list shall be submitted at the Post-Construction Meeting.

Full compensation for furnishing the As-Built/Record Drawings shall be considered included in the prices paid for the various bid items of work, and no additional compensation will be considered therefore.

5-1.19 Maintaining Existing and Temporary Electrical Systems
Maintaining existing electrical systems shall conform to the provisions of Section 86-1.06, "Maintaining Existing and Temporary Electrical Systems," of the Caltrans Specifications and these Special Provisions. Existing traffic signal systems shall be kept in effective operation for the benefit of the traveling public during the progress of the work, except when shut down is permitted. The traffic signal shutdowns shall be limited to the hours of 9:00 a.m. to 3:30 p.m., and shall be permitted only during the switch over from existing to new controller operation, unless prior approval is obtained from the Engineer.

Temporary standards with signal equipment may be required during the construction of the new installation. The Contractor shall provide temporary equipment if he or the Engineer deems necessary. The cost of the temporary system shall be included in the prices paid for installation of traffic signals and modification of traffic signals and no additional compensation shall be allowed.

The Contractor shall notify the Engineer and Police Department 72 hours prior to any operational shutdown of existing signal system.

The contractor shall be responsible for the maintenance of the entire existing signal system at each project traffic signal from the first day Contractor starts working on it to the final acceptance. The contractor shall respond to the notice of signal failure from, by The City of Stockton, within two (2) hours and make repairs to the signal system as necessary. If the contractor fails to respond within the specified time, the City’s maintenance staff will repair the signal system. Any costs associated with the repair shall be billed to the contractor. In addition, a penalty of $500 shall be charged to the Contractor for each maintenance call-out where the Contractor does not respond within 2 hours of notification.

Full compensation for performing the work in these specifications shall be included in the prices paid for the various contract items of work, and no additional compensation will be allowed therefore.

5-1.20 Testing
Testing of materials and work shall conform to the provisions in Section 6-3, "Quality" of the Caltrans Specifications and these special provisions. Whenever the provisions of Section 6-3, of the Caltrans Specifications refer to tests or testing, it shall mean tests to assure the quality and to determine the acceptability of the materials and work.
Contractor shall hire a certified, independent from contractor’s company, laboratory to conduct compaction and material testing. Testing includes and not limited to compaction testing and material testing. A relative compaction of 95% is expected on roadway subgrade and sidewalk areas.

Full compensation for performing the work in these specifications shall be included in the prices paid for the various contract items of work, and no additional compensation will be allowed therefore.

5-1.21 Notice of Potential Claim
The Contractor shall not be entitled to the payment of any additional compensation for any cause, or for the happening of any event, thing, or occurrence, including any act or failure to act, by the Engineer, unless he has given the Engineer due written notice of potential claim as hereinafter specified, provided, however, that compliance with this Section 5-1.14 shall not be a prerequisite for matters within the scope of the protest provisions under “Changes” or “Time of Completion” or within the notice provisions in “Liquidated Damages” not to any claim which is based on differences in measurements or errors of computation as to Contract quantities. The written notice of potential claim shall set forth the items and reasons which the Contractor believes to be eligible for additional compensation, the description of work, the nature of the additional costs and the total amount of the potential claim. If based on an act or failure to act by the Engineer, written notice for potential claim must be given to the Engineer prior to the Contractor commencing work; in all other cases, written notice for potential claims must be given to the Engineer within 15 days after the happening of the event, thing or occurrence giving rise to the potential claim.

It is the intention of this Section that potential differences between the parties of this Contract be brought to the attention of the Engineer at the earliest possible time appropriate action may be taken and settlement may be reached. The Contractor hereby agrees that he shall have no right to additional compensation for any claim that may be based on any act or failure to act by the Engineer or any event, thing or occurrence for which no written notice of potential claim was filed.

SECTION 6 – CONTROL OF MATERIALS

6-1.01 City Furnished Materials
There are no City-furnished materials under this Construction Contract.

SECTION 7 - MEASUREMENT AND PAYMENT

7-1.01 General
Attention is directed to Section 9 of the Standard Specifications, Section 9, “Measurement and Payment”, of the Caltrans Specifications, and these Special Provisions. All measurements and payments for this work shall conform to all applicable provisions on Section 9 of the Standard Specifications and Section 9 of the Caltrans Specifications.
All materials designated to be removed shall become the property of the Contractor, unless otherwise noted, and shall be disposed in accordance with local, State, and Federal laws and ordinances.

Full compensation for disposal of materials and performing the work in these Special Provisions shall be included in the prices paid for the various contract items of work, and no additional compensation will be allowed therefore.

7-1.02 Schedule of Values
Value schedules for each lump sum bid item shall be prepared and submitted to the Engineer as set forth in Section 9-1.00, "Lump Sum Contracts", of the City Standard Specifications and Plans. Unless otherwise approved by the Engineer, materials on hand, but not incorporated into the work, shall not be included for measurement or for purposes of payment.

7-1.03 Payments
Attention is directed to Sections 9-1.16, "Progress Payments", and 9-1.17, "Payment After Contract Acceptance", of the Caltrans Specifications, and Sections 9-1.06, "Partial Payments", and 9-1.07B, "Final Payment and Claims", of the Standard Specifications. No partial payment will be made for any materials that are furnished on hand, but not yet installed or incorporated in the work.

Upon completion of all of the work included herein, including approved contract change orders as appropriate, the Contractor may request that the Engineer file a Notice of Completion for the work items so completed for the purposes of relief of maintenance and release of retention.

Refer to Section 9, “Description of Work,” of these Special Provisions for a Schedule of Measurement and Payment.

SECTION 8 - MATERIALS

8-1.01 Buy America Requirements
Attention is directed to the “Buy America Requirements” included in the Instructions to Bidders in the Contract Documents.

8-1.02 Pre-qualified and Tested Signing and Delineation Material
The California Department of Transportation maintains a trade name list of approved pre-qualified and tested signing and delineation materials and products. Approval of pre-qualified and tested products and materials shall not preclude the Engineer from sampling and testing any of the signing and delineation materials or products at any time.

None of the listed signing and delineation materials and products shall be used in the work unless such material or product is listed on the California Department of Transportation's List of Approved Traffic Products. A Certificate of Compliance shall be furnished as
specified in Section 6-3.05, "Certificates of Compliance", of the Caltrans Specifications for signing and delineation materials and products. Said certificate shall also certify that the signing and delineation material or product conforms to the pre-qualified testing and approval of the California Department of Transportation, Division of Traffic Operations, and was manufactured in accordance with the approved quality control program.

Materials and products will be considered for addition to said approved pre-qualified and tested list if the manufacturer of the material or product submits to the Division of Traffic Operations of the California Department of Transportation a sample of the material or product. The sample shall be sufficient to permit performance of all required tests. Approval of such materials or products will be dependent upon a determination as to compliance with the Specifications and any test the California Department of Transportation may elect to perform. The list of approved pre-qualified and tested signing and delineation materials and products can be found at the California Department of Transportation Web Site:


8-1.03 Minor Concrete
Section 90-2.02, "Materials", of the Caltrans Specifications is amended by adding the following:

Mineral admixture will be required in the manufacture of concrete containing aggregate that is determined to be "deleterious" or "potentially deleterious" when tested in accordance with ASTM Designation: C 289. The use of mineral admixture in such concrete shall conform to the requirements in Section 90-1.02E of the Caltrans Specifications, "Admixtures", except the use of Class C mineral admixture will not be permitted.

SECTION 9 - DESCRIPTION OF WORK

9-1.01 Description of Work
The work to be performed consists of furnishing all labor, materials, tools, transportation, supplies, equipment, appurtenances, fuel, and power, unless specifically excepted, necessary, or required to provide complete operating roadways and traffic signals, as further delineated on the plans and described in these Special Provisions.

The work to be performed shall include, but not be limited to the following:

1. Providing traffic control as specified.

2. Construction staking as specified in Section 5-1.11 of these Special Provisions.

3. Modifying existing traffic signal systems to include new controller cabinets and foundations and new service enclosures and foundations as shown on the plans.
4. The re-routing and splicing of existing fiber cable as shown on the plans.

5. Removal and salvaging of old traffic signal equipment and removal of old pull boxes.

6. Minor concrete work for a concrete pad at the intersection of Hammer Lane/Pershing Avenue.

7. Furnish and installation of controllers cabinets and traffic signal controller systems at the locations shown on the plans.

8. Furnish and installation of new optical detection systems at the locations shown on the plans.

9. Furnishing and installing or modifying CCTV camera (on existing poles) and fiber optic video/data modems and communications equipment at the locations shown on the plans.

10. Installing conduit and pull boxes at the locations shown on the plans.

All other work as may be necessary as indicated on the plans, in the specifications, and as required by the Engineer.

9-1.02 Blank

9-1.03 Quantities
The following estimate of the quantities of work to be done and materials to be furnished are approximate only, and are intended as a basis for the comparison of bids. The City does not expressly or by implications agree that the actual amount of work will correspond therewith, but reserves the right to increase or decrease the amount of any class or portion of the work without increase or decrease in the unit price bid or to omit portions of the work that may be deemed necessary or expedient by the Engineer.
Bid Schedule

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Traffic Control</td>
<td>LS</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Furnish and Install Type P Cabinet on Existing Cabinet Foundation</td>
<td>EA</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Furnish and Install Model 2070LN Traffic Controller with TSP</td>
<td>EA</td>
<td>19</td>
</tr>
<tr>
<td>4</td>
<td>Remove Existing, Furnish and Install New Multimode Phase Selector</td>
<td>EA</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>Furnish and Install Multimode Phase Selector</td>
<td>EA</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Furnish and Install EVP Detector on Existing Mounting Assembly</td>
<td>EA</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>Furnish and Install EVP Detector Assembly</td>
<td>EA</td>
<td>30</td>
</tr>
<tr>
<td>8</td>
<td>Furnish and Install CCTV Camera Assembly</td>
<td>EA</td>
<td>9</td>
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<tr>
<td>9</td>
<td>Furnish and Install Fiber Optic Video/Data Modem (One Port)</td>
<td>EA</td>
<td>19</td>
</tr>
<tr>
<td>10</td>
<td>Furnish and Install Fiber Optic Video/Data Modem (4 Port)</td>
<td>EA</td>
<td>6</td>
</tr>
<tr>
<td>11</td>
<td>Furnish and Install Fiber Optic Video/Data Modem (8 Port)</td>
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<td>16</td>
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<td>12</td>
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<td>13</td>
<td>Furnish and Install IP Video Encoder in TMC (One Port)</td>
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<td>14</td>
<td>Furnish and Install IP Video Encoder in TMC (16 Port)</td>
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<td>15</td>
<td>Furnish and Install Video Splitter in TMC</td>
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<td>16</td>
<td>Furnish and Install Rack Mount Equipment Chassis in TMC</td>
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</tr>
<tr>
<td>17</td>
<td>Furnish and Install 4” GRS Conduit into New Cabinet Foundation</td>
<td>LF</td>
<td>20</td>
</tr>
<tr>
<td>18</td>
<td>Furnish and Install 2.5” GRS Conduit into New Cabinet Foundation</td>
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</tr>
<tr>
<td>19</td>
<td>Furnish and Install 2” GRS Conduit</td>
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<td>20</td>
<td>Furnish and Install 2” Schedule 80 PVC Conduit</td>
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<td>Furnish and Install No. 6E Pull Box</td>
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<tr>
<td>22</td>
<td>Furnish and Install No. 6 Pull Box</td>
<td>EA</td>
<td>1</td>
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<tr>
<td>23</td>
<td>Furnish and Install No. 5(T) Pull Box</td>
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<td>1</td>
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<td>24</td>
<td>Furnish and Install No. 5 Pull Box</td>
<td>EA</td>
<td>4</td>
</tr>
<tr>
<td>25</td>
<td>Furnish and Install Fiber Ethernet Switch in Field Cabinets and TMC</td>
<td>EA</td>
<td>24</td>
</tr>
<tr>
<td>26</td>
<td>Furnish and Install Type III Service Equipment Enclosure</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>Install Type P Controller Cabinet Foundation, Retaining Curb and Pad</td>
<td>LS</td>
<td>1</td>
</tr>
</tbody>
</table>

Each bidder shall bid each item of the Bid Schedule. Failure to bid an item shall be just cause for considering the bid as non-responsive. The City reserves the right to include or delete any Bid Schedule Item or portion thereof, or to reject all bids.

The award, if an award is made, will be to the responsible Bidder submitting the lowest responsive bid price for all work and materials.

Official bid documents, including plans and specifications are available online at [http://www.stocktongov.com/business/bidflash.cfm](http://www.stocktongov.com/business/bidflash.cfm). All bids submitted for this project, must conform to the requirements of the official bid documents, including plans and specifications.
SECTION 10 - CONSTRUCTION DETAILS

10-1.01 Order of Work
The order of work shall conform to the Contractor's approved project schedule described in Section 10-1.02, "Progress Schedule", of these Special Provisions.

Contractor's attention is directed to the Public Safety, Public Convenience, and Maintaining Traffic sections of these Special Provisions. Nothing in this section shall be construed as to relieve the Contractor of his/her responsibility to stage the work in a manner which complies with the requirements of these sections.

All permits and approvals as may be required for this project shall be secured or ordered immediately after award of the contract or their acquisition timing determined, such that the same is not a cause for delay.

Contractor shall obtain permits from the State for work in State right of way at the I-5/Hammer Lane and Highway 99/Hammer Lane interchanges.

The cost of the permits including any and all associated costs for the permit shall be included in the total bid price.

The Contractor shall stage and sequence the work as follows:

The first order of work shall be the ordering of all items required, after all submittals are approved by the engineer, for this project which may have long lead times to assure that their acquisition is not the cause for any delays. These items may include, but are not limited to, traffic signal equipment and related appurtenances. The Contractor shall furnish the Engineer with statements from the vendors that the orders for said equipment has been received and accepted by said vendors. These statements shall be furnished within ten (10) working days of the Notice to Proceed date.

Traffic signal standards and other above ground electrical equipment shall not be installed until the Contractor has received delivery of all electrical materials.

Prior to the start of construction, the Contractor shall verify the location and depth of all existing utilities and underground facilities within the project limits. The Contractor shall notify the Engineer of any discrepancies between the conditions in the field and the plans. The Contractor shall coordinate with all private utility companies where utility facilities are to be adjusted to grade.

Portions of existing concrete curbs, gutters and sidewalks that are removed shall be replaced within 10 working days after removal.

Street lighting and traffic signals shall be maintained at all times.

The Contractor shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP), which specifies Best Management Practices (BMPs) that will prevent all
construction pollutants from contacting storm water and with the intent of keeping all products of erosion from moving off site into receiving waters. The Contractor shall inspect and maintain all BMPs.

Minor deviations from these requirements may be allowed by the Engineer, if in the opinion of the Engineer, the prosecution of the contract will be better served and the work expedited. Any Contractor request for such deviations shall not be adopted without the Engineer's prior written approval.

Full compensation for conforming to such requirements will be considered as included in the prices paid for the various contract items of work, and no additional compensation will be allowed therefore.

10-1.02 Progress Schedule
Attention is directed to Sections 7-1.03, “Public Convenience” and 8-1.02, “Progress Schedule” of the Caltrans Specifications and these Special Provisions. The Contractor shall submit a schedule of construction to the City Engineer within ten (10) days following the Notice to Proceed. The Progress Schedule shall include, but not be limited to, construction phasing, bus stop disruptions, disruptions at pedestrian facilities, and system outages of City facilities.

The Contractor's construction schedule must be approved before any construction may commence.

Any changes in the Contractor's schedule shall be promptly reported so that City departments and public and private utilities are fully informed at all times of the locations of the Contractor's operations and street closures.

10-1.03 Pre-construction Survey
The Contractor shall perform a pre-construction survey of all existing structures, pavements, and other aboveground facilities within the project limits prior to beginning any work, noting their condition by means of photographs and video tapes supplemented by written documentation, where applicable.

Color photographs shall be taken with a 35-mm camera at locations that are appropriate to show pre-existing conditions. Each photograph shall show the date and time the photograph was taken and clearly be labeled showing the location, viewing direction, and any special features noted. Two 4” x 6” copies of each photograph and a copy of videotapes shall be submitted to the Engineer. The photographs shall be indexed, inserted in plastic viewing folder and submitted in 3-ring binders.

Full compensation for pre-construction survey shall be included in the contract price for the various items of work involved, and no additional compensation will be allowed therefore.

10-1.04 Alternative Equipment
The City reserves the right to order discontinuance of any equipment in use. This will be determined at the discretion of the Engineer on the basis that the use of said equipment
would prohibit obtaining the best possible end result.

Additional operated equipment may be requested by the Engineer for the above reasons. Failure to comply with the Engineer's request concerning equipment use or removal will be deemed sufficient cause for shutting down all work until the requirements are met. Days lost for this type of shutdown will be charged as working days.

10-1.05 Inspections
All work under this contract shall be under the control and inspection of the City Engineer or his appointed representative. The Contractor shall notify Public Works Department, at (209) 937-8381, forty-eight (48) hours in advance of any construction.

10-1.06 Obstructions
Attention is directed to Sections 5-1.36, "Preservation of Property", 7-1.05, "Indemnification and Insurance", 5-1.36D, "Nonhighway Facilities", and 15, "Existing Highway Facilities", of the Caltrans Specifications and these Special Provisions.

The Contractor's attention is directed to the existence of certain underground facilities that may require special precautions be taken by the Contractor to protect the health, safety, and welfare of workers and of the public. Facilities requiring special precautions include, but are not limited to, conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases, natural gas in pipelines six (6) inches or greater in diameter, or pipelines operating at pressures greater than 415 KPa (gage); underground electric supply system conductors or cables with potential to ground of more than 300 V, either directly buried or in duct or conduit, which do not have concentric grounded or other effectively grounded metal shields on sheaths.

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

<table>
<thead>
<tr>
<th>Notification Center</th>
<th>Telephone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underground Service Alert – Northern California (USA)</td>
<td>(811) 227-2600 (800) 227-2600</td>
</tr>
<tr>
<td>Underground Service Alert – Southern California (USA)</td>
<td>(800) 422-4133 (800) 227-2600</td>
</tr>
</tbody>
</table>

Relocations or repairs necessitated because of existing facilities, which are not shown on the plans or are shown at substantially different locations than existing, may be paid as extra work in accordance with Section 5-1.36D, "Nonhighway Facilities", of the Caltrans Specifications, but only if the Engineer rules that the Contractor exercised due diligence in his operation. Due diligence may be determined by the Engineer by reviewing surface and subsurface conditions that were existing prior to exposing the facility and determining the absence of any signs sufficient to warn a diligent Contractor of the possible existence of a facility in the area.
Immediately upon encountering unknown existing facilities, the Contractor shall notify the Engineer in writing of the situation, request coverage of the work as extra work, and aid the Engineer in determining due diligence. Failure to do so may result in forfeiture of any rights to receive extra work compensation under Section 8-1.07, "Delays", of the Caltrans Specifications. Should the Contractor stop work, no compensation will be made for any "down time" prior to written notifications being received by the Engineer or his representative.

Delays due to encountering unexpected facilities shall be determined and compensated in accordance with the provisions of Section 8-1.07, "Delays", of the Caltrans Specifications, and as herein modified. Delays due to encountering unexpected facilities shall be compensated as additional contract working days to the contractor. Contractor shall submit a written request to the Engineer requesting time extension due to the delay. No other compensation is allowed.

Payment for complying with this Special Provision shall be included in the various items of work, and no additional compensation will be allowed therefore.

10-1.07 Cooperation
Attention is directed to Sections 5-1.20, "Coordination With Other Entities", and 5-1.36D, "Nonhighway Facilities", of the Caltrans Specifications and these Special Provisions. The Contractor shall protect from damage any utility facilities that are to remain in place, be installed, relocated, adjusted, or otherwise rearranged.

The Contractor should note that the following utility companies and other agencies maintain facilities within the project area and may have forces in the project area or adjacent thereto:

- PG&E
- AT&T and other phone companies
- City of Stockton Municipal Utilities Department
- Comcast Cable Company
- California Water Service Company

The Contractor shall verify the horizontal and vertical locations of all existing utilities prior to start of construction. The Contractor shall be responsible for the repair and replacement of these or any other facilities damaged during construction. A minimum of forty-eight (48) hours or two (2) working days prior to beginning construction, the Contractor shall notify Underground Services Alert (USA), telephone (800) 227-2600, to have existing facilities marked in the field.

Installation and/or relocation of the aforementioned utilities and other agencies' facilities will require coordination with the Contractor's operations. The Contractor shall make necessary arrangements with the utility company and other agencies through the Engineer, and shall submit a schedule of work, verified by a representative of the utility company or other agency, to the Engineer. The Contractor shall notify the Engineer in writing one (1) month and again one (1) week prior to preparing the site for the utility relocation work or
work to be done by other agencies.

The Contractor shall take care to avoid working in any area of the project, which may conflict with the work underway by the utility companies. The Contractor's construction schedule shall be prepared to avoid utility work.

The Contractor shall cooperate completely with all utility companies having facilities within the project area.

Attention is directed to the possible existence of underground facilities not known to the City or in a location different from that which is shown on the plans or in these Special Provisions. The Contractor shall take steps to ascertain the exact location of all underground facilities prior to doing work that may damage such facilities or interfere with their service.

Payment for complying with this Special Provision shall be included in the various items of work, and no additional compensation will be allowed therefore.

10-1.08 System Outage Request, City of Stockton Facilities

Modifications to existing facilities, the construction of new facilities, and the connection of new to existing facilities may require the temporary outage or bypass of treatment processes, equipment, utilities, or other facilities. In addition to the Construction Schedule required under these Special Provisions, the Contractor shall submit a System Outage Request (SOR) and a detailed outage plan and time schedule for all construction activities, which will make it necessary to remove a tank, pipeline, channel, electrical circuit, control circuit, equipment, structure, road, or other facilities from service.

The SOR and outage plan shall be submitted to the Engineer and other affected utilities for review and acceptance a minimum of two (2) weeks in advance of the time that such outage is needed. The outage plan shall be coordinated with the construction schedule specified in these Special Provisions and shall meet the restrictions and conditions specified in this section. The detailed plan shall describe the Contractor's method for preventing bypassing of other facilities; the length of time required to complete said operation; any necessary temporary power, controls, instrumentation, or alarms required to maintain control, monitoring, and alarms for the affected facilities; and the manpower, plant, and equipment which the Contractor shall provide in order to ensure proper operation.

In addition, the outage plan shall describe the Contractor's contingency plan that shall be initiated in the event that his temporary facilities fail, or it becomes apparent that the time constraints described in the approved outage plan cannot be met. The contingency plan shall conform to all specified outage requirements. All costs for preparing and implementing both the outage and contingency plans shall be borne by the Contractor with no additional compensation therefore.

The Contractor shall provide, Monday through Friday, at least three (3) working days prior to the actual shutdown, written confirmation of the shutdown date and time, or written
notification that the schedule for performing the work has changed, or revisions to the outage plan are required.

Operations of the City’s facilities and utilities are critical to the public health and safety of the citizens of Stockton. Sufficient facilities to serve the needs and demands of the City shall remain in service at all times. The City and/or affected utility owner shall be the sole judge of its needs and the facilities that must remain in service to provide adequate service.

The Contractor shall coordinate and cooperate with the City and utilities to establish the Contractor’s schedule for work at the entire project facilities. The approved project schedule shall be subject to change, as it pertains to site work and shutdowns, when required by the City/utilities to accommodate unforeseen or emergency situations in the operation of the affected facilities.

Payment for complying with this Special Provision shall be included in the various other items of work, and no additional compensation will be allowed therefore.

**10-1.09 Water Pollution Control**

Water pollution control shall conform to the requirements in Section 7-1.01G of the Standard Specifications, Section 13, “Water Pollution”, of the Caltrans Specifications, these Special Provisions, and as directed by the Engineer.

The Contractor shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP), which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting storm water and with the intent of keeping all products of erosion from moving off site into receiving waters. The Contractor shall inspect and maintain all BMPs.

Compensation for water pollution control shall be considered as included in the prices paid for various items of work, and no separate payment will be allowed therefore.

