

**CITY OF MANTECA
DEPARTMENT OF ENGINEERING**



**SPECIAL PROVISIONS
INVITATION TO BID
PROPOSAL AND CONTRACT**

FOR

**TRAFFIC SIGNAL UPDATE PROJECT
CIP NO. 17058
FEDERAL PROJECT NO. HSIPL 5242 (034)**

TO BE SUPPLEMENTED WITH THE STATE OF CALIFORNIA DEPARTMENT OF
TRANSPORTATION STANDARD SPECIFICATIONS AND STANDARD PLANS DATED 2023

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

ROADWAY/TRAFFIC/SIGNAGE/ELECTRICAL/STRUCTURE

Approved for Construction
Kevin Jorgensen II, PE, PLS,
Director of Engineering/City Engineer



REGISTERED CIVIL ENGINEER

TRAFFIC SIGNAL UPDATE PROJECT CIP NO. 17058

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APPENDIX

Appendix 1 – Exhibit 1 Insurance Requirements for Construction Contracts

**SECTION 00020 INVITATION TO BID
TRAFFIC SIGNAL UPDATE PROJECT CIP NO. 17058 HSIPL 5242 (034)
ESTIMATED CONSTRUCTION COST INCLUDING BID ALTERNATE: (\$3,585,000)**

SEALED BIDS will be received by the City Clerk of the City of Manteca at 1001 West Center Street, Manteca, California until **1:30 p.m. Pacific Time, Thursday April 18, 2024**, for the **TRAFFIC SIGNAL UPDATE PROJECT CIP NO. 17058 HSIPL 5242 (034)**. As soon as practical thereafter, sealed bids for the project will be publicly opened and read for performing work as follows:

Furnishing all labor, materials, and equipment, and performing all work necessary and incidental to the construction of the project known as the **TRAFFIC SIGNAL UPDATE PROJECT CIP NO. 17058 HSIPL 5242 (034)** according to the plans and specifications as prepared by the City of Manteca and according to the Contract Documents.

Project shall have **Substantial Completion within 210 calendar days** and **Final Completion within 240 calendar days** from the date specified in the Notice to Proceed. Time for commencement and completion of the work is important, and is the essence of the Contract.

This receives funding from:

- **Federal: 90% HSIPL 5242 (034)**
- **State: not applicable**
- **Local: 10% local funding**

The required DBE participation is: 18%

For the Federal training program, the number of Federal trainees or apprentices is 6.

A MANDATORY PRE-BID MEETING AND JOB WALK WILL BE held on Monday March 25, 2024 at 1:30 p.m. Pacific Time at 1001 W. Center Street Suite E, Manteca, CA 95337.

The deadline to submit questions and/or inquires is 5 p.m. Pacific Time, Tuesday March 26, 2024.

BIDDERS MUST SUBMIT BIDS ON A HARD COPY OF THE BID PROPOSAL FORMS PROVIDED IN THE CONTRACT DOCUMENTS.

THE CITY WILL POST THE PROJECT PLANS AND SPECIAL PROVISIONS ON ITS WEB SITE AT:

<https://www.manteca.gov/departments/project-bid>

The City will post Addendum (if any) and all bid-related questions and answers on its web site at:

<https://www.manteca.gov/departments/project-bid>

Questions regarding the contract documents shall be submitted in writing to:

Attn: Beshoy Demyan, PE
Senior Engineer
City of Manteca
Department of Engineering
1001 West Center Street
Manteca, CA 95337
Fax: (209) 923-8956
Email: bdemyan@manteca.gov

Refer to this web address periodically as it will be updated with Addendum (if any) and bid-related questions and answers until **6:00 p.m. Pacific Time, Thursday April 4, 2024**. The Addendum (if any) and questions and answers posted at the web address above shall form part of the Contract Documents.

Bidding procedures are prescribed in the contract documents. Bids shall only be executed upon the bid forms provided, which are a part of said contract documents. Bid guarantee in an amount not less than ten percent (10%) of the total bid dollar amount and conforming to the prescribed bidding procedures is required to be submitted with each bid, as a guaranty to be forfeited should the bidder, if awarded the contract, fail to enter into the same, or fails to furnish in a timely manner the bonds and/or proof of insurance.

Pursuant to the provisions of California Labor Code Section 6707, each bid submitted in response to this Invitation to Bid shall contain, as a bid item, adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life and limb in trenches and open excavation, which shall conform to applicable safety orders. By listing this sum, the bidder warrants that its actions pursuant to this bid item shall not impose tort liability on the City, the Engineer, the Construction Manager, and their employees, agents, and subconsultants.

Pursuant to Section 1770, et. seq., of the California Labor Code, the successful bidder shall pay not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations. Copies of such prevailing rate of per diem wages can be obtained from the Department of Industrial and Relations.

Pursuant to Public Contract Code Section 22300, for moneys earned by the Contractor and withheld by the City of Manteca to ensure the performance of the Contract, the Contractor may, at its option, choose to substitute securities meeting the requirements of said Public Contract Code Section 22300.

All bidders shall be licensed under the provisions of Chapter 9, Division 3 of the Business and Professions Code of the State of California to do the type of work contemplated in the project. In accordance with provisions of California Public Contract Code Section 3300, the City has determined that the **Contractor shall possess a valid Class A license** and it is recommended they are gold shovel certified at the time that the bid is submitted. Failure to possess the specified

license shall render the bid non-responsive.

The successful bidder will be required to furnish a Payment bond in the amount equal to one hundred percent (100%) of the Contract price, as well as a Faithful Performance Bond, in the amount equal to one hundred percent (100%) of the Contract price. All bonds submitted shall be from admitted sureties.

Each bidder shall submit with its bid a statement setting forth its experience on the forms included in the Bid Proposal.

Telephones will not be available to bidders for the preparation of the bids or for calling in bid results. Bid forms received after the designated time will not be accepted. Bidders and their authorized agents are invited to attend the bid opening.

No bidder may withdraw its bid for one hundred twenty (120) calendar days after the date set for the opening of bids.

The successful bidder must insure that employees and applicants for employment are not discriminated against on the basis of age, color, race, national origin, ancestry, religion, sex, sexual preference, marital status, and comply with the Americans With Disabilities Act.

The City reserves the right to reject any or all bids; to make any awards or any rejections in what it alone considers to be in the best interest of the City; and waive any irregularities in the bids. Each bid must be signed by or on behalf of the bidder and must be enclosed in a **DOUBLE SEALED ENVELOPES** with the following information on the inner envelope and outer envelope:

1. Name and address of bidder
2. Project for which the bid is being submitted
3. Date and time of bid opening

The outer envelope shall include:

- Contractor's bid bond
- Contractor's bid schedule
- Sealed inner envelope

The inner envelope shall include:

- All other bid forms other than Contractor's bid bond and Contractor's bid schedule

The envelope shall be addressed to the City of Manteca, City Clerk, 1001 West Center Street, Manteca, California 95337.

Dated: _____ City of Manteca

Cassandra Candini-Tilton, Director of Legislative Services / City Clerk

****END OF SECTION****

SECTION 00100 INSTRUCTIONS TO BIDDERS

Section 1.01 WORK TO BE DONE

It is the intention of the City to construct improvements as shown and set forth on the plans, and in the particular locations shown on the plans. All of the work is particularly set forth in the plans and specifications, and all of said work, together with all other work incidental thereto, is included. Insurance requirements shall be as specified in the attached EXHIBIT 1, INSURANCE REQUIREMENTS FOR CONSTRUCTION CONTRACTS

The work includes the furnishing of labor, materials, incidentals and equipment necessary for the construction of the **TRAFFIC SIGNAL UPDATE PROJECT CIP NO. 17058 HSIPL 5242 (034)** (Project). The Bidder shall be required to provide, at its own cost and expense, all necessary insurance, as required by law or these specifications, and shall pay the cost and expense of any and all incidental matters herein required.

2.00 EXAMINATION OF CONTRACT DOCUMENTS

Each bidder shall thoroughly examine and be familiar with the contract documents. The submission of a bid shall constitute an acknowledgment, upon which the City may rely, that the bidder has thoroughly examined and is familiar with the contract documents. The failure or neglect of a bidder to receive or examine any of the contract documents shall in no way relieve it from any obligation with respect to its proposal or to the Contract. No claim for additional compensation will be allowed which is based upon a lack of knowledge of any contract documents.

3.00 INSPECTION OF SITE

Bidders are required to inspect the site of the work to satisfy themselves by personal examination or by such other means, as they may prefer, of the location of the proposed work, and of the actual conditions, including subsurface, of and at the site of work. If, during the course of its examination, a bidder finds facts or conditions which appear to be in conflict with the letter or spirit of the bidding documents, the Bidder may apply to the City, in writing, for additional information and explanation before submitting its bid.

Submission of a bid by the bidder shall constitute conclusive evidence that, if awarded the Contract, it has relied and is relying on its own examination of (1) the site of the work, (2) access to the site, (3) all other data and matters requisite to the fulfillment of the work and on its own knowledge of existing facilities on and in the vicinity of the site of the work to be constructed under the Contract, (4) the conditions to be encountered, (5) the character, quality and scope of the proposed work, (6) the quality and quantity of the materials to be furnished, and (7) the requirements of the bid, the plans, the specifications, and the other contract documents.

The information provided by the City is not intended to be a substitute for, or a supplement to the independent verification by the bidder to the extent such independent investigation of site conditions is deemed necessary or desirable by the bidder.

4.00 INTERPRETATION OF CONTRACT DOCUMENTS

No oral representations or interpretations will be made to any bidder as to the meaning of the contract documents. Requests for an interpretation shall be made in writing and received by the deadline established in the Invitation to Bid to:

City of Manteca
Department of Engineering
Attention: Beshoy Demyan, PE
Senior Engineer
1001 West Center Street
Manteca, CA 95337
Fax: (209) 923-8956
Email: Bdemyan@manteca.gov

Requests to clarify possible ambiguous or incomplete statements or designs require issuance of an addendum by the City for the interpretation to become effective. All requests for clarifications shall be made in writing.

5.00 POSTPONEMENT OF OPENING

The City reserves the right to postpone the date and time for receiving and/or opening of bids at any time prior to the date and time established in the Invitation to Bid. Postponement notices shall be posted to the following website in the form of an addendum.

<https://www.manteca.gov/departments/engineering/project-information>

6.00 OPENING OF BIDS

All bids, irrespective of any irregularities or informalities, if received on time, will be opened and publicly read aloud at the time and place set forth in the Invitation to Bid. Bidders, their representatives and other interested persons may be present at the opening and reading of bids.

Any bids received after the scheduled closing time as set forth in the Invitation to Bid or as postponed by addenda will be considered non-responsive and will not be opened. Any such bids will be returned unopened to the Bidder. The public reading of each bid will include at least the following:

- A. Name and address of bidder.
- B. The total amount of bid.
- C. The nature and amount of the security furnished with the bid.

7.00 PREPARATION OF BID FORMS

Bid shall be made on the bid forms provided in the contract documents and must be submitted at the time and place stated in the Invitation to Bid. All blanks in the bid forms must be appropriately filled in either in ink or typed, and all prices must be stated in figures. All bid forms must be submitted in sealed envelopes bearing on the outside the name of the bidder, its address, and the name of the project for which the bid is submitted. It is the sole responsibility of the bidder to see that its bid is received in proper time. Any bid received after the scheduled closing time for receipt of bids will be returned to the bidder unopened. City shall not be responsible for errors or omissions in the bid. Bidders shall write their names on each bid form at the space provided.

Each bid must be signed by or on behalf of the bidder and must be enclosed in a **DOUBLE SEALED ENVELOPES** with the following information on the inner envelope and outer envelope:

Name and address of bidder
Project and project number for which the bid is being submitted
Date and time of bid opening

The outer envelope shall include:

- Contractor's bid bond
- Contractor's bid schedule
- Sealed inner envelope

The inner envelope shall include:

- All other bid forms other than Contractor's bid bond and Contractor's bid schedule

8.00 BIDDER'S SIGNATURE AND AUTHORITY

If the bid is made by an individual, this person's name, signature, and post office address must be shown; if made by a firm or partnership, the name and post office address of the firm or partnership, a list of the general partners, and the signature of at least one of the general partners must be shown, if made by a corporation, the bid shall show the name of the state under the laws of which the corporation is chartered, the name and post office address of the corporation, and the title of the person who signs on behalf of the corporation. If the bid is made by the corporation, a certified copy of the bylaws or resolution of the Board of Directors of the corporation shall be furnished showing the authority of the officer or agent signing the bid to execute Contracts on behalf of the corporation. If the bid is made by a joint venture, the bid shall be signed by a representative of one of the joint venture firms. Additionally, the bid shall include a copy of the resolution or agreement empowering the representative to execute the bid and bind the joint venture.

9.00 ERASURES AND CORRECTIONS

The bid submitted must not contain any erasure, interlineations, or other corrections unless each such correction is suitably authenticated by affixing, in the margin immediately

opposite the correction, the initials of the person or persons submitting the bid.

10.00 **BID IRREGULARITIES**

Changes in or additions to the bid form, recapitulations of the work bid upon, alternative bids, omissions, or any other modifications of the bid form which are not specifically called for in the contract documents may result in rejection of the bid by the City, as not being responsive to the Invitation to Bid. No oral or telephonic modification of any bid submitted will be considered.

The City reserves the right to reject any or all bids; to make any awards or any rejections in what it alone considers to be in the best interest of the City; and waive any irregularities in the bids.

11.00 **MODIFICATION OF BID**

On written request filed with the City, a bid already received may be modified or withdrawn at any time prior to the time established for receiving bids. The request must be executed by the bidder or its authorized representative as described in Paragraph 00100-8.00, **BIDDER'S SIGNATURE AND AUTHORITY**. Modifications shall be made in writing, executed, and submitted in the same form and manner as the original bid.

Withdrawal of a bid does not prejudice a bidder's right to submit a new bid within the time designated for the submission of bids. No bid may be withdrawn after the scheduled closing time except as provided in Paragraph 00100-12.00, **WITHDRAWAL OF BIDS**.

12.00 **WITHDRAWAL OF BIDS**

In accordance with Public Contract Code 5103, within five calendar days after the opening of bids, a bidder may withdraw its bid providing the bidder can establish to the City's satisfaction that a mistake was made in preparing the bid. A bidder desiring to withdraw shall give written notice to the City, specifying, in detail, how the mistake occurred and how the mistake made the bid materially different than it was intended to be. Withdrawal will not be permitted for mistakes resulting from errors in judgment or carelessness in inspecting the site of the work or in reading the contract documents.

The bidder is not relieved of their bid until notified by the City in writing.

Include in their Request for Withdrawal of Bid a statement and supporting documentation that describes the following in detail:

1. The mistake in their bid and how it was made.
2. How the mistake made the bid materially different than intended.
3. How the mistake was made in filling out the bid.
4. How the mistake was not resulting from errors in judgment or carelessness in inspecting the site of the work or in reading the contract documents.
5. Signed the certification by the owner or officer of the company authorized to sign for the Bid.

Submit the written Request for Bid Relief statement and supporting documentation to the Director at 1001 West Center Street, Manteca, CA 95337.

Certification shall include the following statement:

1. By my signature on this form, I certify, under penalty of perjury that the attached statement, including any supporting documents, are true and correct.
2. As well as date of signature, Signature of Bidder, and signatories title within the bidding organization.

13.00 **ADDENDA**

Addenda issued during the time of bidding shall become a part of the documents furnished bidders for the preparation of bids, shall be covered in the bids, and shall be made a part of the Contract. Each bid shall include specific acknowledgment in the space provided of receipt of all Addenda issued during the bidding period. Failure to so acknowledge may result in the bid being rejected as not responsive. Failure of any bidder to receive such Addenda shall not be grounds for non-compliance with the terms of the instructions.

14.00 **BID PRICES**

Bid prices shall include everything necessary for the completion of the work including but not limited to providing the materials, equipment, tools, plant and other facilities, and the management, superintendence, labor and services. Bid prices shall include allowance for all federal, state and local taxes

In the event of a difference between a price quoted in words and a price quoted in figures for the same quotation, the words shall be the amount bid. In the event that the product of a unit price and an estimated quantity does not equal the extended amount quoted, the unit price shall govern, and the correct product of the unit price and the estimated quantity shall be deemed to be the amount bid. If the sum of two or more items in a bidding schedule does not equal the total amount quoted, the individual item amounts shall govern and the correct total shall be deemed to be the amount bid.

The award of contract, if it is awarded, will be awarded to the lowest responsive, responsible Bidder whose proposal complies with all the requirements prescribed.

15.00 **BID GUARANTY**

The bid form shall be accompanied by a bid guaranty bond provided by an admitted surety insurer authorized to carry on business in the State of California with a minimum A - Class IV rating with Best's Rating Guide for payment to the City or meeting the following minimum requirements:

If the Best's Rating for any surety company who has furnished a bid guaranty for the bidder is less than A - Class IV and/or not Treasury Rated, bidder may be required to, within 5 calendar days of bid opening, submit to the City an original or certified copy of each of the following documents for each surety company which has furnished a bid guaranty for that bidder:

1. Appropriate authorization of the signatory to execute each bid guaranty.
2. A certificate of authority issued by the State Insurance Commissioner.
3. A certificate from the County Clerk that the above certificate is not ineffective;
and
4. The surety company's financial statement for the prior quarter as specified in Section 995.670 of the California Code of Civil Procedure.

Simultaneously with the submission of the documents described in the preceding paragraphs, the bidder shall also submit an affidavit or declaration, under penalty of perjury under the laws of the State of California, demonstrating the following facts for each bid guaranty submitted or to be submitted on the bidder's behalf.

1. That the surety company's assets exceed its liabilities by more than the amount of the bid guaranty or guaranties submitted on the bidder's behalf, and
2. That in issuing the bid guaranty or guaranties submitted on the bidder's behalf, the surety company shall be in full compliance with California Insurance Code Section 12090, supported by appropriate references to the surety company's most recent financial statement on file in the office of the State Insurance Commissioner.

Any bidder wishing to object to the sufficiency of any surety company used by another bidder shall comply fully with the provisions of Section 995.650 of the California Code of Civil Procedure.

The bid guaranty bond shall be in the sum of at least ten (10) percent of the total amount of the bid price, or, alternatively, by a certified or cashier's check, payable to the City in the sum of at least ten (10) percent of the total amount of the bid price. The bid guaranty bond shall be provided on the form included in Section 00410, BID GUARANTY BOND, of these contract documents.

The amount payable to the City under the bid guaranty bond, or the certified or cashier's check and the amount thereof, as the case may be, shall be forfeited to the City as liquidated damages in case of a failure or neglect of the bidder to furnish, execute, and deliver to the City the required performance and payment bonds, evidences of insurance, and to enter into, execute, and deliver to the City the Agreement on the form provided herewith, within ten (10) calendar days after receiving written notice from the City that the award has been made and the Agreement is ready for execution.

The bid guarantees of the three lowest bidders will be retained until the Agreement is signed, evidence of insurance provided, and satisfactory bonds furnished or other disposition made thereof. The bid guarantees of all bidders except the three lowest responsive bids will be returned within 15 calendar days after the bids are opened.

16.00 **QUALIFICATION OF BIDDER**

Each bidder shall complete and submit with their bid Section 00420, CERTIFICATION OF BIDDER'S EXPERIENCE AND QUALIFICATIONS.

Upon the request of City, any bidder whose bid is under consideration for the award of the Contract shall promptly submit satisfactory evidence showing the bidder's financial resources, its construction experience, and its organization's availability for the performance of the Contract.

The bidder may be required to establish, to the satisfaction of the City, the reliability and responsibility of the persons or entities proposed to furnish and perform the work described in the contract documents.

17.00 **SUBCONTRACTORS**

In accordance with California Public Contracting Code Section 4100, et. seq., the bidder shall list, in Section 00430, PROPOSED SUBCONTRACTORS, the name, portion of work to be performed, and location of the place of business for the following.

- 1) Each subcontractor who will perform work or labor or render service to the bidder in or about the construction of the work or improvement, in an amount in excess of one-half of one percent of the bidder's total bid.
- 2) Any subcontractor licensed by the State of California who, under subcontract to the bidder, will specially fabricate and install a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent of the bidder's total bid.

Failure to list the subcontractors defined in subparts 1) and 2) above will render the bid non-responsive and will be grounds for rejection of the bid. Failure to comply with the provisions of the California "Subletting and Subcontracting Fair Practices Act" shall make the Contractor subject to the sanctions as set forth in the Act.

18.00 **SUBSTITUTIONS DURING BIDDING**

Manufacturers or suppliers of materials and equipment may offer an alternative product to the Contractor and request that alternatives to specified products be considered equal. Inclusion of such alternatives in the bid is the responsibility of the Contractor. Inclusion should only be considered if the Contractor believes the offered alternative is equal in quality and performance to the specified product. You may submit requests for substitution of “or equal” items during the bidding process only. After award of the Contract, such offers of alternative products will be reviewed and processed as a substitution as provided under Section CONTROL OF MATERIALS.

19.00 **BIDDERS INTERESTED IN MORE THAN ONE BID**

No person, firm, or corporation, under the same or different name, shall make, file, or be interested in more than one bid for the same work unless alternate bids are called for.

Pursuant to Public Contract Code Section 7106, bidders shall execute and furnish with their bids Section 00480, NON-COLLUSION AFFIDAVIT. Reasonable grounds to believe that any individual, partnership, corporation, or combination is interested in more than one bid for the proposed work may cause rejection of all bids for parties involved.

A person, firm, or corporation may, however, submit subproposals or quote prices on materials to more than one bidder.

20.00 **SHEETING, SHORING AND BRACING**

Pursuant to the provisions of California Labor Code Section 6707, each bid submitted shall contain, in the bid item indicated, the amount included in the bid for adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life and limb in trenches and open excavation, which shall conform to applicable safety orders. By listing this sum, the bidder warrants that its actions pursuant to this bid item shall not impose tort liability on the City, the Designer, the Construction Manager, or their employees, agents, and subconsultants.

Pursuant to California Labor Code Section 6705, the Contractor shall submit a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such plan varies from the shoring system standards, the plan shall be prepared by a registered civil or structural engineer.

21.00 **WAGE RATES**

Pursuant to provisions of the Labor Code Section 1770, et. seq., of the State of California, the Director of the Department of Industrial Relations has ascertained the prevailing rate of wages of the locality in which the Work is to be performed and applicable to the work to be done. Prevailing wage for each job category shall be as published by Department of Industrial Relations at the time of project work.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Bidders shall complete the form in SB 96 COMPLIANCE AFFIDAVIT and submit with their Bid.

No Contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor code section 1771.1(a)]

No Contractor or subcontractor may be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

Contractor shall post job site notices prescribed by regulation.

All Contractors and subcontractors shall furnish electronic certified payroll records directly to the Labor Commissioner (aka Division of Labor Standards Enforcement).

22.00 OFFER OF ASSIGNMENT OF ANTITRUST ACTIONS

As provided by Section 7103.5, of the California Public Contract Code, in entering into a public works contract or subcontract, the Contractor or subcontractor offers and agrees to assign to the City all rights, title and interest in, and all causes of action it may have under Section 4 of the Clayton Act (15 U. S.C. Section 15) or under the Cartwright Act (Chapter 2) commencing with Section 16700 (of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services or materials pursuant to the public works contract or subcontract. This assignment shall be made and become effective at the time the City tenders final payment to the Contractor, without further acknowledgment by the parties.

23.00 ASSIGNMENT OF CONTRACT

Any attempted assignment by the Contractor of any contract to be entered into hereunder, or any part thereof, or of funds to be received thereunder by the Contractor, is void unless such assignment has had prior written approval of City and the Surety has been given due notice of such assignment in writing and has consented thereto in writing.

24.00 REJECTION OF BIDS

The City reserves the right to reject any or all bids; to make any awards or any rejections in what it alone considers to be in the best interest of the City; and waive any irregularities in the bids and further reserves the right to reject any bids which are:

- a) non-responsive (e.g.: bids which are incomplete, obscure, or irregular-, bids which omit a bid on any one or more items on which the bids are required, bids which are unbalanced-, bids accompanied by insufficient or irregular bid guaranties); or

- b) any bids from bidders who have previously failed to perform properly or to complete on time contracts of any nature with the City or other public agencies; or
- c) any bids from bidders who have a history of change orders in excess of 5% or failing to meet substantial completion by 5%; or
- d) any bid which fails to provide satisfactory documentation of the bidder's qualifications as required by Section 00100-16.00, QUALIFICATION OF BIDDER.

25.00 BONDS AND INSURANCE

The successful bidder, simultaneously with the execution of the Agreement, will be required to furnish a Payment Bond on forms provided by the City in an amount equal to one hundred percent (100%) of the Contract Price, a Faithful Performance Bond in an amount equal to one hundred percent (100%) of the Contract Price, the Workers Compensation Insurance Certificate, and evidences of insurance. Said insurance and bonds shall only use the forms attached and shall be secured from a surety company satisfactory to City with a minimum A -Class IV rating with Best's Rating Guide or meeting the following minimum requirements:

If the Best's Rating for any surety company from which the bidder intends to procure the payment bond, performance bond, or both, is less than A - Class IV and/or not Treasury Rated, bidder may be required to, within 5 working days after bid opening, submit to the City an original or certified copy of each of the following documents for each surety company from which the bidder intends to procure such bond or bonds:

1. Appropriate authorization of the signatory to execute each bond.
2. A certificate of authority issued by the State Insurance Commissioner.
3. A certificate from the County Clerk that the above certificate is not ineffective; and
4. The surety company's financial statement for the prior quarter as specified in Section 995.670 of the California Code of Civil Procedure.

Simultaneously with the submission of the documents described in the preceding paragraphs, the bidder shall also submit an affidavit or declaration, under penalty of perjury under the laws of the State of California, demonstrating the following facts for the bond or bonds submitted or to be submitted on the bidder's behalf.

1. That the surety company's assets exceed its liabilities by more than the amount of the bond or bonds submitted on the bidder's behalf, and
2. That in issuing the bond or bonds submitted on the bidder's behalf, the surety company shall be in full compliance with California Insurance Code Section 12090,

supported by appropriate references to the surety company's most recent financial statement on file in the office of the State Insurance Commissioner.

Any bidder wishing to object to the sufficiency of any surety company used by another bidder shall comply fully with the provisions of Section 995.650 of the California Code of Civil Procedure.

The form of Agreement, as provided in Section 00500, AGREEMENT, which the successful bidder as Contractor will be required to execute, and the forms of bonds as provided in Sections 00610, FAITHFUL PERFORMANCE BOND and 00620, PAYMENT BOND, which it will be required to furnish, shall be carefully examined by the bidder. The Faithful Performance Bond is to secure the faithful performance of the Contract, and the Payment Bond is to secure the payment of those to whom the bidder may become legally indebted for labor, materials, tools, equipment, or services of any kind used or employed by the bidder in performing the work.

26.00 **AWARD OF CONTRACT**

Within one hundred twenty (120) calendar days after the time of opening of the bids, the City will act either to accept a bid, to reject all bids or with the consent of the bidders and their sureties to extend the time in which the City may act. The acceptance of a bid will be evidenced by a Notice of Award of Contract in writing, delivered in person or by certified mail to the bidder whose bid is accepted. No other act of City will constitute acceptance of a bid. The issuance of a Notice of Award of Contract shall obligate the bidder whose bid is accepted to furnish performance and payment bonds and evidences of insurance, and to execute the Agreement in the form set forth in the contract documents. The Agreement will require the completion of the work according to the contract documents.