**10-1.10 Mobilization**

Mobilization shall conform to the provisions in Section 9-1.16D, "Mobilization", of the Caltrans Specifications and these Special Provisions.

Compensation for mobilizations shall be considered as included in the prices paid for various items of work, and no separate payment will be allowed therefore.

**10-1.11 Construction Area Signs**

Construction area signs shall be furnished, installed, maintained, and removed when no longer required in accordance with the provisions in Section 12, "Temporary Traffic Control", of the Caltrans Specifications and these Special Provisions.

**Informational Signs**—The Contractor shall install six (6) project informational construction signs 3’W x 2’H in size with 3” minimum height letters at each end of the project corridor and as shown on the plans. The sign shall be in accordance with Section 100, “Street Opening and Pavement Restoration Regulations,” of the City of Stockton Standard
Specifications and Plans. Letters shall be black on white background. Location of the signs shall be as shown on the plans (Sheet OV-1).

The Contractor shall notify the appropriate regional notification center for operators of subsurface installations at least two (2) working days, but not more than fourteen (14) calendar days, prior to commencing any excavation for construction area sign posts. The regional notification centers include, but are not limited to, the following:

<table>
<thead>
<tr>
<th>Notification Center</th>
<th>Telephone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underground Service Alert – Northern California (USA)</td>
<td>(800) 227-2600</td>
</tr>
<tr>
<td>Underground Service Alert – Southern California (USA)</td>
<td>(800) 422-4133</td>
</tr>
<tr>
<td>South Shore Utility Coordinating Council (DIGS)</td>
<td>(800) 541-3447</td>
</tr>
<tr>
<td>Western Utilities Underground Alert, Inc.</td>
<td>(800) 541-3447</td>
</tr>
</tbody>
</table>

All excavations required to install construction area signs shall be performed by hand methods without the use of power equipment, except that power equipment may be used if it is determined there are no utility facilities in the area of the proposed post holes. The post hole diameter, if backfilled with portland cement concrete shall be at least 4 inches greater than the longer dimension of the post cross section.

Sign substrates for stationary mounted construction area signs may be fabricated from fiberglass reinforced plastic, as specified under "Pre-qualified and Tested Signing and Delineation Materials" elsewhere in these Special Provisions.

Type IV reflective sheeting for sign panels for portable construction area signs shall conform to the requirements specified under "Pre-qualified and Tested Signing and Delineation Materials" elsewhere in these Special Provisions.

The Contractor shall maintain accurate information on construction area signs. Signs that are no longer required shall be immediately covered and removed. Signs that convey inaccurate information shall be immediately replaced or the information shall be corrected. Covers shall be replaced when they no longer cover the signs properly. The Contractor shall immediately restore to the original position and location any sign that is displaced or overturned, from any cause during the progress of work.

Full compensation for furnishing, installing, maintaining, and removing construction area signs shall be considered as included in the prices paid for the various contract items, and no additional compensation will be allowed therefore.

10-1.12 Maintaining Traffic
Attention is directed to Sections 7-1.03, "Public Convenience", 7-1.04, "Public Safety", and 12, "Temporary Traffic Control", of the Caltrans Specifications, 10-1.01, "Order of Work", of
these Special Provisions. Nothing in these Special Provisions shall be construed as relieving the Contractor from the responsibilities specified in these sections.

Lane closures shall conform to the provisions in the Traffic Control System for Lane Closure section of these Special Provisions.

The Contractor shall furnish, and maintain in good working order, all barricades and flashers, and provide flagmen as necessary to protect pedestrians and vehicular traffic. The Contractor shall furnish and maintain all barricades, flashers, and any detour signs twenty-four (24) hours a day, including covering or removing signs during non-construction hours.

The Contractor shall provide adequate and continuous ingress and egress for all adjacent properties; except for the limited period of time it is necessary to perform work at a specific property. The Contractor shall diligently prosecute all work directly impacting businesses to completion. The Contractor shall coordinate limited closures with tenants or owners, as required by these Special Provisions, and as directed by the Engineer.

The Contractor shall submit to the City Engineer a detailed "Traffic Control Plan" for review and approval. The "Traffic Control Plan" shall be submitted no later than ten (10) working days following the Notice to Proceed date and prior to commencing any work which requires implementation of any component of the "Traffic Control Plan". The plan shall be approved by the Engineer prior to its implementation by the Contractor.

The "Traffic Control Plan" shall conform to the typical traffic control details included in the plans and the requirements of Section 10-1.14, "Traffic Control System for Lane Closure", of these Special Provisions. The Traffic Control Plan shall include, but not be limited to, detailed requirements for the following:

1. Traffic control devices, including signs and markings.
2. Construction routes, phasing and/or staging of both the roadway and sidewalk areas.
3. Employee, Customer, and Business/Delivery access to adjacent property.
4. Emergency vehicles access.
5. Bus, refuse collection, and mail delivery access.
6. Any parking zones to be removed on a temporary basis.
7. Any temporary "No Parking" zones.
8. Pedestrian access.

The Traffic Control Plan shall consider the impacts of changes in traffic volumes and capacities related to the construction activities, and their impact on traffic and pedestrian operations, on roadway pavements, including provisions to restore construction-damaged pavements.

Traffic Lane and Sidewalk Closures
Lanes and sidewalks may be closed only as indicated in this section, "Maintaining Traffic", of these Special Provisions. Except for work required under Sections 7-1.08 and 7-1.09,
work that interferes with public traffic shall be performed only as indicated. Traffic lane and sidewalk closures shall conform to the following requirements:

Lane closure, a maximum of one lane in each direction of travel, not less than twelve (12) feet wide, shall be permitted only between the hours of 9:00 a.m. and 3:30 p.m. Any lane closures other than specified shall be approved by the Engineer.

Standard working hours shall be 8:00 a.m. to 4:00 p.m. Any extended working hours require the approval of the Engineer.

Personal vehicles of the Contractor's employees shall not be parked on the traveled way or shoulders, including any section closed to public traffic.

Adequate ingress and egress shall be maintained throughout the project limits for fire, police, and other emergency vehicles. The contractor shall provide adequate ingress and egress for residences, property owners, and abutting business owners to their respective properties except when performing work at their specific locations.

Also, the Contractor shall provide adequate signing, barricades and flashers or portable flashing beacons, flagmen, and other equipment and personnel necessary to adequately control and direct traffic in a safe manner. The Contractor shall maintain all barricades, flashers and detour signs twenty-four (24) hours a day, including covering signs during non-construction hours. The Contractor shall also provide the City with the names and telephone numbers of three (3) representatives available at all times.

Except as otherwise allowed by the Engineer, "long term" and temporary closures shall be removed and the full width of the traveled way shall be open for use by public traffic when construction operations are not actively in progress during the working period or successive working periods.

The contractor shall provide for pedestrian and wheelchair access to at least one (1) intersection corner within each block and the abutting sidewalk facilities along each block, at all times. Simultaneous closure of both intersection corners to pedestrian traffic within the same block is not allowed.

The contractor shall maintain at least one (1) north/south crosswalk and one (1) east/west crosswalk open to pedestrian and wheelchair access, where exists, at each intersection at all times.

Whenever Contractor's vehicles or equipment are parked within six (6) feet of a traffic lane, the area shall be closed with fluorescent traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment and along the edge of the traffic lane at twenty-five (25) foot intervals to a point not less than twenty-five (25) feet past the last vehicle or piece of equipment. A minimum of nine (9) cones or portable delineators shall be used for the taper. A W20-1 (Road Work Ahead) sign shall be mounted on a portable sign stand with flags. The sign shall be placed where directed by the Engineer.
Attention is directed to Part six (6) of the California MUTCD. Nothing in these Special Provisions shall be construed as relieving the Contractor from his responsibility as provided in Part 6 of California MUTCD.

Full compensation for furnishing, installing, moving, removing, and all the necessary traffic control devices including, but not limited to, the necessary signs, striping, barricades, and flagging shall be included in the lump sum price paid for traffic control, and no additional compensation will be allowed therefore.

**Maintaining Pedestrian Access**

Means of passage of pedestrian traffic around and through the work area shall be provided at all times. Path of travel shall comply with ADA regulations.

Temporary Pedestrian walkways shall be surfaced with asphalt concrete or portland cement concrete. The surface shall be skid-resistant and free of irregularities. Pedestrian walkways shall be maintained in good condition, and shall be suitable for wheelchair use. Walkways shall be kept clear of obstructions.

The Contractor shall cause the least possible disruption to the affected properties and restore suitable pedestrian access immediately following completion of the active work in progress.

At least one (1) continuous walkway along one (1) side of the street shall be available at all times. At locations where work is actively in progress, the pedestrian walkway within a single block may temporarily closed at one (1) end of the block along one (1) side of the street. Pedestrians shall be rerouted to the walkway on the opposite side of the street.

Minor deviations from the requirements of this section, which do not significantly change the cost of the work, may be permitted upon the written request of the Contractor if, in the opinion of the Engineer, public traffic will be better served and the work expedited. These deviations shall not be adopted by the Contractor until the Engineer has approved them in writing. All other modifications will be made by contract change order.

Attention is directed to Part 6) of the California MUTCD. Nothing in these Special Provisions shall be construed as relieving the Contractor from his responsibility as provided in Part 6 of the California MUTCD.

Full compensation for furnishing a traffic control plan, furnishing, installing, maintaining, and removing all components of the required traffic control system, traffic lane and sidewalk closures, portable changeable message signs, flagging, temporary pavement delineation, maintaining driveway and pedestrian traffic, and for maintaining traffic as specified in the plans and these Special Provisions, and as directed by the Engineer, shall be included in the lump sum price paid for traffic control, and no additional compensation will be allowed therefore.

**10-1.13 Temporary Pavement Delineation**

Temporary pavement delineation shall be furnished, placed, maintained, and removed in
conformance with the provisions in Section 2-1.01, “General”, of the Caltrans Specifications and these Special Provisions. Nothing in these Special Provisions shall be construed as reducing the minimum standards specified in the California MUTCD or as relieving the contractor from the responsibilities specified in Section 7-1.04 “Public Safety”, of the Caltrans Specifications and these Special Provisions. Whenever the work causes obliteration of existing pavement delineation, temporary or permanent pavement delineation shall be in place prior to opening the traveled way to public traffic. Laneline or centerline pavement delineation shall be provided at all times for traveled ways open to public traffic.

The Contractor shall perform the work necessary to establish the alignment of temporary pavement delineation, including required lines or marks. Surfaces to receive temporary pavement delineation shall be dry and free of dirt and loose material. Temporary pavement delineation shall not be applied over existing pavement delineation or other temporary pavement delineation. Temporary pavement delineation shall be maintained until superseded or replaced with a new pattern of temporary pavement delineation or permanent pavement delineation.

Temporary pavement markers, including underlying adhesive and removable traffic tapes which are applied to the final layer of surfacing or existing pavement to remain in place or which conflicts with a subsequent or new traffic pattern for the area, shall be removed when no longer required for the direction of public traffic, as determined by the Engineer.

Full compensation for furnishing, placing, maintaining, and removing the temporary pavement delineation and/or pavement markers used for temporary laneline and centerline delineation and for providing equivalent patterns of permanent traffic lines for these areas when required shall be considered as included in the contract lump sum price paid for traffic control, and no additional compensation will be allowed therefore.

10-1.14 Traffic Control System for Lane Closure
A traffic control system shall consist of closing traffic lanes and ramps in accordance with the details shown on the plans, the provisions of Section 12, "Temporary Traffic Control", of the Caltrans Specifications, the provisions under "Public Safety", "Maintaining Traffic", and "Construction Area Signs" elsewhere in these Special Provisions.

The provisions in this section will not relieve the Contractor from the responsibility to provide additional devices or take the measures that may be necessary to comply with the provisions in Section 7-1.04, "Public Safety", of the Standard Specifications and these Special Provisions.

During traffic stripe operations and pavement marker placement operations using bituminous adhesive, traffic shall be controlled, at the option of the Contractor, with either stationary or moving type lane closures. During all other operations, traffic shall be controlled with stationary type lane closures. The Contractor's attention is directed to the provisions in Sections 84-1.03B, "Protection From Damage", and 85, "Pavement Markers", of the Caltrans Specifications.

If any component in the traffic control system is displaced, or ceases to operate or function
as specified, from any cause, during the progress of the work, the Contractor shall immediately repair the component to its original condition or replace the component, and shall restore the component to its original location.

When lane closures are made for work periods only, at the end of each work period, all components of the traffic control system, except portable delineators placed along open trenches or excavation adjacent to the traveled way shall be removed from the traveled way and shoulder. If the Contractor so elects, the components may be stored at selected central locations, approved by the Engineer, within the limits of the highway right-of-way.

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

Whenever Contractor's vehicles or equipment are parked within six (6) feet of a traffic lane, the area shall be closed with fluorescent traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment and along the edge of the traffic lane at twenty-five (25) foot intervals to a point not less than twenty-five (25) feet past the last vehicle or piece of equipment. A minimum of nine (9) cones or portable delineators shall be used for the taper. A W20-1 (Road Work Ahead) sign shall be mounted on a portable sign stand with flags. The sign shall be placed where directed by the Engineer.

Section 12-1.03 of the Caltrans Specifications is amended as follows:

"The Contractor shall pay fully the cost of furnishing all flaggers, including transporting flaggers, to provide for passage of public traffic."

Attention is directed to Part 6 of the California MUTCD. Nothing in these Special Provisions shall be construed as relieving the Contractor from his responsibility as provided in Part 6 of California MUTCD.

Full compensation for furnishing all labor (including flagging costs), materials (including signs), tools, equipment, and incidentals, and for doing all the work involved in lane closures, including placing, removing, storing, maintaining, moving to new locations, replacing, and disposing of the components of the traffic control system, as shown on the plans, as specified in the Caltrans Specifications and these Special Provisions, and as directed by the Engineer, shall be included in the lump sum price paid for traffic control, and no additional compensation will be allowed therefore.

The adjustment provisions in Section 4-1.03, "Changes", of the Standard Specifications
shall not apply to the item of traffic control system. Adjustments in compensation for traffic control system will be made only for increased or decreased traffic control system required by changes ordered by the Engineer and will be made on the basis of the cost of the increased or decreased traffic control necessary. The adjustment will be made on a force account basis as provided in Section 9-1.03, "Force Account Payment", of the Standard Specifications for increased work and estimated on the same basis in the case of decreased work.

Traffic control system required by work which is classed as extra work, as provided in Section 4-1.03D of the Standard Specifications, will be paid for as a part of the extra work.

**10-1.15 Existing Highway Facilities**

Contractor’s attention is directed to requirements of Section 5-1.36, "Preservation of Property", of the Caltrans Specifications and 7-1.05, "Indemnification and Insurance", of the Standard Specifications.

The work shall be performed in connection with various existing highway facilities (i.e., traffic signals and streetlights, storm drain pipe, catch basins, sidewalk drains, roadway pavement, roadside signs, utility boxes, trees, fences, etc.) shall conform to the provisions in Section 15, "Existing Facilities", of the Caltrans Specifications and these Special Provisions.

All traffic control signs shall be maintained. If relocation is necessary to facilitate the construction, the Contractor shall notify the City Traffic Engineer, at (209) 937-8411, 72-hours prior to said relocation, and request for approval as to where sign is to be temporarily relocated. Full compensation for performing such removal and reinstallation shall be considered as included in the various items of work and no additional compensation will be allowed therefore.

Fire hydrants, water valves, curb-stop boxes, and other utility facilities shall be unobstructed and accessible during the construction period.

Should the Contractor desire to have any alterations made in any utility or other improvement for Contractor’s own convenience in order to facilitate Contractor’s construction operations and for Contractor’s sole benefit, Contractor shall make all necessary arrangements with the owners and bear all expense in connection therewith.

Removed highway facilities that are not to be salvaged shall become the property of the Contractor and shall be disposed of as follows:

If the Contractor elects to dispose of materials at locations other than those where arrangements have been made by the Department, or, if material is to be disposed of and the Department has not made arrangements for disposal of the material, the Contractor shall make arrangements for disposing of the materials outside the highway right of way and shall pay all costs involved. Arrangements shall include, but not be limited to, entering into agreements with property owners and obtaining necessary permits, licenses and environmental clearances. Before disposing of any material outside the highway right of way.
way, the Contractor shall furnish to the Engineer satisfactory evidence that the Contractor has entered into agreements with the property owners of the site involved and has obtained the permits, licenses and clearances.

When any material is to be disposed of outside the highway right of way, and the Department has not made arrangements for disposal of the material, the Contractor shall first obtain written authorization from the property owner on whose property the disposal is to be made and the Contractor shall file with the Engineer the authorization or a certified copy thereof together with a written release from the property owner absolving the State from any and all responsibility in connection with the disposal of material on the property. Before any material is disposed of on the property, the Contractor shall obtain written permission from the Engineer to dispose of the material at the location designated in the authorization.

When material is disposed of as above provided and the disposal location is visible from a highway, the Contractor shall dispose of the material in a neat and uniform manner to the satisfaction of the Engineer.

Where the Department has made arrangements with owners of land in the vicinity of a project for the disposal of materials on an owner’s property, the arrangements are made solely for the purpose of providing all bidders an equal opportunity to dispose of the materials on the property. Bidders or Contractors may, upon written request, inspect the documents evidencing the arrangements between property owners and the Department. The Contractor may, if the Contractor so elects, exercise any rights that have been obtained, which may be exercised by a Contractor under the arrangements, subject to and upon the conditions hereinafter set forth.

Such arrangements are not a part of the contract and it is expressly understood and agreed that the Department assumes no responsibility to the bidder or Contractor whatsoever in respect to the arrangements made with the property owner to dispose of materials thereon and that the Contractor shall assume all risks in connection with the use of the property, the terms upon which the use shall be made, and there is no warranty or guaranty, either express or implied, as to the quantity or types of materials that can be disposed of on the property.

In those instances in which the Department has compiled Materials Information as referred to in Section 2-1.30, "Job Site and Document Examination" the compilation will include the documents setting forth the arrangement made with some of the property owners for the disposal of material on those owners’ properties. The inclusion of the documents therein shall not in any respect operate as a waiver of any of the provisions in this section concerning the documents.

The bidder or Contractor is cautioned to make such independent investigation and examination as the Contractor deems necessary to be satisfied as to the quantity and types of materials which may be disposed of on the property and the rights, duties and obligations acquired or undertaken under the arrangement with the property owner.
Notwithstanding that the Contractor may elect to dispose of materials on any such property owner's property, no material may be disposed of on that property unless the Contractor has first either:

(1) Executed a document that will guarantee to hold the owner harmless from all claims for injury to persons or damage to property resulting from the Contractor's operations on the property owner's premises and also agree to conform to all other provisions set forth in the arrangement made between the Department and the property owner. The document will be prepared by the Engineer for execution by the Contractor, or

(2) Entered into an agreement with the owner of the disposal site on any terms mutually agreeable to the owner and the Contractor; provided that the Contractor shall furnish to the Engineer a release, in a form satisfactory to the Engineer, executed by the owner, relieving the Department of any and all obligations under the Department's arrangement with the owner.

If the Contractor elects to dispose of material under (1), the use of the site shall be subject to the terms, conditions and limitations of the arrangement made between the property owner and the Department and the Contractor shall pay those charges that are provided for in the arrangement made by the Department with the property owner, and deductions will be made from any moneys due or that may become due the Contractor under the contract sufficient to cover the charges for the material disposed of.

If the Contractor elects to dispose of material under (2), the Contractor shall pay those charges that are provided for in the agreement between the owner and the Contractor and deductions will not be made from any moneys due or that may become due the Contractor under the contract to cover the charges.

Before acceptance of the contract, the Engineer may require the Contractor to submit written evidence that the owner of the disposal site is satisfied that the Contractor has satisfactorily complied with the provisions of either - (1), the arrangement between the Department and the owner, or (2), the agreement between the owner and the Contractor, as the case may be.

Removed highway facilities that are not to be salvaged or reused in the work shall become the property of the Contractor and shall be disposed of as provided in this section.

Full compensation for all costs involved in disposing of materials as specified in this section including all costs of hauling, shall be considered as included in the price paid for the contract item of work involving the materials and no additional compensation will be allowed therefor.

Any contract adjustment that may be warranted due to differing site conditions will be made in accordance with the provisions of Section 4-1.03, "Changes", of the Standard
Specifications.

Relocations or repairs necessitated because of existing facilities which are not shown on the plans, or are shown at substantially different locations than shown may be paid as extra work in accordance with Section 5-1.36D of the Caltrans Specifications, but only if the Engineer rules that the Contractor exercised due diligence in his operation. Due diligence may be determined by the Engineer by reviewing surface and subsurface conditions that were existing prior to exposing the facility, and determining the absence of any signs sufficient to warn a diligent Contractor of the possible existence of a facility in the area.

Utility Facilities
Attention is directed to the possible existence of underground utilities not known to the City or in a location different from that which is shown on the plans or in these Special Provisions. The Contractor shall take steps to ascertain the exact location of such facilities prior to doing any work that may damage such facilities or interfere with their service.

Remove Existing Concrete
Existing concrete sidewalk, gutter, curb and gutter, driveways, wheelchair ramps, and other concrete surfacing, where shown on the plans to be removed, shall be removed and disposed of outside the road right-of-way in accordance with the provisions in these Special Provisions and as indicated on the plans. Sawcut concrete ramps, walks, curbs, and gutters to be removed at the nearest joint or scoreline, at the locations indicated on the plans, and as designated by the Engineer.

Compensation for removing existing concrete shall be considered included in the contract prices paid for various items of work, and no additional compensation will be allowed therefore.

Remove Existing Pavement
Asphalt concrete pavement and aggregate base shall be removed by saw-cutting and excavation or cold planing to the lines, depths, and dimensions indicated on the plans and/or as directed by the Engineer.

Compensation for removing existing pavement shall be considered included in the contract prices paid for various items of work, and no additional compensation will be allowed therefore.

Remove Existing Traffic Stripes and Pavement Markings
Traffic stripes and pavement markings shall be removed at the locations shown on the plans and as directed by the Engineer.

Attention is directed to “Water Pollution Control” of these special provisions.

Waste from removal of yellow thermoplastic and yellow painted traffic stripe and pavement marking contains lead chromate in average concentrations greater than or equal to 350 mg/kg and less than 1000 mg/kg Total Lead. Residue produced when yellow thermoplastic and yellow paint are removed may contain heavy metals in concentrations that exceed...
thresholds established by the California Health and Safety Code and may produce toxic fumes when heated.

Waste from removal of yellow thermoplastic and yellow painted traffic stripe and pavement marking contains lead chromate in average concentrations greater than or equal to 5 mg/L Soluble Lead or 1000 mg/kg Total Lead. Residue produced from when yellow thermoplastic and yellow paint are removed may contain heavy metals in concentrations that exceed thresholds established by the California Health and Safety Code and may produce toxic fumes when heated.

The removed yellow thermoplastic and yellow paint shall be disposed of at a Class 1 disposal facility or a Class 2 disposal facility permitted by the Regional Water Quality Control Board in conformance with the requirements of the disposal facility operator within 30 days after accumulating 100 kg of residue and dust. The Contractor shall make necessary arrangements with the operator of the disposal facility to test the yellow thermoplastic and yellow paint residue as required by the facility and these special provisions. Testing shall include, at a minimum, (1) Total Lead and Chromium by EPA Method 7000 series and (2) Soluble Lead and Chromium by California Waste Extraction Test. From the first 3360 L of waste or portion thereof, if less than 3360 L of waste are produced, a minimum of four randomly selected samples shall be taken and analyzed. From each additional 840 L of waste or portion thereof, if less than 840 L are produced, a minimum of one additional random sample shall be taken and analyzed. The Contractor shall submit the name and location of the disposal facility and analytical laboratory along with the testing requirements to the Engineer not less than 10 days prior to the start of removal of yellow thermoplastic and yellow painted traffic stripe and pavement marking. The analytical laboratory shall be certified by the Department of Health Services Environmental Laboratory Accreditation Program. Test results shall be provided to the Engineer for review prior to signing a waste profile as requested by the disposal facility, prior to issuing an EPA identification number, and prior to allowing removal of the waste from the site.

The Contractor shall prepare a project specific Lead Compliance Plan to prevent or minimize worker exposure to lead while handling removed yellow thermoplastic and yellow paint residue. Attention is directed to Title 8, California Code of Regulations, Section 1532.1, “Lead,” for specific Cal OSHA requirements when working with lead.

The Lead Compliance Plan shall contain the elements listed in Title 8, California Code of Regulations, Section 1532.1(e)(2)(B). Before submission to the Engineer, the Lead Compliance Plan shall be approved by an Industrial Hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene. The Plan shall be submitted to the Engineer at least 7 days prior to beginning removal of yellow thermoplastic and yellow paint.

Prior to removing yellow thermoplastic and yellow painted traffic stripe and pavement marking, personnel who have no prior training, including City personnel, shall complete a
safety training program provided by the Contractor that meets the requirements of Title 8, California Code of Regulations, Section 1532.1, “Lead,” and the Contractor’s Lead Compliance Program.

Where grinding or other methods approved by the Engineer are used to remove yellow thermoplastic and yellow painted traffic stripe and pavement marking, the removed residue, including dust, shall be contained and collected immediately. Sweeping equipment shall not be used. Collection shall be by a high efficiency particulate air (HEPA) filter equipped vacuum attachment operated concurrently with the removal operations or other equally effective methods approved by the Engineer. The Contractor shall submit a written work plan for the removal, storage, and disposal of yellow thermoplastic and yellow painted traffic stripe and pavement marking to the Engineer for approval not less than 10 days prior to the start of the removal operations. Removal operations shall not be started until the Engineer has approved the work plan.

The removed yellow thermoplastic and yellow painted traffic stripe and pavement marking residue shall be stored and labeled in covered containers. Labels shall conform to the provisions of Title 22, California Code of Regulations, Sections 66262.31 and 66262.32. Labels shall be marked with date when the waste is generated, the words “Hazardous Waste”, composition and physical state of the waste (for example, asphalt grindings with thermoplastic or paint), the word “Toxic”, the name and address of the Engineer, the Engineer’s telephone number, contract number, and Contractor or subcontractor. The containers shall be a type approved by the United States Department of Transportation for the transportation and temporary storage of the removed residue. The containers shall be handled so that no spillage will occur. The containers shall be stored in a secured enclosure at a location within the project limits until disposal, as approved by the Engineer.

If the yellow thermoplastic and yellow painted traffic stripe and pavement marking residue is transported to a Class 1 disposal facility, a manifest shall be used, and the transporter shall be registered with the California Department of Toxic Substance Control. The Engineer will obtain the United States Environmental Protection Agency Identification Number and sign all manifests as the generator within 2 working days of receiving sample test results and approving the test methods.

The Contractor shall assume that the yellow paint removed is not regulated under the Federal Resource Conservation and Recovery Act (RCRA). Additional disposal costs for removal residue regulated under RCRA, as determined by test results required by the disposal facility, will be paid for as extra work as provided in Section 4-1.05, “Extra Work,” of the State Standard Specifications.

Nothing in these special provisions shall relieve the Contractor of the Contractor’s responsibilities as specified in Section 71.04, “Public Safety,” of the Caltrans Specifications.
Compensation for removing existing traffic stripes and pavement markings shall be considered included in the contract prices paid for various items of work, and no additional compensation will be allowed therefore.

**Roadside Signs**
Unless otherwise shown on the plans, the Contractor shall maintain existing roadside signs in place. The Contractor shall replace or repair all signs damaged by his operations and under this contract by using new material. Such material shall be a replacement of the original in regards to type of sign, posts, and construction.

At the Contractor's option, existing signs may be temporarily removed in order to facilitate the Contractor's construction of other improvements included under this contract. Any sign which is removed or damaged by the Contractor's shall be reinstalled at its original location using new unistrut posts in conformance with the Standard Specifications. Existing steel pipe sign posts shall be salvaged as directed by the Engineer. Each roadside sign shall be reinstalled on the same day that the sign is removed. **All new signs shall be 3M brand HIP and covered with grafitti film (3M brand 1160 overlay film).**

Compensation for any temporary removal and reinstallation of roadside signs shall be considered included in the contract prices paid for various items of work, and no additional compensation will be allowed therefore.

**10-1.16 Clearing and Grubbing**
Clearing and Grubbing shall conform to the requirements of Section 16, "Clearing and Grubbing", of the Standard Specifications and these Special Provisions.

Payment for clearing and grubbing shall be considered as included in the contract prices paid for various items of work, and no additional compensation will be provided therefore.

All materials removed shall be disposed of outside the road right-of-way in accordance with these Special Provisions and as indicated on the plans.

Attention is directed to Section 19-1.03D, "Buried Man-Made Objects", of the Caltrans Specifications.

Removed concrete shall be disposed of outside the highway right-of-way in conformance with the provisions in these Special Provisions, "Disposal of Material Outside the Highway Right-of-Way", of the Caltrans Specifications.

Existing underground structures, trash, debris, loose fill, tree roots, tree remains, organic surficial soil, and other rubbish shall be removed or otherwise disposed of so as to leave the areas that have been disturbed with a neat and finished appearance, free from debris. Depressions left from any removals shall be properly filled and compacted in accordance with these Special Provisions, and as directed by the Engineer.

The methods for removal of subsurface irrigation and utility lines will depend on the depth and location of the line in relation to planned improvement. Unless otherwise specified,
remove the pipe and compact the soil in the trench according to the applicable portions of these Special Provisions.

Where loose, uncompacted fill occurs at the surface of the site, the materials shall be excavated to expose firm natural ground or previously compacted fill. The exposed surface shall then be prepared to receive fill in accordance with the applicable portions of these Special Provisions.

Nothing herein shall be construed as relieving the Contractor of his responsibility for final cleanup of the highway as provided in Section 4-1.02, "Final Cleaning Up", of the Standard Specifications.

Full compensation for clearing and grubbing, including restoration of landscaping to match existing in kind with all necessary irrigation modifications as shown on the plans and as directed by the Engineer, shall be considered included in the contract prices paid for various items of work, and no additional compensation will be allowed. All the work involve in clearing and grubbing, shall include the removal and disposal of all the existing materials as shown on the plans, as specified in the Standard Specifications, these Special Provisions, and as directed by the Engineer.

10-1.17 Tree Pruning and Root Trimming
All existing trees within the project limits shall be preserved and protected in place.

Tree pruning shall be performed only by a certified arborist and with prior City approval. No pruning of new or existing trees shall be done without prior City Arborist approval. No hooks or any other climbing devices that might damage or puncture tree bark shall be used. The Contractor shall be responsible to report to the City Arborist in writing, any hazardous trees, dead structural limbs, or cavities so corrective action may be taken.

Tree root trimming shall be performed as directed by the City Arborist. Contractor shall request a root system inspection at least 48 hours prior to excavation and root cutting activities. City will issue a Notice to Resume Work to the contractor. Contractor shall adhere to City’s instructions and shall resume work no later than 48 hours after receiving said Notice to Resume Work. If during root trimming, the Engineer or City Arborist determines that a tree, not originally designated for removal is to be removed, compensation will be paid in accordance with Section 4-1.05, “Extra Work” of the Caltrans Specifications.

If in the opinion of the Engineer or City Arborist a tree not approved for removal has been damaged due to the Contractor’s operation and cannot be saved, the Contractor shall, when so ordered by the Engineer, remove the tree in its entirety and replant with a 48” box container size tree of the same kind, or as designated by the City Arborist, at the Contractor’s expense.

Tree pruning, root trimming, and tree replacement, whether shown or not shown on the plans, shall be considered included in the contract price paid for various contract items, and no additional compensation will be made therefore.
Should any direct or indirect damage or injury result to any public or private property by or on account of any act, omission, neglect, or misconduct in the execution of work, or as a consequence of the non-execution thereof on the part of the Contractor or any of his employees or agents, such property shall be restored at the expense of the Contractor to a condition equivalent to that existing before the damage or injury occurred by repairing or rebuilding the same, or by otherwise making restitution in an acceptable manner for such damage or injury.

The Contractor shall be required to provide and maintain barriers, guards, and lights when and where it may be necessary in order to effectively guard the public from the work being done. This includes open excavations resulting from tree removals. The Contractor shall also be required to post proper signage and traffic control for the public regarding detours and the condition of the work under construction, all in accordance with applicable provisions of the California Vehicle Code (CVC).

10-1.18 Roadway Excavation
Roadway excavation shall conform to the requirements of Section 19, "Earthwork", of the Standard Specifications and these Special Provisions. Wherever relative compaction is specified, it shall be determined by ASTM D1557.

Surplus excavated material shall become the property of the Contractor and shall be disposed of outside the highway right-of-way in accordance with these Special Provisions. All excavated material shall be loaded for off-haul from the site as it is generated. Material will not be allowed to accumulate within the right-of-way.

Contaminated Soil
Identify contaminated soil from spills or leaks by noticing discoloration, odors, or differences in soil properties. Soil with evidence of contamination must be sampled and tested by a laboratory certified by Environmental Laboratory Accreditation Program (ELAP).

If levels of contamination are found to be hazardous, handle and dispose of the soil as hazardous waste.

Prevent the flow of water, including ground water, from mixing with contaminated soil by using one or a combination of the following measures:

1. Berms
2. Cofferdams
3. Grout curtains
4. Freeze walls
5. Concrete seal course

If water mixes with contaminated soil and becomes contaminated, sample and test the water using a laboratory certified by ELAP. If levels of contamination are found to be hazardous, handle and dispose of the water as hazardous waste.
Upon completion of underground facilities and backfilling of the trenches in each portion of
the work, the sub-grade shall be prepared by compacting to a relative compaction of not
less than ninety-five (95) percent for a minimum depth of zero point five (0.5) feet below the
grading plane (sub-grade plane) for a total width of the area to be paved.

All portland cement concrete flatwork shall be saw-cut a minimum of 3-1/2 inches deep
prior to removal. All monolithic portland cement concrete shall be saw-cut a minimum of 8
inches deep prior to removal.

Existing asphalt concrete sections to be removed shall be neatly saw cut two and one-half
(2-1/2) inches deep and excavated to a depth of fifteen (15) inches. The vertical edges of
the pavement shall be neatly trimmed. All debris shall be removed. The top six inches of
the sub-grade shall be compacted to 90% of the maximum density at near optimum
moisture content.

Full compensation for Roadway Excavation shall be considered included in the contract
prices paid for the various items of work and no additional compensation will be allowed.

10-1.19 Trench Excavation and Backfill
Trench excavation, pipe bedding, and backfill shall conform to the requirements of Section
71, "Sanitary Sewer and Storm Sewers", of the Standard Specifications and City of
Stockton Standard Plan Nos. 50 and 51, these Special Provisions, and as specified on the
plans.

Water control shall conform to the provisions of Section 19-3.03D of the Caltrans
Specifications and these Special Provisions. The Contractor shall construct and maintain
all necessary ditches, cofferdams, channels, drains, sumps, and temporary protective
works, and shall furnish, install, and maintain all necessary pumping and other equipment
for controlling flows, including ground water in the pipe trenches and structure excavations,
so that no foundation will contain any free water. Full compensation for water control shall
be included in the contract prices paid for various items of work, and no additional
compensation will be made therefore.

The Contractor shall do all excavation of whatever substance is encountered to the lines
and grades shown on the plans. Where it becomes necessary to excavate beyond the
limits of normal excavation lines in order to remove boulders or other interfering objects, the
void remaining after the removal of the boulders shall be backfilled with suitable material
densified, as approved by the Engineer. The Contractor shall do such grading as is
necessary to prevent surface water from entering the excavation. The Contractor shall
remove and dispose of all water entering the excavation. Disposal of water shall be done in
a manner to prevent damage or nuisance to adjacent properties.

Due to width limitations, proximity of existing utilities, structures, and access requirements,
the Contractor may be required to provide a vertical, open trench, shoring system for
portions of this project. Shoring of all trench excavations shall conform to the Sheeting and
Shoring Section of these Special Provisions.
The amount of open trench or plated trench permitted at any one time shall not exceed fifty (50) feet or as allowed by the Engineer. Trench excavation shall be closed and all lanes shall be restored to traffic at the end of each workday. The Contractor shall furnish and install non-skid steel plates to span trench sections, which have not been backfilled. Non-skid trench plates shall have a manufactured surface with a coefficient of friction that equals or exceeds zero point thirty-five (0.35).

Approach and ending plates shall be attached to the roadway by a minimum of two (2) dowels predrilled into the corner of the plate and drilled a minimum of two (2) inches into the pavement. Interior plates are to be butted together. Fine graded asphalt concrete shall be compacted to form ramps with a maximum slope of eight and one-half percent (8.5%) with a minimum twelve- (12) inch taper to cover all exterior edges of the plates. When the plates are removed, the dowel holes in the pavement shall be backfilled with graded fines of asphalt concrete mix. A concrete slurry or equivalent slurry mix may be substituted with the approval of the Engineer.

All operations shall be carried out in an orderly fashion. Backfilling, compacting, and clean-up work shall be accomplished as the work is approved and traffic through the work shall be impeded or obstructed as little as possible.

The trench bottom shall be free of bumps or hollows and graded to provide uniform support along the length of pipe.

Excess excavated material shall become the property of the Contractor and shall be removed and disposed of away from the job site at the Contractor's expense. Full compensation for the removal and disposal of excess or unsuitable material shall be considered included in the contract unit prices paid for the various items of work and no additional compensation will be allowed therefore.

Pipe bedding and backfill shall be placed above and below the pipe to the lines and grades shown on the City of Stockton Standard Plans Nos. 50 and 51, as shown on the plans, and as specified in these Special Provisions.

Delete Section 19-3.03E, "Structure Backfill", of the Caltrans Specifications and substitute the following:

"Pipe bedding, envelope, and trench backfill material shall consist of imported material, free from vegetable matter and other deleterious substances and shall form a firm, stable base when compacted. The percentage composition weight by weight shall conform to the following grading:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percentage Passing</th>
</tr>
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<tbody>
<tr>
<td>1&quot;</td>
<td>100</td>
</tr>
<tr>
<td>¾&quot;</td>
<td>90-100</td>
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<tr>
<td>No. 4</td>
<td>35-60</td>
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<tr>
<td>No. 30</td>
<td>10-30</td>
</tr>
<tr>
<td>No. 200</td>
<td>2-9</td>
</tr>
</tbody>
</table>
The material shall conform to the following quality requirements:

- **Resistance (R-Value)**: 78 min.
- **Sand equivalent**: 25 min.

In no case shall native excavated material be used as pipe bedding, envelope, and trench backfill.

Bedding material shall be placed to approximately the same elevation on both sides of pipe to prevent unequal loading and displacement of the pipe. The difference in elevation of the bedding backfill on either side of pipe shall not exceed six (6) inches at any time.

Trench backfill shall consist of the trench area from the top of the pipe bedding to the ground surface, or if within a roadway, to the bottom of the roadway subgrade.

Backfill shall be compacted by impact, vibration, or by a combination of these methods, as approved by the Engineer. However, impact type compactors shall not be used around or over PVC pipe until backfill over the top of the pipe will permit compaction of the backfill material without deflecting or damaging the pipe. Jetting will not be permitted.

All backfill shall be placed in maximum eight (8) inch uncompacted lifts.

Compaction shall be determined by ASTM D1557.

The Contractor shall place temporary surfacing promptly after backfilling and shall maintain such surfacing until permanent paving work can be installed.

Temporary paving shall consist of asphalt cutback rolled to provide a smoother surface. All edges shall be contoured to provide a smooth transition between the existing grade and the cutback surface. The Contractor shall maintain the surface free of depressions, bumps, loose pieces, and other defects at all times. During wet weather, the Contractor shall provide a solid, non-skid surface over temporary pavement to protect the surface from damage by traffic.

Temporary pavement shall be replaced with permanent pavement, as soon as is practical after the trench is backfilled and as allowed by the Engineer.

Until the permanent pavement is placed, the base rock and temporary asphalt plant mix at the surface of the trench shall be maintained at all times. Continuous inspection and maintenance of the trench area will be required.

Any excavation shall also conform to the provisions in Section 100, "Street Opening and Pavement Restoration Regulations" of the Standard Specifications and Plans of the City of Stockton.

Full compensation for doing all the work involved in trench excavation, water control and dewatering, bedding and backfilling, and placement of temporary paving shall be...
considered as included in the contract prices paid for the various items of work and no additional compensation will be made therefore.

10-1.20  Sheeting and Shoring
Excavations shall be adequately shored and braced so that the earth will not slide, move, or settle, and so that all existing improvements of any kind will be fully protected from damage.

Attention is called to Article 6 of "Construction Safety Orders" of the California Division of Industrial Safety, which applies to all open excavations made in the earth's surface, including trenches.

Trenches over five (5) feet in depth shall be evaluated for stability prior to personnel entering the trench. Where trenches are deeper than five (5) feet, the Contractor shall comply with the California Occupational Safety and Health Administration (CAL OSHA) requirements pertaining to trench safety.

The Contractor shall furnish, install, and maintain such sheet piling, timbering, lagging, and bracing as indicated on the standard drawings or any additional precautions not specifically set forth as necessary to support the sides of the trench. The protection of adjacent structures from movement of the ground and the elimination of the element of danger to life, property, or to existing improvements is the intent of this requirement.

Additional supports requested by the Engineer shall in no way relieve the Contractor of his responsibility for the sufficiency of his precautions.

All such piling, timbering, lagging, and bracing shall, unless otherwise required by the Engineer, be removed during backfilling in such a manner as to prevent any movement of the ground or damage to the piping or other structures.

Full compensation for complying with these provisions shall be included in the contract prices paid for the various items of work, and no additional compensation will be allowed therefore.

10-1.21  Aggregate Base
Unless otherwise indicated in these Special Provisions or indicated on the plans, aggregate base shall conform to the requirements of Section 26, "Aggregate Bases", of the Caltrans Specifications for Class 2 aggregate base.

Aggregate base shall be placed in lifts no greater than eight (8) inches in loose thickness and in a manner that avoids segregation, moisture conditioned as necessary, and compacted to at least ninety-five percent (95%) relative compaction.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in construction of the various depths of aggregate base, complete in place, will be considered as included in the contract prices paid for various items of work requiring aggregate base, and other items of work, and no additional compensation will be allowed therefore.
10-1.22 Asphalt Concrete

Asphalt concrete shall be in accordance with the provisions of Section 39, "Asphalt Concrete", of the Standard Specifications and these Special Provisions.

Asphalt concrete shall be Type A, ¾” maximum, medium aggregate. Asphalt concrete shall have a viscosity grade of PG70-10 or Type B Polymer Modified PG 70-22 or equal may be used. Spreading and compacting of asphalt concrete shall conform to the following provisions:

Spreading equipment shall conform to the applicable provisions of Section 39-1.10, “Spreading and Compacting Equipment” of the Caltrans Specifications. Nominal thickness of top layer shall be two (2) inches.

Compaction of the asphalt concrete shall conform to the applicable provisions of Section 39, “Hot Mix Asphalt” of the Caltrans Specifications.

If poor quality paving joints show deterioration or open areas that allow water through the paving within one (1) year of paving, the Contractor will be required to fog seal for the full joint length for a minimum six (6) foot wide pass. All costs for seal will be at no additional cost to the City of Stockton.

Asphalt concrete shall not be placed adjacent to the curb and gutter until the area behind the curb and gutter is fully backfilled and compacted. It shall be the Contractor's responsibility, based on weather predictions, to schedule his paving operations to avoid paving in the rain or fog. If the day's operations are canceled because of predicted rain or fog, a non-working day will be allowed regardless of actual working conditions. The Engineer will determine whether the day's operation shall be canceled due to predicted rain or fog.

Asphalt concrete shall not be placed on any surface, which contains ponded water or excessive moisture in the opinion of the City Engineer.

If paving operations are in progress and rain or fog forces a shut down, loaded trucks in transit shall return to the plant, and no compensation will be allowed therefore.

The Contractor shall furnish and use canvas tarpaulins to cover all loads of asphalt from the time that the mixture is loaded until it is discharged from the delivery vehicle, unless otherwise directed in writing by the Engineer.

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.

No traffic shall be allowed on to the area to which paint binder has been applied with the exception of vehicles unloading asphalt concrete. All vehicles involved with the Contractor's operations shall turn around within the road right-of-way. Driveways and other
private property shall not be used without prior written consent of the involved property owner, a dated copy of which shall be delivered to the Engineer prior to the use thereof.

The contract price paid per square foot for Construct Asphalt Concrete Pavement shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in constructing asphalt concrete pavement, complete in place, including saw cutting and removing existing roadway pavement and base material, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefore.

10-1.23 Concrete Curbs, Sidewalks, and Curb Ramps

Concrete curb and gutter, sidewalk, and curb ramps, including grooving and detectable warning surface, shall be in accordance with the provisions of Sections 73, "Concrete Curbs and Sidewalks", and Section 90, "Portland Cement Concrete", of the Caltrans Specifications, Section 90 of the Standard Specifications, these Special Provisions, and as shown on the plans.

Portland cement concrete shall conform to Section 90-2, "Minor Concrete," of the Caltrans Specifications and shall contain not less than 590 pounds of cement per cubic yard for all uses. Certification of the concrete shall be received from the vendor and delivered to the City Inspector at the time the concrete is poured.

The Contractor shall sawcut all existing concrete curb, gutter and sidewalks, driveways, and other concrete improvements that will be matched with new improvements at the locations indicated on the plans and where directed by the Engineer.

Expansion joints shall be constructed wherever required by the Standard Specifications, at the locations indicated on the plans, and where directed by the Engineer. Expansion joints shall be filled with 3/8"-thick premolded expansion joint filler conforming to ASTM D-1751.

Sidewalk constructed adjacent to existing curb (and gutter) to remain, shall be doweled to the existing curbs. Dowels shall be 12" No. 4 bars at 3' on-center (minimum of 2 dowels).

Reinforcing steel, where required, shall conform to Section 52, "Reinforcement", of the Caltrans Specifications and these Special Provisions. All rebar shall be Grade 60.

Concrete shall be cured using the curing compound method for curb, sidewalks, and gutters. The curing compound shall be the clear or translucent type conforming to the specifications of AASHTO Designation: M148, Type 1, except that the loss of water in the water retention test shall not exceed 0.040 gram per square centimeter or surface. The curing compound shall contain a fugitive dye and shall be applied at the approximate rate of one (1) gallon per one hundred fifty (150) square feet of area. The curing compound shall be applied in a manner that will provide a complete coating of all exposed faces of the concrete surface. Alternate curing methods shall be submitted to the Engineer for approval before use.
The Contractor shall locate and mark all irrigation facilities. The Contractor shall be responsible for relocation and repair or all irrigation lines and utilities that are in conflict with the proposed improvements and no additional compensation will be allowed therefore.

The contract price paid per each for Construct Caltrans Case A Curb Ramp and Construct Caltrans Case F Curb Ramp shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, including saw cutting and removing existing concrete curb, gutter, and sidewalk, clearing and grubbing, aggregate base, reinforcement, backfill, compaction, compaction testing, watering, expansion joint filler, and concrete curing compound, and for doing all the work involved in placing and installing concrete wheel chair ramps, including grooves, detectable warning surface, adjacent curb and gutter, and retaining curb, to the limits as indicated on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer and no additional compensation will be allowed therefore.

The contract price paid per square foot for Construct Concrete Sidewalk and Construct Cobble Stone Hardscape shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, including saw cutting and removing existing concrete sidewalk, clearing and grubbing, aggregate base, reinforcement, dowels to existing curb and gutter to remain, backfill, compaction, compaction testing, watering, expansion joint filler, and concrete curing compound, and for doing all the work involved in furnishing and placing concrete sidewalk and cobble stone hardscape, including retaining curb, grading at back and front of walk, restoration of landscaping and irrigation damaged as a result of contractor activity or as necessary to complete the work as shown on the plans, and removal and reinstallation of chain link fence, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefore. Where sidewalk is adjacent to curb or curb and gutter, the six (6) inch dimension from face of curb to back of curb shall not be counted.