If award is made, it will be based on the lowest responsive, responsible bid.

26.01 **BIDDERS' SECURITIES**

The City keeps the securities of the bidders until the contract has been executed. The other bidders' securities and bidders' bonds, are returned upon determination of the lowest responsive bidder and contract execution.

27.00 **EXECUTION OF CONTRACT**

The Agreement shall be executed by the successful bidder and returned, together with the Contract bonds and evidences of insurance, within fifteen (15) calendar days after receiving written Notice of the Award of the Contract. Time is of the essence in this regard. After execution by City, one copy of the Agreement shall be returned to Contractor.

Failure or refusal to enter into a Contract as herein provided or to conform to any of the stipulated requirements in connection therewith shall be just cause for annulment of the award and the forfeiture of the proposal guaranty. If the successful bidder refuses or fails to execute the agreement, the City may award the contract to the second lowest responsible bidder. If the second lowest responsible bidder refuses or fails to execute the agreement,

the City may award the contract to the third lowest responsible bidder. On the failure or refusal of such second or third lowest bidder to execute the agreement, such bidder's guarantees shall be likewise forfeited to the City. The work may then be re-advertised.

28.00 CONSTRUCTION DOCUMENTS

Within five (5) calendar days after the execution of the Agreement by the City, the City will furnish electronic copies (PDF's) of the Plans and Specifications to the Contractor for their use.

I, the undersigned, certify and declare that I have read and understood the INSTRUCTIONS TO BIDDERS.

Signature _____

Date _____

****END OF SECTION***

SECTION 00200 INFORMATION AVAILABLE TO BIDDERS

Refer to Project Contract Documents

***** END OF SECTION *****

SECTION 00300 BID FORM
(To be submitted with bid)

1. Enter Into Agreement

The undersigned, as bidder, declares that we have received and examined the Contract Documents entitled **TRAFFIC SIGNAL UPDATE PROJECT CIP NO. 17058 HSIPL 5242 (034)**, and will contract with the City, on the form of Agreement provided herewith, to do everything required for the fulfillment of the Contract Document for the construction of said Project at the prices and on the terms and conditions herein contained.

2. Bidder Accepts

Bidder accepts all of the terms and conditions of the Invitation to Bid and Instructions to Bidders, including, without limitation, those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for the period specified for Notice of Award after the day of Bid opening. Bidder will sign and deliver the required number of counterparts of the Agreement with the Bonds and other documents as detailed in the Instruction to Bidders.

3. Bidder's Representations

In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:

- a. Bidder has examined and carefully studied the Bidding Documents and the Addenda.

We acknowledge that the following addenda numbers have been received and have been examined as part of the Contract Documents.

<u>Addenda No.</u>	<u>Date Received</u>	<u>Initials</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

- b. Bidder has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work.
- c. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
- d. Bidder has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in Paragraph 4.02.A. of the General Conditions.

Bidder accepts the determination set forth in Paragraph SC-4.02. of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which Bidder is entitled to rely as provided in Paragraph 00700-4.02. of the General Conditions.

Bidder acknowledges that such reports and drawings are not Contract Documents and may not be complete for Bidder's purposes.

Bidder acknowledges that Owner and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the site.

- e. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Bidder and safety precautions and programs incident thereto.

Bidder does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.

- f. Bidder is aware of the general nature of Work to be performed by Owner and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.
- g. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- h. Bidder has given Department and Construction Manager written notice of all conflicts, errors, ambiguities or discrepancies in the Contract Documents and the written resolution thereof by Engineer is acceptable to Bidder, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted. Where conflicts, errors, ambiguities or discrepancies have been discovered in or between Contract Documents and/or other related documents, and where said conflicts, etc., have not been resolved through the interpretations or clarifications by Engineer as described in the Instructions to Bidders, because of insufficient time or otherwise, Bidder has included in the Bid the greater quantity or better quality of Work, or compliance with the more stringent requirement resulting in a greater cost.
- i. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly

induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

4. Bid Schedule

Bidder will complete the Work in accordance with the Contract Documents for the following prices(s):

BASE BID SCHEDULE

	Item Description	Unit^a	Estimated Quantity	Unit Price	SubTotal
1	Mobilization	LS	1		
2	Traffic Control System	LS	1		
3	Lead Compliance Plan	LS	1		
4	Prepare Water Pollution Control Program	LS	1		
5	Prepare Storm Water Pollution Prevention Plan	LS	1		
6	Monument Preservation	LS	1		
7	Existing Utility Verification	LS	1		
8	Central Management System	LS	1		
9	Fiber Optic System Testing	LS	1		
10	Wireless System Testing	LS	1		
11	Remove Existing Sign Mounted on Mast Arm	EA	7		
12	Remove Existing Signal Cabinet	EA	30		
13	Remove Existing Battery Backup Unit	EA	2		
14	Remove Existing Controller	EA	40		
15	Remove Signal Head	EA	59		
16	Remove Signal Head Mount	EA	29		
17	Remove Emergency Vehicle Pre-Emption Device	EA	2		
18	Furnish and Install 332LS Cabinet	EA	30		
19	Furnish and Install Battery Backup System and Enclosure and Foundation	EA	4		
20	Furnish and Install 2070LX Controller	EA	40		
21	Furnish and Install Sign on Signal Standard	EA	7		
22	Furnish and Install 12x3 Signal Head with Yellow retroreflective Border	EA	59		
23	Furnish and Install Signal Head Mount	EA	29		
24	Furnish and Install Yellow retroreflective Border Tape on Existing Signal Backplate	EA	126		
25	Furnish and Install Emergency Vehicle Detection System	EA	2		
26	Furnish and Install Integrated Radio and Mounting	EA	12		
27	Furnish and Install Integrated Radio, Omni-Directional Antennas, and Mounting	EA	31		
28	Furnish and Install Power Over Ethernet Cable	LF	6920		

29	Furnish and Install 2" Conduit	LF	135		
30	Furnish and Install 4" Conduit with Four 1" HDPE SDR 11 Innerduct Under Train Tracks	LF	565		
31	Furnish and Install 4" Conduit with Four 1" HDPE SDR 11 Innerduct	LF	8500		
32	Furnish and Install 12-Strand SMFO Cable	LF	1350		
33	Furnish and Install 96-Strand SMFO Cable	LF	1750		
34	Furnish and Install 144-Strand SMFO Cable	LF	12158		
35	Furnish and Install Pull Tape	LF	39080		
36	Furnish and Install 1-18 AWG Tracer Wire	LF	10250		
37	Furnish and Install Fabric Innerduct	LF	900		
38	Furnish and Install #8 Cable	LF	250		
39	Furnish and Install No. 5 Pull Box	EA	2		
40	Furnish and Install No. 6E Pull Box	EA	14		
41	Furnish and Install Splice Vault	EA	9		
42	Furnish and Install Splice Closure	EA	4		
43	Furnish and Install 332LS Hub Cabinet and Foundation	EA	2		
44	Furnish and Install Surge Protector Power Strip	EA	43		
45	Furnish and Install 12-Strand Fiber Distribution Unit	EA	8		
46	Furnish and Install Ethernet Switch (Traffic Signal Cabinet)	EA	45		
47	Furnish and Install 20A Circuit Breaker	EA	2		
48	Furnish and Install Fiber Patch Cords	EA	66		
49	Furnish and Install Type 2 Surge Protection	EA	2		
50	Furnish and Install Power Distribution Unit	EA	4		
51	Furnish and Install Uninterruptible Power Supply Assembly(Hub Cabinet)	EA	4		
52	Furnish and Install External Batteries	EA	8		
53	Furnish and Install Ethernet Switch (Hub Cabinets)	EA	4		
54	Furnish and Install Ethernet Switch (Telecom Room)	EA	1		
55	Furnish and Install 1 Gbps Fiber Transceiver	EA	56		
56	Furnish and Install 10 Gbps Fiber Transceiver	EA	15		
57	Furnish and Install Uninterruptible Power Supply Assembly (Telecom Room)	EA	2		
58	Furnish and Install 144-Strand Fiber Distribution Unit	EA	4		
59	Furnish and Install Cellular Gateway	EA	2		
60	Furnish and Install Nema 3R Enclosure	EA	1		
61	Furnish and Install 2" Indoor Conduit	LF	80		
62	Furnish and Install Conduit Clamp Assembly	EA	22		

63	Furnish and Install Conduit Hanger Assembly	EA	3		
64	Drill Through Wall	EA	3		
65	Furnish and Install Corrugated Flexible Conduit	LF	75		
66	Furnish and Install Rack Cable Assembly	EA	2		
67	Railroad Relations and Insurance Requirements	LS	1	\$15000	\$15000
68	Trainees	EA	6	\$ 800	\$ 4800

^aLS=Lump Sum, LF=Linear Feet, EA=Each

Total Bid (Items 1-68) (written out) _____
 _____ Dollars.

Date Contractor is available to start work: _____

Alternate BID SCHEDULE

	Item Description	Unit ^a	Estimated Quantity	Unit Price	SubTotal
1A	Furnish and Install 4" Conduit	LF	8500		
2A	Furnish and Install Pull Tape	LF	9770		
3A	Furnish and Install Splice Vault	EA	36		

^aLS=Lump Sum, LF=Linear Feet, EA=Each

Total Bid (Items 1A-3A) (written out) _____
 _____ Dollars.

Date Contractor is available to start work: _____

The City reserves the right to select the lowest responsible and responsive bidder based on the total base bid, alternate bid, and/or based upon the date the Contractor is available to start work, and/or based on reference checks, and/or past experience, and/or selection panel’s professional judgement regardless of the lowest bid amount.

In case of any discrepancy between unit prices and total cost of an item, the unit price shall prevail. The bid items listed above are intended to encompass all construction work as called out in these Contract specifications and as shown on the plans. If an item of work is not specifically mentioned, it shall be assumed to be included in the most appropriate bid item.

The Contractor shall perform, with the Contractor’s own organization, contract work amounting to not less than 50 percent of the original total contract price, except that any designated “Specialty Items” may be performed by subcontract and the amount of any designated “Specialty Items” performed by subcontract may be deducted from the original total contract price before computing the amount of work required to be performed by the Contractor with the Contractor’s own organization. When items of work in the Engineer’s Estimate are preceded by the letters (S) or (S-F), those items are designated as “Specialty Items”. Where an entire item is subcontracted, the value of work subcontracted will be based on the contract item bid price. When a portion of an item is subcontracted, the value of work subcontracted will be based on the estimated

percentage of the contract item bid price, determined from the information submitted by the Contractor, subject to approval by the Department.

If this proposal shall be accepted and the undersigned shall fail to contract as aforesaid and to give the two (2) bonds in the sums to be determined as aforesaid, with surety satisfactory to the City Council of the City of Manteca, within ten (10) calendar days after the bidder has received notice from the Department that the contract is ready for signature, the City Council may, at its option, determine that the bidder has abandoned the contract, and thereupon this proposal and the acceptance thereof shall be null and void, and the forfeiture of such security accompanying this proposal shall be in accordance with Public Contract Code Section 20418.

The undersigned understands and agrees that the City will not be responsible for any error or omissions on the part of the undersigned in making this proposal.

5. Attached Documents

We agree that the following shall be attached hereto and made a part of this bid.

<u>SECTION</u>	<u>TITLE</u>
00100	Instructions to Bidders
00300	Bid Form
00301	Authority to Bid
00410	Bid Guaranty Bond
00420	Certification of Bidder's Experience and Qualifications
00425	CA Government Code Section 14310 Questionnaire
00429	Exhibit 12-B: Bidder's List of Subcontractor (DBE and Non-DBE)
00430	Proposed Subcontractors
00431	Equal Employment Opportunity Certification
00432	Public Contract Code Section 10285.1 Certification
00433	Public Contract Code Section 10232 Certification
00434	Debarment and Suspension Certification
00435	City of Manteca Local Business Enterprise (Local Vendor) Preference
00436	Nonlobbying Certification
00437	Disclosure of Lobbying Activities
00438	Exhibit 15-G: Construction Contract DBE Commitment & Exhibit 15-H: Proposer/Contractor Good Faith Efforts
00439	Exhibit 12-G: Required Federal-Aid Contract Language
00440	Site Visit Affidavit
00450	Schedule of Major Equipment and Material Supplies
00470	Acknowledgement of Insurance Requirements
00480	Non-Collusion Affidavit
00490	DIR Compliance Affidavit
00491	Statement Acknowledging Penal and Civil Penalties Concerning The Contractors' Licensing Laws

6. Completion

We agree, if our bid is accepted and a Contract for Performance of the Work is entered into with the City, to so plan work and to prosecute it with such diligence that the work shall be completed within the time stipulated.

If our bid is accepted, we agree to sign the Agreement without qualifications and to furnish the performance and payment bonds and the required evidences of insurance within 15 calendar days after receiving written Notice of Award of the Contract.

Attached is a bid guaranty bond as required.

Name of Bidder

7. Contractor's License and Address for Communications

The undersigned certifies that
the undersigned holds California Contractor's License, Class A, C- __, number ____, expiration
date _____.

Name of Bidder

Signature of Bidder

Title of Signator

Address of Bidder

Witness

Title of Witness

State of Incorporation

Phone Number

FAX Number

****END OF SECTION****

SECTION 00301 AUTHORITY TO BID
(To be submitted with bid)

I, the bidder, am a (check one below)

- An individual, bidder's name, signature, and physical address (not P.O. Box) must be shown.
- A firm or partnership, a list of the partners, and the signature of at least one of the general partners must be shown.
- A corporation, the bid shall show the name of the state under the laws of which the corporation is chartered, the name and post office address of the corporation, and the title of the person who signs on behalf of the corporation. If the bid is made by a corporation, a certified copy of the bylaws or resolution of the Board of Directors of the corporation shall be furnished showing the authority of the officer signing the bid to execute contracts on behalf of the corporation.
- If the bid is made by a joint venture, the bid shall be signed by a representative of one of the joint venture firms. Additionally, the bid shall bind the joint venture. The required information shall be attached to the Bid Form and submitted with the bid.

By my signature below I certify under the penalty of perjury that I have the authority to bind myself/firm/partnership/corporation/joint venture to the subject project bid and have attached all required documentation as detailed above.

Bidders Authorized Agent

Signature	Address
Name: _____	
Title: _____	

*** END OF SECTION ***

SECTION 00410 BID GUARANTY BOND
(To be submitted with bid)

The attached form shall be turned in with the bid as the Bid Guaranty Bond with the form signed and notarized by the surety. Alternately, the bidder may submit the following forms of bidder's security:

- a. Cash
- b. A cashier's check made payable to the City.
- c. A certified check made payable to the City.

If a bid guaranty bond is submitted on a form other than that provided herein, then the alternate bid guaranty bond must meet all the requirements of the form provided herein. If the alternate bid guaranty bond is not acceptable to the City, then the bid may be subject to rejection. The City shall be the sole judge as to whether the alternate bid guaranty bond form is acceptable.

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WE, _____ AS PRINCIPAL, AND _____ AS SURETY, are held and firmly bound unto the City of Manteca in the penal sum of 10 PERCENT OF THE TOTAL AMOUNT OF THE BID of the Principal above named, submitted by said Principal to the City of Manteca for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made to the City of Manteca to which said bid was submitted, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents, in no case shall the liability of the surety hereunder exceed the sum of \$_____.

THE CONDITION OF THIS OBLIGATION IS SUCH

THAT WHEREAS, the Principal has submitted the above-mentioned bid to the City of Manteca, aforesaid, for certain construction specifically described as follows, for which bids are to be opened at _____.

FOR: _____

NOW, THEREFORE, if the aforesaid Principal is awarded the contract and, within the time and manner required under the specifications, after the prescribed forms are presented for signature, the Principal enters into a written contract in the prescribed form, in accordance with the bid, and files two bonds with the City of Manteca, one to guarantee faithful performance, and the other to guarantee payment for labor and materials as required by law, and provide certificate of insurance coverage required by the contract documents, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect, and the surety shall pay said penal sum of City of Manteca on demand.

IN WITNESS WHEREOF, we have hereunto set our hand on this ____ day of _____, 20____.

Title of Signator (seal)

Title of Signator (seal)

Signature of Principal

Signature of Surety

Best Rating: _____

Address:

Address:

Note: Signatures of those executing for the surety must be properly acknowledged.

****END OF SECTION****

SECTION 00420 CERTIFICATION OF BIDDER'S EXPERIENCE AND QUALIFICATIONS

(To be submitted with bid)

1.00 QUALIFICATIONS

By signing in the area indicated below, the Bidder acknowledges and certifies the following:

- A. The Bidder – at the time of bidding, award, and throughout the period of the contract – shall be licensed under the provisions of Chapter 9, Division 3, of the Business and Professions Code of the State of California, to do the type of work contemplated in the contract documents. In accordance with Public Contract Code Section 20103.5, any Bidder not so licensed shall be subject to all legal penalties imposed by law, including, but not limited to, any appropriate disciplinary action by the Contractor's State License Board.
- B. The Bidder is skilled and regularly engaged in the general class and type of work called for in the contract documents.
- C. The Bidder is competent, knowledgeable, and has special skills required for the nature, extent, and inherent conditions of the work to be performed.
- D. The Bidder has the financial ability and experience to perform the work as indicated in the Project Document.
- E. The Bidder acknowledges that there may be certain peculiar and inherent conditions existent in the construction of the particular facilities which may create, during the construction program, unusual or peculiar unsafe conditions hazardous to persons and property. Bidder expressly acknowledges that it is aware of such peculiar risks and that it has the skill and experience to foresee and to adopt protective measures to adequately and safely perform the construction work with respect to such hazards.

2.00 CONTRACTOR EXPERIENCE AND QUALIFICATION REQUIREMENTS

(To be submitted with bid)

To be considered for award, Bidder, as a company, shall have substantially completed within the last five (5) years, at least three (3) projects of similar size.

- 1. Project Name: _____
Owner: _____
Construction Cost: _____
Construction Change orders, number/total Cost: _____
Owner's Representative: _____
Owner's Telephone No.: (____) _____
Date of Substantial Completion: _____
Percent Change Order: _____

2. Project Name: _____
Owner: _____
Construction Cost: _____
Construction Change orders, number/total Cost: _____
Owner's Representative: _____
Owner's Telephone No.: (____) _____
Date of Substantial Completion: _____
Percent Change Order: _____

3. Project Name: _____
Owner: _____
Construction Cost: _____
Construction Change orders, number/total Cost: _____
Owner's Representative: _____
Owner's Telephone No.: (____) _____
Date of Substantial Completion: _____
Percent Change Order: _____

Signed this _____ day of _____, 20_____.

Name of Bidder

Contractor's License No.

Expiration Date

Signature of Bidder

Title of Signator

*** END OF SECTION ***

SECTION 00425 CA GOVERNMENT CODE SECTION 14310 QUESTIONNAIRE
 (To be submitted with bid)

Pursuant to California Government Code 14310, the bidder shall complete, under penalty of perjury, the following questionnaire below.

1. Has the bidder, any officer of the bidder, or any employee of the bidder who has a proprietary interest in the bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of the law or a safety regulation?	YES ___ NO ___
2. Has a contractor’s license held by the Contractor’s firm and/or any owner, officer or partner of the Contractor’s firm been revoked at anytime in the last five years?	YES ___ NO ___
3. Within the last five years, has a surety firm completed a contract on the Contractor’s firms behalf, or paid for completion of a contract to which the Contractor’s firm was a party, because the Contractor’s firm was considered to be in default or was terminated for cause by the project owner?	YES ___ NO ___
4. At the time of submitting this questionnaire, is the Contractor’s firm ineligible to bid on or be awarded a public works contract, or perform as a contractor on a public works contract, pursuant to either California Labor Code Section 1777.1 (prevailing wage violations) or Labor Code Section 1777.7 (apprenticeship violations)?	YES ___ NO ___
5. At any time in the last five years, has the Contractor’s firm, or any of its owners, officers or partners been convicted of a crime involving the awarding of a contract for a government/public construction project, or the bidding or performance of a government/public contract?	YES ___ NO ___
6. Within the last five years, has the Contractor’s firm been assessed liquidated damages on any public contract?	YES ___ NO ___
7. Within the last three years has the Contractor’s firm or representatives been debarred from bidding on, or completing any public works construction contract for any reason?	YES ___ NO ___

8. Has CAL OSHA assessed penalties against the Contractor’s firm for any serious or willful violation occurring on a construction project at anytime in the last three years?	YES ___ NO ___
9. In the past three years, have civil penalties or Notice of Complaint (letter of warning) been issued or assessed against the Contractor’s firm pursuant to California Labor Code 1777.7 for violation of California public works apprenticeship requirements by the California Division of Apprenticeship Standards (DAS)?	YES ___ NO ___
10. In the past three years, has a public agency in California withheld contract payments or assessed penalties against the Contractor’s firm for violation of public works prevailing wage requirements?	YES ___ NO ___
11. Has the Contractor’s firm been assessed penalties for violation of public works prevailing wage requirements by the DLSE (Labor Commissioner)?	YES ___ NO ___
12. Does the Contractor’s firm have any pending complaints or investigations by a regulatory authority?	YES ___ NO ___

I, the undersigned, certify and declare that I have read and understood the questionnaire. I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Date _____

Signature _____

****END OF SECTION****

SECTION 00429 EXHIBIT 12-B BIDDER'S LIST OF SUBCONTRACTOR (DBE AND NON-DBE)

Exhibit 12-B: Bidder's List of Subcontractor (DBE and Non-DBE) - Part 1

As of March 1, 2015 Contractors (and sub-contractors) wishing to bid on public works contracts must be registered with the State Division of Industrial Relations and certified to bid on Public Works contracts. Please register at <https://www.dir.ca.gov/Public-Works/Contractor-Registration.html>. The local agency will verify registration of all contractors and subcontractors on public works projects at bid and thereafter annually to assure that yearly registration is maintained throughout the life of the project.

In accordance with Title 49, Section 26.11 of the Code of Federal Regulations, and Section 4104 of the Public Contract Code of the State of California, as amended, the following information is required for each sub-contractor who will perform work amounting to more than one half of one percent (0.5%) of the Total Base Bid or \$10,000 (whichever is greater).

FEDERAL PROJECT NUMBER:	
-------------------------	--

Photocopy this form for additional firms.

Subcontractor Name & Location	Line Item & Description	Subcontract Amount	Percentage of Bid Item Subcontracted	Contractor License Number	DBE (Y/N)	DBE Cert Number	Annual Gross Receipts	
				DIR Reg Number				
NAME							<small>< \$1 million</small>	
							<small>< \$5 million</small>	
City, State							<small>< \$10 million</small>	
							<small>< \$15 million</small>	
							<small>Age of Firm in years</small>	
NAME							<small>< \$1 million</small>	
							<small>< \$5 million</small>	
City, State							<small>< \$10 million</small>	
							<small>< \$15 million</small>	
							<small>Age of Firm in years</small>	
NAME							<small>< \$1 million</small>	
							<small>< \$5 million</small>	
City, State							<small>< \$10 million</small>	
							<small>< \$15 million</small>	
							<small>Age of Firm in years</small>	
NAME							<small>< \$1 million</small>	
							<small>< \$5 million</small>	
City, State							<small>< \$10 million</small>	
							<small>< \$15 million</small>	
							<small>Age of Firm in years</small>	
NAME							<small>< \$1 million</small>	
							<small>< \$5 million</small>	
City, State							<small>< \$10 million</small>	
							<small>< \$15 million</small>	
							<small>Age of Firm in years</small>	
NAME							<small>< \$1 million</small>	
							<small>< \$5 million</small>	
City, State							<small>< \$10 million</small>	
							<small>< \$15 million</small>	
							<small>Age of Firm in years</small>	
NAME							<small>< \$1 million</small>	
							<small>< \$5 million</small>	
City, State							<small>< \$10 million</small>	
							<small>< \$15 million</small>	
							<small>Age of Firm in years</small>	
NAME							<small>< \$1 million</small>	
							<small>< \$5 million</small>	
City, State							<small>< \$10 million</small>	
							<small>< \$15 million</small>	
							<small>Age of Firm in years</small>	

Distribution – Original: Local Agency File; Copy: DLAE w/Award Package

Bidder's List of Subcontractor (DBE and Non-DBE) - Part 2

In accordance with Title 49, Section 26 of the Code of Federal Regulations, the Bidder shall list all subcontractors who provided a quote or bid but **were not selected** to participate as a subcontractor on this project.

FEDERAL PROJECT NUMBER:	
-------------------------	--

Photocopy this form for additional firms.

Subcontractor Name & Location	Line Item & Description	Subcontract Amount	Percentage of Bid Item Subcontracted	Contractor License Number	DBE (Y/N)	DBE Cert Number	Annual Gross Receipts	
				DIR Reg Number			< \$1 million	Age of Firm in years
NAME							< \$1 million	
							< \$5 million	
							< \$10 million	
City, State							< \$15 million	
							Age of Firm in years	

Distribution – Original: Local Agency File; Copy: DLAE w/Award Package

*** END OF SECTION ***

SECTION 00430 PROPOSED SUBCONTRACTORS
 (To be submitted with bid)

Pursuant to California Public Contracting Code, Section 4100 et. seq., the following list gives the name, business address, and portion of work (description of work to be done) for each subcontractor that will be used in the work if the bidder is awarded the Contract. (Additional supporting data may be attached to this page. Each page shall be sequentially numbered, and headed "Proposed Subcontractors" and shall be signed.)

Name	CLSB License Number & DIR Registration No.	Description of Work	% of Work	¹ Status
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

 Name of Bidder

¹ Status **M = Minority Owned Business Enterprise.**
 W = Women Owned Business Enterprise.

SECTION 00431 EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION
(To Be Submitted with Bid)

I the bidder _____, and proposed subcontractor(s) _____, hereby certify under penalty of perjury that the foregoing is true and correct:

I/we has/have _____, has/have not _____, participated in a previous contract or subcontract subject to the equal opportunity clauses, as required by Executive Orders 10925, 11114, or 11246, and that, where required, he has filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filling requirements.

Note: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b) (1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of \$10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

The bidder must place a checkmark after "has/have" or "has/have not" in one of the blank spaces provided. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Bidders Name: _____

Date: _____

Bidders Signature: _____
Authorized Agent

*** END OF SECTION ***

SECTION 00432 PUBLIC CONTRACT CODE SECTION 10285.1 CERTIFICATION
(To Be Submitted with Bid)

In conformance with Public Contract Code Section 10285.1 (Chapter 376, Stats. 1985), the bidder hereby declares under penalty of perjury under the laws of the State of California that the bidder has ____, has not ____ been convicted within the preceding three years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or Federal antitrust law in connection with the bidding upon, award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or the Trustees of the California State University.

The term "bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

Note: The bidder must place a checkmark after "has" or "has not" in one of the blank spaces provided. The above Statement is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

PUBLIC CONTRACT CODE SECTION 10162 QUESTIONNAIRE

In conformance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire:

Has the bidder, any officer of the bidder, or any employee of the bidder who has a proprietary interest in the bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?
Yes _____ No _____

If the answer is yes, explain the circumstances in the following space

*** END OF SECTION ***

SECTION 00433 PUBLIC CONTRACT CODE SECTION 10232 CERTIFICATION
(To Be Submitted with Bid)

I the bidder _____, In accordance with Public Contract Code Section 10232, the Contractor, hereby state under penalty of perjury, that:

- No more than one final unappealable finding of contempt of court by a federal court has been issued against the Contractor within the immediately preceding two year period because of the Contractor's failure to comply with an order of a federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

The bidder must place a checkmark in one of the box above. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Bidders Authorized Agent

Signature
Name: _____
Title: _____

*** END OF SECTION ***

SECTION 00434 DEBARMENT AND SUSPENSION CERTIFICATION
(To Be Submitted with Bid)

I the bidder _____, In accordance with Title 49, Code of Federal Regulations, Part 29, hereby state under penalty of perjury, that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, manager:

- Is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal agency.
- Has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal agency within the past 3 years
- Does not have a proposed debarment pending.
- Has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

The bidder must place a checkmark in the applicable box(es) above. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution or administrative sanctions.

Bidders Authorized Agent

Signature
Name: _____
Title: _____

*** END OF SECTION ***

SECTION 00435 CITY OF MANTECA LOCAL BUSINESS ENTERPRISE (LOCAL VENDOR) PREFERENCE

1. RECITALS

1. Whereas it is the responsibility of the City to assure that all competitive bids for services, supplies and projects, as well as all professional services, are comprehensively reviewed and evaluated by City staff to ensure the best quality of work is received for the least amount of taxpayer money; and
2. Whereas the City is desirous of providing a preference for local business enterprises (vendors), in an attempt to keep as many local jobs as local as possible, and
3. Whereas the City hopes to balance this preference with assuring the public that the best enterprise/vendor is selected for each and every City contract.

2. POLICY

Definition of “Local Business Enterprise (LBE):” A business enterprise, including but not limited to a sole proprietorship, partnership or corporation, which has a legitimate business presence in the incorporated City limits of the City of Manteca. Evidence of legitimate presence in Manteca shall include:

- A. Having a current Manteca business license; and
- B. Having either of the following types of offices operating legally within the City of Manteca:
 1. The contractor’s principal office; or
 2. The contractor’s regional, branch or satellite office with at least one full-time employee located in the corporate boundaries of the City of Manteca. A post office box address alone does not constitute a “Local Business Enterprise.”

Public, Competitive Bids:

If two or more bids received from responsible bidders are for the same total amount or unit price – quality and service being equal – preference shall be given to the LBE.

In the event two or more bids are received and they are not for the same total amount or unit price, and a bid submitted by **a qualified LBE is within 5% (total net cost)** of the lowest bid or quote, the LBE may be deemed to be the lowest bidder if the LBE agrees, in writing within one business day, to reduce its bid to match the bid or quote of the lowest bidder, providing that the City determines the LBE to be a responsible bidder.

Professional Services:

For professional services not requiring formal bids or quotations, vendor selection is based primarily on qualifications, project understanding and schedule, with cost a secondary concern. Nonetheless, a proposal submitted by a qualified LBE will be taken into account in reaching a final consultant selection decision. A qualified **LBE will be provided 5 points out of 100 in scoring the proposals.**

CITY OF MANTECA LOCAL BUSINESS ENTERPRISE
(To be submitted with bid)

Are you a local business enterprise according to this policy?

Yes _____ No _____

If the answer is yes, complete the following:

City of Manteca Business License Number: _____

Address of local office with at least one full-time employee:

I certify under penalty of perjury that the foregoing is true and correct.

Bidders Name: _____

Date: _____

Bidders Signature: _____
Authorized Agent

SECTION 00436 NON LOBBYING CERTIFICATION
(To Be Submitted with Bid)

I the bidder _____, in accordance with Section 1352, Title 31 of the US Code, hereby state under penalty of perjury, that, to the best of my knowledge and belief, that:

- 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 agreements not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal agency.
- 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 of Lobbying Activities," in conformance with its instructions.
- 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 section 1352, title 31, U.S. Code. 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.
- I shall require that the language of this certification be included in the award documents for all subcontractors at all tiers and that all subrecipients shall certify and disclose accordingly.

The bidder must place a checkmark in the applicable box(es) above. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Bidders Authorized Agent

Signature
Name: _____
Title: _____

*** END OF SECTION ***

SECTION 00437 DISCLOSURE OF LOBBYING ACTIVITIES

CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) 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 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 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.

(2) 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 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 of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents of all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub- recipients shall certify and disclose accordingly.

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 section 1352, title 31, United States Code. 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.

Organization: _____

Street address: _____

City, State, Zip: _____

CERTIFIED BY: (type or print)

TITLE:

(signature) (date)

Approved by OMB

0348-0046

Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352 (See reverse for public burden disclosure)

1. Type of Federal Action: a. contract _____ b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: a. bid/offer/application _____ b. initial award c. post-award	3. Report Type: a. initial filing _____ b. material change For material change only: Year _____ quarter _____ Date of last report _____
4. Name and Address of Reporting Entity: _____ Prime _____ Subawardee Tier _____, if Known: Congressional District, if known:	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Congressional District, if known:	
6. Federal Department/Agency:	7. Federal Program Name/Description: CFDA Number, if applicable: _____	
8. Federal Action Number, if known:	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i>	b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i>	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____	
Federal Use Only	Authorized for Local Reproduction Standard Form - LLL (Rev. 7-97)	

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31

U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitations for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Included prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.

(b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter Last Name, First Name, and Middle Initial (MI).
11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 2050

*** END OF SECTION ***

SECTION 00438 EXHIBIT 15-G CONSTRUCTION CONTRACT DBE COMMITMENT & EXHIBIT 15-H GOOD FAITH EFFORTS

Local Assistance Procedures Manual

Exhibit 15-G
 Construction Contract DBE Commitment

Exhibit 15-G: Construction Contract DBE Commitment

1. Local Agency: _____ 2. Contract DBE Goal: _____
 3. Project Description: _____
 4. Project Location: _____
 5. Bidder's Name: _____ 6. Prime Certified DBE: 7. Bid Amount: _____
 8. Total Dollar Amount for **ALL** Subcontractors: _____ 9. Total Number of **ALL** Subcontractors: _____

10. Bid Item Number	11. Description of Work, Service, or Materials Supplied	12. NAICS or Work Category Codes	13. DBE Certification Number	14. DBE Contact Information (Must be certified on the date bids are opened)	15. DBE Dollar Amount

Local Agency to Complete this Section upon Execution of Award		16. TOTAL CLAIMED DBE PARTICIPATION	
22. Local Agency Contract Number:			\$
23. Federal-Aid Project Number:			%
24. Bid Opening Date:			
25. Contract Award Date:			
26. Award Amount:		IMPORTANT: Identify all DBE firms being claimed for credit, regardless of tier. Names of the First Tier DBE Subcontractors and their respective item(s) of work listed above must be consistent, where applicable with the names and items of the work in the "Subcontractor List" submitted with your bid. Written confirmation of each listed DBE is required.	
Local Agency certifies that all DBE certifications are valid and information on this form is complete and accurate.			
27. Local Agency Representative's Signature	28. Date	17. Preparer's Signature	18. Date
29. Local Agency Representative's Name	30. Phone	19. Preparer's Name	20. Phone
31. Local Agency Representative's Title		21. Preparer's Title	

DISTRIBUTION: 1. Original – Local Agency
 2. Copy – Caltrans District Local Assistance Engineer (DLAE). Failure to submit to DLAE within 30 days of contract execution may result in de-obligation of federal funds on contract.
 3. Include additional copy with award package.

INSTRUCTIONS – CONSTRUCTION CONTRACT DBE COMMITMENT

CONTRACTOR SECTION

1. **Local Agency** - Enter the name of the local agency that is administering the contract.
2. **Contract DBE Goal** - Enter the contract DBE goal percentage as it appears on the project advertisement.
3. **Project Description** - Enter the project description as it appears on the project advertisement (Bridge Rehab, Seismic Rehab, Overlay, Widening, etc).
4. **Project Location** - Enter the project location(s) as it appears on the project advertisement.
5. **Bidder's Name** - Enter the contractor's firm name.
6. **Prime Certified DBE** - Check box if prime contractor is a certified DBE.
7. **Bid Amount** - Enter the total contract bid dollar amount for the prime contractor.
8. **Total Dollar Amount for ALL Subcontractors** – Enter the total dollar amount for all subcontracted contractors. SUM = (DBEs + all Non-DBEs). Do not include the prime contractor information in this count.
9. **Total number of ALL subcontractors** – Enter the total number of all subcontracted contractors. SUM = (DBEs + all Non-DBEs). Do not include the prime contractor information in this count.
10. **Bid Item Number** - Enter bid item number for work, services, or materials supplied to be provided.
11. **Description of Work, Services, or Materials Supplied** - Enter description of work, services, or materials to be provided. Indicate all work to be performed by DBEs including work performed by the prime contractor's own forces, if the prime is a DBE. If 100% of the item is not to be performed or furnished by the DBE, describe the exact portion to be performed or furnished by the DBE. See LAPM Chapter 9 to determine how to count the participation of DBE firms.
12. **NAICS or Work Category Codes** - Enter NAICS or Work Category Codes from the California Unified Certification Program database.
13. **DBE Certification Number** - Enter the DBE's Certification Identification Number. All DBEs must be certified on the date bids are opened.
14. **DBE Contact Information** - Enter the name, address, and phone number of all DBE subcontracted contractors. Also, enter the prime contractor's name and phone number, if the prime is a DBE.
15. **DBE Dollar Amount** - Enter the subcontracted dollar amount of the work to be performed or service to be provided. Include the prime contractor if the prime is a DBE. See LAPM Chapter 9 for how to count full/partial participation.
16. **Total Claimed DBE Participation** - \$: Enter the total dollar amounts entered in the "DBE Dollar Amount" column. %: Enter the total DBE participation claimed ("Total Claimed DBE Participation Dollars" divided by item "Bid Amount"). If the total % claimed is less than item "Contract DBE Goal," an adequately documented Good Faith Effort (GFE) is required (see Exhibit 15-H DBE Information - Good Faith Efforts of the LAPM).
17. **Preparer's Signature** - The person completing the DBE commitment form on behalf of the contractor's firm must sign their name.
18. **Date** - Enter the date the DBE commitment form is signed by the contractor's preparer.
19. **Preparer's Name** - Enter the name of the person preparing and signing the contractor's DBE commitment form.
20. **Phone** - Enter the area code and phone number of the person signing the contractor's DBE commitment form.
21. **Preparer's Title** - Enter the position/title of the person signing the contractor's DBE commitment form.

LOCAL AGENCY SECTION

22. **Local Agency Contract Number** - Enter the Local Agency contract number or identifier.
23. **Federal-Aid Project Number** - Enter the Federal-Aid Project Number(s).
24. **Bid Opening Date** - Enter the date contract bids were opened.
25. **Contract Award Date** - Enter the date the contract was executed.
26. **Award Amount** – Enter the contract award amount as stated in the executed contract.
27. **Local Agency Representative's Signature** - The person completing this section of the form for the Local Agency must sign their name to certify that the information in this and the Contractor Section of this form is complete and accurate.
28. **Date** - Enter the date the DBE commitment form is signed by the Local Agency Representative.
29. **Local Agency Representative's Name** - Enter the name of the Local Agency Representative certifying the contractor's DBE commitment form.
30. **Phone** - Enter the area code and phone number of the person signing the contractor's DBE commitment form.
31. **Local Agency Representative Title** - Enter the position/title of the Local Agency Representative certifying the contractor's DBE commitment form.

EXHIBIT 15-H: PROPOSER/CONTRACTOR GOOD FAITH EFFORTS

Cost Proposal Due Date _____ PE/CE

Federal-aid Project No(s). _____ Bid Opening Date _____ CON

The _____ established a Disadvantaged Business Enterprise (DBE) goal of _____% for this contract. The information provided herein shows the required good faith efforts to meet or exceed the DBE contract goal.

Proposers or bidders submit the following information to document their good faith efforts within five (5) calendar days from cost proposal due date or bid opening. Proposers and bidders are recommended to submit the following information even if the Exhibit 10-O1: Consultant Proposal DBE Commitments or Exhibit 15-G: Construction Contract DBE Commitment indicate that the proposer or bidder has met the DBE goal. This form protects the proposer's or bidder's eligibility for award of the contract if the administering agency determines that the bidder failed to meet the goal for various reasons, e.g., a DBE firm was not certified at bid opening, or the bidder made a mathematical error.

The following items are listed in the Section entitled "Submission of DBE Commitment" of the Special Provisions, **please attach additional sheets as needed:**

- A. The names and dates of each publication in which a request for DBE participation for this project was placed by the bidder (please attach copies of advertisements or proofs of publication):

Publications	Dates of Advertisement

- B. The names and dates of written notices sent to certified DBEs soliciting bids for this project and the dates and methods used for following up initial solicitations to determine with certainty whether the DBEs were interested (please attach copies of solicitations, telephone records, fax confirmations, etc.):

Names of DBEs Solicited	Date of Initial Solicitation	Follow Up Methods and Dates

C. The items of work made available to DBE firms including those unbundled contract work items into economically feasible units to facilitate DBE participation. It is the bidder's responsibility to demonstrate that sufficient work to facilitate DBE participation in order to meet or exceed the DBE contract goal.

Items of Work	Proposer or Bidder Normally Performs Item (Y/N)	Breakdown of Items	Amount (\$)	Percentage Of Contract
	Pick			
	Pick			
	Pick			
	Pick			

D. The names, addresses and phone numbers of rejected DBE firms, the reasons for the bidder's rejection of the DBEs, the firms selected for that work (please attach copies of quotes from the firms involved), and the price difference for each DBE if the selected firm is not a DBE:

Names, addresses and phone numbers of rejected DBEs and the reasons for the bidder's rejection of the DBEs:

[Redacted area for rejected DBE information]

Names, addresses and phone numbers of firms selected for the work above:

[Redacted area for selected firm information]

E. Efforts (e.g. in advertisements and solicitations) made to assist interested DBEs in obtaining information related to the plans, specifications and requirements for the work which was provided to DBEs:

[Redacted area for DBE assistance efforts]

- F. Efforts (e.g. in advertisements and solicitations) made to assist interested DBEs in obtaining bonding, lines of credit or insurance, necessary equipment, supplies, materials, or related assistance or services, excluding supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate:

- G. The names of agencies, organizations or groups contacted to provide assistance in contacting, recruiting and using DBE firms (please attach copies of requests to agencies and any responses received, i.e., lists, Internet page download, etc.):

Name of Agency/Organization	Method/Date of Contact	Results

- H. Any additional data to support a demonstration of good faith efforts:

*** END OF SECTION ***

SECTION 00439 EXHIBIT 12-G: REQUIRED FEDERAL-AID CONTRACT LANGUAGE

Local Assistance Procedures Manual

Exhibit 12-G
Required Federal-Aid Contract Language

EXHIBIT 12-G: REQUIRED FEDERAL-AID CONTRACT LANGUAGE (For Local Assistance Construction Projects)

The following language must be incorporated into all Local Assistance Federal-aid construction contracts.
The following language, with minor edits, was taken from the Code of Federal Regulations.

MAINTAIN RECORDS AND SUBMIT REPORTS DOCUMENTING YOUR PERFORMANCE UNDER THIS SECTION

1. DISADVANTAGED BUSINESS ENTERPRISES (DBE)	2
A. Nondiscrimination Statement	3
B. Contract Assurance	3
C. Prompt Progress Payment	3
D. Prompt Payment of Withheld Funds to Subcontractors	3
E. Termination and Replacement of DBE Subcontractors	4
F. Commitment and Utilization	6
G. Running Tally of Attainments	7
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1. DISADVANTAGED BUSINESS ENTERPRISES (DBE)

The contractor, subrecipient or subcontractor shall take necessary and reasonable steps to ensure that DBEs have opportunity to participate in the contract (49 CFR 26). To ensure equal participation of DBEs provided in 49 CFR 26.5, the Agency shows a contract goal for DBEs. The prime contractor shall make work available to DBEs and select work parts consistent with available DBE subcontractors and suppliers.

The prime contractor shall meet the DBE goal shown elsewhere in these special provisions or demonstrate that they made adequate Good Faith Efforts (GFE) to meet this goal. An adequate GFE means that the bidder must show that it took all necessary and reasonable steps to achieve a DBE goal that, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to meet the DBE goal.

If the DBE goal is not met, the contractor needs to complete and submit the DBE GFE documentation as described in Local Assistance Procedures Manual (LAPM) Chapter 9, Section 9.8 within 5 (five) days of bid opening.

It is the prime contractor's responsibility to verify that the DBE firm is certified as a DBE on the date of bid opening by using the California Unified Certification Program (CUCP) database and possesses the most specific available North American Industry Classification System (NAICS) codes and Work Code applicable to the type of work the firm will perform on the contract. Additionally, the prime contractor is responsible to document this verification by printing out the CUCP data for each DBE firm. A list of DBEs certified by the CUCP can be found at: <https://dot.ca.gov/programs/civil-rights/dbe-search>.

DBE participation will only count toward the California Department of Transportation's federally mandated statewide overall DBE goal if the DBE performs a commercially useful function under 49 CFR 26.55.

Credit for materials or supplies the prime contractor purchases from DBEs counts towards the goal in the following manner:

- 100 percent counts if the materials or supplies are obtained from a DBE manufacturer.
- 60 percent counts if the materials or supplies are obtained from a DBE regular dealer.
- Only fees, commissions, and charges for assistance in the procurement and delivery of materials or supplies count if obtained from a DBE that is neither a manufacturer nor regular dealer. 49 CFR 26.55 defines "manufacturer" and "regular dealer."

The prime contractor receives credit towards the goal if they employ a DBE trucking company that performs a commercially useful function as defined in 49 CFR 26.55(d) as follows:

- The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting DBE goals.
- The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
- The DBE receives credit for the total value of the transportation services it provides on the Contract using trucks it owns, insures, and operates using drivers it employs.
- The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the Contract.
- The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE that leases trucks equipped with drivers from a non-DBE is entitled to credit for the total value of transportation services provided by non-DBE leased trucks equipped with drivers not to exceed the value of transportation services on the contract provided by DBE-owned trucks or leased trucks with DBE employee drivers. Additional participation by non-DBE owned trucks equipped with drivers receives credit only for the fee or commission it receives as a result of the lease arrangement.
- The DBE may lease trucks without drivers from a non-DBE truck leasing company. If the DBE leases trucks from a non-DBE truck leasing company and uses its own employees as drivers, it is entitled to credit for the total value of these hauling services.

- A lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

A. Nondiscrimination Statement

The contractor, subrecipient or subcontractor will never exclude any person from participation in, deny any person the benefits of, or otherwise discriminate against anyone in connection with the award and performance of any contract covered by 49 CFR 26 on the basis of race, color, sex, or national origin. In administering the Local Agency components of the DBE Program Plan, the contractor, subrecipient or subcontractor will not, directly, or through contractual or other arrangements, use criteria or methods of administration that have the effect of defeating or substantially impairing accomplishment of the objectives of the DBE Program Plan with respect to individuals of a particular race, color, sex, or national origin.

B. Contract Assurance

Under 49 CFR 26.13(b): The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR 26 in the award and administration of federal-aid contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (1) Withholding monthly progress payments;
- (2) Assessing sanctions;
- (3) Liquidated damages; and/or
- (4) Disqualifying the contractor from future bidding as non-responsible.

C. Prompt Progress Payment

In accordance with California Business and Professions Code section 7108.5, the prime contractor or subcontractor shall pay to any subcontractor, not later than seven days after receipt of each progress payment, unless otherwise agreed to in writing, the respective amounts allowed the contractor on account of the work performed by the subcontractors, to the extent of each subcontractor's interest therein. In the event that there is a good faith dispute over all or any portion of the amount due on a progress payment from the prime contractor or subcontractor to a subcontractor, the prime contractor or subcontractor may withhold no more than 150 percent of the disputed amount. Any violation of this requirement shall constitute a cause for disciplinary action and shall subject the licensee to a penalty, payable to the subcontractor, of 2 percent of the amount due per month for every month that payment is not made.

In any action for the collection of funds wrongfully withheld, the prevailing party shall be entitled to his or her attorney's fees and costs. The sanctions authorized under this requirement shall be separate from, and in addition to, all other remedies, either civil, administrative, or criminal. This clause applies to both DBE and non-DBE subcontractors.

D. Prompt Payment of Withheld Funds to Subcontractors

The Agency may hold retainage from the prime contractor and shall make prompt and regular incremental acceptances of portions, as determined by the Agency, of the contract work, and pay retainage to the prime contractor based on these acceptances. The Agency shall designate one of the methods below in the contract to ensure prompt and full payment of any retainage kept by the prime contractor or subcontractor to a subcontractor. The Agency shall include either Method 1, Method 2, or Method 3 below and delete the other two.

Method 1: No retainage will be held by the Agency from progress payments due to the prime contractor. Prime contractors and subcontractors are prohibited from holding retainage from subcontractors. Any delay or postponement of payment may take place only for good cause and with the Agency's prior written approval. Any violation of these provisions shall subject the violating contractor or subcontractor to the penalties, sanctions, and other remedies specified in Section 7108.5 of the California Business and Professions Code and Section 10262 of the California Public Contract Code. This requirement shall not be construed to limit or impair any contractual, administrative or judicial remedies, otherwise available to the

contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the contractor, deficient subcontractor performance and/or noncompliance by a subcontractor. This clause applies to both DBE and non-DBE subcontractors.

Method 2: No retainage will be held by the Agency from progress payments due to the prime contractor. Any retainage kept by the prime contractor or by a subcontractor must be paid in full to the earning subcontractor within seven (7) days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment may take place only for good cause and with the Agency's prior written approval. Any violation of these provisions shall subject the violating contractor or subcontractor to the penalties, sanctions, and remedies specified in Section 7108.5 of the California Business and Professions Code and Section 10262 of the California Public Contract Code. This requirement shall not be construed to limit or impair any contractual, administrative or judicial remedies, otherwise available to the contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the contractor, deficient subcontractor performance and/or noncompliance by a subcontractor. This clause applies to both DBE and non-DBE subcontractors.

Method 3: The Agency shall hold retainage from the prime contractor and shall make prompt and regular incremental acceptances of portions, as determined by the Agency of the contract work and pay retainage to the prime contractor based on these acceptances. The prime contractor or subcontractor shall return all monies withheld in retention from all subcontractors within seven (7) days after receiving payment for work satisfactorily completed and accepted including incremental acceptances of portions of the contract work by the Agency. Any delay or postponement of payment may take place only for good cause and with the Agency's prior written approval. Any violation of these provisions shall subject the violating prime contractor or subcontractor to the penalties, sanctions, and other remedies specified in Section 7108.5 of the California Business and Professions Code and Section 10262 of the California Public Contract Code. This requirement shall not be construed to limit or impair any contractual, administrative or judicial remedies otherwise available to the contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the contractor; deficient subcontractor performance and/or noncompliance by a subcontractor. This clause applies to both DBE and non-DBE subcontractors.

Any violation of these provisions of Prompt Progress Payment and Prompt Payment of Withheld Funds to Subcontractors shall subject the violating prime contractor or subcontractor to the penalties, sanctions and other remedies specified therein. These requirements shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the prime contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract performance, or noncompliance by a subcontractor.

E. Termination and Replacement of DBE Subcontractors

The prime contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains the Agency's written consent. The prime contractor shall not terminate or replace a listed DBE for convenience and perform the work with their own forces or obtain materials from other sources without prior written authorization from the Agency. Unless the Agency's prior written consent is provided, the contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE on the Exhibit 15-G Construction Contract DBE Commitment form, included in the Bid.

Termination of DBE Subcontractors

After a contract with a specified DBE goal has been executed, termination of a DBE may be allowed for the following, but not limited to, justifiable reasons with prior written authorization from the Agency:

1. Listed DBE fails or refuses to execute a written contract based on plans and specifications for the project.
2. The Local Agency stipulated that a bond is a condition of executing the subcontract and the listed DBE fails to meet the Local Agency's bond requirements.
3. Work requires a contractor's license and listed DBE does not have a valid license under Contractors License Law, or is not properly registered with the California Department of Industrial Relations as a public works contractor.
4. Listed DBE fails or refuses to perform the work or furnish the listed materials (failing or refusing to

perform is not an allowable reason to remove a DBE if the failure or refusal is a result of bad faith or discrimination).

5. Listed DBE's work is unsatisfactory and not in compliance with the contract.
6. Listed DBE is ineligible to work on the project because of suspension or debarment.
7. Listed DBE becomes bankrupt or insolvent or exhibits credit unworthiness.
8. Listed DBE voluntarily withdraws with written notice from the Contract.
9. Listed DBE is ineligible to receive credit for the type of work required.
10. Listed DBE owner dies or becomes disabled resulting in the inability to perform the work on the Contract.
11. The Agency determines other documented good cause.

To terminate a DBE or to terminate a portion of a DBE's work, the contractor must use the following procedures:

1. Send a written notice to the DBE of Contractor's intent to use other forces or material sources and include one or more justifiable reasons listed above. Simultaneously send a copy of this written notice to the Agency. The written notice to the DBE must request they provide any response within five (5) business days to both the Contractor and the Agency by either acknowledging their agreement or documenting their reasoning as to why the use of other forces or sources of materials should not occur.
2. If the DBE does not respond within 5 business days, Contractor may move forward with the request as if the DBE had agreed to Contractor's written notice.
3. Submit Contractor's DBE termination request by written letter to the Agency and include:
 - One or more above listed justifiable reasons along with supporting documentation.
 - Contractor's written notice to the DBE regarding the request, including proof of transmission and tracking documentation of Contractor's written notice
 - The DBE's response to Contractor's written notice, if received. If a written response was not provided, provide a statement to that effect.

The Agency shall respond in writing to Contractor's DBE termination request within 5 business days.

Replacement of DBE Subcontractors

After receiving the Agency's written authorization of DBE termination request, the Contractor must obtain the Agency's written agreement for DBE replacement. The Contractor must find or demonstrate GFEs to find qualified DBE replacement firms to perform the work to the extent needed to meet the DBE commitment.

The following procedures shall be followed to request authorization to replace a DBE firm:

1. Submit a request to replace a DBE with other forces or material sources in writing to the Agency which must include:
 - a. Description of remaining uncommitted work items made available for replacement DBE solicitation and participation.
 - b. The proposed DBE replacement firm's business information, the work they have agreed to perform, and the following:
 - Quote for bid item work and description of work to be performed
 - Proposed subcontract agreement and written confirmation of agreement to perform on the Contract
 - Revised Subcontracting Request form
 - Revised Exhibit 15-G: Construction Contract DBE Commitment
2. If Contractor has not identified a DBE replacement firm, submit documentation of the Contractor's GFEs

to use DBE replacement firms within 7 days of Agency's authorization to terminate the DBE. The Contractor may request the Agency's approval to extend this submittal period to a total of 14 days. Submit documentation of actions taken to find a DBE replacement firm, such as:

- Search results of certified DBEs available to perform the original DBE work identified and/or other work the Contractor had intended to self-perform, to the extent needed to meet the DBE commitment
- Solicitations of DBEs for performance of work identified
- Correspondence with interested DBEs that may have included contract details and requirements
- Negotiation efforts with DBEs that reflect why an agreement was not reached
- If a DBE's quote was rejected, provide Contractor's reasoning for the rejection, such as why the DBE was unqualified for the work, or why the price quote was unreasonable or excessive
- Copies of each DBE's and non-DBE's price quotes for work identified, as the Agency may contact the firms to verify solicitation efforts and determine if the DBE quotes are substantially higher
- Additional documentation that supports the GFE

The Agency shall respond in writing to the Contractor's DBE replacement request within five (5) business days. The Contractor must submit a revised Subcontracting Request form if the replacement plan is authorized by the Agency.