The contract price paid per linear foot for Construct Concrete Curb and Gutter shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, including saw cutting and removing existing concrete curb and gutter, aggregate base, reinforcement, backfill, compaction, watering, expansion joint filler, and concrete curing compound, and for doing all the work involved in furnishing and placing concrete curb and gutter, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefore.

Broken pieces of concrete shall be immediately removed from the job site and disposed. No portions of broken concrete shall remain on the job site overnight. Contractor shall pay to the City of Stockton the sum of Two Hundred Fifty Dollars ($250) for every calendar day where debris has remained on the job site overnight.
10-1.24 Surface Restoration
Surface restoration shall consist of restoring all areas within the limits of work to their original existing condition prior to construction or to the condition shown on the plans or specified in the Specifications.

The Contractor shall restore all paved areas, such as driveways, curb and gutter, roadway surfaces, etc., landscaped areas, fences, and all other improvements disturbed or damaged by his operations to the satisfaction of the Engineer. Grass damaged by Contractor activity shall be replaced with sod.

Payment for the restoration of damaged areas, for which specific bid items are not provided, shall be included in the prices paid for various items of work and no additional compensation will be allowed therefore.

10-1.25 Traffic Stripes, Pavement Markings, and Pavement Markers
Traffic stripes and pavement legends, including crosswalks, shall be placed as shown on the plans, as specified in California MUTCD and Sections 84, "Traffic Stripes and Pavement Markings", and 85, "Pavement Markers", of the Caltrans Specifications, as modified herein, and as directed by the Engineer. All pavement traffic stripes, legends, arrows and crosswalks shall be installed with hot applied thermoplastic pavement material.

The thermoplastic material shall conform to State Specification PTH-02ALKYD (for markings) and PTH-02SPRAY (for stripes). Thermoplastic material shall be applied to the pavement at a minimum thickness of 0.060 inches for long lines (4 inch and 8 inch stripes in width) and 0.10 inches for all legends and arrows. The crosswalk lines and limit lines shall be installed at a minimum thickness of 0.125 inches. If Contractor chooses to install stripes by using a cart (extruded), all striping shall be applied at a minimum thickness of 0.90 inches. Glass beads shall conform to State Specification 8010-004 (type II). Thermoplastic pavement markings and stripes shall be free of runs, bubbles, craters, drag marks, stretch marks, and debris.

Use appropriate installation procedures according to manufacturer. If pavement markings are applied to existing surface over existing painted legends (arrows and crosswalks), existing pavement legends (arrows and sidewalks) shall be removed before thermoplastic material is applied. For either material, pavement shall be preheated to remove all residual moisture prior to installation.

At intersections where existing pavement is removed and replaced, Contractor shall install new crosswalk striping to match the layout and dimensions of the existing crosswalk.

Configuration of traffic stripes, pavement markings, and crosswalks shall conform to the detail and methods as set forth in the latest issue of the State of California MUTCD and Caltrans Specifications, unless specifically modified on the plans.

All existing traffic stripes and pavement markings shall be removed where shown on the plans, where the existing striping conflicts with proposed striping, and as designated by the Engineer.
Existing pavement markers, including underlying adhesive, when no longer required for traffic lane delineation, as directed by the Engineer, shall be removed and disposed of.

Removal of traffic stripes and pavement markings, or the removal of objectionable material, shall be performed using methods approved in advance by the Engineer. All resulting residue and dust shall be removed immediately from the surface being treated. Such removal shall be by a vacuum attachment operating concurrently with the blast cleaning operation. The removal of yellow paint materials shall include testing for lead prior to disposal of the material. Disposal of materials containing lead shall conform to state approved practices.

The Contractor shall place control points for the Engineer to review and approve. No additional "cat tracks" shall be placed until control points are approved by the Engineer. The Contractor shall obtain approval from the Engineer on all striping cat tracks prior to final application and striping and markers.

The Contractor shall place and remove any temporary striping required for routing traffic through the project area.

All thermoplastic shall be provided by the Contractor. Manufacturer and specifications shall be submitted for approval and shall conform to the specifications contained herein. All thermoplastic supplied shall conform to the local air pollution regulations. Traffic line markings shall be reflectorized and shall conform to the Caltrans Specifications, Section 84-2, "Thermoplastic Traffic Stripes and Pavement Marking".

Existing surface which is to receive the thermoplastic material shall be mechanically wire brushed to remove all dirt and contaminants. Thermoplastic material shall be applied only to the dry pavement surfaces and only when the pavement surface temperature is above fifty (50°F) degrees Fahrenheit. Thermoplastic shall be applied only on a thoroughly dry surface and during periods of favorable weather.

The Contractor shall make all necessary conform striping as required. The completed stripes and markings shall be sharp and clear with clean, well-defined edges.

Any damage by the elements to the newly stripe or marking due to the failure of any Contractor to protect his work shall be repaired by him at no additional cost. Any overspray or tracking of fresh thermoplastic material onto unpainted surfacing shall be removed by any methods to the satisfaction of the Engineer.

The contract lump sum price paid for signing and striping modifications, including placement of storm drain message and location markings, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placing traffic stripes and pavement markers, including any necessary cat tracks, dribble lines, and layout work, placement, removal, and disposal of any and all conflicting striping, complete in place, as shown on the plans, as specified in the Caltrans
Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefore.

10-1.26 Roadside Signs
Roadside signs shall be placed as shown on the plans, as specified in California MUTCD and Section 56, "Signs", of the Caltrans Specifications, as modified herein, and as directed by the Engineer.

Existing roadside signs shall be removed and relocated to a new location as shown on the plans. Each roadside sign shall be installed at the new location on the same day the sign is removed from its original location.

All new signs shall be 3M brand HIP and covered with graffiti film (3M brand 1160 overlay film).

The contract lump sum price paid for signing and striping modifications shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in removing, relocating and installing roadside signs and posts, complete in place, as shown on the plans, as specified in the Caltrans Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefore.

10-1.27 Barricades and Channelizers
Barricades shall be furnished, placed and maintained at the locations shown on the plans, specified in the Standard Specifications or in these special provisions or where designated by the Engineer. Barricades shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Attention is directed to "Prequalified and Tested Signing and Delineation Materials" of these special provisions regarding retroreflective sheeting for barricades.

Construction area sign and marker panels conforming to the provisions in Section 12-3.06, "Construction Area Signs," of the Standard Specifications shall be installed on barricades in a manner determined by the Engineer at the locations shown on the plans.

Sign panels for construction area signs and marker panels installed on barricades shall conform to the provisions in Section 12-3.06A, "Stationary Mounted Signs," of the Standard Specifications.

Channelizers shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Channelizers shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.
At the time of completion of the project, certain channelizers shall be left in place as determined by the Engineer.

When no longer required for the work as determined by the Engineer, channelizers (except channelizers to be left in place) and underlying adhesive used to cement the channelizer bases to the pavement shall be removed. Removed channelizers and adhesive shall become the property of the Contractor and shall be removed from the site of work.

Full compensation for furnishing, installing, maintaining, and removing construction area signs and marker panels on barricades, and installing and removing channelizers shall be considered as included in the price paid for traffic control and no additional compensation will be allowed therefore.

10-2 Blank

10-3 TRAFFIC SIGNALS AND LIGHTING

10-3.01 Scope
Work covered under this division shall include furnishing all labor, material, tools, equipment, and incidentals and doing all work involved which is required for the complete installation of the electrical work.

Work or equipment not specified or shown on the Plans which is necessary for the proper operation of the work in this area shall be provided and installed at no additional cost to the City.

10-3.02 Regulations and Code
Regulations and Code shall conform to Section 86-1.02, “Regulations and Code” of the Caltrans Specifications. Nothing in these plans or specifications shall be construed to permit work not conforming to the most stringent of applicable codes.

All individuals who perform work as electricians, for contractors licensed as class A and C-10 electrical contractors, shall be certified according to Assembly Bill AB1719.

10-3.03 Warranties, Guarantees and Instruction Sheets
Manufacturers’ warranties and guaranties furnished for materials used in the work, and instruction sheets and parts lists supplied with materials, shall be delivered to the Engineer prior to acceptance of the project. In addition, certification compliance shall be in accordance with Section 86-1.05, “Certificate of Compliance” of the Caltrans Specifications.
All equipment furnished shall be guaranteed to the City by the manufacturers for a period of not less than one- (1) year following the date of acceptance of the installation of such equipment. If any part (or parts) is found to be defective in materials or workmanship within the one year period and it is determined by the Engineer or by an authorized manufacturer's representative that said part (or parts) cannot be repaired on the site, the manufacturer shall provide a replacement part (or parts) of equal kind and/or type during the repair period and shall be responsible for the removal, handling, repair or replacement, and reinstallation of the part (or parts) until such time as the traffic signal equipment is functioning as specified and as intended herein; the repair period shall in no event exceed seventy-two (72) hours, including acquisition of parts.

The one- (1) year guarantee on the repaired or replaced parts shall again commence with the date of reassembly of the system.

10-3.04 Description
Traffic signal modifications shall conform to the latest applicable provisions of the CALTRANS, California MUTCD, and City of Stockton Standard Specifications and Plans and these Special Provisions.

Traffic signal work is to be performed at the locations shown on the plans. Work or equipment not specified or shown on the Plans which is necessary for the proper operation of the work in this section shall be provided and installed at no additional cost to the City.

Any Contractor-requested change from approved plans and all specifications shall be made in writing to the City. No changes shall be made in the field without written approval of requested changes by the City.

The contractor is responsible to take all necessary precautions and use best practices in the industry to perform all work require completing the project.

10-3.05 Materials
Attention is directed to Section 6, except as provided under "City-furnished Materials" as applicable of these Special Provisions, the Contractor shall furnish all other materials required to complete the work under this contract.

10-3.06 Equipment List and Drawings
Equipment list and drawings shall conform to the provisions in Section 86-1.04, “Equipment List and Drawings” of the Caltrans Specifications, and these Special Provisions.
All equipment and materials that the Contractor proposes to install shall conform to the Standard Specifications, Caltrans Specifications, these Special Provisions and the Contract Plans.

A list of substitute equipment and/or materials along with a written descriptive summary, describing the functions of the components, which the Contractor proposes to install, shall be submitted along with his bid proposal. The list shall be complete as to the name of manufacturer, size and identifying number of each item. The list shall be supplemented by such other data as may be required. In all cases, the judgment of the Engineer shall be final as to whether substitute equipment and/or material recommended by the Contractor conform to the intent of these specifications.

THE CONTRACTOR SHALL FURNISH FINAL AS-BUILT DRAWINGS AS PART OF THIS PROJECT AT NO ADDITIONAL COST TO THE CITY.

10-3.07 **Foundations**
Foundations shall conform to the provisions in Section 86-2.03, "Foundations," of the Caltrans Specifications and these Special Provisions.

Portland cement concrete shall conform to Section 90-2, “Minor Concrete”, of the Caltrans Specifications and shall contain not less than 590 pounds of cement per cubic yard for all uses. Certification of the concrete shall be received from the vendor and delivered to the City Inspector at the time the concrete is poured. Concrete foundations shall be constructed on undisturbed ground, or in material that has been compacted to 95% relative density before excavating for foundation. The foundation shall be cast monolithically up to the top 2 inches which shall be placed after the standards have been plumbed. Construction of Concrete foundations includes placement of reinforcement required per City standards. Poles shall not be set on foundations till a 7 day concrete curing period has passed.

Attention is directed to Section 51, “Concrete Structures” of the Caltrans Specifications regarding bonding, cold joints and construction preparations for same.

Dimensions of concrete footings for City of Stockton signal standards are shown on City of Stockton Standard Plans, Drawings 113 and 116. Type 1-B pole foundations shall be installed in conformance with the City of Stockton Standard Drawings number 113.

10-3.08 **Standards, Steel Pedestals and Posts**
Type 1-B poles shall have four (4) bolt foundations, utilizing a cast iron pipe flange with eight (8) holes, with an ornamental bolt cover. On Type 1-B poles, the ornamental cover shall rest on the grouted surface. Type 1-B poles shall be installed in conformance with the City of Stockton Standard Drawings number 113.

The Contractor shall have the Engineer locate the position of mast arm poles to determine if mast arms will be in conflict with existing overhead utilities. If relocation of utilities is required, immediate notification shall be given to the appropriate utility company.

All Type 29, 60, 61 traffic signal mast arms shall be one piece and unsleeved. Type 60 and 61 shall conform to the latest edition of the State Standard Plans and Specifications.

All unused signal head tenons shall be capped.

Grout height under poles shall be the height of the leveling nut plus a washer as a minimum and the height of the leveling nut, washer and one half inch as a maximum. This height will be measured from the highest point of grade under the pole.

All nuts used to attach standards to foundations and all bolts and nuts used to attach mast arms to standards shall be tightened with the correct size socket or box wrenches.

**10-3.09 Conduit/Interconnect**

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

All Conduits shall be Poly Vinyl Chloride (PVC), Schedule 80 with rigid steel sweeps. IMC conduit shall not be accepted. With the exception for bends to and from pull boxes and foundations, the conduit shall run straight and true so that cable pulling forces are minimized.

Insulated bonding bushings will be required on metal conduit. All nonmetallic conduits shall have a No.8 stranded (with green insulation) copper bounded/grounding wire. These bounding/grounding wires shall be connected in the pull box with cable connectors - Burndy-Servit No. KS -15 or an approved equal meeting Caltrans specifications.

Conduits into pull boxes and pole foundations shall be rigid metal and have 90-degree sweeps unless shown otherwise on the plans. Plastic pulling bells shall be installed on all conduit ends before conductors are pulled through the conduits.
After conductors have been installed, the ends of conduits terminating in pull boxes and/or controller cabinets will be sealed with an approved type of sealing compound. Refer to the City of Stockton Standard Drawing 111 and 111A for conduit/pull box details.

Refer to City of Stockton Standard Plan Drawing 50A for trench width and depth. All conduits shall be installed below the existing AC pavement regardless of the depth of the existing AC pavement. All conduits shall be installed at a minimum depth of twenty-four (24) inches (top of conduit to the finish grade).

All excavated areas in the street or sidewalk shall be completely backfilled or covered at the end of each working day and approved by the Engineer.

Where existing conduits are to be reused, as directed by the Engineer, the existing conduit shall be cleaned and both old and new cables shall be pulled into the existing conduit as a unit per Caltrans Specifications in Section 86-2.09B, "Installation."

**Fiber Optic Interconnect**

The 2” rigid metal conduit between #6E pull box and the controller cabinet (for fiber optic interconnect) shall have 90-degree sweep and large radius bend. Conduit sweeps into No. 6 pull boxes on fiber optic interconnect runs shall enter, with rigid sweeps, at 45 degrees (in vertical plane). Sweeps shall be at least 24 inches below finished grade, unless approved by engineer. A pulling bell shall be installed at the end of each conduit. 2.5” PVC Schedule 80 conduit shall be installed between #6 pull boxes on fiber optic interconnect runs.

All fiber optic interconnect conduits shall include one DT1250lbf detectable pull rope with 22 AWG wire, made by NEPTCO.

10-3.10 **Colored Controlled Density Fill (CDF)**

The controlled density fill for the installations of all conduits shall be a red color to distinguish the concrete backfill from other concrete and soil. The concrete shall be pigmented by the addition of commercial quality cement pigment to the concrete mix.

The red concrete pigment shall be LM Scofield Company; Orange Chromix Colorant; or Davis Colors; or accepted equivalent. A minimum of 5 lbs. of red tint pigment shall be used per yard of the CDF mix.

10-3.11 **Pull Boxes**

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

When a pull box is subjected to vehicular traffic load, the cover shall be
steel embossed with a non-skid pattern.

Pull boxes shall be placed at the same elevation as adjacent standard base, service cabinet base or signal controller cabinet base if not in an existing or future sidewalk area and the elevation is not shown on plans. Pull boxes shall be five feet (5') from base or as shown on the plans. Pull boxes in existing or future sidewalk areas shall be placed at sidewalk elevation. The elevation for pull boxes installed in median areas shall match the slope of the two adjacent curbs. The elevation for pull boxes installed in planting areas adjacent to sidewalk or sidewalk area shall be at sidewalk grade. Pull boxes shall not be located within the limits of wheelchair ramps.

When pull boxes are placed in dirt and planting areas, a concrete collar shall be constructed around the pull box. The top of the pull box shall match slope of the adjacent top of curb. The surface elevation of the collar shall match the surface elevation of the pull box and slope away from the pull box at a rate of 1:50 (2%) slope. The concrete collar shall be 12” wide with 4” inch depth.

The contractor shall clean all pull boxes entered for installation of conduit or wire of all dirt and debris. All pull box lids damaged by Contractor operations shall be replaced at his/her expense. The wiring in these pull boxes shall be neatly bundled, recoiled and reinstalled in the box. Where existing pull boxes are removed and replaced with new larger boxes the existing conduits shall be cut back. When the conduits are cut, the existing conductors must either be removed or well protected. The ends of the cut conduits must have bushings placed on them.

Grout in bottom of pull boxes will not be required. Pull boxes shall be set on 6 inches of crushed rock for drainage. The conduits in the pull boxes shall be placed 2” above the crushed rock.

Recesses for suspension of ballasts will not be required.

All pull boxes shall be No. 5 unless otherwise noted on the plans.

All pull boxes shall include copper grounding rods per City Standard. All pull boxes on fiber optic interconnect runs shall be # 6 unless otherwise noted on the plans. All conduit sweeps into No. 6 pull boxes on fiber optic interconnect runs shall be 45 degrees.

A State Standard Number 6E pull box with extension (17" x 30" x variable depth (inside dimensions)) shall be installed adjacent to the traffic controller cabinet for fiber optic inter-connect cable. The seam between pull box and extension shall be grouted. The optional base slab of the 6 (T) PB shall not be used.
10-3.12 **Conductors and Wiring**

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

The Contractor shall install individual conductors type THW Polyvinyl Chloride (600 volt). Signal wires, Street Light wires, and White Neutral wires shall be 14 AWG, 10AWG, 12AWG, respectively. Signal cable shall not be used. Inert lubricant shall be used in placing conductors in the conduit.

All conductors that are to be spliced together shall be twisted a minimum of 5-turns and soldered. Then, the joint shall be held by mechanical means before insulating in accordance with Method "B."

All field wiring terminating in the traffic signal controller cabinet or service cabinet shall be fastened to the termination panels with copper solderless wire lugs made by Teledyne Penn-Union (Catalog #SLU-35, DCI #63055) or equal approved by City Electrical Supervisor. Solderless lug shall have offset shank and have a maximum wire size capacity of 6.

When new conductors are to be added or existing conductors are to be removed from existing conduit, all conductors shall be removed; the conduit shall be cleaned as provided in section 86-2.05C, "Installation"; and both old and new conductors as shown on the plans, shall be pulled into the conduit as a single unit.

10-3.13 **Fused Splice Connectors**

Fused splice connectors as specified in Section 86-2.09F, "Fused Splice Connectors," of the Caltrans Specifications shall be required. Fused splice connectors shall be installed in the base of the poles, next to the inspection plate. No pigtail is allowed on the fuse holders.

10-3.14 **Bonding and Grounding**

Bonding and grounding shall conform to the provisions in Section 86-2.10, "Bonding and Grounding," of the Caltrans Specification 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 adjacent pull box.

In addition, because of past conflict monitor electronic problems associated with grounding, the Contractor shall be required to install a total of four (4) conductors between the service pedestal and the controller cabinet. These conductors shall be installed as follows;
Green Conductor - No. 8 stranded conductor from Ground Bus #2 in controller cabinet to ground bus in service pedestal.

White Conductor - No. 8 stranded conductor from Ground Bus #1 terminal in the controller cabinet to the neutral bus in the service pedestal.

Black Conductor - No. 8 stranded conductor from the power terminal in the controller cabinet (312B) to service breaker.

Bare Copper Conductor - No. 10 solid conductor from Ground Bus #2 in controller cabinet to conduit grounding bushing in pullbox.

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

10-3.15 **Service**

Service shall conform to the provisions in Section 86-2.11, "Service," of the Caltrans Specification and these Special Provisions. Each service shall be suitable for the short circuit current available at its supply terminal.

Refer to Type III-AF wiring diagram on improvements plans.

If service equipment cabinet design deviates in any way from the details shown on the, details of such deviation shall be submitted to the Engineer for review before fabrication of the contract cabinets. If deemed necessary by the Engineer, one complete prototype cabinet shall be delivered to the Engineer for review at least 30 days before fabrication of the contract fixtures. The prototype cabinet will be returned to the Contractor and if permitted by the Engineer, the cabinet may be installed in the work.

The Contractor shall furnish and install Type III-AF single meter service equipment. Cabinets (See State of California Standard Plan ES-2C) conforming to City of Stockton Specifications shall be constructed with anodized aluminum and per latest State of California Standard Specification Section 86-3 and section 86-3.04A. A 40 amp, 120 volt, metered circuit shall be furnished to the controller cabinet for traffic signal operation. The Contractor shall confirm and provide all service requirements with Pacific Gas and Electric Company, AT&T, and the City of Stockton. Refer to Attachment A (PG&E service confirmation letters). Note: 120/240 volt service houses a 4 jaw meter socket, 120/208 volt service houses a 5 jaw meter socket.

**Service Cabinet Fabrication:**

1. Maximum width 12", Maximum height 63" with a minimum of 60", Maximum depth 9". Minimum opening to control section 8.25" x 39.25".
2. **Cabinet shall be fabricated with anodized aluminum.**
3. Internal part shall be fabricated for 14-gauge cold steel.
4. Cabinet shall be welded construction with welding materials specifically designed for material used.
5. All fasteners, hinges, latches, and hardware shall be of stainless steel and hinges shall be continuous piano style.
6. There shall be no exposed nuts, bolts, screws, rivets, or other fasteners on the exterior.
7. Cabinet shall have enclosed swept pull section with removable step.
8. Cabinet shall have fully framed ride hinged outer door with swaged close tolerance sides for flush fit with top drip lip and closed cell neoprene flange compressed gaskets.
9. Cabinet door shall have 2,000 LB stress rated stainless hasp, welded to cabinet door.
10. Base mounting detail shall be identical to existing cabinets for emergency Dead-front Safety Door.
11. Distribution and control panel shall have separate hinged dead-front panels with 1/4 turn latch and knotted knobs.
12. Breaker compartment shall be safety barriered from the control compartment.
13. Dead front shall be hinged on the same side as the front door and shall open a minimum of 120 degrees.
14. Removable back-pan shall be mounted on 4 welded 1/4” studs.

Power Distribution Panel:
1. Main breakers shall be available as 1 pole, 2 pole, 3 pole, or 4 pole.
2. Provide separate metered main, lighting main and disconnects as required.
3. All circuit breakers shall be installed in a vertical position, handle up for “On,” handle down for “Off.”
4. Circuit breaker shall be industrial grade, Westinghouse Quicklag C or equal to match existing.
5. There shall be no plug-in circuit breakers.
6. All bushing shall be UL approved copper THHN cable bussing, fully rated 125 Amps.

Control Compartment:
1. There shall be a minimum 25” from base to circuit breakers.
2. All components shall match existing components in use for maintenance of spare parts and known reliability.
3. Contactors shall be Westinghouse Class A202 or other to match existing.
4. The cabinet shall be wired to include a spare contactor for street lighting (See the wiring diagram detail).
5. The cabinet shall be completely pre-wired in the factory.
6. Wiring will be to NEMA IIB standards showing external connections and external equipment.
7. All control wiring shall be 19 strand #14 AWG THHN.
8. All control wires shall be permanently labeled with matching engraved clip-sleeve nylon markers.
9. All terminals shall be permanently labeled.

Nameplates and Drawings:
1. The function of all circuit breakers, switches and other components as required shall be identified by laminated engraved plastic nameplates with minimum 1/4 " letters fastened with minimum of two 1/4", #4-40 machine screws.
2. Wiring schematics shall be Computer Aided Drafted and include all external equipment and connections per NEMA IIB.
3. As built factory drawings shall be enclosed in clear plastic and held inside the outer door by weld hooks.