F. Commitment and Utilization

The Agency's DBE program must include a monitoring and enforcement mechanism to ensure that DBE commitments reconcile to DBE utilization.

The bidder shall complete and sign Exhibit 15-G: Construction Contract DBE Commitment included in the contract documents regardless of whether DBE participation is reported. The bidder shall provide written confirmation from each DBE that the DBE is participating in the Contract. LAPM Exhibit 9-I: DBE Confirmation or equivalent form and DBE's quote must be submitted. The written confirmation must be submitted no later than 4pm on the 5th day after bid opening. If a DBE is participating as a joint venture partner, the bidder shall submit a copy of the joint venture agreement.

If the DBE Commitment form, Exhibit 15-G, is not submitted with the bid, it must be completed and submitted by all bidders to the Agency within five (5) days of bid opening. If the bidder does not submit the DBE Commitment form within the specified time, the Agency will find the bidder's bid nonresponsive.

The prime contractor shall use each DBE subcontractor as listed on Exhibit 15-G: Construction Contract DBE Commitment unless they receive written authorization for a termination or replacement from the Agency.

The Agency shall request the prime contractor to:

1. Notify the Resident Engineer or Inspector of any changes to its anticipated DBE participation
2. Provide this notification before starting the affected work
3. Maintain records including:
 - Name and business address of each 1st-tier subcontractor
 - Name and business address of each DBE subcontractor, DBE vendor, and DBE trucking company, regardless of tier
 - Date of payment and total amount paid to each DBE (see Exhibit 9-F: Monthly Disadvantaged Business Enterprise Payment)

If the prime contractor is a DBE contractor, they shall include the date of work performed by their own forces and the corresponding value of the work.

Before the 15th of each month, the prime contractor shall submit a Monthly DBE Trucking Verification (LAPM Exhibit 16-Z1) form.

If a DBE is decertified before completing its work, the DBE must notify the prime contractor in writing of the decertification date. If a business becomes a certified DBE before completing its work, the business must notify the prime contractor in writing of the certification date. The prime contractor shall submit the notifications. Upon work completion, the prime contractor shall complete a Disadvantaged Business Enterprises (DBE) Certification Status Change, Exhibit 17-O, form and submit the form within 30 days of contract acceptance.

Upon work completion, the prime contractor shall complete Exhibit 17-F: Final Report – Utilization of Disadvantaged Business Enterprises (DBE), First-Tier Subcontractors and submit it within 90 days of contract acceptance. The Agency will withhold \$10,000 until the form is submitted. The Agency releases the withhold upon submission of the completed form.

G. Running Tally of Attainments

For projects awarded on or after March 1, 2020, but before September 1, 2023:

After submitting an invoice for reimbursement that includes a payment to a DBE, but no later than the 10th of the following month, the prime contractor/consultant must complete and email the Exhibit 9-F: Disadvantaged Business Enterprise Running Tally of Payments to business.support.unit@dot.ca.gov with a copy to local administering agencies.

For projects that are awarded on or after September 1, 2023:

Exhibit 9-F is no longer required. Instead, by the 15th of the month following the month of any payment(s), the prime contractor must now submit Exhibit 9-P to the Local Agency administering the contract. If the Contractor does not make any payments to subcontractors, supplier(s) and/or manufacturers they must report “no payments were made to subs this month” and write this visibly and legibly on Exhibit 9-P.

H. Commercially Useful Function

DBEs must perform a commercially useful function (CUF) under 49 CFR 26.55 when performing work or supplying materials listed on the DBE Commitment form. The DBE value of work will only count toward the DBE commitment if the DBE performs a CUF. A DBE performs a CUF when it is responsible for execution of the work on the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. If a DBE does not perform or exercise responsibility for at least 30% of the total cost of its contract with its own work force, or the DBE subcontracts a greater portion of the work of a contract than would be expected on the basis of normal industry practice for the type of work involved, it will be presumed that the DBE is not performing a CUF. Additionally, the DBE must also be responsible, with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material and installing (where applicable), and paying for the material itself.

The Contractor must perform CUF evaluation for each DBE company working on a federal-aid contract, with or without a DBE goal. Perform a CUF evaluation at the beginning of the DBE’s work, and continue to monitor the performance of CUF for the duration of the project.

The Contractor must provide written notification to the AGENCY at least 15 days in advance of each DBE's initial performance of work or supplying materials for the Contract. The notification must include the DBE's name, work the DBE will perform on the contract, and the location, date, and time of where their work will take place.

Within 10 (ten) days of a DBE initially performing work or supplying materials on the contract, the Contractor shall submit to the LPA the initial evaluation and validation of DBE performance of a CUF using the LAPM 9-J: Disadvantaged Business Enterprise Commercially Useful Function Evaluation. Include the following information with the submittal:

- Subcontract agreement with the DBE
- Purchase orders
- Bills of lading
- Invoices
- Proof of payment

The Contractor must monitor all DBE's performance of CUF by conducting quarterly evaluations and validations throughout their duration of work on the contract using the LAPM 9-J: DBE Commercially Useful Function Evaluation. The Contractor must submit to the AGENCY these quarterly evaluations and validations by the 5th of the month for the previous three (3) months of work.

The Contractor must notify the AGENCY immediately if the Contractor believes the DBE may not be performing a CUF.

The AGENCY will verify DBEs performance of CUF by reviewing the initial and quarterly submissions of LAPM 9-J: DBE Commercially Useful Function Evaluation, submitted supporting information, field observations, and through any additional AGENCY evaluations. The AGENCY must evaluate DBEs and their CUF performance throughout the duration of a Contract. The AGENCY will provide written notice to Contractor and DBE at least two (2) business days prior to any evaluation. The Contractor and DBE must participate in the evaluation. Upon completing the evaluation, the AGENCY must share the evaluation results with the Contractor and DBE. An evaluation could include items that must be remedied upon receipt. If the AGENCY determines the DBE is not performing a CUF the Contractor must suspend performance of the noncompliant work.

The Contractor and DBEs must submit any additional CUF related records and documents within five (5) business days of AGENCY's request such as:

- Proof of ownership or lease and rental agreements for equipment
- Tax records
- Employee rosters
- Certified payroll records
- Inventory rosters

Failure to submit required DBE Commercially Useful Function Evaluation forms or requested records and documents can result in withholding of payment for the value of work completed by the DBE.

If the Contractor and/or the AGENCY determine that a listed DBE is not performing a CUF in performance of their DBE committed work, immediately suspend performance of the noncompliant portion of the work. The AGENCY may deny payment for the noncompliant portion of the work. The AGENCY will ask the Contractor to submit a corrective action plan (CAP) to the AGENCY within five (5) days of the noncompliant CUF determination. The CAP must identify how the Contractor will correct the noncompliance findings for the remaining portion of the DBE's work. The AGENCY has five (5) days to review the CAP in conjunction with the prime contractor's review. The Contractor must implement the CAP within five (5) days of the AGENCY's approval. The AGENCY will then authorize the prior noncompliant portion of work for the DBE's committed work.

If corrective actions cannot be accomplished to ensure the DBE performs a CUF on the Contract, then the Contractor may have good cause to request termination of the DBE.

I. Use of Joint Checks

A joint check may be used between the Contractor or lower-tier subcontractor and a DBE subcontractor purchasing materials from a material supplier if the contractor obtains prior approval from the LPA for the proposed use of joint check upon submittal of the LAPM 9-K: DLA Disadvantaged Business Enterprises (DBE) Joint Check Agreement Request form.

To use a joint check, the following conditions must be met:

- All parties, including the Contractor, must agree to the use of a joint check
- Entity issuing the joint check acts solely to guarantee payment
- DBE must release the check to the material supplier
- LPA must authorize the request before implementation
- Any party to the agreement must provide requested documentation within 10 days of the LPA's request for the documentation
- Agreement to use a joint check must be short-term, not to exceed 1 year, allowing sufficient time needed to establish or increase a credit line with the material supplier

A request for a joint check agreement may be initiated by any party. If a joint check is used, the DBE remains responsible for all elements of 49 CFR 26.55(c)(1).

Failure to comply with the above requirements disqualifies DBE participation and results in no credit and no payment to the Contractor for DBE participation.

A joint check may not be used between the Contractor or subcontractor and a DBE regular dealer, bulk material supplier, manufacturer, wholesaler, broker, trucker, packager, manufacturer's representative, or other persons who arrange or expedite transactions.

2. BID OPENING

The Agency publicly opens and reads bids at the time and place shown on the Notice to Contractors.

3. BID RIGGING

The U.S. Department of Transportation (DOT) provides a toll-free hotline to report bid rigging activities. Use the hotline to report bid rigging, bidder collusion, and other fraudulent activities. The hotline number is (800) 424-9071. The service is available 24 hours 7 days a week and is confidential and anonymous. The hotline is part of the DOT's effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General.

4. CONTRACT AWARD

If the Agency awards the contract, the award is made to the lowest responsible and responsive bidder.

5. CONTRACTOR LICENSE

The Contractor must be properly licensed as a contractor from contract award through Contract acceptance (23 CFR 635.110).

6. CHANGED CONDITIONS

A. Differing Site Conditions

1. During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract, are encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before the site is disturbed and before the affected work is performed.
2. Upon written notification, the engineer will investigate the conditions, and if it is determined that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the contract, an adjustment, excluding anticipated profits, will be made and the contract modified in writing accordingly. The engineer will notify the contractor of the determination whether or not an adjustment of the contract is warranted.
3. No contract adjustment which results in a benefit to the contractor will be allowed unless the contractor has provided the required written notice.
4. No contract adjustment will be allowed under this clause for any effects caused on unchanged work. *[This provision may be omitted by the Local Agency, at their option.]*

B. Suspensions of Work Ordered by the Engineer

1. If the performance of all or any portion of the work is suspended or delayed by the engineer in writing for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry) and the contractor believes that additional compensation and/or contract time is due as a result of such suspension or delay, the contractor shall submit to the engineer in writing a request for adjustment within 7 calendar days of receipt of the notice to resume work. The request shall set forth the reasons and support for such adjustment.
2. Upon receipt, the engineer will evaluate the contractor's request. If the engineer agrees that the cost and/or time required for the performance of the contract has increased as a result of such suspension and the suspension was caused by conditions beyond the control of and not the fault of the contractor, its suppliers, or subcontractors at any approved tier, and not caused by weather, the engineer will make an adjustment (excluding profit) and modify the contract in writing accordingly. The contractor will be notified of the engineer's determination whether or not an adjustment of the contract is warranted.

3. No contract adjustment will be allowed unless the contractor has submitted the request for adjustment within the time prescribed.
4. No contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided or excluded under any other term or condition of this contract.

C. Significant Changes in the Character of Work

1. The engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the project. Such changes in quantities and alterations shall not invalidate the contract nor release the surety, and the contractor agrees to perform the work as altered.
2. If the alterations or changes in quantities significantly change the character of the work under the contract, whether such alterations or changes are in themselves significant changes to the character of the work or by affecting other work cause such other work to become significantly different in character, an adjustment, excluding anticipated profit, will be made to the contract. The basis for the adjustment shall be agreed upon prior to the performance of the work. If a basis cannot be agreed upon, then an adjustment will be made either for or against the contractor in such amount as the engineer may determine to be fair and equitable.
3. If the alterations or changes in quantities do not significantly change the character of the work to be performed under the contract, the altered work will be paid for as provided elsewhere in the contract.
4. The term "significant change" shall be construed to apply only to the following circumstances:
 - When the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction; or
 - When a major item of work, as defined elsewhere in the contract, is increased in excess of 125 percent or decreased below 75 percent of the original contract quantity. Any allowance for an increase in quantity shall apply only to that portion in excess of 125 percent of original contract item quantity, or in case of a decrease below 75 percent, to the actual amount of work performed.

7. BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES

The Contractor shall begin work within 20 calendar days after the issuance of the Notice to Proceed.

See section 00020 Invitation to Bid for the total contract working days for completion of work.

See Section 8-1.10 Liquidated Damages of the Caltrans Standard Specifications and the Project Special Provisions for the requirements for liquidated damages.

8. BUY AMERICA

Buy America Requirements apply to steel and iron, manufactured products, and construction materials permanently incorporated into the project.

Steel and Iron Materials

All steel and iron materials must be melted and manufactured in the United States except:

1. Foreign pig iron and processed, pelletized, and reduced iron ore may be used in the domestic production of the steel and iron materials [60 Fed Reg 15478 (03/24/1995)];
2. If the total combined cost of the materials produced outside the United States does not exceed the greater of 0.1 percent of the total contract amount or \$2,500, materials produced outside the United States may be used if authorized.

Furnish steel and iron materials to be incorporated into the work with certificates of compliance and certified mill test reports. Mill test reports must indicate where the steel and iron were melted and manufactured. All melting and manufacturing processes for these materials, including an application of a coating, must occur in the United States. Coating includes all processes that protect or enhance the value of the material to which the coating is applied.

Manufactured Products

Iron and steel used in precast concrete manufactured products must meet the requirements of the above section (Steel and Iron Materials) regardless of the amount used. Iron and steel used in other manufactured products must meet the requirements of the above section (Steel and Iron Materials) if the weight of steel and iron components constitute 90 percent or more of the total weight of the manufactured product.

Construction Materials

Buy America requirements apply to the following construction materials that are or consist primarily of:

- 1. Non-ferrous metals
- 2. Plastic and polymer-based products *such as:*
 - 2.1 Polyvinylchloride
 - 2.2 Composite Building Materials
- 3. Glass
- 4. Fiber optic cable (including drop cable)
- 5. Optical fiber
- 6. Lumber
- 7. Engineered wood
- 8. Drywall

All manufacturing processes for these materials as defined in 2 CFR 184.6 must occur in the United States.

Where one or more of these construction materials have been combined by a manufacturer with other materials through a manufacturing process, Buy America requirements do not apply unless otherwise specified.

Furnish construction materials to be incorporated into the work with certificates of compliance with each project delivery. Manufacturer's certificate of compliance must identify where the construction material was manufactured and attest specifically to Buy America compliance.

All manufacturing processes for these materials must occur in the United States.

Buy America requirements do not apply to the following:

- 1. Tools and construction equipment used in performing the work
- 2. Temporary work that is not incorporated into the finished project

Waivers

If Buy America waivers are granted, use the following language to include in the contract:

The following steel and iron products, manufactured products, or construction materials have received an approved Buy America waiver for this contract, and therefore, are not subject to Buy America requirements:

- 1. _____
- 2. _____

9. QUALITY ASSURANCE

The Local Agency uses a Quality Assurance Program (QAP) to ensure a material is produced to comply with the Contract. The Local Agency may examine the records and reports of tests the prime contractor performs if they are available at the job site. Schedule work to allow time for QAP.

10. PROMPT PAYMENT

A. FROM THE AGENCY TO THE CONTRACTORS

The Local Agency shall make all project progress payment within 30 days after receipt of an undisputed and properly submitted payment request from the Contractor on a construction contract. If the Local Agency fails to pay promptly, the Local Agency shall pay interest to the Contractor, which accrues at the rate of 10 percent per annum on the principal amount of a money judgment remaining unsatisfied and pro-rated as necessary. Upon receipt of the payment request, the Local Agency shall act in accordance with both of the following:

1. The Local Agency shall review each payment request as soon as feasible after receipt to verify it is a proper payment request.
2. The Local Agency must return any payment request deemed improper by the Local Agency to the Contractor as soon as feasible, but not later than seven (7) days, after receipt. A request returned pursuant to this paragraph shall include documentation setting forth in writing the reasons why it is an improper payment request.

B. SUBMITTAL OF EXHIBIT 9-P

For projects awarded on or after September 1, 2023:

The Contractor must submit Exhibit 9-P to the Local Agency administering the contract by the 15th of the month following the month of any payment(s). If the Contractor does not make any payments to subcontractors, supplier(s) and/or manufacturers they must report "no payments were made to subs this month" and write this visibly and legibly on Exhibit 9-P.

The Local Agency must verify all Exhibit 9-P information, monitor compliance with prompt payment requirements for DBE and non-DBE firms, and address any shortfall to the DBE commitment and prompt payment issues until the end of the project. The Local Agency must email a copy of Exhibit 9-P to DBE.Forms@dot.ca.gov before the end of the month after receiving the Exhibit 9-P from the Contractor.

11. FORM FHWA-1273 REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONTRACTS

[Form FHWA-1273 must be physically inserted into the contract without modification, excluding ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS.]

*[The current version of Form FHWA-1273 is accessible at FHWA's website:
<https://www.fhwa.dot.gov/programadmin/contracts/1273/1273.pdf>]*

12. FEMALE AND MINORITY GOALS

To comply with Section II, "Nondiscrimination," of "Required Contract Provisions Federal-Aid Construction Contracts," the following are for female and minority utilization goals for Federal-aid construction contracts and subcontracts that exceed \$10,000:

The nationwide goal for female utilization is 6.9 percent.

The goals for minority utilization (45 Fed Reg 65984 (10/3/1980)) are as follows:

MINORITY UTILIZATION GOALS

	Economic Area	Goal (Percent)
174	Redding CA: Non-SMSA (Standard Metropolitan Statistical Area) Counties: CA Lassen; CA Modoc; CA Plumas; CA Shasta; CA Siskiyou; CA Tehama	6.8
175	Eureka, CA Non-SMSA Counties: CA Del Norte; CA Humboldt; CA Trinity	6.6
176	San Francisco-Oakland-San Jose, CA: SMSA Counties: 7120 Salinas-Seaside-Monterey, CA CA Monterey	28.9
	7360 San Francisco-Oakland CA Alameda; CA Contra Costa; CA Marin; CA San Francisco; CA San Mateo	25.6
	7400 San Jose, CA	19.6
	CA Santa Clara, CA 7485 Santa Cruz, CA CA Santa Cruz	14.9
	7500 Santa Rosa CA Sonoma	9.1
	8720 Vallejo-Fairfield-Napa, CA CA Napa; CA Solano Non-SMSA Counties: CA Lake; CA Mendocino; CA San Benito	17.1 23.2
177	Sacramento, CA: SMSA Counties: 6920 Sacramento, CA CA Placer; CA Sacramento; CA Yolo Non-SMSA Counties	16.1
	CA Butte; CA Colusa; CA El Dorado; CA Glenn; CA Nevada; CA Sierra; CA Sutter; CA Yuba	14.3
178	Stockton-Modesto, CA: SMSA Counties: 5170 Modesto, CA CA Stanislaus	12.3
	8120 Stockton, CA CA San Joaquin	24.3
	Non-SMSA Counties CA Alpine; CA Amador; CA Calaveras; CA Mariposa; CA Merced; CA Tuolumne	19.8
179	Fresno-Bakersfield, CA SMSA Counties: 0680 Bakersfield, CA CA Kern	19.1
	2840 Fresno, CA CA Fresno	26.1
	Non-SMSA Counties: CA Kings; CA Madera; CA Tulare	23.6

180	Los Angeles, CA: SMSA Counties: 0360 Anaheim-Santa Ana-Garden Grove, CA	11.9
	CA Orange	28.3
	4480 Los Angeles-Long Beach, CA	
	CA Los Angeles	21.5
	6000 Oxnard-Simi Valley-Ventura, CA	
	CA Ventura	19.0
	6780 Riverside-San Bernardino-Ontario, CA	
	CA Riverside; CA San Bernardino	19.7
	7480 Santa Barbara-Santa Maria-Lompoc, CA	
	CA Santa Barbara	24.6
181	Non-SMSA Counties CA Inyo; CA Mono; CA San Luis Obispo	
	San Diego, CA: SMSA Counties	16.9
	7320 San Diego, CA	
	CA San Diego	18.2
	Non-SMSA Counties CA Imperial	

For the last full week of July during which work is performed under the contract, the prime contractor 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.

13. TITLE VI ASSURANCES

[The U.S. Department of Transportation Order No. 1050.2A requires all federal-aid Department of Transportation contracts between an agency and a contractor to contain Appendix A and E.

Note: Appendix B only requires inclusion if the contract impacts deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein. Appendices C and D only require inclusion if the contract impacts deeds, licenses, leases, permits, or similar instruments entered into by the recipient.]

APPENDIX A

During the performance of this Agreement, the contractor, for itself, its assignees and successors in interest (hereinafter collectively referred to as CONTRACTOR) agrees as follows:

- a. Compliance with Regulations: CONTRACTOR shall comply with the regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the REGULATIONS), which are herein incorporated by reference and made a part of this agreement.
- b. Nondiscrimination: CONTRACTOR, with regard to the work performed by it during the AGREEMENT, shall not discriminate on the grounds of race, color, sex, national origin, religion, age, or disability in the selection and retention of sub-applicants, including procurements of materials and leases of equipment. CONTRACTOR shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the agreement covers a program set forth in Appendix B of the Regulations.
- c. Solicitations for Sub-agreements, Including Procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by CONTRACTOR for work to be performed under a Sub- agreement, including procurements of materials or leases of equipment, each potential sub-applicant or supplier shall be notified by CONTRACTOR of the CONTRACTOR'S obligations under this Agreement and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
- d. Information and Reports: CONTRACTOR shall provide all information and reports required by the

Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the recipient or FHWA to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of CONTRACTOR is in the exclusive possession of another who fails or refuses to furnish this information, CONTRACTOR shall so certify to the recipient or FHWA as appropriate, and shall set forth what efforts CONTRACTOR has made to obtain the information.

- e. Sanctions for Noncompliance: In the event of CONTRACTOR's noncompliance with the nondiscrimination provisions of this agreement, the recipient shall impose such agreement sanctions as it or the FHWA may determine to be appropriate, including, but not limited to:
 - i. withholding of payments to CONTRACTOR under the Agreement within a reasonable period of time, not to exceed 90 days; and/or
 - ii. cancellation, termination or suspension of the Agreement, in whole or in part.
- f. Incorporation of Provisions: CONTRACTOR shall include the provisions of paragraphs (1) through (6) in every sub-agreement, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto.

CONTRACTOR shall take such action with respect to any sub-agreement or procurement as the recipient or FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance, provided, however, that, in the event CONTRACTOR becomes involved in, or is threatened with, litigation with a sub-applicant or supplier as a result of such direction, CONTRACTOR may request the recipient enter into such litigation to protect the interests of the State, and, in addition, CONTRACTOR may request the United States to enter into such litigation to protect the interests of the United States.

APPENDIX B

CLAUSES FOR DEEDS TRANSFERRING UNITED STATES PROPERTY

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of Assurance 4:

NOW THEREFORE, the U.S. Department of Transportation as authorized by law and upon the condition that the recipient will accept title to the lands and maintain the project constructed thereon in accordance with Title 23 U.S.C., the regulations for the administration of the preceding statute, and the policies and procedures prescribed by the FHWA of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the recipient all the right, title and interest of the U.S. Department of Transportation in and to said lands described in Exhibit A attached hereto and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto the recipient and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the recipient, its successors and assigns. The recipient, in consideration of the conveyance of said lands and interest in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the recipient will use the lands and interests in lands and interest in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title

VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended[, and (3) that in the event of breach of any of the above-mentioned non-discrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said lands, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation and its assigns as such interest existed prior to this instruction].*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

APPENDIX C

**CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED UNDER THE
ACTIVITY, FACILITY, OR PROGRAM**

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the recipient pursuant to the provisions of Assurance 7(a):

A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:

1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.

B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Non-discrimination covenants, the recipient will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*

C. With respect to a deed, in the event of breach of any of the above Non-discrimination covenants, the recipient will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the recipient and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX D

**CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY ACQUIRED UNDER THE
ACTIVITY, FACILITY OR PROGRAM**

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by the recipient pursuant to the provisions of Assurance 7(b):

A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishings of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits or, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.

B. With respect to (licenses, leases, permits, etc.) in the event of breach of any of the above of the above Non-discrimination covenants, the recipient will have the right to terminate the (license, permits, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.*

C. With respect to deeds, in the event of breach of any of the above Non-discrimination covenants, the recipient will there upon revert to and vest in and become the absolute property of the recipient and its assigns.

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities, including, but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), prohibits discrimination on the basis of sex;
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 U.S.C. § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such

- programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 – 12189) as implemented by Department of Transportation regulations 49 C.F.R. parts 37 and 38;
 - The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
 - Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
 - Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
 - Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

Federal Trainee Program Special Provisions
(to be used when applicable)

14. FEDERAL TRAINEE PROGRAM

For the Federal training program, the number of trainees or apprentices is ____.

This section applies if a number of trainees or apprentices is [shown on the Notice of Bidders](#).

As part of the prime contractor's equal opportunity affirmative action program, provide on-the-job training to develop full journeymen in the types of trades or job classifications involved.

The prime contractor has primary responsibility for meeting this training requirement.

If the prime contractor subcontracts a contract part, they shall determine how many trainees or apprentices are to be trained by the subcontractor. Include these training requirements in each subcontract.

Where feasible, 25 percent of apprentices or trainees in each occupation must be in their 1st year of apprenticeship or training.

Distribute the number of apprentices or trainees among the work classifications on the basis of the prime contractor's needs and the availability of journeymen in the various classifications within a reasonable recruitment area.

Before starting work, the prime contractor shall 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

The prime contractor shall obtain the City/County of _____ approval for this submitted information before the prime contractor starts work. The City/County of _____ credits the prime contractor for each apprentice or trainee the prime contractor employs on the job 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 journeyman status. The prime contractor shall 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 and show that they have made the efforts. In making these efforts, the prime contractor shall not discriminate against any applicant for training.

The prime contractor shall 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 journeyman status or in which the employee has been employed as a journeyman
2. Who is not registered in a program approved by the US Department of Labor, Bureau of Apprenticeship and Training

The prime contractor shall ask the employee if the employee has successfully completed a training course leading to journeyman status or has been employed as a journeyman. The prime contractor's records must show the employee's answers to the questions.

In the training program, the prime contractor shall 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:
 - Meet the equal employment opportunity responsibilities
 - Qualify the average apprentice or trainee for journeyman 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

The prime contractor shall obtain the State's approval for their training program before they start work involving the classification covered by the program.

The prime contractor shall 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 the prime contractor 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 prime contractor does at least one of the following:
 - a. Contribute to the cost of the training
 - b. Provide the instruction to the apprentice or trainee
 - c. Pay the apprentice's or trainee's wages during the off-site training period
3. If the prime contractor complies 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 a:

1. Copy of the training plan approved by the U.S. Department of Labor or a training plan for trainees approved by both Caltrans and FHWA
2. Certification showing the type and length of training satisfactorily completed

Maintain records and submit reports documenting contractor's performance under this section.

15. PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE EQUIPMENT AND SERVICES

In response to significant national security concerns, the agency shall check the prohibited vendor list before making any telecommunications and video surveillance purchase because recipients and subrecipients of federal funds are prohibited from obligating or expending loan or grant funds to:

- Procure or obtain;
- Extend or renew a contract to procure or obtain; or
- Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

The prohibited vendors (and their subsidiaries or affiliates) are:

- Huawei Technologies Company;
- ZTE Corporation;
- Hytera Communications Corporation;
- Hangzhou Hikvision Digital Technology Company;
- Dahua Technology Company; and
- Subsidiaries or affiliates of the above-mentioned companies.

In implementing the prohibition, the agency administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

The contractors should furnish telecommunications and video surveillance equipment with a certificate of compliance. The certificate must state telecommunications and video surveillance equipment was not procured or obtained from manufacturers identified in the above list.

**REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS**

- I. General
- II. Nondiscrimination
- III. Non-segregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- XI. Certification Regarding Use of Contract Funds for Lobbying
- XII. Use of United States-Flag Vessels:

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work

performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

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 (see 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 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 contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its 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, sexual orientation, gender identity, 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 contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program 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 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 or other knowledgeable company official.

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 minorities and women.

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 minorities and women 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 minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women 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, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such 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, sexual orientation, gender identity, 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 its 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 their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

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). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

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 employees who are minorities and women 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 good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. 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 good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith 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, sexual orientation, gender identity, 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 contracting agency 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 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, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide

sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. 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 contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurances Required:

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

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

- (1) Withholding monthly progress payments;
- (2) Assessing sanctions;
- (3) Liquidated damages; and/or
- (4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

11. 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 the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours 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; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than \$10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway

Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), 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 issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. of this section; also, 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 must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. 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. The wage determination (including any additional classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH-1321) must 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.

b. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

(i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is used in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), 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 will be sent by the contracting officer by email to DBAconformance@dol.gov. The 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.

(4) In the event the contractor, the laborers or mechanics to be employed in the 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 will, by email to DBAconformance@dol.gov, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The 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.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division

under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

d. *Fringe benefits not expressed as an hourly rate.* 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 may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. *Unfunded plans.* If the contractor does not make payments to a trustee or other third person, the contractor may consider as 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, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

f. *Interest.* In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding (29 CFR 5.5)

a. *Withholding requirements.* The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and 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.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph

2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (2) A contracting agency for its procurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (4) A contractor's assignee(s);
- (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901-3907](#).

3. Records and certified payrolls (29 CFR 5.5)

a. *Basic record requirements (1) Length of record retention.* All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph 1.e. of this section 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 [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(4) *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. *Certified payroll requirements (1) Frequency and method of submission.* The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting

agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (e.g., the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH-347 or in any other format desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division website at <https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347.pdf> or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) *Statement of Compliance.* Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

- (i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;
- (ii) That each laborer or mechanic (including each helper and apprentice) working 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 [29 CFR part 3](#); and
- (iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) *Use of Optional Form WH-347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

(5) *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification.* The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under [18 U.S.C. 1001](#) and [31 U.S.C. 3729](#).

(7) *Length of certified payroll retention.* The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access (1) Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action 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, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under [29 CFR part 6](#) any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address

of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity (29 CFR 5.5)

a. *Apprentices (1) Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits.* Apprentices must 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 determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio.* The allowable ratio of apprentices to journeymen on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must be paid not less than the applicable wage rate on 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 this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity.* The use of apprentices and journeymen under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and [29 CFR part 30](#).

c. 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. 23 CFR 230.111(e)(2). 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.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 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 U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility. a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, [18 U.S.C. 1001](#).

11. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#); or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#).

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. 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 or

mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1. of this section.

* \$31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, 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 that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (2) A contracting agency for its procurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (4) A contractor's assignee(s);
- (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901-3907](#).

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the

event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

5. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

- a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;
- b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;
- c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or
- d. Informing any other person about their rights under CWHSSA or this part.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

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 contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or leased by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;

- (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
- (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

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 or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI 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. Pursuant to 23 CFR 635.116(c), 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 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 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 contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the 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. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and

health standards (29 CFR Part 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. 3704). 29 CFR 1926.10.

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. 3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of \$150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier 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 first tier 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 first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first 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 entering into this transaction. 2 CFR 180.330.

g. The prospective first tier 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 Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 180.300.

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. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov>). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;

(2) Have not within a three-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, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

3. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which

this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contractor). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

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. 2 CFR 1200.220 and 1200.332.

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 exceeding the \$25,000 threshold. 2 CFR 180.220 and 1200.220.

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 is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov>), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily

excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000. 49 CFR Part 20, App. A.

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 its bid or proposal that the participant 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.

XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS
PREFERENCE FOR APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS
ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B)**
This provision is applicable to all Federal-aid projects funded
under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

SECTION 00440 SITE VISIT AFFIDAVIT
(To Be Submitted with Bid)

NAME OF PROJECT: **TRAFFIC SIGNAL UPDATE PROJECT CIP NO. 17058 HSIPL 5242 (034)**

State of California

County of _____

_____, being first duly sworn, deposes
(Printed Name of Contractor's Authorized Representative)

he or she is

_____ of _____,
(Title of Representative) (Bidder's Name)

the party making the bid, has visited the Site of the Work as described in the Contract Documents and has examined and familiarized themselves with the existing conditions, as well as all other conditions relating to the construction which will be performed. The submitting of a bid shall be considered an acknowledgement on the part of the Bidder of familiarity with conditions at the site of Work. The Bidder further acknowledges that the site examination has provided adequate and sufficient information related to existing conditions which may affect cost, progress or performance of the Work.

Signed this _____ day of _____, 20_____.

Authorized Signature

*** END OF SECTION ***

**SECTION 00450 SCHEDULE OF MAJOR EQUIPMENT AND MATERIAL
SUPPLIERS**
(To Accompany Bid)

Bidders must designate the manufacturer/supplier of each item of equipment, materials or systems listed below. By such designation, Bidder warrants the equipment and material manufactured and/or supplied by the named manufacturer or supplier, with the exception of substitutions which may be proposed.

A substitute may be proposed in accordance with Public Contract Code 3400. Bidder agrees that should it propose a substitute manufacturer/supplier, that prior to award, Bidder shall submit complete information, satisfactory to the City, demonstrating that such manufacturer's or supplier's equipment is in general compliance with the requirements of the Contract Documents. Full submittal information, as specified under Specifications Section 5, CONTROL OF WORK, of 2023 Caltrans Standard Specifications and Project Special Provisions, products data and samples, shall be submitted following award.

If the City should determine that the proposed substitute does not meet the requirements of the Contract Documents, the Bidder's Bid will be rejected unless, prior to award, the Bidder agrees in writing to furnish a listed manufacturer/supplier or submits an acceptable substitute without change in the Bid price.

The Bidder will be responsible for any additional costs necessary for the incorporation of such substitutions.

The following named items of major equipment and materials will be supplied by the manufacturers or suppliers as written in by the bidder. By so indicating, the bidder warrants that the equipment and material manufactured and/or supplied by the named manufacturer or supplier will be provided on the project unless review of submittal information or performance under tests reveals that the equipment or material does not meet the Contract requirements. Failure to indicate a manufacturer or supplier listed in the following schedule may render the Bid non-responsive and may be the basis for rejection of the Bid.

If the Bidder fails to identify a manufacturer/supplier for any item shown on this list, the City has the right to waive such omission. In such case it will be assumed that the manufacturer/supplier to be used by the Bidder will be the first listed manufacturer/supplier identified for the given item.

NAME OF BIDDER _____

SCHEDULE OF MAJOR EQUIPMENT AND MATERIAL SUPPLIES			
Item	Description	Section	Manufacturer/Supplier
8	Central Management System	87-15	
20	Furnish and Install 2070LX Controller	87-13	
25	Furnish and Install Emergency Vehicle Detection System	77-2.01	
26	Furnish and Install Integrated Radio and Mounting	86 & 87	
27	Furnish and Install Integrated Radio, Omni-Directional Antennas, and Mounting	86 & 87	
28	Power Over Ethernet Cable	87-9.15G	
32	Furnish and Install 12-Strand SMFO Cable	86 & 87	
33	Furnish and Install 96-Strand SMFO Cable	86 & 87	
34	Furnish and Install 144-Strand SMFO Cable	86 & 87	
42	Furnish and Install Splice Closure	86 & 87	
46	Furnish and Install Ethernet Switch (Traffic Signal Cabinet)	86 & 87	
48	Furnish and Install Fiber Patch Cords	86 & 87	
8	Network Switch (Telecom Room/Hub)	87-11	
50	Furnish and Install Power Distribution Unit	86 & 87	
51	Furnish and Install Uninterruptible Power Supply Assembly (Hub Cabinet)	86 & 87	

52	Furnish and Install External batteries	86 & 87	
53	Furnish and Install Ethernet Switch (Hub Cabinets)	86 & 87	
54	Furnish and Install Ethernet Switch (Telecom Room)	86 & 87	
55	Furnish and Install 1 Gbps Fiber Transceiver	86 & 87	
56	Furnish and Install 10 Gbps Fiber Transceiver	86 & 87	
57	Furnish and Install Uninterruptible Power Supply Assembly (Telecom Room)	86 & 87	
58	Furnish and Install 144-Strand Fiber Distribution Unit	86 & 87	
59	Furnish and Install Cellular Gateway	86 & 87	

****** END OF SECTION *****

SECTION 00470 ACKNOWLEDGMENT OF INSURANCE REQUIREMENTS
(To be submitted with Bid)

At the time the bid proposal is submitted to the City, the Bidder is not required to obtain the required insurance coverage as outlined in the Contract Documents. The objective of this acknowledgement is for the Bidder to verify he has reviewed and understood the insurance requirements and that he will obtain the insurance coverage if awarded the Project.

If awarded the Project, the Bidder also acknowledges that the City will not accept contract change orders that are based on insurance costs that were not appropriately considered.

Bidder certifies that full compensation for the requirements set forth in Section 00820 **LIABILITY AND INSURANCE REQUIREMENTS** of the Contract Documents is included in the Bid Price.

Bidder acknowledges that he has reviewed the insurance requirements for the **TRAFFIC SIGNAL UPDATE PROJECT CIP NO. 17058 HSIPL 5242 (034)** and certifies that he can and will acquire the insurance specified coverages and limits if the City awards the Project to the Bidder.

Bidder's Signature _____

Date _____

***** END OF SECTION *****

**SECTION 00480 NON-COLLUSION AFFIDAVIT
(TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID)**

State of California)
) ss.
County of)

_____, being first duly sworn, deposes and say that he or she is _____ of _____ the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, business entity, business combination, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Signature

Name of Bidder

Title

Date

Subscribed and sworn to before me this
_____ day of _____, 20_____.

Signature of Notary Public in and for
the County of _____,
State of California.

*** END OF SECTION ***

**SECTION 00490 DEPARTMENT OF INDUSTRIAL RELATIONS COMPLIANCE
AFFIDAVIT**

In accordance with California Labor Code as amended through Senate Bill (SB) 96, no contractor or subcontractor shall be listed on a bid proposal for a public works project or awarded a contract for public work on a public works project unless registered with the California Department of Industrial Relations (DIR)

This project is subject to compliance monitoring and enforcement by the DIR. In accordance with California Labor Code as amended through Senate Bill SB 96, prior to commencement of the Contract, all Contractors are required to register, and maintain active registration throughout the duration of the contract with the California Department of Industrial Relations (DIR). For information regarding registration, please go to:

www.dir.ca.gov

I, the Bidder, certify that:

I am aware of the provisions of SB 96 and subsequent DIR regulations, which require Contractors/Vendors to comply with all labor compliance requirements including, but not limited to, prevailing wage requirements, Labor Code Sections 1725.5, 1771.1(a), 1774-1776, 1777.5, 1813, 1815, Public Works Contractor Registration Program, Electronic Certified Payroll Records to Labor Commissioner, and other requirements described in the DIR website. I will comply with such provisions before commencing the performance of the work of this contract and maintain compliance throughout the completion of said contract. Any fees levied by DIR as a result of contractor's non-compliance shall be borne by the contractor.

_____ Signature	_____ Date
_____ Print Name	_____ Business Name
_____ Title	_____ CSLB License Number

Public Works Contractor (PWC) Registration #

END OF SECTION

**SECTION 00491 STATEMENT ACKNOWLEDGING PENAL AND CIVIL PENALTIES
CONCERNING THE CONTRACTORS' LICENSING LAWS**

[Business & Professions Code § 7028.15]

[Public Contract Code § 20103.5]

I, the undersigned, certify that I am aware of the following provisions of California law and that I, or the entity on whose behalf this certification is given, hold a currently valid California contractor's license as set forth below:

Business & Professions Code § 7028.15:

(a) It is a misdemeanor for any person to submit a bid to a public agency in order to engage in the business or act in the capacity of a contractor within this state without having a license therefor, except in any of the following cases:

- (1) The person is particularly exempted from this chapter.
- (2) The bid is submitted on a state project governed by Section 10164 of the Public Contract Code or on any local agency project governed by Section 20104 [now § 20103.5] of the Public Contract Code.

(b) If a person has been previously convicted of the offense described in this section, the court shall impose a fine of 20 percent of the price of the contract under which the unlicensed person performed contracting work, or four thousand five hundred dollars (\$4,500), whichever is greater, or imprisonment in the county jail for not less than 10 days nor more than six months, or both.

In the event the person performing the contracting work has agreed to furnish materials and labor on an hourly basis, "the price of the contract" for the purposes of this subdivision means the aggregate sum of the cost of materials and labor furnished and the cost of completing the work to be performed.

(c) This section shall not apply to a joint venture license, as required by Section 7029.1. However, at the time of making a bid as a joint venture, each person submitting the bid shall be subject to this section with respect to his or her individual licensure.

(d) This section shall not affect the right or ability of a licensed architect, land surveyor, or registered professional engineer to form joint ventures with licensed contractors to render services within the scope of their respective practices.

(e) Unless one of the foregoing exceptions applies, a bid submitted to a public agency by a contractor who is not licensed in accordance with this chapter shall be considered nonresponsive and shall be rejected by the public agency. Unless one of the foregoing exceptions applies, a local public agency shall, before awarding a contract or issuing a purchase order, verify that the Contractor was properly licensed when the Contractor submitted the bid. Notwithstanding any other provision of law, unless one of the foregoing exceptions applies, the registrar may issue a citation to any public officer or employee of a public entity who knowingly awards a contract or issues a purchase order to a Contractor who is not licensed pursuant to this chapter. The amount of civil penalties,

appeal, and finality of such citations shall be subject to Sections 7028.7 to 7028.13, inclusive. Any contract awarded to, or any purchase order issued to, a contractor who is not licensed pursuant to this chapter is void.

- (f) Any compliance or noncompliance with subdivision (e) of this section, as added by Chapter 863 of the Statutes of 1989, shall not invalidate any contract or bid awarded by a public agency during which time that subdivision was in effect.
- (g) A public employee or officer shall not be subject to a citation pursuant to this section if the public employee, officer, or employing agency made an inquiry to the board for the purposes of verifying the license status of any person or contractor and the board failed to respond to the inquiry within three business days. For purposes of this section, a telephone response by the board shall be deemed sufficient.

Public Contract Code § 20103.5:

In all contracts subject to this part where federal funds are involved, no bid submitted shall be invalidated by the failure of the bidder to be licensed in accordance with the laws of this state. However, at the time the contract is awarded, the Contractor shall be properly licensed in accordance with the laws of this state. The first payment for work or material under any contract shall not be made unless and until the Registrar of Contractors verifies to the agency that the records of the Contractors' State License Board indicate that the Contractor was properly licensed at the time the contract was awarded. Any bidder or contractor not so licensed shall be subject to all legal penalties imposed by law, including, but not limited to, any appropriate disciplinary action by the Contractors' State License Board. The agency shall include a statement to that effect in the standard form of pre-qualification questionnaire and financial statement. Failure of the bidder to obtain proper and adequate licensing for an award of a contract shall constitute a failure to execute the contract and shall result in the forfeiture of the security of the bidder.

Signature, Date	Business Name
Print Name	Contractor License Number, Class
Title	Contractor License Expiration

*** END OF SECTION ***

**SECTION 00500 AGREEMENT
FOR THE CONSTRUCTION OF TRAFFIC SIGNAL UPDATE PROJECT CIP NO. 17058
HSIPL 5242 (034)**

This AGREEMENT, made this _____ day of _____,
20____ by and between City of Manteca, hereinafter called the "City," and _____
_____ hereinafter
called the "Contractor."

W I T N E S S E T H:

Article 1. WORK

WHEREAS, the City has caused the contract documents to be prepared comprised of bidding and contract requirements and technical specifications and plans for the construction of the **TRAFFIC SIGNAL UPDATE PROJECT CIP NO. 17058 HSIPL 5242 (034)** as described therein, and

WHEREAS, the Contractor has offered to perform the proposed work in accordance with the terms of this AGREEMENT and the contract documents in the sum of \$_____.

NOW, THEREFORE, in consideration of the mutual covenants and agreements of the parties herein contained and to be performed, the Contractor hereby agrees to complete the work at the total bid and on the terms and conditions herein contained, and the City agrees to pay the Contractor as provided herein for the fulfillment of the work and the performance of the covenants set forth herein.

The further terms, conditions, and covenants of the Contract are set forth in the contract documents, each of which is by this reference made a part hereof.

Article 2. ENGINEER

The Project has been designed by TJKM, who is hereinafter called Engineer and who is to act as Owner's Representative, assume all duties and responsibilities, and have the rights and authority assigned to the Engineer of Record in connection with completion of this PROJECT and in accordance with the contract documents.

Article 3. CONTRACT TIMES

3.1. TIME ALLOWED FOR COMPLETION

The Work shall be completed within 210 calendar days of Notice to Proceed for Substantial Completion and 30 calendar days after Substantial Completion for Final Completion as specified in the Project Special Provisions, and ready for final payment in accordance with Paragraph 14.07 of the General Conditions

3.2. LIQUIDATED DAMAGES

Owner and Contractor recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 3.1. above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by Owner if the Work is not completed on time.

Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$4,800 for each calendar day that expires after the time specified in Paragraph 3.1 for Substantial Completion until the Work is substantially complete.

After Substantial Completion, if Contractor shall neglect, refuse or fail to complete the remaining Work within the time specified in Paragraph 3.1. for completion and readiness for final payment or any proper extension thereof granted by Owner, Contractor shall pay Owner \$4,800 for each calendar day that expires after the time specified in Paragraph 3.1. for completion and readiness for final payment.

Article 4. PAYMENT PROCEDURES

Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Construction Manager as provided in the General Conditions.

Article 5. INTEREST

Payment of interest shall be as provided in the Special Provisions.

Article 6. CONTRACTOR'S REPRESENTATIONS

In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

- 6.1. Contractor has thoroughly examined and carefully studied the contract documents (including the Addenda listed in Article 7.) and the other related data identified in the Bidding Documents including "technical data."
- 6.2. Contractor has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.
- 6.3. Contractor is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishing of the Work.
- 6.4. Contractor has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing

surface or subsurface structures at or contiguous to the site which have been identified in the Supplementary Conditions as provided in Paragraph 4.02A. of the General Conditions.

Contractor accepts the determination set forth in Paragraph 4.02. of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which Contractor is entitled to rely as provided in Paragraph 4.02. of the General Conditions.

Contractor acknowledges that such reports and drawings are not contract documents and may not be complete for Contractor's purposes.

Contractor acknowledges that Owner and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the contract documents with respect to Underground Facilities at or contiguous to the site.

Contractor has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto.

Contractor does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the performance and furnishing of the Work at the Contract Price, within the contract times and in accordance with the other terms and conditions of the contract documents.

- 6.5. Contractor is aware of the general nature of work to be performed by Owner and others at the site that relates to the Work as indicated in the contract documents.
- 6.6. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the site, reports and drawings identified in the contract documents and all additional examinations, investigations, explorations, tests, studies and data with the contract documents.
- 6.7. Contractor has given Owner written notice of all conflicts, errors, ambiguities or discrepancies in the contract documents and the written resolution thereof by Engineer through issued addendum or addenda is acceptable to Contractor, and the contract documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work. When said conflicts, etc., have not been resolved through interpretation or clarification by Owner, because of insufficient time or otherwise, Contractor has included in the Bid the greater quantity or better quality of Work, or compliance with the more stringent requirement resulting in a greater cost; and said greater cost is included in the Contract Price.

Article 7. CONTRACT DOCUMENTS

The contract documents which comprise the entire agreement between Owner and Contractor

concerning the Work consist of the following:

- 7.1. This Agreement.
- 7.2. Exhibits to this Agreement.
- 7.3. Performance, Payment, and other Bonds.
- 7.4. Notice to Proceed.
- 7.5. Invitation to Bid.
- 7.6. Special Provisions.
- 7.7. Technical Specifications
- 7.8. Contract Drawings
- 7.9. Contract Proposal
- 7.10. General Conditions.
- 7.11. Supplementary Conditions.
- 7.12. Addenda numbers _____ to _____, inclusive.
- 7.13. Bid Period Questions and Answers (Enclosure A).
- 7.14. Contractor's Bid (pages _____ to _____, inclusive) marked Exhibit _____.
- 7.15. Documentation submitted by Contractor prior to Notice of Award (pages _____ to _____ inclusive).
- 7.16. The following which may be delivered or issued after the Effective Date of the Agreement and are not attached thereto:
- 7.17. All written amendments and other documents amending, modifying or supplementing the contract documents pursuant to Paragraph 3.04 of the General Conditions.
- 7.18. Caltrans Standard Plans and Standard Specifications dated 2023

There are no contract documents other than those listed above in this Article 7. All the documents above are contained herein with the exception of the Caltrans Standard Plans and Specifications, dated 2023. The contract documents may only be amended, modified or supplemented as provided in Paragraph 3.04 of the General Conditions.

Article 8. MISCELLANEOUS

- 8.1. Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions
- 8.2. No assignment by a party hereto of any rights under or interests in the contract documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the contract documents.
- 8.3. Owner and Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the contract documents.
- 8.4. Any provision or part of the contract documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the contract documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, this agreement has been executed on this _____ day of _____, 20____.

Name of Contractor

CITY OF MANTECA

Signature of Contractor

Gary Singh, Mayor

Toni Lundgren, City Manager

Print Name and Title of Signator

ATTEST

Cassandra Candini-Tilton, City Clerk

Address

APPROVED AS TO FORM

Phone Number

Daniella G. Green, Assistant City Attorney

Contractor's License No.

COUNTERSIGNED

Shay Narayan, Finance Director

Date

COUNTERSIGNED

Nancy Bronstein, Director of Employee Services & Engagement

Date

****END OF SECTION****

SECTION 00610 FAITHFUL PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS, THAT, WHEREAS, City of Manteca, hereinafter designated the “City,” has, on _____, 20____, awarded to _____, hereinafter designated as the “Principal,” a Contract for the construction of the **TRAFFIC SIGNAL UPDATE PROJECT CIP NO. 17058 HSIPL 5242 (034)**.

WHEREAS, said Principal is required under the terms of said Contract to furnish a bond for the faithful performance of said Contract:

NOW, THEREFORE, WE, the Principal, and _____, as Surety, are held and firmly bound unto the City the penal sum of _____, dollars (\$_____) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the above bounden Principal, it or its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and faithfully perform the covenants, conditions, and agreements in the said contract and any alterations made as therein provided, on it or their part to be kept and performed, at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless, the City, its officers and agents as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

It is acknowledged that the Contract provides for one-year warranty period, during which time this bond remains in full force and effect.

And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder or the specifications accompanying the same shall, in any way, affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract or to the work or to the specifications. Said Surety hereby waives the provisions of Sections 2819 and 2845 of the Civil Code of the State of California.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their seals this ____ day of _____, 20____, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

(Seal)

Principal

Signature for Principal

Title of Signator

(Seal)

Surety

Signature for Surety

Title of Signator

****END OF SECTION****

SECTION 00620 PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS, THAT, WHEREAS, City of Manteca, hereinafter designated as the "City," has, on _____, 20____, awarded to _____, hereinafter designated as the "Principal," a Contract for the construction of the **TRAFFIC SIGNAL UPDATE PROJECT CIP NO. 17058 HSIPL 5242 (034)**, and

WHEREAS, said Principal is required to furnish a bond in connection and with said Contract, providing that if said Principal, or any of it or its subcontractors shall fail to pay for any materials, provisions, or other supplies used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor done thereon of any kind, the Surety of this bond will pay the same to the extent hereinafter set forth:

NOW, THEREFORE, we, the Principal, and _____, as Surety, are held and firmly bound unto the City the penal sum of _____ Dollars (\$ _____) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if said Principal, it or its heirs, executors, administrators, successors, or assigns, shall fail to pay for any materials, provisions, or other supplies used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind or for amount due under the Unemployment Insurance Act with respect to such work or labor, or for any amounts due, or to be withheld pursuant to Sections 18806 of the Revenue and Taxation Code of the State of California with respect to such work or labor, then said surety will pay the same in or to an amount not exceeding the amount hereinabove set forth, and also will pay in case suit is brought upon this bond, such reasonable attorney's fees to the City as shall be fixed by the court.

This bond shall insure to the benefit of any and all persons, companies, and corporations named in Section 3181 of the Civil Code of the State of California so as to give a right of action to them or their assigns in any suit brought upon this bond.

And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition of the terms of the Contract or to the work to be performed thereunder or the specifications accompanying the same shall, in any way, affect its obligations of this bond, and it does hereby waive notice of any change, extension of time, alteration, or addition to the terms of the contract or to the work or to the specifications. Said Surety hereby waives the provisions of Sections 2819 and 2845 of the Civil Code of the State of California.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their seals this _____ day of _____, 20__ , the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Principal

(Seal)

Signature for Principal Title

Surety

(Seal)

Signature for Surety Title

*** END OF SECTION ***

SECTION 00630 WARRANTY BOND

Whereas, the City Council of the City of Manteca, State of California, and

(hereinafter designated as “Contractor”) have entered into a Contract whereby Contractor agrees to repair any improvements set forth in said Contract identified as the **TRAFFIC SIGNAL UPDATE PROJECT CIP NO. 17058 HSIPL 5242 (034)**, and awarded by Resolution to Contractor on _____, 20____, is hereby referred to and made a part hereof, and

Whereas, the Contractor is required under the terms of said Contract to furnish a one year bond starting at Final Completion for the Warranty of Improvements of said Contract.

Now, therefore, we, the Contractor and _____ as surety, are held and firmly bound unto the City of Manteca, hereinafter called “City” in the penal sum of _____ dollars (\$_____) lawful money of the United States, for the payment of which sum well and truly to be made, we bond ourselves, our heirs, successors, executors and administrators, jointly and severally, firmly by these presents.

The condition of this obligation is such that if the above bounded Contractor, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and provisions in the said Contract and any alteration thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless the City of Manteca, its officers, agents and employees, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As a part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees, including reasonable attorney’s fees, incurred by City in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered.

In witness whereof, this instrument has been duly executed by the Contractor and surety above named, on _____, 20____.

Name of Contractor

Name of Surety

Address

Address and Telephone

Signature of Contractor

Signature of Surety

APPROVED AS TO FORM:

APPROVED AS TO SUFFICIENCY:

L. David Nefouse, City Attorney

Director of Engineering

Attach Notary Form Here

*** END OF SECTION ***

SECTION 00650 WORKERS' COMPENSATION INSURANCE

In accordance with California Labor Code Section 1861, prior to commencement of work on the Contract, the Contractor shall sign and file with the City the following certification:

"I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract."