Certification:
Manufacturers will be required to furnish independent laboratory certification of material preparation and finish and to confirm that the overall product meets these specifications. If this agency wishes to witness this testing, all costs to be paid by the Contractor.

Photoelectric Control:
Photoelectric control shall be NEMA Type V, three-prong, twist-lock, and housed inside the service cabinet. Photoelectric control shall have an instant on/delay (5 second) off incorporated as per State Standards, to prevent cycling if struck by vehicle headlights. The photoelectric cell shall be solid-state unit and the photocell sensitivity shall be in compliance with PG&E LS rate requirements.

A secondary photoelectric control system shall be wired from the mast arm street light to the service cabinet. After testing the secondary, the wire will be disconnected, coiled, and secured in the service cabinet until needed at a future date. The mast arm PEU shall have a north orientation. The photoelectric unit shall be a multi-voltage, instant on/ delay (5 sec) off, and three-prong twist-locking type unit. The photocells sensitivity shall be in compliance with PG&E LS rate requirements.

10-3.16 Solid State Traffic Actuated Controllers

Solid-state traffic actuated controller units and auxiliary equipment shall conform to the provisions in Section 86-3, "Controller Assemblies," of the Caltrans Specifications and these Special Provisions.

Installation: Eagle (Siemens) Type 2070LN (Lite and NEMA) system controller at locations shown on the plans.

Eagle (Siemens) Type 2070 Lite NEMA controller (including Ethernet switch described elsewhere in these special provisions), with D4 software/firmware, auxiliary equipment and cabinet shall be furnished and installed by the contractor.

The controller shall be in a 16-phase frame assembly with auxiliary equipment housed in a Type P cabinets, TS-2 Type 2, as specified below. Solid-state switching devices shall conform to the provisions in Section 86-3.08D, "Solid-State Switching Devices," of the Standard Specifications, dated July 1992, and the following:

The controller unit shall be Eagle (Siemens) Type 2070 LN controller, and shall meet the most current Caltrans Transportation Electrical Equipment Specifications (TEES) (prior to the bid date of this special provision).
Controller shall not have VME chassis.

Controller shall have an 8x40 display.

Controller shall have NEMA module with “A”, “B”, “C” connectors and standard 63-pin “D” connector.

Controller shall have a 2070-1B CPU module and a 2070-2B field I/O module.

The controller shall also be supplied with 2-Conversion Cables (one meter long each), converting 2-female simplex ST to 2-female simplex SC optical fiber connectors.

The controller shall be provided with the following items:

1) Quality Control (QC) test sheet
2) Vendor’s test report
3) All the accessories, including 1B, 2B, 7B
4) One copy of the latest version of the D4 user manual.

**D Connector Adapter Cable**
The Contractor shall furnish and install a D-connector adaptor cable at the locations shown on the project plans that convert the pin outs from TMP390 to the pin inputs for a 2070 controller.

Contractor shall contact Siemens Industry, Inc. and refer to adaptor cable drawing No. BW16539. The adaptor cable shall be at least 12 inches in length.

Each controller shall be supplied with the latest version of the D4 software/firmware (manufactured by Fourth Dimension) fully integrated and tested with each controller, and one copy of the latest version of the D4 user manual.

**10-3.17 Eagle (Siemens) Type 2070LN Controllers**
Controller shall be capable of operating under NTCIP protocol as an optional firmware for communications. Controller shall be capable of being downloaded directly from a PC computer or PDA device. Controller shall use Type 2070 technology, using a flash drive for software and data files and shall not need PROM chips for this purpose.

When connected in City of Stockton traffic signal controller cabinet, with fiber optic interconnect system, controller shall be capable of operating at a minimum of 19.2k baud rate or under Ethernet.
Controller shall be capable of operating under background timed-based-coordination with both adjacent intersections until communication is established in the future. Controller software shall be consistent for all intersections within this group (established by City staff). Controller shall have 16 available phases and software shall be able to operate and coordinate two intersections with one controller.

Controller software, at a minimum, shall be capable of 4 cycle lengths, each with 4 splits and 3 offsets. Local timed-based coordination shall be available with special day and special function programs available. Controller shall be capable of operating Traffic Responsive, using system detectors to determine coordination patterns based on volume, occupancy, directionality or queue variables.

Controller software shall include a minimum of 6 coordination modes, one of which is fully-actuated coordination. A minimum of 6 emergency vehicle preempt sequences and 6 low priority preemption routines, and capable of operating under a transit priority where transit phases are accommodated without phase skipping, but having coordination operating in the background.

Manufacturer must prove it has applications of their controller and software in a minimum of 2 or more agencies with populations over 500,000.

10-3.18 Traffic Signal Controller Cabinets
Eagle (Siemens) Type 2070LN controllers with auxiliary equipment shall be furnished and installed by the contractor in existing and/or new controller cabinets. New NEMA Type P controller cabinets to be installed by the Contractor at locations shown on the plans shall be Contractor-furnished.

The controller cabinet shall be capable of operating 16 phases (NEMA TS-2, Type 2). Solid-state switching devices shall conform to the provisions in Section 86-3.08D,"Solid-State Switching Devices," of the Standard Specifications dated July 1992, and the following:

NEMA TS-2, TYPE 2 traffic signal controller cabinet shall be constructed of anodized aluminum as per the most current California Standard Specification, Section 86-3.04A (prior to the bid date of this special provision).

The cabinet shall incorporate an interface panel to accommodate the hardwire routing of any detector output to any of the controller’s first 16 detector inputs. When a TS2 controller is installed and operating in the cabinet, it shall not be necessary to hardwire any detector output to any of the controller’s detector inputs, however, when a TS1 controller is installed in the cabinet it must be possible to establish the link between detector outputs and the controller’s call inputs without the support of the SDLC link between the detector rack BIU’s and the controller. This interface panel shall also eliminate the need for the communication link between the controller and the
MMU, making the MMU act as a Conflict Monitor Unit (CMU).

In the TS-1 mode, it is no longer necessary to assign the first 8 detector channels to the associated phase. All Stockton controllers have the ability to assign the detector channel to any phase.

Loadbay shall be silk screened on front and back, showing all alpha numeric positions. Loadbay shall accommodate all terminations of four controller connectors (A, B, C, and D connectors).

No other equipment within the controller cabinet shall use a socket that will accept a flasher or a flash transfer relay. Only mechanical relay-type flash transfer relays with DPST 15 amp contacts and 120 V coil shall be allowed.

If relays are required other than the flash transfer relay, they shall be octal relays.

With respect to TS2 color output channel assignments, default channel, load switch, and MMU wiring, assignments on the loadbay shall be as follows:

1. Channels 1 through 8 shall be assigned to Vehicle Phases 1 through 8 respectively.
2. Channels 9 through 12 shall be assigned to Pedestrian Phases 2, 4, 6, and 8 respectively.
3. Channels 13 through 16 shall be assigned to Overlaps A through D respectively.

10-3.18-1.0 STATE SPECIFICATIONS
City of Stockton traffic signal cabinet specification shall supersede any applicable parts of the State of California, Department of Transportation Standard Specifications and Standard Plans. This specification shall apply to all controller cabinet types with noted exceptions.

All specifications not covered by these specifications shall conform to State of California, Department of Transportation Standard Specifications and Standard Plans. Traffic signal cabinets shall also comply with NEMA specifications where applicable.

The State Specifications referred to in these specifications shall mean the latest State of California, Department of Transportation, Standard Specifications, unless otherwise is indicated.

10-3.18-2.0 EQUIPMENT DRAWINGS:
Equipment drawings shall comply with Section 86-1.03 of the State Specifications and these specifications, with the following changes:
All information shall be contained on one sheet. The cabinet print shall be laid out to show the three interior walls of the cabinet folded out to show three panels.

The left panel shall show the location of the two detectors and pedestrian termination panels, spare termination panel.

The center panel shall show the load bay, detector rack, power supply, maintenance malfunction unit (MMU), controller, and connector wiring.

The right panel shall show cabinet power panel, controller termination panel, flash panel, power supply panel, special function panel, and emergency vehicle/railroad pre-empt module (if specified) and a service equipment electrical outlet (not on GFI) with six outlet power strip that is suppress for noise and has over-voltage protection.

A separate 24-volt AC center-tapped (100VA) transformer shall be provided. The 24-volt AC transformer shall be capable of handling 4-amp minimum and be wired into the Auxiliary Breaker on the Auxiliary Power Panel. Two (2) 12" x 12" aluminum plate (.080" thick) shall be mounted on the right side: one above the power panel, for future City installation of fiber optic data and video modem and video equipment: one between the top and bottom shelves, for fiber optic cable housing. The center tapped 24-volt A.C. transformer (described above) shall be mounted below or to the right of the 12" x 12" fiber optic video and data plate as follows:

1. A 12" long “din” rail shall be installed with the 24-volt transformer.
2. The “din” rail shall have a minimum of one (1) each “din” grounding terminal block, three (3) each “din” terminal blocks capable of accommodating 3 - size #18 wires in each hole, and four (4) each “din” terminal blocks capable of accommodating 4-size #14 wires in each hole.
3. The three smaller “din” rail terminal blocks shall be marked “12-volt, Center Tap, 12 volt,” respectively. The terminal block shall contain the outputs from the 24-volt A.C. transformer and provide a landing for the optical modem power.
4. The four larger “din” rail terminal blocks shall be labeled “120 A.C. +, 120 A.C. Neutral, 120 A.C. +, 120 A.C. Neutral,” respectively. The first two terminal blocks shall land the 120 A.C. wires from the Auxiliary Power Panel. The output from this terminal block will power the 24-volt A.C. transformer and the second two larger terminal blocks. The second two larger terminal blocks shall output 120 A.C. power to the video camera equipment. The holes in the block shall accommodate 4-size 14 wires.

An intersection drawing shall be included on plan. A cabinet equipment drawing shall also be included on the plan showing the location of each panel.
assembly, fans, light, and door equipment. Entire cabinet schematic wiring diagram shall be on one standard "E" size sheet drawing. Three (3) blue-line prints of this cabinet wiring diagram shall be provided for each cabinet. Plans shall always designate “north” to the top of the plan.

10-3.18-3.0 CONTROLLER CABINETS:
Referring to Caltrans standard plans for Type “P” controller cabinets. The cabinets shall be delivered to the City of Stockton Signal Shop for visual inspection and field testing at least three (3) weeks prior to installation in the field.

All City of Stockton traffic signal cabinets shall be constructed of anodized aluminum and base cabinet prepared in accordance with Caltrans latest Standard Specification 86-3.04A. The cabinet shall have no visible exterior seams. All cabinets shall be supplied with pleated dirt filters capable of filtering peat dirt. The filters shall be supplied in the following sizes:

TYPE P CABINET: 12” x 16” x 1” Exact

3.1A Louvers shall be located in the lower one-half of the front door.

3.1B The door latching mechanism shall be a roller type three-point draw. The center catch and push rods shall be cadmium plated. Push rods shall be turned edgewise at outward supports and shall be 0.25-inch by 0.75 inch minimum with U-shaped supports and D slots of 12-gauge steel or equivalent. Rollers shall be 0.875-inch minimum plate steel. The cabinet door frame shall be double flanged out on all four sides and shall provide strikers for nylon rollers.

3.1C The door lock shall be set to the right of the door handle when facing the cabinet. At no time shall the handle conflict with key during operation of the handle. When the handle is in the locked position, the handle shall be vertical with the fulcrum at the top. The handle shall swing to the left. The latching handle shall have provisions for padlocking in the latched position. The operating handle shall be 7.5 inch long stainless steel.

3.1D An intersection display panel shall be mounted on the inside of the cabinet door. The display shall be 14” W x 9” H. The display indicators shall be placed in the display to reflect a typical eight-phase intersection. The indicator lights shall be LED, with appropriate colors for each indication represented. The panel shall have 3-position detector switches oriented with each vehicle and pedestrian phase indicator light. The switches shall operate as fixed, normal, and momentary, top to bottom. They shall be labeled for each phase. Pushbuttons shall be provided to test the preempt inputs. Six preempt pushbuttons shall be provided and labeled “Prmpt 1/RR, (blank),
Prmpt 3, Prmpt 4, Prmpt 5, Prmpt 6. There shall be a door switch to turn on power to the display when the door is open. When the door is closed, a switch shall remove all power to the indications. The display shall be driven by the output side of the load switches. If a separate power supply is required to power the intersection display, then the display shall be powered by a separate, fused DC power supply. Intersection display shall be show north at the top of the display. Phase 2 shall be northbound if the major movement is north/south. Phase 2 shall be eastbound if the major movement is east/west. All other phases shall be labeled with counterclockwise rotation. (Phase 4 to the right of Phase 2)

3.2 Each controller cabinet shall be equipped with two (2) electric fans with ball or roller bearings and a capacity of at least 100 cubic feet per minute each. The fans shall be thermostatically controlled and separately fused to the requirements of Section 86-3.04B of the State Specifications.

3.3 All circuits appearing at the controller plugs shall be wired to a terminal board.

3.4 The Cabinet shall incorporate a series/shunt surge protection device for all 120VAC powered electronic equipment within the cabinet that does not drive any A.C. electrical signals outside of the cabinet. The surge protection device shall protect both the AC+ and the AC- sides of the incoming 120VAC power.

The Signal controller, TS2 power supply, any other auxiliary power supplies, detector power, etc. shall be protected by the surge protector.

Power to drive any signal, i.e. signal colors, etc., external to the controller cabinet shall not pass through the protection device. Power for the cabinet GFI, lamp, and fans shall not pass through the protection device. Because the MMU is electrically connected to other “unprotected” signals, power to the MMU also shall not pass through the protection device.

The surge protection and RFI device shall be compliant with Caltrans cabinet standards.

3.5 The auxiliary field wire and control terminal blocks shall be barrier type with marker strips and shall be provided with 8-32 by 5/16-inch minimum nickel or cadmium plated brass binder head screw and metal inserts. The field terminal blocks for the signal indications, the detector terminal blocks, the power distribution assembly and the required unused blocks shall be as specified above, except that screws shall be 10-32 minimum.

3.6 Each controller cabinet shall be provided with enough shelves to house the controller (high enough to accommodate the 2070 NEMA controller), rack mounted detectors and any other equipment supplied, or mentioned in the
specifications and/or shown on the plans. In any case no less than two (2) shelves shall be supplied. The top shelf shall contain all detector amplifiers. A pull-out laptop computer shelf shall be incorporated below and attached to the controller shelf. This pull-out shelf shall be 10” wide x 12.5” long and provide an opening under the controller shelf lip of 1.5” to 2.5” (shall allow a closed laptop computer to be stored under the controller shelf.)

3.7 All connecting cable leads shall terminate at terminal blocks. The lead-in cables shall not be taped.

3.8 The field connection terminals shall be located along the bottom back of the cabinet with minimum clearance of 11 inches from cabinet floor.

3.9 All identification shall be by means of silk screening or engraved labels only, no KROY type tape will be accepted. Silk screening shall be of a color contrasting to the cabinet door. Engraved labels shall be engraved into the panel or shall be made from multi-layer color contrasting plastic and shall be secured with chrome-plated or stainless steel machine screws. Function and cabinet drawing reference numbers shall be silk screened on the load bay (front and back) for field wiring terminals and controller termination panel for each controller connector. Each panel or shelf shall be painted white. Each channel on detector shelf shall be labeled for phase and lane where applicable. BIU racks shall be labeled “TF-1”, “TF-2” … etc. and “DET 1”, “DET 2” … etc. where applicable.

4.0 One copy of circuit diagrams for each piece of control equipment, operation manual and external solid-state logic circuits shall be provided for each cabinet.

4.1 Machine screws used for mounting equipment on door or walls of the cabinet shall have inside nuts.

4.2 Cabinet door switch override shall be provided which will allow the MMU device to be removed without causing the intersection to go into flashing operation provided the cabinet door is open. The switch shall be normally “Off” and shall have flip-up switch cover. With the cover up, and the switch in the “Open” position, the switch shall remain open until it is manually switched off with the switch cover. This override circuit shall cause the intersection to go into flashing operation if the cabinet door is closed and the monitoring device is removed. The cabinet shall contain a conspicuous warning against operation without the MMU device being installed. Warning label shall designate the following:

Procedure for MMU replacement for periodic maintenance:
1. Go to Unit Data (4) on the controller front panel. Choose Port 1 Data (7) and scroll down to Item No. 16 - MMU. Move the cursor right to "Pres" (Y/N).

2. Lift switch cover for interlock circuit and place switch to "On" position, then immediately hit "0" under Y/N for the MMU. This turns off communication to the MMU from the controller.

3. Remove MMU and replace with pre-tested unit.

4. Go back to Unit Data (4) on the controller front panel and choose Port 1 Data (7). In reverse, push down switch cover which will close interlock circuit and immediately hit "1" under 'Pres." (Y/N) on Item No. 16 - MMU. This reinstates communication.

5. **INTERLOCK CIRCUIT SWITCH SHALL ALWAYS REMAIN IN THE "OFF" POSITION EXCEPT WHEN REPLACING MMU UNIT FOR PERIOD MAINTENANCE.**

4.3 With MMU device disconnected, and controller power off, the intersections shall go into flashing operation and remain in flashing operation until controller power is turned on. (CITY WILL NOT ACCEPT CABINET IF INTERSECTION GOES DARK INSTEAD OF FLASH.)

4.4 Sixteen (16) red fail jumpers shall be supplied with each cabinet. Red fail jumpers shall be made of .080 inches thick aluminum, 2"x 3/4". The U-shaped cut-out shall be exposed aluminum with the rest of the jumper covered with red, heat-shrink tubing insulation.

4.5 Detector Termination Panel: The bottom six (6) terminal positions on the last terminal block shall be allocated for pedestrian push button and pedestrian common (return) wires. The rest of the terminal positions shall be allocated to detector cable input wires. There shall be sufficient terminal positions for four (4) pedestrian inputs, two (2) pedestrian returns and sixty-four (64) loop inputs (32 channels).

4.6 The detector rack shall accommodate a minimum of 8 model E Reno A&E four-channel detector amplifiers with LCD display.

4.7 GROUND FAULT INTERRUPTER UTILITY OUTLETS shall be mounted on the right cabinet panel.

4.8 Flasher unit shall be rated 25 amps minimum.

4.9 MALFUNCTION MANAGEMENT UNIT (MMU): A MMU shall be supplied with each cabinet unless specified otherwise. A signed and date test sheet for the unit, performed at the factory, shall be included with each MMU supplied to the City of Stockton. MMU shall meet NEMA Standards Publication TS-2-1998 and containing the following features as a minimum:
A. Dual Indication Monitoring, simultaneously active inputs of Green (Walk), Yellow, or Red (Don't Walk) on the same channel.
B. GY-Dual Indication Monitoring, detects simultaneously active inputs of Green and Yellow field signal inputs on the same channel.
C. Field Check Monitoring, This function combines information about active field inputs with information received through the Port 1 communications between the Controller Unit and the MMU in a TS2 Cabinet.
D. External Watchdog Monitoring, this detects an optional external watchdog output from a controller unit or other external cabinet device.
E. Program Card Absent Monitoring, this function causes a fault should the MMU be absent a program card or a poorly seated card.
F. Display LED Test.
G. 12 Volt DC Monitoring.
H. Modified CVM Latch.
I. Type 16 Only Mode, when used to retrofit a TS-1 cabinet, using an existing connector, but operating as a Type 16 mode.

5.0 MMU and controller cables, when not connected to controller or monitor, shall not be long enough for connectors to touch AC field wiring terminals (potential shorting problems).

5.1 Type P Cabinet: A swing-down type loadbay with the pivot point on the front of the loadbay shall be utilized. Signal cabinet shall be supplied without communication equipment. The cabinet shall have an auxiliary 120v breaker with panel.

5.2 Fire Pre-empt: When a fire pre-empt is specified, either by special provisions or noted on plan with requirement of hardwired interconnect to firehouse, a pre-empt isolation relay panel shall be installed. This panel shall be easily installed without extensive modification to cabinet. If the cabinet is replaced, the modular pre-empt panel shall be easily transferred to a standard City of Stockton cabinet.

5.3 Vehicle Pre-empt: The vehicle pre-empt shall comply with the Section 10-3.30 “Optical Detection/Discriminator Assembly” of this special provisions. The Optical detection phase selector shall include the ability to directly sense the green traffic controller signal indications through the use of dedicated sensing circuits and wires connected directly the field wire termination points in the traffic controller cabinet. The phase selector shall be a plug-in, four (4)-channel, multiple-priority device intended to be installed directly into a card rack located within the controller cabinet. The phase selector shall be able to detect encoded infrared as well as other signals and provide coordinated inputs to the controller. The harness wire, which connects to the phase selector, shall be installed in the cabinet prior to shipping the cabinet to the City’s Corporation Yard for testing. Two directions with the same phasing (like; 2-6 and 4-8) shall have separate wiring from cabinet to the proper signal poles. The cabinet shall be wired such that the two phases do not turn
green, at the same time, during vehicle pre-emption in only one direction. The following configuration shall be used for detection.

<table>
<thead>
<tr>
<th>Channel</th>
<th>Phases</th>
<th>2070/M50</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2 &amp; 5</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>4 &amp; 7</td>
<td>4</td>
</tr>
<tr>
<td>C</td>
<td>6 &amp; 1</td>
<td>5</td>
</tr>
<tr>
<td>D</td>
<td>8 &amp; 3</td>
<td>6</td>
</tr>
</tbody>
</table>

A communication cable (6-pin (P1) and 9-pin (S1)) shall be furnished to enable the phase selector to communicate with a PC or traffic signal controller.

5.4 Railroad Pre-empt: For railroad pre-empt, please refer to plans. The City does not have a standard configuration for railroad pre-empt. Cabinet design engineer shall submit to the City a written schematic of the proposed railroad pre-empt configuration. This schematic design shall be approved by the City prior to the construction of the cabinet. If illuminated directional signs required to be installed to restrict turns during railroad pre-emption, sign relay panel shall also be installed as well as pre-empt isolation relay panel in the cabinet.

5.5 The Siemens type 2070LN controller shall be provided with the following items:
1) Quality Control (QC) test sheet
2) Vendor’s test report
3) All the accessories, including 1B, 2B, 7B
4) Running Fourth Dimension’s D4 firmware and shall communicate with a central traffic control server running TranSuite software.
5) A D-connector adaptor cable that converts the pin from TMP390 to the pin input for 2070N controller.

5.7 Type P TS2 cabinet with type 2070LN controllers shall be provided with two redundant SDLC cables. One shall be standard 15-pin connector and the other shall be 25-pin connector to accommodate either NEMA TS-2 or 2070 TS-2 Type 2 controllers.

5.8 Standards for Pre-qualifying Traffic Signal Controllers and Cabinets:

All local controller equipment shall be submitted to City of Stockton Signal Shop for visual inspection and field-testing (field-testing may take up to 3 weeks) prior to bidding. Only those cabinets, controllers, and modules pre-qualified will be allowed to bid.

Prequalification will be based, in part, upon quality of construction, materials used, track density of boards, ability to easily repair boards, overall physical
size of controllers, ease of programming, and changes thereto of the total controller for all functions including preemption at each intersection.

5.9 All field wiring terminating in the traffic signal controller cabinet or service cabinet shall be fastened to the termination panels with one piece copper solderless/crimpless wire lugs. Solderless/crimpless lug shall have offset shank and have a maximum wire size capacity of 6.

6.1 WORKMANSHIP - FIELD CONDUCTOR PLACEMENT

Six to eight feet of field wiring, in two to three coils shall be placed in the bottom of the cabinet. These coils shall be neatly bound using tie wraps. Each set of vehicle, pedestrian, ped push button, DLC, common, camera wiring shall be incrementally brought out the coiled bundle depending on its connection point in the cabinet. All conductors or groups of conductors shall be labeled appropriately and only long enough to neatly connect to the load bay or terminal inside the cabinet. The fiber optic cable shall be securely attached to the right side of the cabinet. The connecting ends shall be long enough to be neatly placed along the back right corner of the cabinet and brought up to the camera modem or Ethernet switch. Labeling of field conductors shall use plastic labeling tie wrap, using permanent black marker compatible with nylon or plastic ty-wrap style.