Signature

Name of Contractor

Title

Date

****END OF SECTION****

**SECTION 00700 STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION
CONTRACT**

**STANDARD
GENERAL CONDITIONS
OF THE
CONSTRUCTION CONTRACT**

CITY OF MANTECA

These General Conditions are based in part on
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GENERAL CONDITIONS

ARTICLE 1. DEFINITIONS AND TERMINOLOGY

Section 1.01 Defined Terms

- A. Wherever used in these General Conditions or in other Contract Documents, the terms listed below have the meanings indicated which are applicable to both the singular and plural thereof. Said terms are generally capitalized or written in italics, but not always. When used in a context consistent with the definition of a listed-defined term, the term shall have a meaning as defined below whether capitalized or italicized or otherwise.
1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids, which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*--The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 3. *Application for Payment*--The form acceptable to Construction Manager which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*--The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*--The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*--A document recommended by Construction Manager which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 10. *City*--City of Manteca, San Joaquin County, California, including its agencies, departments or divisions whose conduct or action is related to the work.
 11. *Claim*--A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 12. *Construction Manager*--The individual or entity retained by the Owner to perform construction quality assurance and contract administration functions not involving reviews and interpretations with respect to design intent. The Construction Manager is a representative of the City, either an employee or consultant, employed to act as advisor to the City in construction matters related to the Contract.
 13. *Contract*--The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

14. *Contract Documents*-- Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
15. *Contract Price*--The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
16. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Construction Manager's written recommendation of final payment.
17. *Contractor*--The individual or entity with whom Owner has entered into the Agreement.
18. *Cost of the Work*--See Paragraph 11.01.A for definition.
19. *Day*-- 24 consecutive hours running from midnight to midnight; calendar day.
 - a. *business day*: Day on the calendar except a Saturday and a holiday.
 - b. *working day*: Time measure unit for work progress. A working day is any 24-consecutive-hour period except:
 - 1) Saturday and a holiday.
 - 2) Day during which Contractor cannot perform work on the controlling activity for at least 50 percent of the scheduled work shift with at least 50 percent of the scheduled labor and equipment due to any of the following:
 - i) Adverse weather-related conditions.
 - ii) Traffic maintenance under the Contract.
 - iii) Suspension of a controlling activity that Contractor and the Owner agree benefits both parties.
 - iv) Unanticipated event not caused by either party, such as:
 - a) *Act of God*
 - b) *Act of a public enemy*.
 - c) *Epidemic*.
 - d) *Fire*.
 - e) *Flood*.
 - f) *Governor-declared state of emergency*.
 - g) *Landslide*.
 - h) *Quarantine restriction*.
 - v) Issue involving a third party, including:
 - i) *Industry or area-wide labor strike*.
 - j) *Material shortage*.
 - k) *Freight embargo*.
 - l) *Jurisdictional requirement of a law enforcement agency*.
 - m) *Workforce labor dispute of a utility or non-City facility owner resulting in a non-City*

facility rearrangement not described and not solely for the Contractor's convenience. Rearrangement of a non-City facility includes installation, relocation, alteration, or removal of the facility.

- 3) Day during a concurrent delay.
20. *Drawings*--That part of the Contract Documents prepared or approved by Engineer which graphically shows, on paper, the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
21. *Delay*--Event that extends the completion of an activity.
 - a. *excusable delay*: Delay caused by the Department and not reasonably foreseeable when the work began, such as:
 - 1) Change in the work
 - 2) Department action that is not part of the Contract
 - 3) Presence of an underground utility main not described in the Contract or in a location substantially different from that specified
 - 4) Described facility rearrangement not rearranged as described, by the utility owner by the date specified, unless the rearrangement is solely for the Contractor's convenience
 - 5) Department's failure to obtain timely access to the right-of-way
 - 6) Department's failure to review a submittal or provide notification in the time specified
 - b. *critical delay*: Excusable delay that extends the scheduled completion date.
 - c. *concurrent delay*: Occurrence of at least 2 of the following events in the same period of time, either partially or entirely:
 - 1) Critical delay
 - 2) Delay to a controlling activity caused by the Contractor
 - 3) Non-working day
22. *Department*—City of Manteca Engineering Department and its authorized representatives.
23. *Detour*--Temporary route for traffic around a closed road part. A passageway through a job site is not a detour.
24. *Director*--the Director of the Engineering Department, City of Manteca.
25. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
26. *Engineer*--The individual or entity named as such in the Agreement.
27. *Field Order*--A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
28. *Force Account Work*--Work ordered on a construction project without an existing agreement on its cost, and performed with the understanding that the contractor will bill the owner according to the cost of labor, materials, and equipment, plus a certain percentage for overhead and profit. (Refer to Section 12.01 of these General Conditions, and the California Department of Transportation Equipment Rental Rates and Labor Surcharge).
29. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

- 30. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.
- 31. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
- 32. *Holiday*--Holiday shown in the following table:

Holidays	
Holiday	Date observed
Every Sunday	Every Sunday
New Year's Day	January 1st
Birthday of Martin Luther King, Jr.	3rd Monday in February
Lincoln's Birthday	February 12th
Washington's Birthday	3rd Monday in February
Cesar Chavez Day	March 31st
Memorial Day	Last Monday in May
Independence Day	July 4th
Labor Day	1st Monday in September
Columbus Day	2nd Monday in October
Veterans Day	November 11th
Thanksgiving Day	4th Thursday in November
Day after Thanksgiving Day	Day after Thanksgiving Day
Christmas Day	December 25th

If February 1st, February 12th, March 31st, July 4th, November 11th, or December 25th falls on a Sunday, the Monday following is a holiday. If November 11th falls on a Saturday, the preceding Friday is a holiday.

Additionally, the City does not work on alternating Fridays of every month. Special accommodations must be made by the Contractor for City staff to be available for any work to occur on these Fridays.

- 33. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
- 34. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
- 35. *Material shortage*--
 - a. *Shortage of raw or produced material that is area-wide and caused by an unusual market condition except if any of the following occurs:*
 - 1) Shortage relates to a produced, nonstandard material
 - 2) Supplier's and the Contractor's priority for filling an order differs
 - 3) Event outside the United States for a material produced outside the United States
 - 4) Unavailability of water that delays a controlling activity
- 36. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
- 37. *Notice of Award*--The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

38. *Notice to Proceed*--A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
39. *Owner*--The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
40. *PCBs*--Polychlorinated biphenyls.
41. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
42. *Progress Schedule*--A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
43. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
44. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
45. *Quality Control Plan*--Contractor's plan to ensure QC.
46. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
47. *Related Entity*--An officer, director, partner, employee, agent, consultant, or subcontractor.
48. *Resident Project Representative*--The authorized representative of Construction Manager who may be assigned to the Site or any part thereof.
49. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
50. *Schedule of Submittals*--A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
51. *Schedule of Values*--A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
52. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
53. *Site*--Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
54. *Specifications*--That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
55. *Subcontractor*--An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

56. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Construction Manager, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be safely and conveniently utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.
57. *Substantial Defects*--Defects plainly seen as damaged, displaced, or missing parts or improper functioning of materials, parts, equipment, or systems.
58. *Successful Bidder*--The Bidder submitting a responsive Bid to whom Owner makes an award.
59. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.
60. *Supplier*--A manufacturer, fabricator, supplier, distributor, material man, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.
61. *Traffic*--Pedestrians, bicyclists, ridden or herded animals, vehicles, streetcars, and other conveyances either singularly or together while using any street, roadway or sidewalk for purposes of travel.
62. *Traffic lane*--Portion of traveled way used for the movement of a single line of vehicles.
63. *Traveled way*--Portion of the roadway for the movement of vehicles, exclusive of the shoulders, berms, sidewalks, and parking lanes.
64. *Unauthorized Work*: Work performed outside of the scope of the agreement or beyond the lines and grades described in the Contract or established by the Engineer or extra work performed without City authorization.
65. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
66. *Unit Price Work*--Work to be paid for on the basis of unit prices.
67. *Work*--The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
68. *Work Change Directive*--A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Construction Manager ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times. The signatory for the Owner may authorize a Work Change Directive for work on a Not-to-Exceed basis, where the Engineer's estimate for probable cost for said work is within the signatories authority and threshold in conformance of the City's purchasing policies.
69. *Withhold*--Money temporarily or permanently taken from a progress payment.

70. *Work*--Resources and activities required for Contract acceptance, including labor, materials, equipment, and the created product.
71. *Work Plan*--Detailed formulation of a program of action.
72. *Work Zone*--Area of a roadway or street with construction, maintenance, or utility work activities.

Section 1.02 Terminology

- A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.
- B. Intent of Certain Terms or Adjectives
 1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered”, “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer or Construction Manager. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer or Construction Manager as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer or Construction Manager any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.
- C. Day
 1. The word “day” means a calendar day of twenty-four (24) hours measured from midnight to the next midnight.
- D. Defective
 1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents, or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or
 - c. has been damaged prior to –Construction Manager’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).
- E. Furnish, Install, Perform, Provide, Supply
 1. The word "Furnish" or the word "Install" or the word "Perform" or the word "Provide" or the word "Supply," or any combination or similar directive or usage thereof, shall mean FURNISHING AND INCORPORATING IN THE WORK including all necessary labor, materials, equipment, and everything necessary to perform the Work indicated, unless specifically limited in the context used.
 2. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2. PRELIMINARY MATTERS

Section 2.01 Delivery of Bonds and Evidence of Insurance

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. Evidence of Insurance: Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

Section 2.02 Copies of Documents

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

Section 2.03 Commencement of Contract Times; Notice to Proceed

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement.

Section 2.04 Starting the Work

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

Section 2.05 Before Starting Construction

- A. Preliminary Schedules: Within ten (10) days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Construction Manager for timely review:
 - 1. a preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

Section 2.06 Preconstruction Conference

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Construction Manager and Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

Section 2.07 Initial Acceptance of Schedules

- A. At least ten (10) days before submission of the first Application for Payment a conference attended by

Contractor, Construction Manager, and others as appropriate will be held to review for acceptability to Construction Manager as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

- B. The Progress Schedule will be acceptable to Construction Manager if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Construction Manager responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
- C. Contractor's Schedule of Submittals will be acceptable to Construction Manager and Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
- D. Contractor's Schedule of Values will be acceptable to Construction Manager as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work for each Bid Item as submitted on the Bid Sheet.

ARTICLE 3. CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Section 3.01 Intent

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.
- C. Clarifications and interpretations with respect to the design intent of the Contract Documents shall be issued by Engineer through the Construction Manager, and clarifications and interpretations with respect to administrative matters shall be issued by the Construction Manager as provided in Article 9.
- D. The Specifications may vary in form, format and style. Some specification sections are written in varying degrees of streamlined or declarative style and some sections may be relatively narrative by comparison. Omissions of such words and phrases as "the Contractor shall," "in conformity with," "as shown," or "as specified" are intentional in streamlined sections. Omitted words and phrases shall be supplied by inference. Similar types of provisions may appear in various parts of a section or articles within a part depending on the format of the section. The Contractor shall not take advantage of any variation of form, format or style in making claims for extra Work.
- E. The cross referencing of specification sections under the subparagraph heading "Related Sections include but are not necessarily limited to:" and elsewhere within each specification section is provided as an aid and convenience to the Contractor. The Contractor shall not rely on the cross referencing provided and shall be responsible to coordinate the entire work under the Contract Documents and provide a complete Project whether or not the cross referencing is provided in each section or whether or not the cross referencing is complete.

Section 3.02 Reference Standards

- A. Standards, Specifications, Codes, Laws, and Regulations
 - 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of

opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, Engineer or Construction Manager, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer or Construction Manager, or any of their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

Section 3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

1. Contractor's Review of Contract Documents Before Starting Work: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Construction Manager any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer through Construction Manager before proceeding with any Work affected thereby.
2. Contractor's Review of Contract Documents During Performance of Work: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Construction Manager in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner, Construction Manager or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

Section 3.04 Amending and Supplementing Contract Documents

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 1. A Field Order
 2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3);

or

3. Engineer's written interpretation or clarification of matters of design intent issued through the Construction Manager, and Construction Managers written interpretation or clarification of administrative matters.

Section 3.05 Reuse of Documents

- A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:
 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or
 2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adoption by Engineer.
- B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

Section 3.06 Electronic Data

- A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within sixty (60) days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4. AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

Section 4.01 Availability of Lands

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.
 1. Where easement lines are shown on the Contract Drawings they shall be considered as shown in their final location unless stipulated otherwise in the Supplementary Conditions.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal

title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

Section 4.02 Subsurface and Physical Conditions

- A. *Reports and Drawings:* The Supplementary Conditions identify:
1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and
 2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

Section 4.03 Differing Subsurface or Physical Conditions

- A. *Notice:* If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:
1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
 2. is of such a nature as to require a change in the Contract Documents; or
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Construction Manager in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

- B. *Construction Manager's and Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Construction Manager will promptly review the pertinent condition with Engineer as appropriate, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor and Engineer) of Construction Manager's findings and

conclusions.

C. Possible Price and Times Adjustments:

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner, Engineer and Construction Manager, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

Section 4.04 Underground Facilities

- A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and
 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data,
 - b. contacting and coordinating with underground service alert (USA) and locating all Underground Facilities within the construction area
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.
 3. Pursuant to Government Code Section 4216-4216.9, the Contractor shall notify the appropriate regional notification center of all excavations as required under Government Code sections 4216 to

4216.9. The Contractor shall contact Underground Service Alert at 1-800-642-2444 for the location of subsurface installations. Contractor shall furnish to the Construction Manager written documentation of its contact(s) with Underground Service Alert within two (2) days after such contact(s).

4. At least two (2) days before performing any excavation work, the Contractor shall request the utility owners to mark or otherwise indicate the location of their service. Contractor shall furnish to the Construction Manager written documentation of its contact(s) with utility owners requesting them to mark or otherwise indicate the location of their respective facilities within three (3) days after such contact(s).
5. It shall be the Contractor's responsibility to determine the exact location and depth of all utilities, including service connections, which have been marked by the respective owners and which Contractor believes may affect or be affected by Contractor's operations. If no pay item is provided in the Contract for this work, full compensation for such work shall be considered as included in the prices bid for other items of work.

B. Not Shown or Indicated:

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Construction Manager. Construction Manager will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Construction Manager concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05. In accordance with Government Code Section 4215 the Contractor shall not be assessed liquidated damages for delay in completion of the project, when such delay is caused by the failure of the Owner or utility company to provide for the removal or relocation of facilities for which they are the responsible party.
3. When the General Requirements, Specifications, or Construction Drawings indicate that a utility is to be relocated, altered or constructed by others, the City will conduct all negotiations with the utility company and the work will be done at no cost to the Contractor.
4. Temporary or permanent service, relocation or alteration of utilities desired by the Contractor for its own convenience shall be the Contractor's responsibility and it shall make arrangements and bear all costs.
5. Except where the owner of a damaged utility has advised that it intends to repair the damage through its own forces or forces that it will retain or has retained, Contractor shall, within 24 hours of receipt from the Owner of notice to commence correction of damage, notify the Construction Manager in writing if Contractor intends to repair the damage. During nights and weekends when work is not in progress, Owner may give such notice by telephone or by facsimile transmission to the Contractor's

facsimile number and such notice will be immediately effective. The Contractor's failure to provide timely written notification that it intends to repair the damage shall be deemed its agreement that the Owner may repair the damage at Contractor's expense without further notice and without prejudice to any other remedy available to Owner. In such event, the Contractor may observe the Work if this can be done without in any way delaying the progress thereof, but may not contest any element of the expense of repair or the lack of further notice. This provision is in addition to any other remedy, including the remedy provided in 13.09, Owner May Correct Defective Work.

Section 4.05 Reference Points

- A. Owner shall provide engineering surveys to establish reference points for construction which in Construction Manager's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Construction Manager whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by licensed land surveyor registered in the state of California.

Section 4.06 Hazardous Environmental Condition at Site

- A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Construction Manager (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Construction Manager concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.
 - 1. Contractor shall not be required to resume Work in connection with such condition or in any affected

area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

- E. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- F. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, Engineer and Construction Manager, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.F shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- G. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner, Engineer and Construction Manager, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
 - 1. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5. BONDS AND INSURANCE

Section 5.01 Performance, Payment, and Other Bonds

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring

Companies” as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent’s authority to act.

- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

Section 5.02 Licensed Sureties and Insurers

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

Section 5.03 Certificates of Insurance

- A. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

Section 5.04 Contractor’s Liability Insurance

- A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor’s performance of the Work and Contractor’s other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 - 1. claims under workers’ compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor’s employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor’s employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner, Engineer and Construction Manager, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
2. include at least the specific coverages and be written for not less than the limits of liability provided in the Contract Documents or required by Laws or Regulations, whichever is greater;
3. include completed operations insurance;
4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.
 - a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.
8. With respect to all insurance required by this paragraph 5.04., Contractor agrees to waive all rights of subrogation against Owner, Engineer and Construction Manager, and each additional insured identified in the Supplemental Conditions.

Section 5.05 Owner's Liability Insurance

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

Section 5.06 Property Insurance

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 1. include the interests of Owner, Contractor, Subcontractors, Engineer and Construction Manager, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;
 2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, collapse,

explosion, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, (other than caused by flood) and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 5. allow for partial utilization of the Work by Owner;
 6. include testing and startup; and
 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, Engineer and Construction Manager with thirty (30) days written notice to each other additional insured.
- B. Contractor shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, Engineer and Construction Manager, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least thirty (30) days prior written notice has been given to Owner and Contractor and to each other additional insured and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.
- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

Section 5.07 Waiver of Rights

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, Engineer and Construction Manager, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition,

waive all such rights against Subcontractors, Engineer and Construction Manager, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

- B. Owner waives all rights against Contractor, Subcontractors, Engineer and Construction Manager, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, Engineer or Construction Manager, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

Section 5.08 Receipt and Application of Insurance Proceeds

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

Section 5.09 Acceptance of Bonds and Insurance; Option to Replace

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy,

the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

Section 5.10 Partial Utilization, Acknowledgment of Property Insurer

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.
1. All insurance required by the Contract Documents, or by laws or regulations shall remain in full force and effect on all phases of the Work, whether or not the Work is occupied or utilized by Owner, until all Work included in the agreement has been completed and final payment has been made.
 2. Nothing contained in the insurance requirements shall be construed as limiting the extent of Contractor's responsibility for payment of damages resulting from Contractor's, subcontractors' or suppliers' operations under the Contract. Contractor agrees that Contractor alone shall be completely responsible for procuring and maintaining full insurance coverage as provided herein or as may be otherwise required by the Contract Documents. Any approval by Owner or Construction Manager shall not operate to the contrary.

ARTICLE 6. CONTRACTOR'S RESPONSIBILITIES

Section 6.01 Supervision and Superintendence

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. Means or methods of work suggested by the Owner, the Construction Manager, or the Engineer to the Contractor, but not specified or required, if adopted or followed by the Contractor in whole or in part, shall be used at the risk and responsibility of the Contractor. The Owner, Construction Manager, or the Engineer assume no responsibility therefor, and in no way will be held liable for any defects in the Work which may result from or be caused by use of such plan or method of Work.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Construction Manager except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or received from the superintendent shall be binding on Contractor.

Section 6.02 Labor; Working Hours

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. In the absence of any Federal, state or local laws, regulations or covenants, the Contractor may conduct its performance of the Work at the Contractor's sole discretion, except that the cost of any overtime pay or other expense incurred by the Owner for Resident Project Representative, Owner's Representative and

construction observation services, occasioned by the conduct of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day, shall be reimbursed to the Owner by the Contractor. Contractor shall provide to Construction Manager 72-hour written notice of intent to work outside of regular working hours.

C. Prevailing Wage:

1. Pursuant to SB 854 and to provisions of the Labor Code Section 1770, et. seq., of the State of California, the Director of the Department of Industrial Relations has ascertained the prevailing rate of wages of the locality in which the Work is to be performed and applicable to the work to be done. Prevailing wage for each job category shall be as published by Department of Industrial Relations at the time of project work.
2. This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.
3. No Contractor or subcontractor may be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5
4. Contractor shall post job site notices prescribed by regulation.
5. For each worker paid less than the stipulated rate in the execution of the Contract by the Contractor, or any subcontractor under it, in violation of the provisions of the Labor Code, and in particular, Section 1770 to Section 1780, inclusive, the Contractor shall be subject to the provisions and penalties of Section 1775 of the Labor Code. In addition to said penalty, and pursuant to said Section 1775, the difference between such stipulated prevailing wage rates and the amounts paid to each worker for each calendar day, or portion thereof, for which each worker was paid less than the stipulated prevailing rate shall be paid to each worker by the Contractor.
6. The wage rates set forth are the minimum that may be paid by the Contractor. Nothing herein contained shall be construed as preventing the Contractor from paying more than the minimum set forth.
7. No extra compensation whatever shall be allowed by the City due to the inability of the Contractor to hire labor at the minimum rate nor for any necessity for payment by the Contractor for subsistence, travel time, overtime, or other added compensation, all of which possibilities are elements to be considered and ascertained to the Contractor's own satisfaction in preparing the bid.
8. If it becomes necessary to employ a craft other than those listed in the prevailing rates, the Contractor shall notify the City immediately and the City will obtain the additional prevailing rate from the Director of the Department of Industrial Relations and the rate thus determined shall be applicable as a minimum at the time of initial employment.
9. The Contractor shall pay travel and subsistence payments to workers needed to execute the work as such travel and subsistence payments are defined in the applicable collective bargaining agreement filed with the Department of Industrial Relations pursuant to Labor Code Section 1773.8.
10. City and Contractor stipulate that Labor Code Section 1775 will be complied with.
11. The City will consider the type of work performed by classification traditionally employed to perform said work in San Joaquin County when determining appropriate craft, classification or type of worker under Section 1733.2 of the California Labor Code.
12. Not Used.
13. Certified Payrolls - In accordance with Section 1776 of the Labor Code, each Contractor and subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time, and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by

the Contractor or the subcontractor in connection with the project. Pursuant to SB 854, All Contractors and subcontractors must furnish electronic certified payroll records directly to the Labor Commissioner (aka Division of Labor Standards Enforcement).

14. The payroll records shall be certified and shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis:
 - a. A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or its authorized representative on request.
 - b. A certified copy of all payroll records shall be made available for inspection or furnished upon request to a representative of the City, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations.
 - c. A certified copy of all payroll records shall be made available upon request by the public in accordance with Section 1776 of the Labor Code.
15. The Contractor is responsible for its and its subcontractors' compliance with the provisions of Section 1776 of the Labor Code.
16. Overtime Requirements - The Contractor shall forfeit, as a penalty to the City, the penalty as provided in Section 1813 of the Labor Code for each worker employed in the execution of the Contract by the Contractor, or any subcontractor under the Contractor, for each day during which such worker is required or permitted to work more than eight (8) hours in any one day and forty (40) hours in any one week, in violation of the provisions of the Labor Code, and in particular, Section 1810 to Section 1815 thereof, inclusive, except that work performed by employees of Contractors in excess of eight (8) hours a day and forty (40) hours during one week, shall be permitted upon compensation for all hours worked in excess of eight (8) hours per day, at not less than one and a half (1.5) times the basic rate of pay as provided for in Section 1815 of the Labor Code.
17. Apprentice and Trainee - Attention is directed to the provisions in Section 1777.5 of the Labor Code and in accordance with the regulations of the California Apprenticeship Council concerning the employment of apprentices by the Contractor or any subcontractor under the Contractor.
18. Section 1777.5 requires the Contractor or subcontractors employing tradespersons in any apprenticeable occupation to apply to the joint apprenticeship committee nearest the site of the project that administers the apprenticeship program in that trade for a certificate of approval. The Contractor and subcontractors are required to submit contract award information to the applicable joint apprenticeship committee. As provided for in Section 1777.5 of the Labor Code, the Contractor is required to make contributions to funds established for the administration of apprenticeship programs.
19. It shall be the responsibility of the Contractor to abide by the provisions of Section 1777.5 of the Labor Code and to require all subcontractors employed by or contracting with the Contractor to abide by said provisions. The Contractor shall furnish the City any and all evidence of compliance with this code section when requested by the City.
20. For failure to comply with Section 1777.5 of the Labor Code, the Contractor shall be subject to the penalties in Section 1777.7 of the Labor Code. The provisions of this paragraph apply only to the extent not preempted by Federal law.
21. Workers' Compensation Insurance - The Contractor is required to secure the payment of compensation to its employees in accordance with the provisions of Sections 1860 and 3700 of the Labor Code and Paragraph 00820-2.40, Workers' Compensation Insurance.

Section 6.03 Services, Materials, and Equipment

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full

responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

1. Where the Work requires equipment be furnished, due to the lack of standardization of equipment as produced by the various manufacturers, it may become necessary to make minor modifications in the structures, buildings, piping, mechanical work, electrical work, accessories, controls, or other work, to accommodate the particular equipment offered. Contractor's bid price for any equipment offered shall include the cost of making any necessary changes subject to the approval of Construction Manager.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer or Construction Manager, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.
 1. Materials and equipment, if furnished by the Owner, will be made available as designated in the General Requirements. The cost of unloading, hauling and handling, and placing Owner-furnished materials and equipment shall be considered as included in the price bid for the Contract item involving such Owner-furnished material.
 2. Contractor shall inspect and assure itself of the amount and soundness of such materials and equipment.
 3. The Contractor will be held responsible for all materials and equipment furnished to it and received by it, and shall pay all demurrage and storage charges. City-furnished materials and equipment lost or damaged from any cause whatsoever shall be replaced by the Contractor. The Contractor will be liable to the Owner for the cost of replacing Owner-furnished material and equipment and such costs may be deducted from any moneys due or to become due the Contractor.
- D. All items of standard equipment shall be the latest model at the time of bid, unless otherwise specified.

Section 6.04 Progress Schedule

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
 1. Contractor shall submit to Construction Manager for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

Section 6.05 Substitutes and "Or-Equals"

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or

description contains or is followed by words reading that no like, equivalent, or “or-equal” item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *“Or-Equal” Items*: If in Engineer’s sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an “or-equal” item, in which case review and approval of the proposed item may, in Engineer’s sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - i) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - ii) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; it has a proven record of performance and availability of responsive service; and

Contractor certifies that, if approved and incorporated into the Work:

- iii) there will be no increase in cost to the Owner or increase in Contract Times, and
 - iv) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
2. *Substitute Items*
 - a. If in Engineer’s sole discretion an item of material or equipment proposed by Contractor does not qualify as an “or-equal” item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
 - b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Construction Manager from anyone other than Contractor.
 - c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.
 - d. Contractor shall make written application to Construction Manager for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - i) shall certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design,
 - 2) be similar in substance to that specified, and
 - 3) be suited to the same use as that specified;
 - ii) will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor’s achievement of Substantial Completion on time;
 - 2) whether or not use of the proposed substitute item in the Work will require a change in

- any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
- 3) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
- iii) will identify:
- 1) all variations of the proposed substitute item from that specified; and
- 2) available engineering, sales, maintenance, repair, and replacement services.
- iv) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. **Substitute Construction Methods or Procedures:** If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. **Engineer's Evaluation:** Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. **Special Guarantee:** Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. **Engineer's Cost Reimbursement:** Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. **Contractor's Expense:** Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

Section 6.06 Concerning Subcontractors, Suppliers, and Others

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written

objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

- C. Contractor shall be fully responsible to Owner, Engineer, and Construction Manager for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner, Engineer or Construction Manager and any such Subcontractor, Supplier or other individual or entity, nor
 - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Construction Manager and Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner, Construction Manager and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Construction Manager and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

Section 6.07 Patent Fees and Royalties

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

- B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner, Construction Manager and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

Section 6.08 Permits

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

Section 6.09 Laws and Regulations

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner, Construction Manager nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

Section 6.10 Taxes

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

Section 6.11 Use of Site and Other Areas

- A. Limitation on Use of Site and Other Areas
 - 1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
 - 2. Should any claim be made by any such owner or occupant because of the performance of the Work,

Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner, Construction Manager and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Section 6.12 Record Documents

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Construction Manager for reference, and shall be current at the time of Contractor's submission of Application for Payment as a condition precedent for Construction Manager's recommendation of payment. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Construction Manager for Owner. Contractor shall include accurate locations for buried and imbedded items.

Section 6.13 Safety and Protection

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 1. all persons on the Site or who may be affected by the Work;
 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect

them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

1. At least three (3) business days before performing any excavation work or other work that could damage existing improvements within, or adjacent to, the Work area, the Contractor shall notify the owners of properties adjacent to the Work area of intended commencement of such Work and request that such owners mark or otherwise indicate the location of underground improvements of which they are aware or other improvements not readily apparent from visual inspection of the adjacent property, such as survey points and utility service installations not owned by the appropriate utility. The Contractor shall also give three (3) business days notice to occupants or owners of adjacent property to permit them to salvage or relocate plants, trees, fences, sprinklers, and other improvements within the right-of-way that are designated for removal or would be destroyed because of the Work. Contractor shall furnish to the Construction Manager written documentation of its contact(s) with property owners (1) requesting them to mark or otherwise indicate the location of their respective facilities, and (2) notifying them to salvage or relocate landscaping or improvements within or adjacent to the Work area within two (2) days after such contact(s).
 2. It shall be the Contractor's responsibility to determine the exact location (including depth for underground improvements) and to document the existing condition of all existing improvements which are not designated for removal (e.g., curbs, sidewalks, survey points, fences, walls, signs, utility installations, pavements, structures, etc.) which the Contractor believes may affect or be affected by Contractor's operations.
 3. In the event that existing improvements are found that have not been identified in the Contract Documents or indicated by the respective property owner, or are found to exist in a substantially different location than so indicated, the Contractor shall (1) immediately notify the Construction Manager thereof in writing, and (2) take steps to avoid damaging such improvements, including ascertaining their exact location if not yet known.
- C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner, Construction Manager or Engineer, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
1. The Contractor shall immediately notify the Construction Manager and the property owner of any damage to any existing improvements that have not been designated to be removed. The Contractor shall be responsible for the cost of repairing or restoring all existing improvements which are not designated for removal (e.g., curbs, sidewalks, survey points, fences, walls, signs, utility installations, pavements, structures, etc.) and are damaged or removed as a result of its operations. Repairs and replacements shall be at least equal to existing improvements and shall match them in finish and dimension.
 2. The Contractor shall protect from damage all landscaping (e.g., trees, lawns, shrubbery, etc.) adjacent to the Work area or within the Work area that have not been designated to be removed. The Contractor shall immediately notify the Construction Manager and the property owner of any damage to any such landscaping which is not designated for removal. The Contractor shall be responsible for the cost of restoring or replacing such landscaping in as nearly the original conditions and location as it is reasonably possible. Lawns shall be re-seeded and covered with suitable mulch.
 3. Except where an owner of damaged improvements or landscaping has advised that he or she intends to repair the damage himself or through forces that he or she will retain or has retained, Contractor

shall, within 24 hours of receipt from the Owner of notice to commence correction of damage, notify the Construction Manager in writing if Contractor intends to repair the damage. During nights and weekends when work is not in progress, Owner may give such notice by telephone or by facsimile transmission to the Contractor's facsimile number designated and such notice will be immediately effective. The Contractor's failure to provide timely written notification that it intends to repair the damage shall be deemed its agreement that the Owner may repair the damage at Contractor's expense without further notice and without prejudice to any other remedy available to City. In such event, the Contractor may observe the Work if this can be done without in any way delaying the progress thereof, but may not contest any element of the expense of repair or the lack of further notice. This provision is in addition to any other remedy, including the remedy provided in 13.09, Owner May Correct Defective Work.

- D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Construction Manager has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
- E. The Contractor shall establish, implement, and maintain a Written injury prevention program as required by Labor Code Section 6401.7. This written program shall be submitted to the Construction Manager within five (5) days of Notice to Proceed. The Contractor's injury prevention program will not be reviewed for approval. Before proceeding with any construction work, the Contractor shall take the necessary action to comply with all provisions for safety and accident prevention. The Contractor shall develop and maintain for the duration of this Contract, a safety program that will effectively incorporate and implement all required safety provisions. The Contractor shall appoint an employee as safety supervisor who is qualified and authorized to supervise and enforce compliance with the safety program. The Contractor, as a part of its safety program, shall maintain at its office or other well-known place at the Site, safety equipment applicable to the Work as prescribed by the aforementioned authorities, all items necessary for giving first aid to the injured, and shall establish the procedure for the immediate removal to a hospital or a doctor's care of persons who may be injured on the jobsite.
1. In accordance with the provisions of Section 6705 of the Labor Code, the Contractor shall submit, in advance of excavation 5 feet or more in depth, detailed plans showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from hazard of caving ground during such excavation. If such plans vary from the shoring system standards set forth in the Construction Safety Orders in Title 8, California Code of Regulations, the plans shall be prepared and signed by a registered civil or structural engineer. Shoring, bracing, sloping, or other protective system shall not be less effective than required by the California Construction Safety orders. The Contractor shall designate in writing to the Construction Manager the "competent person" with the authority and responsibilities designated in the Construction Safety Orders.
 2. If death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Construction Manager and the City. In addition, the Contractor must promptly report in writing to the Construction Manager all accidents whatsoever arising out of, or in connection with, the performance of the Work whether on, or adjacent to, the Site, giving full details and statements of witnesses. The Contractor shall make all reports as are, or may be, required by any authority having jurisdiction, and permit all safety inspections of the work being performed under this Contract.
 3. If a claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Construction Manager, giving full details of the claim.

Section 6.14 Safety Representative

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and

responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

Section 6.15 Hazard Communication Programs

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

Section 6.16 Emergencies

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Construction Manager prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.
- B. If Contractor fails to take appropriate action in an emergency, the Owner also reserves the right to perform any portion of the work that threatens the safety or health of the public or Owner, and the safety of the work or any property or equipment. In the event the Owner performs work in an emergency, an appropriate Change Order shall be issued unilaterally deducting from the payments then or thereafter due the Contractor the cost for performing such Work, including compensation for the Engineer's, the Construction Manager's, and City's additional services made necessary by such emergency.

Section 6.17 Shop Drawings and Samples

- A. Contractor shall submit required Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.
 - 1. Shop Drawings:
 - a. Submit number of copies specified in the General Requirements.
 - i) Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.
 - ii) Shop Drawings submitted as herein provided by Contractor and reviewed by Engineer for conformance with the design concept shall be executed in conformity with the Contract Documents unless otherwise required by Owner.
 - iii) When Shop Drawings are submitted for the purpose of showing the installation in greater detail, their review shall not excuse Contractor from requirements shown on the drawings and Specifications.
 - iv) For-Information-Only submittals upon which the Engineer is not expected to conduct review or take responsive action may be so identified in the Contract Documents.
 - 2. *Samples*: Contractor shall also submit required Samples to Engineer for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals.
 - a. Submit number of Samples specified in the Specifications.
 - b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the

submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:
 - a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;
 - c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and
 - d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation; otherwise Contractor will not be relieved of the responsibility of executing the Work in accordance with the Contract Documents, even though such Shop Drawings or Samples have been otherwise reviewed.
 - a. If a Shop Drawing or Sample, as submitted, indicates a variation from the Contract Requirements as set forth in the Contract Documents and Engineer finds same to be in the interest of Owner and to be so minor as not to involve a change in the Contract Price or time for performance, Engineer may approve the Shop Drawings or Samples; provided however, such departure is slight in nature and does not affect the design concept of the Work.
4. Contractor shall submit all Shop Drawings and Samples sufficiently in advance of construction requirements to allow ample time for checking, correcting, resubmitting and rechecking and to avoid any delay in progress of the Work.
5. Shop Drawings and Sample submittals not conforming to requirements of this paragraph 6.17D and Section 01340 will be returned to Contractor without action for resubmittal and the resulting delay shall be entirely the responsibility of Contractor.

D. *Engineer's Review*

1. Engineer will provide timely review of required Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or

procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.
4. Engineer's check and review of Shop Drawings and Samples, Standard Specifications and descriptive literature submitted by Contractor will be only for general conformance with design concept, except as otherwise provided, and shall not be construed as:
 - a. permitting any departure from the Contract Requirements;
 - b. relieving Contractor of the responsibility for any error in details, dimensions or otherwise that may exist in such submittals;
 - c. constituting a blanket approval of dimensions, quantities, or details of the material or equipment shown; or
 - d. approving departures from additional details or instructions previously furnished by Engineer. Such check or review shall not relieve Contractor of the full responsibility of meeting all of the requirements of the Contract Documents.

E. Resubmittal Procedures

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

Section 6.18 Continuing the Work

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

Section 6.19 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Construction Manager and Engineer, and their Related Entities, shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Construction Manager and Engineer;
2. recommendation by Construction Manager or payment by Owner of any progress or final payment;
3. the issuance of a certificate of Substantial Completion by Construction Manager or any payment related thereto by Owner;
4. use or occupancy of the Work or any part thereof by Owner;
5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
6. any inspection, test, or approval by the Construction Manager, Engineer or others; or
7. any correction of defective Work by Owner.

Section 6.20 Indemnification

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner, Construction Manager and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Construction Manager and Engineer and their respective officers, directors, partners, employees, agents, consultants and subcontractors arising out of:
 1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

Section 6.21 Delegation of Professional Design Services

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the permanent Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to permanent systems, materials or equipment incorporated into the Work are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must

satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

Section 6.22 Waste Disposal Services

- A. Contractor shall use City garbage services for the disposal of construction waste. Contractor shall recycle waste as appropriate. Contractor shall provide a monthly update to the City of the quantity of waste recycled and general waste.

ARTICLE 7. OTHER WORK AT THE SITE

Section 7.01 Related Work at Site

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Construction Manager and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Construction Manager in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent

defects and deficiencies in such other work.

Section 7.02 Coordination

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 - 3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

Section 7.03 Legal Relationships

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

ARTICLE 8. OWNER'S RESPONSIBILITIES

Section 8.01 Communications to Contractor

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Construction Manager.

Section 8.02 Replacement of Construction Manager or Engineer

- A. In case of termination of the employment of either Construction Manager or Engineer, Owner shall appoint a Construction Manager or engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Construction Manager or Engineer.

Section 8.03 Furnish Data

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

Section 8.04 Pay When Due

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

Section 8.05 Lands and Easements; Reports and Tests

- A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

Section 8.06 Insurance

- A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

Section 8.07 Change Orders

- A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

Section 8.08 Inspections, Tests, and Approvals

- A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

Section 8.09 Limitations on Owner's Responsibilities

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

Section 8.10 Undisclosed Hazardous Environmental Condition

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

Section 8.11 Evidence of Financial Arrangements

- A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9. CONSTRUCTION MANAGER'S AND ENGINEER'S STATUS DURING CONSTRUCTION

Section 9.01 Owner's Representative

- A. Construction Manager and Engineer will be Owner's representatives during the construction period. The duties and responsibilities and the limitations of authority of Construction Manager and Engineer as Owner's representatives during construction are set forth in the Contract Documents and will not be changed without written consent of Owner, Construction Manager and Engineer.

Section 9.02 Visits to Site

- A. Engineer may make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will endeavor to guard Owner against defective Work.

- B. Construction Manager will make visits to the Site at intervals appropriate to the various stages of construction as Construction Manager deems necessary in order to observe the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Construction Manager, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Construction Manager will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Construction Manager's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Construction Manager will keep Owner informed of the progress of the Work, and will endeavor to guard Owner against defective Work.
- C. Engineer's and Construction Manager's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

Section 9.03 Construction Manager's Project Representative

- A. If Owner and Construction Manager agree, Construction Manager will furnish a Resident Project Representative to assist Construction Manager in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Construction Manager's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.
- B. Construction Manager's Resident Project Representative shall not authorize any deviation from the Contract Documents or substitutions of materials or equipment.

Section 9.04 Authorized Variations in Work

- A. Construction Manager or Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

Section 9.05 Rejecting Defective Work

- A. Construction Manager will have authority to reject Work which Construction Manager or Engineer believes to be defective, or that Construction Manager or Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Construction Manager will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.
- B. The acceptance at any time of materials or equipment by or on behalf of Owner shall not be a bar to future rejection if they are subsequently found to be defective, inferior in quality, or not equal to the material or equipment specified, or are not as represented to Construction Manager, Engineer or Owner.

Section 9.06 Shop Drawings, Change Orders and Payments

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Construction Manager's authority as to Applications for Payment, see Article 14.

Section 9.07 Determinations for Unit Price Work

- A. Construction Manager will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Construction Manager will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Construction Manager's written decision thereon will be final and binding (except as modified by Construction Manager to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

Section 9.08 Decisions on Requirements of Contract Documents and Acceptability of Work

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents with respect to matters of design intent. Construction Manager will be the initial interpreter of the requirements of the Contract Documents with respect to administrative matters and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Construction Manager in writing within 30 days of the event giving rise to the question.
- B. Construction Manager or Engineer through Construction Manager will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Construction Manager's or Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Construction Manager's or Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Construction Manager and Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

Section 9.09 Limitations on Construction Manager's and Engineer's Authority and Responsibilities

- A. Neither Construction Manager's and Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Construction Manager or Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Construction Manager or Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Construction Manager or Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Construction Manager and Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the

safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Construction Manager and Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

- C. Construction Manager and Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Construction Manager's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10. CHANGES IN THE WORK; CLAIMS

Section 10.01 Authorized Changes in the Work

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
 - 1. *Change Proposal Request:*
 - a. When Owner requests Contractor to present a proposal to accomplish a change in the Work, the request will be made in the form of a Change Proposal Request (CPR) prepared by Construction Manager. The CPR will describe the change and request Contractor to propose a cost and Contract Price and/or Contract Time change. Contractor will propose cost and/or time changes, if any, sign the CPR and return it to Construction Manager. If requested by Owner or Construction Manager, Contractor shall provide an itemized breakdown of the cost of the change. Construction Manager will make recommendations to Owner concerning acceptance. If the CPR is approved by Owner, the CPR will be included in a Change Order. Contractor is not authorized to proceed with a change contained in a CPR until the Change Order is properly signed and issued in conformance with the Owner's purchasing policies.
 - b. When the Contractor desires to propose changes to the Work, it may initiate a CPR in the same form as provided in Paragraph 10.01A.1.a. and submit the CPR to the Construction Manager for the Engineer's review and recommendation.
 - 2. *Work Change Directive:*
 - a. The Owner may issue a work change directive as an order to perform additional work that is deemed necessary if the Owner and Contractor cannot agree upon a cost or schedule for proposed additional work or when they agree that delays could cause damage such that work must proceed immediately. Work change directives are valid if signed by a signatory approved by Owner. The Owner's signatory may authorize a work change directive for work on a Not-to-Exceed basis, where the Engineer's estimate for probable cost for said work is within the signatory's authority and threshold in conformance of the City's purchasing policies. Upon issuance of a valid Work Change Directive, Contractor shall proceed with work. A work change directive shall be followed by a valid change order for an agreed upon or force account adjustment to Contract payment or schedule for the additional work, as provided in Section 12.01.

3. *Force Account:*

- a. Work paid for by force account may be authorized by Owner under a valid work change directive. For work paid by force account, the Construction Manager compares the Owner's records to Contractor's daily force-account work report. When the Contractor and the Owner agree on the contents of the daily force-account work reports, the Owner accepts the report and the Owner pays for the work. If the records differ, the Owner pays for the work based only on the information shown on the Owner's records. If a subcontractor performs work at force account, the markups specified for labor, materials, and equipment include compensation for all delay costs, overhead costs, and profit. If an item's unit price is adjusted for work-character changes, the Owner excludes Contractor's cost of determining the adjustment. Payment for owner-operated labor and equipment is made at the market-priced invoice submitted.
- B. If the Owner chooses to pay for change order work based on an agreed price, but Contractor and the Owner cannot agree on the price, the Owner may choose to pay by force account. If a portion of extra work is covered by bid items, the Owner pays for this work as changed quantities in those items. The Owner pays for the remaining portion of the extra work by force account or agreed price.
- C. Force account work shall conform to this Agreement, including the articles of these general conditions. In cases where this Agreement does not specify applicable requirements, terms or conditions, force account work shall conform to those applicable requirements as set forth in the most current version of Section 9-1.04 of the California Department of Transportation Standard Specifications.
- D. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

Section 10.02 Unauthorized Changes in the Work

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

Section 10.03 Execution of Change Orders

- A. It is at the sole discretion of the City Council, or a delegate explicitly authorized by City Council, to execute Change Orders. The City and the Construction Manager will review all change orders, and, if the changes are deemed reasonable and appropriate by the City, the City will proceed to execute the appropriate change orders accordingly. Change orders recommended by the Construction Manager to the City shall consist of:
 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Construction Manager or by Engineer through Construction Manager pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

Section 10.04 Notification to Surety

- A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

Section 10.05 Claims

- A. *Construction Manager's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Construction Manager for decision. A decision by Construction Manager shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Construction Manager and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Construction Manager and the other party to the Contract within 60 days after the start of such event (unless Construction Manager allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Construction Manager and the claimant within thirty (30) days after receipt of the claimant's last submittal (unless Construction Manager allows additional time).
- C. *Construction Manager's Action:* Construction Manager will review each Claim and, within thirty (30) days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part,
 2. recommend approval of the Claim to the City, or
 3. notify the parties that the Construction Manager is unable to resolve the Claim if, in the Construction Manager's sole discretion, it would be inappropriate for the Construction Manager to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Construction Manager does not take action on a Claim within said thirty (30) days, the Claim shall be deemed denied.
- E. Construction Manager's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within thirty (30) days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11. COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

Section 11.01 Cost of the Work

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work, or the reasonable cost that would have been incurred in the case of deleted Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, training, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above. For Change Order pricing, the Labor Surcharge (social security contributions, unemployment excise, and payroll taxes) shall be twenty-seven (27) percent of the sum of the wages, vacation, and fringe benefits (workers' compensation, training, health and retirement benefits, sick leave, bonuses, and holiday pay).
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Construction Manager, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
 5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Construction Manager, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements.

The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain. For Change Order pricing, bonds and insurance shall be 1 percent of the Change Order value for both additive and credit changes that are above the original Contract value and 0 percent of the Change Order value for both additive and credit changes that are below the original Contract value.
- B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:
1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Construction Manager an itemized cost breakdown together with supporting data.

Section 11.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Construction Manager.
- B. Cash Allowances
1. Contractor agrees that:
 - a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. Contingency Allowance
1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Construction Manager to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

Section 11.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Construction Manager subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item. Work described in the Contract Documents, or reasonably inferred as required for a functionally complete installation, but not identified in the listing of unit price items shall be considered incidental to unit price work listed and the cost of incidental work included as a part of the unit price.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
1. the total cost of a particular item of Unit Price Work amounts to ten percent (10%) or more of the Contract Price at time of Notice of Award and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than twenty-five percent (25%) from the estimated quantity of such item indicated in the Agreement; and if there is no corresponding adjustment with respect to any other item of Work; and if Contractor believes that Contractor has

incurred additional expense as a result thereof; or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a claim for an adjustment in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.; and

2. there is no corresponding adjustment with respect any other item of Work; and
3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12. CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

Section 12.01 Change of Contract Price

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Construction Manager and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
 1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum including overhead and profit not necessarily in accordance with Paragraph 12.01.C.2, and shall include the cost of any secondary impacts that are foreseeable at the time of pricing the cost of extra Work; or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (either by estimate before the work is performed or force account) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. Contractor's Fee: The Contractor's fee for overhead and profit shall be determined as follows:
 1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be fifteen percent (15%);
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent (5%);
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of fifteen percent (15%) of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent (5%) of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

- e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the reasonable cost that would have been incurred to perform the Work plus a deduction in Contractor's fee by an amount equal to five percent (5%) of such net decrease; and
- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.
- g. costs and mark up percentages for force account work shall conform to this Agreement, including the articles of these general conditions. In cases where this Agreement does not specify applicable requirements, terms or conditions, force account work shall conform to those applicable requirements as set forth in the most current version of Section 9-1.04 of the California Department of Transportation Standard Specifications and the California Department of Transportation Labor Surcharge and Equipment Rental Rates.

Section 12.02 Change of Contract Times

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Construction Manager and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.
- C. No extension of the Contract Time will be allowed for additional Work or for claimed delay unless the additional Work contemplated or claimed delay is shown to be on the critical path of the Project's schedule of construction or Contractor can show by Critical Path Method analysis how the additional Work or claimed delay adversely affects the critical path.

Section 12.03 Delays

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Construction Manager, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be in accordance with Paragraph 12.02 C, and shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Construction Manager, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of

engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor, or for concurrent delays. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13. TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

Section 13.01 Notice of Defects

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

Section 13.02 Access to Work

- A. Owner, Construction Manager, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

Section 13.03 Tests and Inspections

- A. Contractor shall give Construction Manager timely notice of readiness of the Work in accordance with the Contract Documents for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform Quality Assurance inspections, tests, or approvals on behalf of the Owner as specified under the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.
- C. All inspection and testing required to maintain the contractor's quality control and execute the construction in conformance with the Contract Documents are the contractor's responsibility. Where the contractor fails to meet quality assurance requirements, and additional inspection, testing or approvals are necessary to provide the required quality assurance as specified in the Contract Documents, the contractor shall bear the cost for said additional inspection, testing or approvals.
- D. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- E. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Construction Manager's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Construction

Manager.

- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Construction Manager, it must, if requested by Construction Manager, be uncovered for observation.
- G. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Construction Manager timely notice of Contractor's intention to cover the same and Construction Manager has not acted with reasonable promptness in response to such notice.

Section 13.04 Uncovering Work

- A. If any Work is covered prior to the specified inspection, testing or approvals required in the Contract Documents or contrary to the written request of Construction Manager, it must, if requested by Construction Manager, be uncovered for Construction Manager's observation and replaced at Contractor's expense.
- B. If Construction Manager considers it necessary or advisable that covered Work be observed by Construction Manager or inspected or tested by others, Contractor, at Construction Manager's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Construction Manager may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); or Owner shall be entitled to accept defective Work in accordance paragraph 13.08 in which case Contractor shall still be responsible for all costs associated with exposing, observing, and testing the defective Work. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If the uncovered Work, which had previously been inspected, tested or approved by the as specified and was deemed by the Engineer and Construction Manager to conform with the requirements set forth in the Contract Documents, is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

Section 13.05 Owner May Stop the Work

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

Section 13.06 Correction or Removal of Defective Work

- A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Construction Manager or Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or

relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

Section 13.07 Correction Period

- A. If within one year after the date of Final Acceptance of the Work by Owner (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. repair such defective land or areas; or
 - 2. correct such defective Work; or
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective,
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom, and
 - 5. Contractor shall provide a Warranty Form to the Owner with all appropriate Contractor contact information for the Owners Staff to contact the Contractor in relation to warranty items.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

Section 13.08 Acceptance of Defective Work

- A. If (prior to Construction Manager's recommendation of final payment), instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Construction Manager as to reasonableness) and the diminished value of the

Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Construction Manager's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

Section 13.09 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Construction Manager to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, Construction Manager and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14. PAYMENTS TO CONTRACTOR AND COMPLETION

Section 14.01 Schedule of Values

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Construction Manager. Progress payments on account of Unit Price Work will be based on the number of units completed.

Section 14.02 Progress Payments

- A. Applications for Payments
 1. At least twenty (20) days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Construction Manager for review an Application for Payment filled out and signed by Contractor covering the Work completed as of

- the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 3. *Retention* - The Owner will deduct from each progress payment and retain as part security, five percent (5%) of the amount earned until the final payment.
 4. Pursuant to Public Contract Code Section 22300, for moneys earned by the Contractor and withheld by the Owner to ensure the performance of the Contract, the Contractor, may, at their option, choose to substitute securities meeting the requirements of said Section 22300. In the event the Contractor wishes to choose this option, the Contractor shall enter into an escrow agreement with the Owner and the escrow agent, a qualified bank to be acceptable to the Owner, in the form of the agreement included in the project specifications. The costs of such escrow shall be paid by the Contractor. The securities to be deposited in said escrow account shall be equivalent, in fair market value, to the amount to be withheld as performance retention. The securities shall be held in accordance with the provisions of Public Contract Code Section 22300, and the implementing agreement.
 5. Contractor shall have the obligation of ensuring that such securities deposited are sufficient so as to maintain, in total fair market value, an amount equal to the cash amount of the sums to be withheld under the Contract. If, upon written notice from the Owner, or from the appropriate escrow agent, indicating that the fair market value of the securities has dropped below the dollar amount of moneys to be withheld by the Owner to ensure performance, Contractor shall, within five (5) days of the date of such notice, post additional securities as necessary to ensure that the total fair market value of all such securities held by the Owner, or in escrow, is equivalent to the amount of money to be withheld by the Owner under the Contract.
 6. Any Contractor wishing to exercise this option shall give notice in writing to Owner, and shall thereafter execute an escrow agreement in the form of the form included with these Contract Documents.
 7. Materials, as used herein, shall be considered to be those items that are fabricated and manufactured goods and equipment. Only those materials for which the Contractor can demonstrate are properly stored and secured in conformance with the Contract documents, and can transfer clear title to the City will be qualified for partial payment. The Contractor may request payment of seventy-five percent (75%) of the actual net cost of these materials, not to exceed fifty percent (50%) of the total adjusted line item extension as found in the bid schedule.
 8. To receive partial payment for materials and equipment delivered to the Site, but not incorporated in the Work, it shall be necessary for the Contractor to submit to the Construction Manager a list of such materials, at least seven (7) business days prior to submitting the monthly estimate of amount earned for work completed. At the Construction Manager's sole discretion, the Construction Manager will approve items for which partial payment is to be made subject to the following:
 - a. Only equipment or materials that have received favorable review of shop drawings will qualify.
 - b. Eligible equipment or materials must be delivered and properly stored, protected, and maintained in a manner favorably reviewed by the Construction Manager, at the job site or at a bonded

warehouse.