6.2 2- WIRE SYSTEM ACCESSIBLE PEDESTRIAN SYSTEM

If a 2-wire system PPB system is required, an interface panel and a Central Control unit with required wiring shall be installed in the cabinet prior to the cabinet delivery for testing by the City's maintenance staff.

See table below for locations of traffic signal controller and cabinet modifications.
<table>
<thead>
<tr>
<th>Intersection</th>
<th>Existing Cabinet Type</th>
<th>New Cabinet Type</th>
<th>Existing Controller Type</th>
<th>New Controller Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hammer Lane / Mariners Drive</td>
<td>R</td>
<td>2070L ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / Kelley Drive</td>
<td>P</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
</tr>
<tr>
<td>Hammer Lane / Richland Way</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / Don Avenue / Meadow Avenue</td>
<td>P</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
</tr>
<tr>
<td>Hammer Lane / Alexandria Place</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / Pershing Avenue</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / Thornton Road</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / Lower Sacramento Road</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / Etna Street</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / El Dorado Street</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / Lan Ark Drive</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / Tam O'Shanter Drive</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / West Lane</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / Montauban Avenue</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / Lorraine Avenue</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / Girardi Way</td>
<td>P</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
</tr>
<tr>
<td>Hammer Lane / Holman Road</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
<tr>
<td>Hammer Lane / Sampson Road</td>
<td>P</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
</tr>
<tr>
<td>Hammer Lane / Maranatha Drive</td>
<td>P</td>
<td>2070 ATC</td>
<td>2070LN</td>
<td></td>
</tr>
</tbody>
</table>
6.3 CONTROLLER CABINET FOUNDATION

Type P traffic signal cabinet foundations shall be 18" above finished grade. All edges and corners of foundations shall be rounded 1.5 inches radii to prevent chipping. Top surface of foundation shall have smooth or polished surface. No broom finish allowed. This is to facilitate cleaning in the future.

Anchor bolts for the controller cabinet shall extend 1-1/2 inches (plus or minus 1/8 inch) above the top of the foundation. When installing cabinet foundation bolts, install bottom set of nut and washer threaded on the foundation bolts so the nut is embedded in the concrete foundation. The bottom washer shall rest on the top of the concrete foundation. The cabinet then is placed on the washer to prevent direct contact on the concrete foundation. Mastix or plumber's tape shall be all along the base of the cabinet between the washers. After the cabinet is installed on the foundation, silicon sealant shall be used along the outside and inside of the cabinet base to ensure waterproofing.

The one inch foundation drain pipe in the back of the cabinet shall be fitted with a union fitting, with the union fitting set just below the top of the foundation grade. A 4" piece of 1" pipe shall be placed in the fitting until the concrete is cured. Then the 1" pipe if removed to ensure the drain is the lowest point of the foundation and will drain properly if it becomes necessary. The foundation shall be located as shown on the plans.

Type P traffic signal cabinets will be installed on existing foundations when shown on plans.

6.4 WORKMANSHIP - FIELD CONDUCTOR PLACEMENT

Six to eight feet of field wiring, in two to three coils shall be placed in the bottom of the cabinet. These coils shall be neatly bound using tie wraps. Each set of vehicle, pedestrian, ped push button, DLC, common, camera wiring shall be incrementally brought out the coiled bundle depending on its connection point in the cabinet. All conductors or groups of conductors shall be labeled appropriately and only long enough to neatly connect to the load bay or terminal inside the cabinet. The fiber optic cable shall be securely attached to the right side of the cabinet. The connecting ends shall be long enough to be neatly placed along the back right corner of the cabinet and brought up to the fiber optic video modem or Ethernet switch. Labeling of field conductors shall use plastic labeling tie wrap, using permanent black marker (Sharpie or equivalent).

10-3.19 Fiber Optic Cabling (Existing Locations)

General

For relocation of controller cabinets as shown on the plans, the contractor shall be responsible to perform the relocation and connection of the existing fiber optic cable. It is necessary to maintain communications and protect cabling during construction.
If the fiber and its associated connectors are damaged due to the contractor's activities, the contractor shall be fully responsible to replace the existing fiber with new. The contractor shall contact AT&T and hire AT&T as subcontractor to install and test a new fiber cable from the original splice point or termination to an original splice point or termination. Replacement, testing and verification of the new fiber optic cabling shall be done by AT&T. As a subcontractor, all costs incurred by AT&T shall be the responsibility of the contractor.

The fiber optic cable shall be spliced at the splice vaults if available. The amount of new fiber optic cable slack in splice vaults and the number of new fiber optic cable splices shall be equivalent to the amount of slack and number of splices existing before the damage or as directed by the Engineer.

The Contractor shall demonstrate that repaired or replaced elements operate in a manner equal to or better than the replaced equipment or as directed by the Engineer. If the Contractor fails to perform required repairs or replacement work, as determined by the Engineer, the City may perform the repair or replacement work and the cost will be deducted from monies due to the Contractor.

The contractor shall remove all wires first, before removing fiber optic cable from the existing signal cabinet. The connectorized fiber optic cable shall be protected such that none of the pigtails can be damaged during the pulling through any conduit. The fiber optic cable shall be protected in place in the nearest pull box, in the fiber run, next to the signal cabinet.

Before any other wires are installed, the existing fiber optic cable shall be re-installed, from nearest pull box, through conduits into the new signal cabinet and re-start communications. The fiber optic cable shall be re-installed in a timely manner in order to minimize the time that the communications are out of service.

The fiber optic cable shall be secured in the new traffic signal cabinet with Velcro type wrapping. Plastic type wrappings are acceptable.

The Contractor shall be fully responsible for assembling, installing, testing, and troubleshooting the fiber optic cable system.

Payment for performing the above work shall be included in the modify traffic signal item of work for each location, and no additional compensation will be allowed therefore.

Testing and Documentation

Fiber optic testing shall only be conducted if an existing fiber optic cable is to be replaced with a new fiber optic cable due to damage done by the contractor.

The contractor shall retain AT&T to conduct, verify and certify all fiber tests and connections. Documentation of all test results (factory and
(field tests) and fiber run as-builts shall be submitted to the Engineer within two (2) working days after completing the tests.

Testing shall include the tests on elements of the passive fiber optic components:

(1) At the factory:

The Manufacturer with the appropriate documentation shall supply verification of the fiber specifications as listed in the Fiber Characteristics Table. After cabling, before shipment but while on the shipping reel, one hundred (100%) percent of all fibers shall be tested for attenuation. Copies of the results shall be (1) maintained on file at the Contractor's, Manufacturer's and Owner's place of business with a file identification number for a minimum of ten (10) years, (2) attached to the cable reel in a waterproof pouch, and (3) submitted to the Contractor and to the Engineer prior to the delivery of the cable to the jobsite.

(2) After delivery to the project site but prior to installation:

The Cable and reel shall be physically inspected by the Contractor on delivery and one hundred (100%) percent of the fibers shall be tested with the Optical Time Domain reflectometer (OTDR) for attenuation to confirm that the cable meets requirements.

OTDR testing shall be done at the following points in the system construction:

- At cable delivery (reel test).
- Following cable installation prior to connectorization, termination or splicing.
- End to End following installation of all pigtails, connectors, and termination devices.

In addition, the final test (post-connectorization test) shall be completed with an optical power meter and light source.

Test results shall be recorded, dated, compared with the manufacturer factory test results and filed with the factory manufacturer test results accompanying the shipping reel in a weatherproof envelope. Attenuation deviations from the shipping records greater than five (5%) percent shall be brought to the attention of the Engineer in writing. The cable shall not be installed until completion of this test sequence and written approval by the Engineer is received. Copies of traces and test results shall be submitted to the Engineer. If the OTDR test results are unsatisfactory, the reel of fiber optic cable shall be considered unacceptable and all records corresponding to that reel of cable shall be marked accordingly. The unsatisfactory reels of cable shall be replaced with new reels of cable at the Contractor expense.
The new reels of cable shall then be tested to demonstrate acceptability. Copies of the test results shall be submitted to the Engineer for approval.

(3) After installation but prior to connection to any other portion of the system:

After the fiber optic cable has been pulled but before breakout and termination one hundred (100%) percent of all the fibers shall be tested with the OTDR for attenuation. Test results shall be recorded, dated, compared, and filed with the previous copies of the tests. Copies of traces and test results shall be submitted to the Engineer for approval. If the OTDR test results are unsatisfactory, the fiber optic cable segment will be unacceptable. The unsatisfactory segment of cable shall be replaced with a new segment, without additional splices, at the Contractor’s expense. The new segment of cable shall then be tested to demonstrate acceptability. The contractor shall also perform end-to-end attenuation test, utilizing a power meter in field, after installing the cable to establish the integrity and performance of the system and its components. The end-to-end attenuation shall not exceed the sum of the maximum allowable attenuation for the component cable segments, splices, and typical loss for connectors. Nor shall the attenuation from an individual connector exceed the maximum allowable losses. If the fibers in the cable exceed the allowable loss, the Contractor shall take corrective measures to bring the cable’s total attenuation below the allowable limit, including replacement of the cable at the Contractor’s expense.

The contractor shall perform all OTDR testing in the presence of the Engineer. The Engineer shall attach their written mark to all test documentation made by the Contractor at the time of the test. Testing performed by the Contractor and not witnessed by the Engineer shall not be accepted, re-testing will be required.

The contractor shall verify that the attenuation and optical continuity of each active and spare optical fiber in the cable plant satisfies the specified requirements.

Attenuation and continuity shall be measured at the operational wavelength of the equipment being used on the link. If the operational wavelength is unknown, the attenuation shall be measured at both 1310nm and 1550nm.

Testing of fiber links shall be completed in such way to show the loss of each connector, in the OTDR trace. The tests shall be conducted in both directions. The test shall be performed at both wavelengths (1310 and 1550 nm). The cable shall be tested in accordance with EIA-455-3A (FOTP-3), “Procedure to Measure Temperature Cycling Effect on Optical Fiber, Optical Cable, and Passive Fiber Optic Components”. Copies of the test results shall be submitted to the Engineer for approval.

(4) During the final system testing:
The active components shall be tested after installation. The Contractor shall provide all personnel, equipment, instrumentation and materials necessary to perform all testing. The Engineer shall be notified in writing a minimum of two (2) working days prior to all field tests. The notification shall include the exact location of the system to be tested.

The fiber optic shall be in one continuous length without factory splices in the fiber. Installation procedures and technical support information shall be furnished at the time of delivery. The change in attenuation at extreme operational temperature for singlemode fiber shall not be greater than 0.20dB/km, with 80% percent of the measured values no greater than 0.10dB/km. The singlemode fiber measurement is made at 1550nm.

The contractor shall also follow the following guidelines for efficient and accurate test results:

- Ensure that the test jumpers (end-to-end attenuation) or test fiber box (OTDR) are of the same fiber core size and connector type as the cable system, e.g., 50/125 μm core test jumpers should be used for testing a 50/125 μm multimode cable.

- Ensure that optical sources are stabilized and have center wavelengths within ± 20 nm of the 850/1300 nm multimode and 1310/1550 nm single-mode nominal wavelengths. In accordance with TIA/EIA-526-14-A, multimode LED sources should have spectral widths from 30-60 nm at 850 nm and 100-140 nm at 1300 nm.

- Ensure that the power meter is calibrated at each of the nominal test wavelengths and traceable to the National Institute of Standards and Technology (NIST) calibration standard.

- Ensure that the power meter and the light source are set to the same wavelength.

- Ensure that all system connectors, adapters, and jumpers are properly cleaned prior to and during measurement.

**Warning Tape**

Warning tape shall be provided and placed in the trench over conduits containing fiber optic cable as shown on the plans. The warning tape shall be four (4”) inches wide with bold printed black letters of approximately seventy-five (75”) inches on bright orange color background, and contain the printed warning “CAUTION BURIED FIBER OPTIC CABLE” repeated at approximately thirty (30”) inches intervals.
The printed warning shall be non-erasable and shall be rated to last with the tape for a minimum of forty (40) years.

The construction of the warning tape shall be such that it will not delaminate when it is wet. It shall be resistant to insects, acid, alkaline and other corrosive elements in the soil. It shall have a minimum of 120 lb tensile strength per four (4") wide strip and shall have a minimum of seven hundred (700%) percent elongation before breakage. The warning tape shall be the detectable type with a contiguous conductor in the form of a copper wire or aluminized foil, encased in a protective plastic jacket. The aluminized foil shall be approximately 0.01" (inch) thick. Separate rolls of the warning tape shall be electrically connected by corrosion resistant clips or soldering. The ends of warning tape shall extend into pull boxes and splice vaults a minimum of twenty-four (24") inches for future connection to a warning signal device. The continuity and detectability of the warning tape, for the entire conduit run, shall be demonstrated prior to and again after backfilling each trench to the satisfaction of the Engineer. Warning tape shall be Condux international, Inc.; Allen System, Inc.; Reff Industries, Inc.; or approved equal.

**Payments**

Full compensation for conforming to the provisions in this section shall be considered as included in the contract price paid for relocation of traffic signal controllers and no additional compensation will be allowed thereof.

10-3.20 Removing, Reinstalling or Salvaging Electrical Equipment

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

Existing facilities that are removed (i.e., streetlights, electroliers, frames, grates, covers, roadside signs, etc.) shall be salvageable wherever shown on the plans and as determined by the Engineer. Equipment shall be tagged with intersection name from which it was removed.

All equipment to be salvaged shall be handled as follows: All signal equipment (signal heads, pedestrian heads, push buttons, etc.) shall be removed from the poles and stacked on pallets. This includes signal hardware, conductors, and terminal compartments. The equipment shall be secured on the pallets and delivered to Corporation Yard. All poles shall be salvaged to the storage yard on Daggett Road. Call City Signal Maintenance Staff at (209) 937-7406, giving 72 hours advanced notice prior to delivery. Staff will direct contractor to Daggett Road yard and where to leave signal equipment in the Corp Yard.
All conductors shall be removed from abandoned conduits. Otherwise, removed items shall become the property of the Contractor and shall be disposed of per these Special Provisions.

10-3.21 **Traffic Signal Controller Communications and CCTV System:**

3.21.1 **Fiber Optic Ethernet Switches – Field Units**

The contractor shall supply and install Fiber Optic Ethernet Switches in the field controller cabinets to establish communications between the City of Stockton traffic signal controllers and the central system master at the City’s Traffic Management Center (TMC). Each field Fiber Optic Ethernet Switch shall consist of the following:

1. One (1) Comnet CNGE8US environmentally hardened unmanaged Ethernet switch which supports 10/100/1000 Mbps ports, or accepted equivalent in all features and functions.
2. One (1) Comnet SFP-21 Single Mode, 1000FX, 1310nm, 60 km, single fiber, SC connector Small Form-Factor Pluggable (SFP) module, or accepted equivalent in all features and functions.
3. One (1) Comnet SFP-22 Single Mode, 1000FX, 1550nm, 60 km, single fiber, SC Small Form-Factor Pluggable module, or accepted equivalent in all features and functions.
4. One (1) Comnet SFP-1 Copper 10/100/1000 Mbps RJ45 Small Form-Factor Pluggable module, or accepted equivalent in all features and functions.
5. Associated mounting hardware, power supply and required category 5e or 6 cables.
6. Other accessories as required by the switch manufacturer.
7. Surface mounted in the controller cabinet as directed by the Engineer.

3.21.2 **Fiber Optic Ethernet Switch Assembly – TMC Units**

The contractor shall supply and install Fiber Optic Ethernet Switches in the TMC to establish communications between the City of Stockton traffic signal controller and the central system master at the City’s Traffic Management Center (TMC). Each TMC Fiber Optic Ethernet Switch shall consist of the following:

1. One (1) Comnet C1-US Chassis or accepted equivalent in all features and functions
2. Two (2) Comnet CNGE8US environmentally hardened unmanaged Ethernet switch which supports 10/100/1000 Mbps ports, or accepted equivalent in all features and functions.
3. Seven (7) Comnet SFP-21 Single Mode, 1000FX, 1310nm, 60 km, single fiber, SC connector Small Form-Factor Pluggable (SFP) module, or accepted equivalent in all features and functions.
4. Two (2) Comnet SFP-1 Copper 10/100/1000 Mbps RJ45 Small Form-Factor Pluggable module, or accepted equivalent in all features and functions.
5. Associated switch mounting hardware, power supply and required category 5e or 6 cables.
6. Other accessories as required by the manufacturer.
7. Rack mounted in the TMC as directed by the Engineer.

3.21.3 Fiber Optic Video/Data Modems (One Port)

The Contractor shall supply and install fiber optic video/data modems, one each for the field and TMC. The fiber optic video/data modems (one port) shall be furnished and installed for each pan/tilt/zoom CCTV camera location and in the City’s TMC as indicated on the plans:

1. TMC Video/Data Modem: Comnet FVR1021S1 FM video receiver/data transceiver: 1310/1550 nm, one single mode fiber (rack mount), or accepted equivalent in all features and functions.
2. Field Video/Data Modem: Comnet FVT1021S1 FM video transmitter/data transceiver: 1550/1310 nm, one single mode fiber (shelf mount - for field installation), or accepted equivalent in all features and functions.
3. Associated modem mounting hardware, power supply and required cables.
4. Other accessories as required by the modem manufacturer.

3.21.4 Fiber Optic Video/Data Modem (Four Port)

The Contractor shall supply and install fiber optic video/data modems (four port), one each for the field and the TMC as indicated on the plans. The fiber optic video/data modems (four port) shall consist of four (4) video inputs and four (4) serial data ports including the following:

1. TMC Video/Data Modem: Comnet FVR414S1 Video Transmitter/Data Transceiver (1310/1550 nm), one single mode fiber (rack mount), or accepted equivalent in all features and functions.
2. Field Video/Data Modem: Comnet FVT414S1 Video Transmitter/Data Transceiver (1310/1550 nm), one single mode fiber (shelf mount), or accepted equivalent in all features and functions.
3. Associated modem mounting hardware, power supply and required cables.
4. Other accessories as required by the modem manufacturer.

3.21.5 Fiber Optic Video/Data Modem (Eight Port)

The Contractor shall supply and install Fiber Optic Video/Data Modems (8 Port), one each for the field and TMC as indicated on the plans. The Video/Data modems shall
consist of eight (8) video inputs and two (2) serial data ports and include the following:

1. Field Video/Data Modem (8 port): Comnet FVT812S1 Video Transmitter single mode fiber shelf mounted (for field installation), or accepted equivalent in all features and functions.
2. TMC Video/Data Modem (8 port): Comnet FVR812S1 Video Receiver single mode fiber rack mounted (for central system installation), or accepted equivalent in all features and functions.
3. Associated modem mounting hardware, power supply, and required cables.
4. Other accessories as required by the manufacturer.

3.21.6 IP Video Encoder – 16 Port (TMC-RTD)

The Contractor shall supply and install a 16-port IP Video Encoder in the TMC as indicated in the plans. The 16 port IP video encoder shall be used to encode analog video in the City’s TMC for transport of the digitally encoded video from the City’s TMC to RTD’s facilities. Each IP Video Encoder (16 Port) shall consist of the following:

1. IP Video Encoder (16 Port): Nextiva S1816e-SP, or accepted equivalent in all features and functions.
2. Associated mounting hardware and power supply (PS1261 or equivalent)
3. Coaxial cables with BNC connectors
4. Category 5e or 6 cables
5. Other accessories as required by the manufacturer.
6. Three (3) year warranty coverage (hardware & labor)

3.21.7 IP Video Encoder/Decoder (Four Port)

The Contractor shall supply and install an IP Video Encoder/Decoder (Four Port), one each for the field and the TMC. The IP Video Encoder/Decoder shall be provided for each signal location and in the TMC as indicated on the plans. For each IP Video Encoder (Four Port) installed in the field, there shall be a corresponding IP Video Decoder (Four Port) to be installed in the TMC. The IP Video Encoder shall consist of the following:

a. Verint (Nextiva) Encoder/Decoder Model S1808e or accepted equivalent (for field cabinet and TMC).
b. Associated mounting hardware and power supply (PS1261 or equivalent)
c. Coaxial cables with BNC connectors
d. Category 5e or 6 cables
e. Other accessories as required by the manufacturer.
f. Three (3) year warranty coverage (hardware & labor)
3.21.8  **IP Video Encoder (One-Port)**

The Contractor shall provide and install IP Video Encoders (One Port). The IP Video Encoders (One Port) shall be furnished and installed to encode the analog video signal in the TMC from each field CCTV camera. The Contractor shall supply and install in the TMC the following One Port IP Video Encoder and with a power supply (one for each field CCTV camera):

a. Verint (Nextiva) one-port Encoder (H.264 Model S1801e (5W@12VDC) or accepted equivalent (for TMC installation).

b. Associated mounting hardware, power supply and cables.

c. Coaxial cables with BNC connectors

d. Category 5e or 6 cables

e. Other accessories as required by the manufacturer

f. Three (3) year warranty coverage (hardware & labor)

3.21.9  **Video Splitter**

The Contractor shall provide and install a rack mounted video splitter in the TMC equipment room. The video splitter shall receive analog (NTSC) video inputs and split inputs into two analog (NTSC) video outputs as indicated on the plans.

3.21.10  **Monitoring Camera Cabling (General)**

- Power cable shall be A11403-BWG (water and sun resistant, 3-#14 AWG, white/green/black, UL Type TC 600V, NEC Type TFN Conductors, IEEE 1202/CSA FT4, IEEE 383, UL Subject 1277, and OSHA acceptable) or accepted equivalent in all features and functions.

- Composite Data and Coaxial cable for PTZ control (3 #18); shall be UL approved, water and sun resistant, 3C18AWG, 75C, E108998, Max operating Voltage 300 V RMS, and CM C(UL) 3098 15:44 ROHS.

All Coaxial BNC connectors shall be 75 ohm. All cables shall be continuous (no splices) between the controller cabinet and the cameras.

3.21.11  **Traffic Monitoring Camera Conductors Installation (General)**

**Field Installation:**

The installation of the wiring will require that a hole be drilled into the camera supporting structure for all the camera installations. Prior to drilling this hole the existing wiring inside the pole or mast arm shall be removed or protected such that it is not damage by the drilling operation. The edges of the drilled hole shall be
smoothed. The Contractor shall install a watertight gland nut (or grommet) in this hole that securely holds the wiring. All cables shall be:

- Installed without damaging the conductors or insulation
- Installed without kinks
- Handled in accordance with manufacturers specifications and recommended bending radius
- Run continuously between terminations without splices
- Installed with sufficient slack for equipment movement
- Neatly tagged at the cabinet to indicate which camera it serves
- Rated for outdoor use and resistant to water and UV radiation
- Have a watertight, strain relieved plug type connection to the camera housing

The Contractor shall make all connections of this wiring to the camera assembly, the video transmission device, and power.

3.21.12 High Speed Dome Pan/Tilt/Zoom Traffic Monitoring Camera

Camera unit and associated equipment shall conform to the current City of Stockton specification requirements. Equipment shall consist of single Pan/Tilt/Zoom (PTZ) cameras capable of providing a 360 degrees viewing field. Equipment shall include all mounting hardware (at pole top and on luminaire arm), camera unit, coaxial video and data cable, power cable, field modem, and central office modem to make the installation complete and operational with the existing City traffic management’s video system.

The camera shall be fully compatible with and be able to communicate with the City’s existing Philips’ Allegiant Microprocessor Based Switcher/Control System TC 8800, version 6.70. The following components are an integral part of the system.

- Bosch AutoDome 600 Series Intelligent PTZ Camera System, VG5-624-ECS, 36X Day/Night camera.
- VG4-A-PA1 Pendant Arm Mount with 120 VAC transformer.
- VG4-A-9541 pole mount adaptor
- Stainless steel banding straps and mounting assembly.

The contractor shall be fully responsible for purchasing, assembling, installing, testing, and troubleshooting the camera system at each location, when the project includes multiple new traffic signal installations or modification of the existing traffic signals.

3.21.13 High Speed Dome Pan/Tilt/Zoom Camera Installation

The Contractor shall install and fully adjust the camera with the associated lens, communication addressing, power supplies, housings, and all-necessary cabling, etc., to make the assembly operational. The Contractor shall firmly attach the dome system to the assigned poles as shown on the Plans. The Contractor shall exercise
care to tighten the camera mount within the torque limits specified by the camera manufacturer.

The Contractor shall properly terminate all of the electrical cables to the camera and firmly attach them. The Contractor shall dress and secure the electrical cables inside the dome enclosure and traffic signal cabinet so that they do not interfere with the closing of the cabinet, with the fan, or with any other moving part.

Cameras and other video sources where possible, shall use the electrical power supply 60 Hz signal for synchronization. When cameras are initially installed, the camera shall be in a position where its view of the roadway will not be obstructed by the pole it is mounted on. At a 4-leg intersection, the camera shall be capable of seeing all four legs without its view being blocked by the signal pole.

After all cameras are installed and central equipment is operational, the Contractor shall arrange an interactive session with the Engineer to fine-tune any adjustments to the camera that require a technician in the field. This session shall enable the Engineer to observe the image at the control room while being in verbal communication with the Contractor at the camera.

Payment

Full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing the work described in this section shall be included in the contract prices paid for various items of work for furnishing and installation of the elements under this section, Traffic Signal Controller Communications and CCTV System, and no additional compensation shall be allowed therefor.

10-3.22 Pre-emption and Priority Control System

The contractor shall be fully responsible for purchasing, assembling, installing, testing, and troubleshooting the vehicle Pre-emption and Priority System at each location as indicated on the plans. The Pre-emption and Priority System shall receive and store all information in a processor at each traffic signal controller cabinet.

I. SYSTEM DESCRIPTION

A pre-emption and priority control system shall operate in a manner that allows infrared as well as other signal control technologies to interoperate and activate one another in a consistent manner. The priority control system shall consist of a matched system of vehicle equipment and intersection equipment capable of employing both data-encoded radio communications to identify the presence of designated priority vehicles, as well as data-encoded infrared signaling communications. In preemption mode, the data-encoded communication shall request the traffic signal controller to advance to and/or hold a desired traffic signal display selected from phases normally available. A record of system usage
by agency identification number, vehicle classification and vehicle identification number shall be created. The system software shall support call history analysis and reporting across any subset of intersections and/or vehicles independent of activation method. System software shall also support both onsite and remote programming and monitoring of the priority control system.

Intersection detection equipment will consist of an infrared detector at or near the intersection that is connected to a phase selector located in the intersection controller cabinet. The infrared detector, mounted on signal pole mast arms or vehicle signal head, receives the data-encoded infrared signal from the infrared equipped vehicle and transmits information through detector cable designed to convert infrared light energy at the proper wavelength into analog voltage signals that can be evaluated and decoded by the phase selector.

The phase selector shall be capable of receiving data encoded signals from infrared and other signals and combine the detection signals into a single set of tracked vehicles requesting priority activation. The phase selector will process the vehicle information to ensure that the vehicle is (1) in a predefined approach corridor, (2) heading toward the intersection, (3) requesting priority, and (4) within user-settable range. The phase selector shall treat the combined, single set of tracked calls with first come first served priority methodology within a given priority level. Arbitration between infrared signal intensity and other signal distance/ETA shall be first come first served methodology based on time of detection as each equipped vehicle reaches its programmed threshold.

When these conditions are met, the phase selector shall generate a priority control request to the traffic controller for the approaching priority vehicle. The system shall offer compatibility with most signal controllers, e.g. NEMA (National Electrical Manufacturers Association) 170/2070 controllers. The system can be interfaced with most globally available controllers using the controller’s preemption inputs. RS-232, USB and Ethernet interfaces shall be provided to allow management by on-site interface software and central software. The required priority control system shall be vehicle ID compatible with neighboring jurisdictions using optical emergency vehicle preemption. This will allow neighboring jurisdictions with mutual aid agreements with the City of Stockton to use the preemption system in Stockton and vice versa.

When replacing existing detectors, Contractor shall verify the new pre-emption and priority operation for the detector before leaving intersection. Contractor shall confirm using a pre-emption and priority emitter to transmit high and low-priority calls to the detector and verify that the call is received at the phase selector and that controller responds appropriately. Payment for this testing shall be considered as included in other bid items and no separate payment shall be made therefore.

Contractor shall adjust the priority distance sensitivity for optimal priority (low priority) operations as directed by the Engineer. The low priority detections shall be set to a range of 50’ to 400’ from the stop bar depending on physical configuration of

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the intersection and proximity to the next adjacent signal.

Contractor shall program phase selectors to only recognize Bus Rapid Transit (BRT) buses and authorized emergency and maintenance vehicles. Other codes shall be locked out. City of Stockton shall furnish codes for authorized emergency and maintenance vehicles.

The phase selectors shall communicate with a Central Software (to be furnished and installed by others). The central software will manage the City’s pre-emption and priority control system as a single, integrated system, independent of the particular activation method or methods used within the City.

II. MATCHED SYSTEM COMPONENTS

The required priority control, data-encoded, infrared communications system shall be comprised of five basic matched components: data-encoded emitter, infrared detector, detector cable, phase selector and system software. This system shall be installed, with all five basic components, at each signalized location. In addition, a card rack and an electromechanical interface card shall be available if required. To ensure system integrity, operation and compatibility, all components shall be from the same manufacturer. The system shall offer compatibility with most signal controllers, e.g., electromechanical, NEMA (National Electrical Manufacturers Association), 170. Interfacing to an electromechanical controller may require the use of an interface card.

A. Data-Encoded LED Infrared Emitter. The data-encoded LED emitter shall trigger the system. It shall send the encoded infrared signal to the detector. It shall be located on the priority or probe vehicle. A Remote Coding Unit shall be purchased and delivered with each LED Emitter.

B. Infrared Detector. The detector shall change the infrared signal to an electrical signal. It shall be located at or near the intersection. It shall send the electrical signal, via the detector cable, to the phase selector.

C. Detector Cable. The detector cable shall carry the electrical signal from the detector to the phase selector. The cable shall be made by the same manufacturer as the rest of the priority control system.

D. Phase Selector. The phase selector shall be a multimode phase selector and shall recognize inputs from both infrared and other signal activation methods at the intersection and supply coordinated inputs to the controller. The phase selector shall process the data in order to validate that all parameters required for granting a priority request are met. It shall be located within the controller cabinet at the intersection. It shall request the controller to provide priority to a valid priority vehicle by connecting its outputs to the traffic controller’s preemption inputs.

E. Card Rack. The card rack shall provide simplified installation of a phase selector into controller cabinets that do not already have a suitable card rack.

F. Auxiliary Interface Panel. The auxiliary panel shall provide additional preemption outputs if needed. It shall also provide a connection point for the phase selector to monitor the status of the intersection’s green lights (green sense). Additional RS-232 communication ports may also be accessed via this panel. If additional outputs
are not required, an auxiliary harness shall be used to monitor the status of the intersection’s green lights.

G. Central System Software for infrared detectors and phase selector. The system software shall be a Windows XP and Window 7 operating system for system. It supports system configuration and gathering of operational information.

III. SYSTEM COMPONENT SPECIFICATIONS

A. Data-Encoded LED Infrared Emitter and Programming Software

1. The required data-encoded emitter shall be LED and generate the infrared signal, which serves as the trigger to the rest of the priority control system. The infrared signal generated by the data encoded emitter shall be a series of intense flashes from a single light source with integral power supply. The flash signal shall consist of a fixed frequency base signal and a coded overlay signal that can be used to transmit information.

2. The data-encoded LED emitter shall be powered by the DC voltage supplied from the vehicle's battery, 10 to 32 volts DC. The unit shall be equipped with a weatherproof in-line fuse holder and a weatherproof quick-disconnect plug.

3. The unit, including all electronics, shall be miniaturized to a size no greater than 5.900 inches (14.986 cm) wide by 3.800 inches (9.652 cm) high by 3.500 inches (8.890 cm) deep to accommodate standalone and internal light-bar installation.

4. The contractor shall furnish the data-encoded emitter complete with a 25 foot (8.0m) installation cable.

5. The flash sequence generated by the data-encoded emitter shall carry three types of information:

   a. The first type shall be one of three distinctly different base frequencies of either 10Hz for a Low priority emitter, or 14Hz for a High priority emitter or 12Hz for Probe frequency.

   b. The second type of information generated by the data-encoded emitter shall be a vehicle classification and identification code that is interleaved into the base frequency flashes. Setting the vehicle classification and identification code shall be accomplished through emitter programming software. Each data-encoded emitter shall be capable of setting 10 different classifications with 1,000 different identification numbers per class for a total of 10,000 codes per base frequency.

   c. The third type of information generated by the data-encoded emitter shall be reserved for setting the intersection detection range. The system shall enable the traffic engineer to activate the range code from his/her vehicle using a specially equipped emitter control module with a range setting command switch. The system shall accommodate setting a separate
range from 200 feet (61m) to 2,500 feet (762m) with 1200 range set points, for both High and Low priority signals.

6. The emitter shall include a multi-purpose port compliant with the SAE J1708 communication standard. This port enables unit configuration to be set into the emitter and read from the emitter.

7. While operating, the data-encoded emitter shall conduct self-diagnostics designed to monitor data transmission integrity by checking for missing pulses. Any failures of the self-diagnostic tests shall be displayed by flashing of the ON/OFF switch indicator light.

8. An ON/OFF switch (available for each data-encoded emitter) shall be equipped with an indicator light providing internal diagnostics to assist in troubleshooting. The indicator light shall operate as follows:
   a. Steady on when the emitter is operating
   b. Flash at a 0.5Hz rate when the emitter is intentionally disabled
   c. Flash at a 2Hz rate when the emitter is inoperative

9. The LED emitter shall contain visible light LEDs which may be user configured as follows:
   a) Flash at emitter flash rate during normal operation. Flash at diagnostic rate when unit has failed or is in disable mode. The visible LEDs will flash at the same rate as the infrared LEDs during normal operation. When the emitter is in Disable Mode; the LEDs will flash once every two seconds. When the emitter has failed, the LEDs will flash two times per second.
   b) Off during normal operation, Flash at diagnostic rate when unit has failed or is in disable mode. The visible LEDs will be off during normal operation. When the emitter is in Disable Mode; the LEDs will flash once every two seconds. When the emitter has failed the LEDs will flash two times per second.
   c) Flash once per second for 10 seconds at power up. The visible LEDs will flash once per second for ten seconds after initial power up. After that, the visible LEDs will shut off.
   d) Always Off: The visible LEDs will remain off at all times.

10. The data-encoded emitter will be equipped with a disable input that, when activated, the emitter will stop flashing, thereby eliminating the possibility of inadvertent signal transmission after the priority vehicle has arrived at its destination. The disable input will be programmable to operate in either a latching or non-latching mode. Operation of the disable input will be programmable using software.
   a. The data encoded infrared LED based emitters use angle of half intensity
0 = +/- 10 degrees LEDs to provide precise directionality control.

11. The data-encoded emitter shall operate over a temperature range of $-30^\circ F$ (-34$^\circ C$) to $+165^\circ F$ (+74$^\circ C$).

12. The data-encoded emitter shall operate over a relative humidity range of 5% to 95%.

13. Windows™ based software shall be available for programming the emitter through its J1708 compatible multi-purpose port. The communication protocol will be made available upon request for creating software to implement real-time communication.

14. The emitter will provide operating modes that allow it to be powered on with the strobe/LEDs active or inactive.

15. The remote coding unit shall be capable of remotely programming and reading the following parameters from the data-encoded LED emitter without the use of a computer:
   a. Vehicle Class and Vehicle ID
   b. Disable operation mode
   c. Visible LED behavior
2. The unit shall be able to reset the emitter to factory defaults.
3. The unit including all electronics shall be 6.3 inches (16 cm) long, 3.7 inches (9.4 cm) wide and 1 inch (2.5 cm) thick. The unit shall have an LCD display and a keypad.
4. The unit shall operate on four AAA batteries.

B. Infrared Detector

1. The required detector shall be a lightweight, weatherproof device capable of sensing and transforming pulsed infrared energy into electrical signals for use by the phase selection equipment.

2. The infrared detector shall be designed for mounting at or near an intersection on mast arms, pedestals, signal heads, signal head framings, pipes or span wires. All infrared detectors shall be mounted vertically.

3. Each infrared detector shall be supplied with mounting hardware to accommodate installation all types of installation; on mast arms, on signal heads, and on signal head framing. Additional hardware shall also be available, if span wire installations are required.

4. The infrared detector design shall include adjustable tubes to enable their reorientation for span wire mounting without disassembly of the unit.
5. The detector shall accept infrared signals from one or two directions and shall provide single or dual electrical output signal(s).

6. The infrared detector shall be Bi-directional with one output channel. Where the conduit's capacity, at the intersection, does not allow multiple wires to be installed, the Bi-directional with two output channels can be installed as directed by the engineer.

7. The detector shall allow aiming of the two infrared sensing inputs for skewed approaches or slight curves.

8. The infrared detector shall have a built-in terminal block to simplify wiring connections.

9. The infrared detector shall receive power from the phase selector and shall have internal voltage regulation to operate at 24 volts DC.

10. The infrared detector shall respond to a clear lens data-encoded emitter with 0.84 (±10%) Joules of energy output per flash at a distance of 2,500 feet (762m) under clear atmospheric conditions. If the emitter is configured with a visible light filter, the detector shall respond at a distance of 1800 feet (549m) under clear atmospheric conditions. The noted distances shall be comparable day and night.

11. The infrared detector shall deliver the necessary electrical signal to the phase selector via a detector cable up to 1,000 feet (305m) in length.

12. Each optical detector shall not have less than two telescopic sights that are rotational from 180 degrees to 5 degrees. Each optical detector shall be aimed and mounted for maximum line of sight for each direction.

C. Detector Cable

1. The detector cable shall deliver sufficient power from the phase selector to the infrared detector and shall deliver the necessary quality signal from the detector to the phase selector over a non-spliced distance of 1,000 feet (305m).

2. The cable shall be of durable construction to satisfy the following installation methods:
   a. Direct burial.
   b. Conduit and mast arm pull.
   c. Exposed overhead (supported by messenger wire).

3. The outside diameter of the detector cable shall not exceed 0.3 inches (7.62mm).
4. The insulation rating of the detector cable shall be 600 volts minimum.

5. The temperature rating of the detector cable shall be +158°F (+70°C) minimum.

6. The conductors shall be shielded with aluminized polyester and have an AWG #20 (7 x 28) stranded and individually tinned drain wire to provide signal integrity and transient protection.

7. The shield wrapping shall have a 20% overlap to ensure shield integrity following conduit and mast arm pulls.

8. The detector cable shall have four conductors of AWG #20 (7 x 28). The capacitance will not exceed 48 pF per foot a 1 Khz. The detector cable wires will be stranded, individually tinned copper, color-coded insulation as follows:
   a. Orange for delivery of detector power (+).
   b. Drain wire for detector power return (-).
   c. Yellow for detector signal #1.
   d. Blue for detector signal #2 or ground, depending on model.

9. The characteristic impedance of the detector cable shall be:
   0.6ohms/1000'
   14.3uF/1000'

D. Phase Selector

1. The phase selector shall be a multimode phase selector that recognizes inputs from infrared and other signal activation methods at the intersection and supplies coordinated inputs to the controller.

2. The phase selector is designed to be installed in the traffic controller cabinet and is intended for use directly with numerous controllers. These include California/New York Type 170 controllers with compatible software, NEMA controllers, or other controllers along with the system card rack and suitable interface equipment and controller software.

3. The phase selector will be a plug-in, four channel, multiple-priority, multi-modal device intended to be installed directly into a card rack located within the controller cabinet. The multi-mode phase selector shall be capable of using existing infrared or other signal system card racks.

4. The phase selector may be powered from either +24 VDC or 120VAC.

5. The phase selector shall support front-panel RS-232, USB and Ethernet interfaces to allow management by on-site interface software and central software. An RS-232 port shall be provided on the rear card edge of the unit. Additional RS-232 communication ports shall be available using the Auxiliary Interface Panel.
6. The phase selector shall include the ability to directly sense the green traffic controller signal indications through the use of dedicated sensing circuits and wires connected directly to field wire termination points in the traffic controller cabinet. This connection shall be made using the auxiliary interface panel.

7. The phase selector shall have the capability of storing a minimum of 10,000 priority control calls. When the log is full, the phase selector shall drop the oldest entry to accommodate the new entry. The phase selector shall store each call record in non-volatile memory and shall retain the record if power terminates. Each preemption record entry shall include the following points of information about the priority call:
   a. Agency: Indicates the operating agency of the vehicle.
   b. Classification: Indicates the class type of vehicle.
   c. Identification number: Indicates the unique ID number of the vehicle.
   d. Priority level: Indicates the vehicle’s priority level (High, Low or Probe).
   e. Direction: Channel A, B, C, or D; indicates the vehicle’s direction of travel.
   f. Call duration: Indicates the total time in seconds the priority status is active.
   g. Final greens at end of call: Indicates which phases are green at the end of the call.
   h. Duration of the final greens: Indicates the total time final greens were active at the end of call.
   i. Time and date call started and ended: Indicates the time a priority call started and ended, provided in seconds, minutes, hours, day, month, and year.
   j. Turn signal status: Indicates the status of the turn signal during the call.
   k. Priority output active: Indicates if the phase selector requested priority from the controller for the call.
   l. Historical no preempt cause: Indicates a history of conditions, which may have prevented a call or caused a call to terminate.
   m. Speed of vehicle: entry speed, exit speed, average speed through call,
   n. Relative priority: relative priority of vehicle class logged at time of call,
   o. Directional priority: directional priority logged at time of call,
   p. Preempt output used
   q. Signal intensity: maximum and minimum infrared signal intensity during call.

8. The phase selector shall support a minimum of 5000 code pairs (agency ID, vehicle ID) providing unique vehicle identification and system security implementation at the vehicle level.

9. The phase selector shall include several programmable control timers that will limit or modify the duration of a priority control condition, by channel. The control timers will be as follows:
   a. MAX CALL TIME: Sets the maximum time that a channel is allowed to be held active by a specific vehicle. It shall be settable from 60 to 65,535 seconds in one-second increments. The factory default shall be 360 seconds.
   b. OFF APPROACH CALL HOLD TIME: Sets the amount of time a call is held on a channel after the vehicle has left the approach. It shall be settable from 4 to 255 seconds in one-second increments. The factory default shall be 6 seconds.
   c. LOST SIGNAL CALL HOLD TIME: Sets the amount of time that a call is held on a channel after the intersection has lost contact with the vehicle. It shall
be settable from one to 255 seconds in one-second increments. The factory
default shall be six seconds.

10. The phase selector shall have the ability to enable or disable all calls of both priority
levels. This shall be independently settable by channel.

11. A unique intersection name, which shall be broadcasted, shall be settable for each
phase selector.

12. Up to 25 different radio channels shall be available to be assigned to the phase
selector.

13. The phase selector shall operate in a mode that shall vary the output based on the
status of the approaching vehicles turn signal. Additional outputs available on an
Auxiliary Interface Panel may be needed. Settings shall be available for this mode
as follows:
   a. Output mappings for each channel.
   b. Separate setting for each of the four channels.
   c. Separate settings for each left turn, right turn or straight signal status for each
      of the above four channels.

14. The phase selector's default values shall be programmable by the operator on-site
or at a remote location.

15. The phase selector shall be capable of three levels of signal discrimination, as
follows:
   a. Verification of the presence of the signal of either High priority or Low priority.
   b. Verification that the vehicle is approaching the intersection within a prescribed
      Estimate Time of Arrival (ETA).
   c. Determination of when the vehicle is within the prescribed range, either by
      intensity level or distance from the intersection.

16. The phase selector shall include one opto-isolated NPN output per channel that
provides the following electrical signal to the appropriate pin on the card edge
connector:
   a. 6.25Hz ± 0.1Hz 50% on/duty square wave in response to a Low priority call.
   b. A steady ON in response to a High priority call.
   c. The phase selector will also have the option of providing separate outputs for
      High and Low priority calls for controllers that do not recognize a 6.25 Hz
      pulsed Low priority request.
   d. Additional outputs or output modes shall also be available on the auxiliary
      interface panel.

17. The phase selector shall accommodate three methods for setting range thresholds
for High and Low priority signals:
   a. Based on the approaching vehicle’s Estimated Time of Arrival (ETA). This
      shall be settable between 0 and 255 seconds in one second increments. The
      factory default shall be 30 seconds. The ETA threshold shall be
      independently settable by each of the following parameters: vehicle class,
      approach channel and priority level.
   b. Based on the approaching vehicle’s distance from the intersection. This shall
      be settable between 0 and 5,000 feet in one foot increments. The factory
      default shall be 1000 feet. The Distance threshold shall be independently
      settable by each of the following parameters: vehicle class, channel and
      priority level.
c. Based on infrared emitter intensity the system shall accommodate setting a separate range from 200 feet (61m) to 2,500 feet (762m) with 1,200 range set points for both High and Low priority signals.

18. The phase selector shall support three types of green sense logging.
   a. Preemption impact logging which measures and records the impact of an individual signal preemption upon a measured green cycle time.
   b. TSP impact logging which measures and records whether a TSP advantage was gained during a request and the amount of early or extended green applied.
   c. Green cycle logging records changes in the average green cycle time. When the average time is measured to have changed, a new log entry is made.

19. The phase selector will have the following indicators:
   a. A STATUS indicator that illuminates steadily to indicate proper operation.
   b. LED indicators (one for High priority, one for Low priority) for each channel display active calls as steady ON and pulse to indicate pending preemption requests.

20. The phase selector shall have a test switch for each channel to test proper operation of High or Low priority.

21. If additional detectors installed, an auxiliary interface panel shall be available to facilitate interconnections between the phase selector and traffic cabinet wiring as well as provide additional outputs.

22. The phase selector shall provide the user with call play-back logs for the last 100 priority activation requests. Each log shall contain up to the last 250 seconds of a call. The call play-back logs shall include:
   a. Infrared based calls shall record intensity, coded ID, green sense state, call status (active, pending, disabled), approach channel and priority information.
   b. Data shall be recorded once per second. Recording terminates at call end.

23. The following diagnostic tests are incorporated in the multimode phase selector:
   a. Power up built in test
   b. Communications port tests
   c. Preemption output test call
   d. Detector response test

24. The phase selector shall be capable of call bridging. Call bridging enables the treatment of two vehicles requesting priority activation to have their calls linked together to hold a call to the controller so that they may traverse the approach together.

25. The phase selector shall be capable of directional priority. Priority for calls may be assigned to individual approach channels such that calls in a particular direction will be given priority over calls in competing directions within the same priority level.

26. The phase selector shall be capable of utilizing time plans to allow users to vary priority activation by time of day, or for a specific time period such as special events. Time plans shall be configured via system software.

27. The phase selector shall support evacuation mode for low priority calls. Upon activation of this mode from the central management software, low priority vehicle calls shall be recognized by the phase selector as if they were high priority vehicle calls for a temporary period of time as defined by the user. This mode shall be
supported for both infrared and other signal emitters. Vehicles transmitting high priority signals shall continue to maintain priority over the evacuation mode priority vehicles.

28. The phase selector shall allow relative priority. Relative priority allows emitter classes to be used as an additional level of prioritization within priority levels (i.e. high and low priority levels have different sets of relative priorities). Relative priority shall support up to 15 unique classes in each priority level (High and Low). Relative priority class level 15 will have the highest weight and 1 the lowest weight in each. If relative priority is enabled, a priority call will be granted to the caller with the higher class level within high and low priority levels. A vehicle with a call granted, shall be able to have its call taken away by a higher level class vehicle. The system shall provide a lockout threshold that once met, shall disallow higher relative priority calls from taking away a call. Separate thresholds for infrared and other signal calls shall be provided. Infrared call thresholds shall be specified as intensity with a default value of 1,000. Other signal call thresholds shall be specified as an ETA in seconds. The default is ETA shall be 12 seconds. Threshold values for both types of calls shall be settable via system software. High priority calls will always be served over low priority calls regardless of either’s relative class. Preemption for vehicles with the same base priority (high, low) and the same relative priority is done using the default first come, first served mechanism. Relative priority is capable of being enabled or disabled using system software. Relative priority for high and low can be separately enabled or disabled using system software. The default settings for all relative priority (high and low) values will be 15. Relative priority shall be disabled by default for both high and low priority.

29. The phase selector shall be a plug-in, **four (4) channel**, multiple-priority device intended to be installed directly into a card rack located within the controller cabinet. The phase selector shall be able to detect encoded infrared as well as other signals.

The following configuration shall be used for detection:

<table>
<thead>
<tr>
<th>Channel</th>
<th>Phases</th>
<th>M50/2070</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2 &amp; 5</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>4 &amp; 7</td>
<td>4</td>
</tr>
<tr>
<td>C</td>
<td>6 &amp; 1</td>
<td>5</td>
</tr>
<tr>
<td>D</td>
<td>8 &amp; 3</td>
<td>6</td>
</tr>
</tbody>
</table>

E. **Card Rack**

1. The required card rack shall provide simplified installation of a phase selector into controller cabinets that do not already have a suitable card rack.

2. The card rack shall be factory wired to one connector, located behind the card slot, and a terminal block, located next to the phase selector slot, on the front of the card rack.

3. The card rack connector on the front, shall provide for all connections to the
traffic controller. The card rack shall provide labeled terminal blocks for connecting the primary infrared detectors to a phase selector.

F. **Auxiliary Interface Panel.**

If additional detectors are installed, the auxiliary panel shall provide additional preemption outputs if needed. It shall also provide a connection point for the phase selector to monitor the status of the intersection’s green lights (green sense). Additional RS-232 communication ports may also be accessed via this panel. If additional outputs are not required, an auxiliary harness shall be used to monitor the status of the intersection’s green lights.

G. **Interface Software**

1. The priority control interface software will be provided on a single CD-ROM or via download to interface with the phase selector. The software shall be provided to manage the phase selector while on-site at the intersection. It shall be supported on Windows™ XP and Windows™ 7.

2. The priority control interface software must accommodate:
   a. Setting up and presenting user-determined system parameters.
   b. Viewing and changing settings.
   c. Viewing activity screens and other signal channel.
   d. Displaying and/or downloading records of previous activity showing class, code, priority, direction, call duration, final greens at end of call, duration of final greens, time call ended in real time plus maximum signal intensity (vehicle location information).
   e. Agency ID, vehicle class, and vehicle ID
   f. Priority level
   g. Turn signal status
   h. No priority cause
   i. Source of the call
   j. Active preemption/priority output

3. The priority control interface software must accommodate operation via a mouse or via the keyboard, or in combination.

4. The priority control interface software must provide menu displays to enable:
   a. Setting of valid vehicle ID and class codes.
   b. Establishing signal intensity thresholds (detection ranges), modem initialization, intersection name and timing parameters.
   c. Setting of desired green signal indications during priority control operation and upload and download capability to view.
   d. Resetting and/or retrieving logged data and priority vehicle activity.
   e. Addressing for each card in a multi-drop connected system.
   f. Confirmation light configuration.
   g. Manual Control Parameters.

5. The interface software will provide readout of noise levels detected by the detectors. This noise level will serve as a troubleshooting tool.

6. The interface software shall provide a real-time activity screen which will provide the following information.
a. Call intensity value even if below threshold.
b. Emitter priority level.
d. Indication of detection on primary or auxiliary detector.
e. Indication if call is being serviced or is pending.
f. Indication if vehicle is in range.
g. Provides readout for four separate vehicles per channel.
h. Detector noise level readout.
i. Green phase monitoring with information on the current greens.

7. The on-site software shall allow the user to provide intersection name and approach names for each of the four channels and store these as part of the phase selector configuration.

8. The on-site software shall allow the user to save the configuration from the phase selector to a file.

9. The on-site software shall allow the user to restore the configuration for a phase selector from a saved configuration file.

10. The on-site software shall allow the user to print the phase selector configuration.

11. The on-site software shall allow the user to view the activity log from the phase selector.

12. The on-site software shall allow the user to save the activity log to a file.

13. The on-site software shall allow the user to print the activity log.

14. The on-site software shall allow the user to update firmware for all upgradeable modules of the phase selector.

IV. RELIABILITY

A. All equipment supplied as part of the infrared priority control system intended for use in the controller cabinet shall meet the following electrical and environmental specifications spelled out in the NEMA Standards Publication TS2 1992, Part 2:

2. Power source frequency per NEMA TS2 1992, Paragraph 2.1.3.
4. Temperature range per NEMA TS2 1992, Paragraph 2.1.5.1.

B. Each piece of equipment supplied as part of the priority control system intended for use in or on priority vehicles shall operate properly across the entire spectrum of combinations of environmental conditions (temperature range, relative humidity, vehicle battery voltage) per the individual component specifications.

V. QUALIFICATIONS

A. The manufacturer of the required infrared pre-emption and priority control system shall verify the proven, safe operation of the system's infrared communication
technology. Upon request, the manufacturer shall produce a list of 20 user agencies having two years or more experience interfacing priority control equipment with electromechanical, solid state and programmable controller types.

B. The manufacturer shall demonstrate the ability to finance ongoing technical support, written product warranties, and responsibility for product failure.

C. Upon request, the manufacturer shall produce a copy of its last full year and four previous year's corporate financial statements.

D. The manufacturer shall have an independent quality department that has complete authority to control product integrity and is answerable only to the senior officer of the organization.

VI. RESPONSIBILITIES

A. The manufacturer of the required infrared priority control system and/or the manufacturer's representative shall provide responsive service before, during and after installation of the priority control system. The manufacturer and/or the manufacturer's representative, as consultants to the installer, shall provide certified, trained technicians having traffic systems industry experience and operational knowledge of priority control systems.

B. The lowest fully responsive bidder shall be required to supply working production components specified in this Specification within 14 calendar days from the bid opening date. Failure to do so shall render the bid non-responsive.

C. Paragraph B. shall not be required if, prior to the bid opening, the bidder demonstrated to the city that the equipment bid meets these specifications.

VII. SUBSTANTIATED WARRANTY

A. The manufacturer of the required infrared priority control system shall warrant that, provided the priority control system has been properly installed, operated and maintained, component parts of a matched component system (see Section II) that prove to be defective in workmanship and/or material during the first five (5) years from the date of shipment from the manufacturer shall be covered in a documented system-protection plan, plus provide an added five-year maintenance coverage for repair or replacement at a fixed deductible charge for a total of ten (10) years of product coverage.

The manufacturer must substantiate its financial ability to respond to warranty claims. The guarantee shall be determined in reference to the manufacturer's business assets and financial experience over the preceding five-year period.

B. In addition, upon request, the manufacturer shall provide documentation proving
ability to financially support the ten (10) year provisions of the warranty/maintenance period. Documentation shall include appropriate financial reports for the previous five business years.

C. The protection plan shall warrant that component parts of a matched component system that are not subject to coverage limitations and prove to be defective in workmanship and/or material during the first five (5) years from the date of shipment from manufacturer shall be repaired at no charge, and that extended coverage with a fixed repair deductible shall be available for an additional five (5) years.

D. In total, the warranty/maintenance coverage must assure that system components shall be available to allow system operation during the ten (10) year warranty/maintenance coverage.

E. A copy of the manufacturer's written warranty outlining the conditions stated above shall be supplied with the bid. Coverage and coverage limitations are to be administered as detailed in the manufacturer’s Warranty/Maintenance document.

VIII. CERTIFICATE OF INSURANCE

The manufacturer of the required infrared priority control system shall provide a certificate of product liability insurance protection for $5,000,000 assuring the priority control user that the manufacturer is insured against civil damages if proven to be at fault for an accident due to equipment failure within the system of matched priority control components. This certificate, however, need not, and is not meant to, provide liability insurance protection to the priority control system dealer, installer or user.

IX. USER SUPPORT SERVICES

The manufacturer of the required infrared priority control system shall offer support programs to assist the purchase and implementation of a priority control system program, including:

A. A preferred lease program to finance purchase of a system.
B. Public relations assistance to promote the system within the user community.
C. Intersection survey service to document appropriate equipment interfaces.
D. Customized proposals to assist the procurement process.
E. Driver Training Program

X. CERTIFICATION

The manufacturer of the required infrared priority control system shall certify that all component products are designed, manufactured and tested as a system of
matched components and shall meet or exceed the requirements of this specification.

Y. System Operation

The Contractor shall demonstrate that all of the components of each system are compatible and will perform satisfactorily as a system.

Operating sequence shall be initiated when the detector receives optical energy of the required identification code and sequential flash rate from an emitter.

Detector shall transform the optical energy signals into electrical signals and transmit the electrical signals to the phase selector module for processing.

The phase selector module shall place a logical true call (high priority) or a pulsing logical true call (6.25 Hz square wave for second priority) into the signal controller to advance to and hold the green display, which grants right-of-way to the authorized vehicle(s) displaying the optical energy pulses.

When a preemption call is registered while the controller is serving a vehicular phase or phase combination other than the preemption phase(s) called for, a clearance interval for the phase(s) in conflict shall be displayed immediately after the minimum green period. If a preemption call is registered while the controller is servicing the preemption phase or phase combination called for, the controller shall remain in that phase or phase combination at least four (4) seconds after the call drops out. If a preemption call is registered while the controller is servicing a pedestrian call, the controller shall immediately terminate the WALK indication and time a separately programmable flashing DONT WALK indication before serving the preemption phase(s) called for.

Phase selector module shall obtain and hold the desired green display(s) for a minimum of four (4) seconds, even if the optical energy signals cease before entering the preempt green display(s).

Phase selector module shall allow the signal controller to resume normal operation 6 to 10 seconds after optical energy signals are lost, if the optical energy signals are lost after entering the pre-empt green display(s).

Preemption equipment shall be installed in such a manner that the internal wiring of the controller, as normally furnished by the manufacturer, is not altered.

Phase selector module shall provide for assigning right-of-way to one of two (1 of 2) priority levels on either of two (2) channels. Priority is given on a first-detected, first-served basis, except that a high priority optical transmission shall have precedence over a low priority optical transmission when both are detected concurrently.
Full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing the work described in this section (10-3.30) shall be included in bid items “Installation of traffic signal,” and/or “Modification of traffic signals,” and no additional compensation shall be allowed therefore.

Prior to conditional acceptance, Contractor shall perform pre-approved tests on the EVP/TSP system to demonstrate the end-to-end functionality of the system. This testing shall be done in addition to specific tests for individual pieces of equipment.

The Contractor shall adhere to the testing requirements for this project and shall allow for 30 days between substantial completion and entrance into the 12-month operational support period which exceeds and includes the warranties provided.

TSP operations shall tested at each project intersection. Intersection test shall consist of properly detecting BRT buses at 400 feet from intersection (unless otherwise specified by Engineer) and granting TSP response subject to pre-defined parameters (vehicle privileges and time since last TSP activation). The Engineer shall be present at testing to review performance of signal timing parameters. Contractor shall implement signal timing changes as needed.

Vendor representation shall be provided for all system equipment testing.

The Contractor shall review ‘as constructed’ drawings and provide all that is necessary to operate and maintain the system and its components for the period during construction and for 12 months thereafter.

The Contractor shall adhere to the testing requirements for this project and shall allow for 30 days between substantial completion and entrance into the 12-month operational support period which exceeds and includes the warranties provided.

Z. Payment

Full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing the work described in this section shall be included in the prices paid for various items of work related to the furnishing and installation of the optical detectors and phase selectors, and no additional compensation shall be allowed therefore.

10-3.23 Payment

Payment for signals, lighting, and interconnect shall conform to the provisions in Section 86-8, “Payment,” of the Caltrans Specifications and these Special Provisions.

(Sections 11 through 13 BLANK)
SECTION 14  FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS

Attention is directed to the provisions in Section 7-1.11, “FEDERAL LAWS FOR FEDERAL-AID CONTRACTS of the Caltrans Specifications and these Special Provisions.
SECTION 14. FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS

GENERAL.—The work herein proposed will be financed in whole or in part with Federal funds, and therefore all of the statutes, rules and regulations promulgated by the Federal Government and applicable to work financed in whole or in part with Federal funds will apply to such work. The "Required Contract Provisions, Federal-Aid Construction Contracts, "Form FHWA 1273, are included in this Section 14. Whenever in said required contract provisions references are made to "SHA contracting officer," "SHA resident engineer," or "authorized representative of the SHA," such references shall be construed to mean "Engineer" as defined in Section I-1.18 of the Standard Specifications.

PERFORMANCE OF PREVIOUS CONTRACT.—In addition to the provisions in Section II, "NonDiscrimination," and Section VII, "Subletting or Assigning the Contract," of the required contract provisions, the Contractor shall comply with the following:

The bidder shall execute the CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS located in the proposal. No request for subletting or assigning any portion of the contract in excess of $10,000 will be considered under the provisions of Section VII of the required contract provisions unless such request is accompanied by the CERTIFICATION referred to above, executed by the proposed subcontractor.

NON-COLLUSION PROVISION.—The provisions in this section are applicable to all contracts except contracts for Federal Aid Secondary projects.

Title 23, United States Code, Section 112, requires as a condition precedent to approval by the Federal Highway Administrator of the contract for this work that each bidder file a sworn statement executed by, or on behalf of, the person, firm, association, or corporation to whom such contract is to be awarded, certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the submitted bid. A form to make the non-collusion affidavit statement required by Section 112 as a certification under penalty of perjury rather than as a sworn statement as permitted by 28 USC, Sec. 1746, is included in the proposal.

PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES IN SUBCONTRACTING.—Part 26, Title 49, Code of Federal Regulations applies to this Federal-aid project. Pertinent sections of said Code are incorporated in part or in its entirety within other sections of these special provisions.

Schedule B—Information for Determining Joint Venture Eligibility

(This form need not be filled in if all joint venture firms are DBE owned.)

1. Name of joint venture ________________________________

2. Address of joint venture ________________________________

3. Phone number of joint venture ________________________________

4. Identify the firms which comprise the joint venture. (The DBE partner must complete Schedule A.)

   a. Describe the role of the DBE firm in the joint venture. ________________________________

   b. Describe very briefly the experience and business qualifications of each non-DBE joint venturer: ________________________________

5. Nature of the joint venture’s business ________________________________

6. Provide a copy of the joint venture agreement. ________________________________

7. What is the claimed percentage of DBE ownership? ________________________________

8. Ownership of joint venture: (This need not be filled in if described in the joint venture agreement, provided by question 6.)

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08-07-93

March 15, 2001
a. Profit and loss sharing.
   b. Capital contributions, including equipment.
   c. Other applicable ownership interests.

9. Control of and participation in this contract. Identify by name, race, sex, and “firm” those individuals (and their titles) who are responsible for day-to-day management and policy decision making, including, but not limited to, those with prime responsibility for:

   a. Financial decisions ________________________________

   b. Management decisions, such as:

      1. Estimating ________________________________

      2. Marketing and sales ________________________________

      3. Hiring and firing of management personnel ______

      4. Purchasing of major items or supplies ____________

   c. Supervision of field operations ____________________

Note — If, after filing this Schedule B and before the completion of the joint venture’s work on the contract covered by this regulation, there is any significant change in the information submitted, the joint venture must inform the grantee, either directly or through the prime contractor if the joint venture is a subcontractor.

Affidavit

"The undersigned swear that the foregoing statements are correct and include all material information necessary to identify and explain the terms and operation of our joint venture and the intended participation by each joint venturer in the undertaking. Further, the undersigned covenant and agree to provide to grantee current, complete and accurate information regarding actual joint venture work and the payment therefor and any proposed changes in any of the joint venture arrangements and to permit the audit and examination of the books, records and files of the joint venture, or those of each joint venturer relevant to the joint venture, by authorized representatives of the grantee or the Federal funding agency. Any material misrepresentation will be grounds for terminating any contract which may be awarded and for initiating action under Federal or State laws concerning false statements."

On this ___ day of __________, 19 ____, before me appeared (Name) ________________________ to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) ________________________ to execute the affidavit and did so as his or her free act and deed.

Notary Public ____________________________________
Commission expires ________________________________
[Seal]
Date ________________
State of ________________
County of ________________

On this ___ day of __________, 19 ____, before me appeared (Name) ________________________ to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) ________________________ to execute the affidavit and did so as his or her free act and deed.

Notary Public ____________________________________
Commission expires ________________________________
[Seal]
REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

(Exclusive of Appalachian Contracts)

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ATTACHMENTS

A. Employment Preference for Appalachian Contracts (included in Appalachian contracts only)

I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate supervision and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

   Section I, paragraph 2;
   Section IV, paragraphs 1, 2, 3, 4, and 7;
   Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 3) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

6. Selection of Labor: During the performance of this contract, the contractor shall not:

   a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or

   b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 29 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4, and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 29 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

   a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.

   b. The contractor will accept as his operating policy the following statement:

      "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the SHA contracting officer an EEO Officer who will have the responsibility for and must be capable of effectively
administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

   a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

   b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

   c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

   d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

   e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

   a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

   b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of such agreement to the extent that he systems permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

   c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

   a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

   b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

   c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

   d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

6. Training and Promotion:

   a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

   b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

   c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

   d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.
7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

   a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

   b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

   c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.

   d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The Dol has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

8. **Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

   a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

   b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 26, shall have equal opportunity to compete for and perform subcontract which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.

   c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

9. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

   a. The records kept by the contractor shall document the following:

      (1) The number of minority and non-minority group members and women employed in each work classification on the project;

      (2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

      (3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees;

      (4) The progress and efforts being made in securing the services of DBE subcontractors or subcontracts with meaningful minority and female representation among their employees.

   b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, woman, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

III **NONSEGREGATED FACILITIES**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

   a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of race or disability.

   b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).
c. The contractor agrees that it has obtained or will obtain identification certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of $2,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. General:

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276a) the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment.] The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conferred under paragraph 2 of this Section IV and the DOL poster (WH-1521) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All ratings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

2. Classification:

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

(1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;

(2) the additional classification is utilized in the area by the construction industry;

(3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. Payment of Fringe Benefits:

a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit
as stated in the wage determination or shall pay another bona
fide fringe benefit or an hourly wage equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona
fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account funds for the meeting of obligations under the plan or program.

4. Apprentices and Trainees (Programs of the U.S. DOL)
and Helpers:

a. Apprentices:

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona
fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeymen-level
employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually
performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the
registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeymen-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen-
level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator of the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringe benefits shall be paid in accordance with that determination.

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(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeymen-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeymen-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeymen-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.
5. Apprentices and Trainees (Programs of the U.S. DOT):

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

6. Withholding:

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withheld, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accruing payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

7. Overtime Requirements:

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one and one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. Violation:

Liability for Unpaid Wages, Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. Withholding for Unpaid Wages and Liquidated Damages:

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withheld, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

V. STATEMENTS AND PAYROLLS

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. Compliance with Copeland Regulations (29 CFR 3):

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. Payrolls and Payroll Records:

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bonus, fringe benefits or cash equivalent thereof, and the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 101(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.)
c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

(2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;

(3) that each laborer or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalent for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b in this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records, or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than $1,000,000 (23 CFR 635); the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor on Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.

c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontractor shall be submitted.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontractor and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.
2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned, or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (29 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous for his health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding re-

Regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

18 U.S.C. 1020 reads as follows:

"Whoever being an officer, agent, or employee of the United States, or any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quality or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 335), as amended and supplemented;

Shall be fined not more than $10,000 or imprisoned not more than 5 years or both."

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub. L. 91-504), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub. L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized
for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. Instructions for Certification - Primary Covered Transactions:

   (Applicable to all Federal-aid contracts - 49 CFR 29)

   a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

   b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency’s determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

   c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

   d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

   e. The terms “covered transaction,” “debarred,” “suspended,” “ineligible,” “lower tier covered transaction,” “participant,” “person,” “primary covered transaction,” “principal,” “proposal,” and “voluntarily excluded,” as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

   f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

   g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled “Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction,” provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

   h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the “Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs” (Nonprocurement List) which is compiled by the General Services Administration.

   i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

   j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

******** Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion—Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

   a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

   b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

   c. Are not presently indicted or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and
2. Instructions for Certification - Lower Tier Covered Transactions:

(ApPLICABLE to all subcontracts, purchase orders and other lower tier transactions of $25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below:

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to whom this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participants is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

\*

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\*

XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(ApPLICABLE to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract,
grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

### Minority Utilization Goals

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<th>Economic Area</th>
<th>Goal (Percent)</th>
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</table>

For each July during which work is performed under the contract, you and each non-material-supplier subcontractor with a subcontract of $10,000 or more must complete Form FHWA PR-1391 (Appendix C to 23 CFR 230). Submit the forms by August 15.

**Training**

This section applies if a number of trainees or apprentices is specified in the special provisions. As part of your equal opportunity affirmative action program, provide on-the-job training to develop full journeymen in the types of trades or job classifications involved.

You have primary responsibility for meeting this training requirement. If you subcontract a contract part, determine how many trainees or apprentices are to be trained by the subcontractor.

Include these training requirements in your subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation must be in their 1st year of apprenticeship or training.

FR-14
Distribute the number of apprentices or trainees among the work classifications on the basis of your needs and the availability of journeymen in the various classifications within a reasonable recruitment area. Before starting work, submit to the City/County of ________: 

1. Number of apprentices or trainees to be trained for each classification.
2. Training program to be used.
3. Training starting date for each classification.

Obtain the City/County of ________ approval for this submitted information before you start work. The City/County of ________ credits you for each apprentice or trainee you employ on the work who is currently enrolled or becomes enrolled in an approved program.

The primary objective of this section is to train and upgrade minorities and women toward journeymen status. Make every effort to enroll minority and women apprentices or trainees, such as conducting systematic and direct recruitment through public and private sources likely to yield minority and women apprentices or trainees, to the extent they are available within a reasonable recruitment area. Show that you have made the efforts. In making these efforts, do not discriminate against any applicant for training.

Do not employ as an apprentice or trainee an employee:

1. In any classification in which the employee has successfully completed a training course leading to journeymen status, or in which the employee has been employed as a journeymen.
2. Who is not registered in a program approved by the US Department of Labor, Bureau of Apprenticeship and Training.

Ask the employee if the employee has successfully completed a training course leading to journeymen status, or has been employed as a journeymen. Your records must show the employee's answers to the questions. In your training program, establish the minimum length and training type for each classification. The City/County of ________ and FHWA approves a program if one of the following is met:

1. It is calculated to:
   1.1. Meet your equal employment opportunity responsibilities.
   1.2. Qualify the average apprentice or trainee for journeymen status in the classification involved by the end of the training period.

2. It is registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training and it is administered in a way consistent with the equal employment responsibilities of federal-aid highway construction contracts.

Obtain the State's approval for your training program before you start work involving the classification covered by the program.

FR-15
Provide training in the construction crafts, not in clerk-typist or secretarial-type positions. Training is allowed in lower level management positions such as office engineers, estimators, and timekeepers if the training is oriented toward construction applications. Training is allowed in the laborer classification if significant and meaningful training is provided and approved by the division office. Off-site training is allowed if the training is an integral part of an approved training program and does not make up a significant part of the overall training.

The City/County of ________ reimburses you 80 cents per hour of training given an employee on this contract under an approved training program:

1. For on-site training.
2. For off-site training if the apprentice or trainee is currently employed on a federal-aid project and you do at least one of the following:
   2.1. Contribute to the cost of the training.
   2.2. Provide the instruction to the apprentice or trainee.
   2.3. Pay the apprentice's or trainee's wages during the off-site training period.
3. If you comply with this section.

Each apprentice or trainee must:

1. Begin training on the project as soon as feasible after the start of work involving the apprentice's or trainee's skill.
2. Remain on the project as long as training opportunities exist in the apprentice's or trainee's work classification, or until the apprentice or trainee has completed the training program.

Furnish the apprentice or trainee:

1. Copy of the program you will comply with in providing the training.
2. Certification showing the type and length of training satisfactorily completed.

Maintain records and submit reports documenting your performance under this section.