- c. The Contractor's actual net cost for the materials must be supported by invoices of suppliers, or other documentation requested by the Construction Manager.
 - d. Materials or equipment delivered to the Site less than thirty (30) days prior to their scheduled incorporation in the Work shall not qualify.
 - e. Final payment shall be made only for materials actually incorporated in the Work. Upon acceptance of the Work, all materials remaining for which advance payments had been made shall revert to the Contractor, unless otherwise agreed, and partial payments made for these items shall be deducted from the final payment for the Work.
 - f. Partial payments for materials and equipment on hand shall not be deemed to be final payment for the material nor relieve the Contractor of its obligations under the Contract.
 - g. Partial payments for materials and equipment on hand shall be subject to retention in accordance with the Contract Documents.
9. After receipt of the last progress payment, but prior to acceptance of the Work by the City, the Contractor shall send a letter to the Construction Manager. The letter, pursuant to California Public Contract Code Section 7100, shall state that acceptance of the final payment described below shall operate as and shall be, a release to the City, the Construction Manager, the Designer, and their duly authorized agents, from all claim of and/or liability to the Contract arising by virtue of the Contract related to those amounts. Disputed Contract claims in stated amounts previously filed as provided in Paragraph 00700-7.03b, Claims, may be specifically excluded by the Contractor from the operation of the release.

B. Review of Applications

1. Construction Manager will, within ten (10) business days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing City's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Construction Manager's recommendation of any payment requested in an Application for Payment will constitute a representation by Construction Manager to Owner, based on Construction Manager's observations on the Site of the executed Work as an experienced and qualified design professional and on Construction Manager's review of the Application for Payment and the accompanying data and schedules, that to the best of Construction Manager's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Construction Manager's responsibility to observe the Work.
3. By recommending any such payment Construction Manager will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Construction Manager in the

Contract Documents; or

- b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Construction Manager's review of Contractor's Work for the purposes of recommending payments nor Construction Manager's recommendation of any payment, including final payment, will impose responsibility on Construction Manager:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Construction Manager may refuse to recommend the whole or any part of any payment if, in Construction Manager's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Construction Manager may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Construction Manager's opinion to protect Owner from loss because:
 - a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
 - d. Construction Manager has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due

1. Forty-five (45) days after presentation of the Application for Payment to Owner with Construction Manager's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor. Payment will be made by the Owner to the Contractor in accordance with Owner's normal accounts payable procedure.

D. Reduction in Payment

1. Owner may refuse to make payment of the full amount recommended by Construction Manager because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Construction Manager, Owner will give Contractor written notice (with a copy to Construction Manager) within (10) days after receipt of each Application for Payment stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.
3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

Section 14.03 Contractor's Warranty of Title

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

Section 14.04 Substantial Completion

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Construction Manager in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Construction Manager issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Construction Manager shall make an inspection of the Work to determine the status of completion. If Construction Manager does not consider the Work substantially complete, Construction Manager will notify Contractor in writing giving the reasons therefor.
- C. If Construction Manager considers the Work substantially complete, Construction Manager will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven (7) days after receipt of the tentative certificate during which to make written objection to Construction Manager as to any provisions of the certificate or attached list. If, after considering such objections, Construction Manager concludes that the Work is not substantially complete, Construction Manager will within fourteen (14) days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Construction Manager considers the Work substantially complete, Construction Manager will within said fourteen (14) days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Construction Manager believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Construction Manager will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Construction Manager in writing prior to Construction Manager's issuing the definitive certificate of Substantial Completion, Construction Manager's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

Section 14.05 Partial Utilization

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed

part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Construction Manager to issue a certificate of Substantial Completion for that part of the Work.
2. Contractor at any time may notify Owner and Construction Manager in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Construction Manager to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Construction Manager shall make an inspection of that part of the Work to determine its status of completion. If Construction Manager does not consider that part of the Work to be substantially complete, Construction Manager will notify Owner and Contractor in writing giving the reasons therefor. If Construction Manager considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

Section 14.06 Final Inspection

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Construction Manager will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

Section 14.07 Final Payment

- A. Application for Final Payment
 1. After Contractor has, in the opinion of Construction Manager, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
 2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
 3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the

releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. Construction Manager's Review of Application and Acceptance

1. If, on the basis of Construction Manager's observation of the Work during construction and final inspection, and Construction Manager's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Construction Manager is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Construction Manager will, within ten (10) days after receipt of the final Application for Payment, indicate in writing Construction Manager's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Construction Manager will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Construction Manager will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

1. Forty-five (45) days after final project acceptance by City Council and within sixty (60) days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Construction Manager, less any sum Owner is entitled to set off against Construction Manager's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor. In the case of a disputed claim, the City may withhold a portion of final payment in an amount not to exceed 150 percent of any amount disputed in accordance with California Public Contracts Code Section 7107 (c).

Section 14.08 Final Completion Delayed

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Construction Manager so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Construction Manager, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Construction Manager with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

Section 14.09 Waiver of Claims

- A. The making and acceptance of final payment will constitute:
 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15. SUSPENSION OF WORK AND TERMINATION

Section 15.01 Owner May Suspend Work

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

Section 15.02 Owner May Terminate for Cause

- A. The occurrence of any one or more of the following events will justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 3. Contractor's disregard of the authority of Construction Manager or Engineer; or
 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02A. occur, Owner will provide written notice to Contractor and Surety to arrange a conference with Contractor and Surety to address Contractor's failure to perform the Work. Conference shall be held not later than fifteen (15) days, after receipt of notice.
1. If the Owner, the Contractor, and the Surety do not agree to allow the Contractor to proceed to perform the Construction Contract, the Owner may, to the extent permitted by Laws and Regulations, declare a Contractor Default and formally terminate the Contractor's right to complete the Contract. Contractor Default shall not be declared earlier than twenty (20) days after the Contractor and Surety have received notice of conference to address Contractor's failure to perform the Work.
 2. If Contractor's services are terminated, Surety shall be obligated to take over and perform the Work. If Surety does not commence performance thereof within fifteen (15) consecutive calendar days after date of an additional written notice demanding Surety's performance of its obligations, then Owner, without process or action at law, may take over any portion of the Work and complete it as described below.
 3. If Owner completes the Work, Owner may exclude Contractor and Surety from the site and take possession of the Work and of all tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by Contractor and Surety (without liability to Contractor and Surety for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which Owner has paid Contractor or Surety but which are stored elsewhere, and finish the Work as Owner may deem expedient.
 4. Whether Owner or Surety completes the Work, Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses and damages sustained by Owner arising out of or resulting from completing the Work, such excess will be paid to Contractor. If such claims, costs, losses and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and when so approved by Engineer incorporated in a Change Order, provided that when exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

5. Neither Owner, Engineer, nor any of their respective consultants, agents, officers, directors or employees shall be in any way liable or accountable to Contractor or Surety for the method by which the completion of the said Work, or any portion thereof, may be accomplished or for the price paid therefor.
 6. Owner, notwithstanding the method used in completing the Contract, shall not forfeit the right to recover damages from Contractor or Surety for Contractor's failure to timely complete the entire Contract. Contractor shall not be entitled to any claim for damages on account of the method used by Owner in completing the Contract.
 7. Maintenance of the Work shall continue to be Contractor's and Surety's responsibilities as provided for in the bond requirements of the Contract Documents or any special guarantees provided for under the Contract Documents or any other obligations otherwise prescribed by law.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven (7) days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than thirty (30) days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

Section 15.03 Owner May Terminate For Convenience

- A. Upon seven (7) days written notice to Contractor, Construction Manager and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 4. reasonable expenses directly attributable to termination.

- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

Section 15.04 Contractor May Stop Work or Terminate

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than ninety (90) consecutive days by Owner or under an order of court or other public authority, or (ii) Construction Manager fails to act on any Application for Payment within thirty (30) days after it is submitted, or (iii) Owner fails for thirty (30) days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven (7) days written notice to Owner and Construction Manager, and provided Owner or Construction Manager do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Construction Manager has failed to act on an Application for Payment within thirty (30) days after it is submitted, or Owner has failed for thirty (30) days to pay Contractor any sum finally determined to be due, Contractor may, seven (7) days after written notice to Owner and Construction Manager, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16. DISPUTE RESOLUTION

Section 16.01 Methods and Procedures

- A. The process for resolving claims shall comply with the California Public Contracts Code as amended by Section 9204 et. seq.. The Contractor shall furnish sufficient documentation, as determined by the Construction Manager, to support any claim.
- B. Either Owner or Contractor may request mediation of any Claim submitted to Construction Manager for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- C. Upon receipt of a claim pursuant, the Owner shall conduct a reasonable review of the claim and, within a period not to exceed forty-five (45) days, shall provide the Contractor a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, the Owner and Contractor may, by mutual agreement, extend the time period provided in this subdivision.
- D. If the Owner needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the forty-five (45) days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the Owner shall have up to three (3) days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.
- E. The Owner shall pay any undisputed portion of the claim. Payment shall be processed and made within sixty (60) days after the Owner issues its written statement.
- F. If the Owner fails to issue a written statement, the claim shall be deemed rejected in its entirety. A claim that is denied by reason of the Owner's failure to have responded to a claim, or its failure to otherwise

- meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.
- G. If the Contractor disputes the Owner's written response, or if the Owner fails to respond to a claim issued within the time prescribed, the Contractor may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the Owner shall schedule a meet and confer conference within thirty (30) days for settlement of the dispute.
- H. Within ten (10) business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the Owner shall provide the Contractor a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within sixty (60) days after the Owner issues its written statement. Any disputed portion of the claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the Owner and Contractor sharing the associated costs equally. The Owner and Contractor shall mutually agree to a mediator within ten (10) business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.
- I. Amounts not paid in a timely manner as required by this section shall bear interest at 2 percent per annum.
- J. If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, Contractor may present to the Owner a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that Contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the Owner shall furnish reasonable documentation to support the claim. Within forty-five (45) days of receipt of this written request, Contractor shall notify the subcontractor in writing as to whether the Contractor presented the claim to the Owner and, if Contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.
- K. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within the timeline as stipulated under the California Public Contracts Code. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- L. If the Claim is not resolved by mediation, Owner's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding thirty (30) days after termination of the mediation unless, within that time period, Owner or Contractor:
1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or
 2. agrees with the other party to submit the Claim to another dispute resolution process, or
 3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17. MISCELLANEOUS

Section 17.01 Giving Notice

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

Section 17.02 Computation of Times

- A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

Section 17.03 Cumulative Remedies

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.
- B. No action or failure to act by the Owner, the Engineer, or the Construction Manager shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

Section 17.04 Survival of Obligations

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

Section 17.05 Controlling Law

- A. This Contract is to be governed by the law of the state of California, the county of San Joaquin, and city of Manteca.

Section 17.06 Headings

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

Section 17.07 Penalty for Collusion

- A. If, at any time, it is found that the person, firm, or corporation to whom the Contract has been awarded has, in presenting any bid or bids, colluded with any other party or parties, then the Contract shall be null and void, and the Contractor and its sureties shall be liable for loss or damage which the City may suffer thereby, and the City may advertise for new bids for said Work.

END OF SECTION

SECTION 00800 SUPPLEMENTARY GENERAL CONDITIONS

1.0 MODIFICATIONS TO THE GENERAL CONDITIONS

These Supplementary General Conditions amend and supplement Section 00700, GENERAL CONDITIONS, and other provisions of the contract documents as indicated below. All provisions of the General Conditions that are amended or supplemented remain in full force and effect as so amended or supplemented. All provisions of the General Conditions which are not so amended or supplemented remain in full force and effect.

1.1 Time Allowed for Completion

In accordance with the provisions of Section 00700, **Contract Time**, substantial completion of this project shall be completed within Two Hundred and Ten (210) calendar days and Final Completion within Two Hundred and Forty (240) calendar days from the date established in the Notice to Proceed for the commencement of Contract Time. In addition, the following milestone item(s) shall be substantially completed within the time period defined below. Milestones can be overlapped.

<u>Milestone</u>	<u>No. Of calendar days</u>
Milestone A	Sixty (60) calendar days
Milestone B	Ninety (90) calendar days
Milestone C	Ninety (90) calendar days
Milestone D	One Hundred and Twenty (120) calendar days
Substantial Completion	Two Hundred and Ten (210) calendar days
Final Completion	Two Hundred and Forty (240) calendar days

1.2 Damages for Delays

Liquidated Damages must be according to section 8-1.10B of the project special Provisions.

1.3 Weather Days

In accordance with the provisions of Paragraph 00700 Section 12.03, Delays, the following allowance(s) for weather caused delay have been included in the time allowed for completion as listed below:

<u>Milestone</u>	<u>Weather Day Allowance</u>
Project Substantial Completion	Ten (10) calendar days

This allowance represents the Owner’s assessment of potential lost working days. This allowance includes both weather days due to inclement weather conditions and the conditions resulting from weather in accordance with Paragraph 00700 Section 12.03, Delays. These weather days shall be included in the Contractor’s schedule. This allowance is not a warranty as to the extent that weather may or may not impact the Work. The Contractor shall make its own independent assessment of potential impacts to the Work due to weather based on the Project location, the Work required, the Contract Period, the schedule, and the Contractor’s planned means, methods and appliances, and the Contractor shall take such factors into consideration in its Bid and planning of the Work. The Contractor is responsible for determining the means, methods and appliances for prosecuting the Work as defined in Section 00700, Means, Methods and Appliances.

2.0 SUBSTANTIAL COMPLETION

Substantial completion of the Project as required by Section 00700, **Substantial Completion**, requires that the following portions of the Work must be operational and ready for the City's continuous use as intended:

The following items of work must be fully tested and functional for Project Substantial Completion to be attained:

Completion of the Corrective Work Item(s)
Milestones can be overlapped

Milestone A:

Contractor to verify line of sight for each wireless communication device prior to procurement of devices. Requirements for this testing can be seen in Section 87-9.11 and 87-9.12 of the Project Special Provisions. Once City representative and Engineer of Record has approved the wireless site survey test, proposed locations, then devices may be procured.

Contractor to file Union Pacific Railroad Encroachment permits at the onset of the project to get approvals to work within UPPR right-of-way to ensure no delays occur on the project. The Contract includes an agreement with a railroad company, the City of Manteca makes the provisions of the agreement available in the Information Handout in the document titled "Railroad Relations and Insurance Requirements." Comply with all the terms and conditions in the document as specified in Section 5-1.20C and 5-1.20B of the Project Special Provisions.

Contractor to provide manufacturer's submittals for all new electrical and infrastructure equipment to the Engineer and Engineer of Record for an approval per plans and specifications prior to procurement.

Contractor to furnish all new electrical and infrastructure equipment.

Contractor to complete water pollution prevention plans, monument preservation, utility verification, and any other required task as specified to avoid any construction delay.

Start the installation of all specified new underground infrastructure for the proposed fiber optic system including the new main backbone conduit, the new connection to the existing City Telecom room, and the new connection to the existing traffic signal cabinets as shown on the project Plans.

Milestone B:

Complete the installation of all specified aboveground and underground infrastructure for the proposed fiber optic system including the new main backbone conduit, the new connection to the existing City Telecom room, and the new connection to the existing traffic signal cabinets as shown on the project Plans.

Installation of new signal cabinets and battery backup system as shown on project plans and specifications.

Perform a burn test for proposed controllers prior to arriving at project site.

Installation of traffic signal controllers at each location in close coordination with the specified vendor. Specified software must be properly loaded onto the new controller and functioning per signal timing provided.

Burn test for proposed hub cabinets at two locations prior to arriving at project site.

Installation of Hub Cabinets at two intersections noted on the project plans with all communications and

power equipment and wiring to tie into existing signals.

Installation of new traffic signal heads, new emergency vehicle detection systems, new traffic signs on mast arm, new, and existing yellow retroreflective signal backplates as shown on the project plans.

Milestone C:

Installation of wireless devices, Ethernet switches to establish Ethernet communications at all intersections as shown per the project plans and specifications.

Installation of complete fiber optic systems including the fiber optic cable backbone and drop cables between Hubs, existing traffic signal, and existing City Telecom room with respective fiber patch panels, fiber splice enclosures, Ethernet switches, Fiber Transceiver, Fiber distribution units, and all communication and power equipment inside the City Telecom room, hub cabinets, and existing traffic signal cabinets as shown on the project plans. Test the fiber optic cable systems, and submit to the engineer for review and approval the testing worksheets and all other required submittals as specified in the project special provision Section 87-19.01(D)(4) and 87-19.01(D)(5).

Installation of server rack and ancillary equipment in the telecom room to tie in the fiber cable coming in from roadway to the building as noted on the plans and specifications.

Installation of Traffic Management Center workstation at location specified by Engineer and software at City Hall and tie into the telecom room to receive data from hub cabinets.

Milestone D:

Functionality testing of each intersection controller communication to wireless devices.

Functionality testing of each new traffic signal controller, traffic signal cabinets, detection systems, and signal operational systems.

Functionality testing of wireless devices to ensure communication with adjacent intersection and for the entire corridor. Proof of communication signal strength between devices satisfying the City requirements and specifications

OTDR testing for hard-wired fiber installation and proof of results satisfying signal strength between hubs, existing traffic signal cabinets, City Telecom room, and new traffic management center.

Setup and testing of virtual network for wireless network devices at all intersection, ability to access each controller and modify timings remotely from the Traffic Management Center.

Test the fiber optic cable systems, and submit to the engineer for review and approval the testing worksheets and all other required submittals as specified in the project special provision Section 87-19.01(D)(4) and Section 87-19.01(D)(5). Complete and submit for approval the System Gain Margin worksheet and Cable Verification Worksheet for each link in the fiber optic system and for each test as specified to demonstrate the fiber system's meeting or exceeding the system gain margin requirement under section 87-19.01(D)(3).

Complete System Acceptance and Handover with the Engineer and City as specified.

Completion of the Corrective Work Item(s)

Training has been completed for all electrical items as required.

Approved final copies of the Project's Operation and Maintenance Manuals.

Portions of the Work not essential to the system operation, which can be completed without interruption of system operations, may be completed after the Work is accepted as substantially complete, and may include the following items:

Final Site Clean-Up

Final Building Clean-Up

Completion of the Final Punch List prepared by the Construction Manager.

A. Paragraph 00700-5.04C:

The entities listed below are "additional insureds as their interest may appear" including their respective officers, directors, agents and employees.

Construction Manager: TBD

Design Engineer: TJKM Transportation Consultants

The insured and the additional insured shall be listed in the insurance coverage by specific name and not by genre.

B. Paragraph 00700-12.01.D:

Add the following paragraphs:

The Contractor shall be responsible to reimburse the City for any unforeseen costs incurred, including labor and materials, relating to any disruption of City operations or services due to Contractor's activities or negligence. Unforeseen City costs may include, but are not limited to:

1. Labor, materials, and administrative civil liabilities associated with sanitary sewer overflows/regulatory violations due to Contractor activities or negligence.
2. Labor, including overtime hours, and materials associated with City forces preparing for a scheduled outage that is canceled subsequently by the Contractor.
3. Labor, including overtime hours, and materials associated with City activities necessitated by outages extending beyond the scheduled duration caused by the Contractor.

Reimbursement to the City shall be accomplished through a 'back-charge' and a resultant reduction in contract price. Documentation of City costs will be furnished to the Contractor.

C. Paragraph 00700-12.03F:

Time extensions will not be granted for rain, wind, flood, or other natural phenomena of normal intensity for the locality where Work is performed. For purpose of determining extent of delay attributable to unusual weather phenomena, a determination shall be made by comparing the weather for the month involved with the average of the preceding 10-year climatic range during the same month based on U.S. Weather Bureau statistics for the locality where the Work is performed.

****END OF SECTION****

SECTION 00810 ENVIRONMENTAL REQUIREMENTS

1.0 GENERAL



NEPA/CEQA RE-VALIDATION FORM

DIST-CO-RTE: 10-City of Manteca
PM/PM: N/A
EA or Fed-Aid Project No.: N/A
Other Project No. (specify): HSIPL-5242(034)
Project Title: Traffic Signal Hardware Update at Various Locations
Environmental Approval Type: NEPA CE
Date Approved: 09/13/2017
Reason for Consultation (23 CFR 771.129), check one: <input checked="" type="checkbox"/> Project proceeding to next major federal approval <input type="checkbox"/> Change in scope, setting, effects, mitigation measures, requirements <input type="checkbox"/> 3-year timeline (EIS only) <input type="checkbox"/> N/A (Re-Validation for CEQA only)
Description of Changed Conditions: <i>Briefly describe the changed conditions or new information on page 2. Append continuation sheet(s) as necessary. Include a revised Environmental Commitments Record (ECR) when applicable.</i>

NEPA CONCLUSION - VALIDITY

Based on an examination of the changed conditions and supporting information: (Check ONE of the three statements below, regarding the validity of the original document/determination (23 CFR 771.129). If document is no longer valid, indicate whether additional public review is warranted and whether the type of environmental document will be elevated.)

- The original environmental document or CE remains valid. No further documentation will be prepared.
- The original environmental document or CE is in need of updating; further documentation has been prepared and is included on the continuation sheet(s) or is attached. With this additional documentation, the original ED or CE remains valid.
 Additional public review is warranted (23 CFR 771.111(h)(3)) Yes No
- The original document or CE is no longer valid.
 Additional public review is warranted (23 CFR 771.111(h)(3)) Yes No
 Supplemental environmental document is needed. Yes No
 New environmental document is needed. Yes No (If "Yes," specify type:)

CONCURRENCE WITH NEPA CONCLUSION

I concur with the NEPA conclusion above.

<u>Elizabeth Hummel</u>	<u>02/20/2024</u>
Signature: Environmental Branch Chief	Date
<u>Parminder Singh</u>	<u>02/20/2024</u>
Signature: Project Manager/DLAE	Date

CATEGORICAL EXEMPTION/CATEGORICAL EXCLUSION DETERMINATION FORM

10 / CITY OF MANTECA		HSIPL-5242(034)	
Dist.-Co.-Rte. (or Local Agency)	P.M./P.M.	E.A/Project No.	Federal-Aid Project No. (Local Project)/Project No.
PROJECT DESCRIPTION: (Briefly describe project including need, purpose, location, limits, right-of-way requirements, and activities involved in this box. Use Continuation Sheet, if necessary.)			
<p>The City of Manteca (City) proposes to improve the city's traffic signal hardware as well as the signal timing and coordination (see attached list for traffic signal locations). The scope of the project includes work on the traffic controllers, cabinets, lenses, back-plates, and mounting hardware. All work is to occur within the existing City right-of-way. There are no proposed staging areas, disposal sites, or borrow sites. All construction activities and access will take place on existing paved surfaces or sidewalks. The purpose of the project is to improve the City's traffic hardware, and the need of the project is to ensure the efficiency of the City's traffic operations.</p>			
CEQA COMPLIANCE (for State Projects only)			
Based on an examination of this proposal and supporting information, the following statements are true and exceptions do not apply (See 14 CCR 15300 et seq.):			
<ul style="list-style-type: none"> • If this project falls within exempt class 3, 4, 5, 6 or 11, it does not impact an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law. • There will not be a significant cumulative effect by this project and successive projects of the same type in the same place, over time. • There is not a reasonable possibility that the project will have a significant effect on the environment due to unusual circumstances. • This project does not damage a scenic resource within an officially designated state scenic highway. • This project is not located on a site included on any list compiled pursuant to Govt. Code § 65962.5 ("Cortese List"). • This project does not cause a substantial adverse change in the significance of a historical resource. 			
CALTRANS CEQA DETERMINATION (Check one)			
<input checked="" type="checkbox"/> Not Applicable – Caltrans is not the CEQA Lead Agency		<input type="checkbox"/> Not Applicable – Caltrans has prepared an Initial Study or Environmental Impact Report under CEQA	
<input type="checkbox"/> Exempt by Statute. (PRC 21080(b); 14 CCR 15260 et seq.)			
Based on an examination of this proposal, supporting information, and the above statements, the project is:			
<input type="checkbox"/> Categorically Exempt. Class _____ (PRC 21084; 14 CCR 15300 et seq.)			
<input type="checkbox"/> Categorically Exempt. General Rule exemption. (This project does not fall within an exempt class, but it can be seen with certainty that there is no possibility that the activity may have a significant effect on the environment (CCR 15061[b](3).))			
_____ Print Name: Senior Environmental Planner or Environmental Branch Chief		_____ Print Name: Project Manager	
_____ Signature	_____ Date	_____ Signature	_____ Date
NEPA COMPLIANCE			
In accordance with 23 CFR 771.117, and based on an examination of this proposal and supporting information, the State has determined that this project:			
<ul style="list-style-type: none"> • does not individually or cumulatively have a significant impact on the environment as defined by NEPA, and is excluded from the requirements to prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS), and • has considered unusual circumstances pursuant to 23 CFR 771.117(b). 			
CALTRANS NEPA DETERMINATION (Check one)			
<input checked="" type="checkbox"/> 23 USC 326: The State has determined that this project has no significant impacts on the environment as defined by NEPA, and that there are no unusual circumstances as described in 23 CFR 771.117(b). As such, the project is categorically excluded from the requirements to prepare an EA or EIS under the National Environmental Policy Act. The State has been assigned, and hereby certifies that it has carried out the responsibility to make this determination pursuant to Chapter 3 of Title 23, United States Code, Section 326 and a Memorandum of Understanding dated May 31, 2016, executed between the FHWA and the State. The State has determined that the project is a Categorical Exclusion under:			
<input checked="" type="checkbox"/> 23 CFR 771.117(c): activity (c)(26)			
<input type="checkbox"/> 23 CFR 771.117(d): activity (d)(_____)			
<input type="checkbox"/> Activity _____ listed in Appendix A of the MOU between FHWA and the State			
<input type="checkbox"/> 23 USC 327: Based on an examination of this proposal and supporting information, the State has determined that the project is a Categorical Exclusion under 23 USC 327.			
JULIE MYRAH		PARMINDER SINGH	
_____ Print Name: Senior Environmental Planner or Environmental Branch Chief		_____ Print Name: Project Manager/DLA Engineer	
			
_____ Signature		_____ Signature	
_____ Date		_____ Date	
Date of Categorical Exclusion Checklist completion: 8/29/2017		Date of ECR or equivalent : N/A	

Briefly list environmental commitments on continuation sheet. Reference additional information, as appropriate (e.g., CE checklist, additional studies and design conditions).

CATEGORICAL EXEMPTION/CATEGORICAL EXCLUSION DETERMINATION FORM
Continuation Sheet

10 / CITY OF MANTECA			HSIPL-5242(034)
Dist.-Co.-Rte. (or Local Agency)	P.M./P.M.	E.A/Project No.	Federal-Aid Project No. (Local Project)/Project No.

Continued from page 1:

General :

- Environmental reevaluation will be required if the scope of the project changes to include additional areas or activities, or if previously unknown cultural or other sensitive resources are discovered. Contact the Environmental Office if project changes occur or sensitive resources discovered.

Cultural:

- If cultural materials are discovered at the job site, do not disturb the resources and immediately:
 1. Stop all work within a 60-foot radius of the discovery
 2. Protect the discovery area
 3. Notify the EngineerThe Department investigates. Do not move cultural materials or take them from the job site. Retain a qualified archaeologist to assess the significance of the find. Do not resume work within the discovery area until authorized.
- If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) who will then notify the Most Likely Descendant (MLD). At that time the landowner will work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

No permits required for this project.

SECTION 00820 LIABILITY AND INSURANCE REQUIREMENTS

1. INDEMNIFICATION

The Contractor shall indemnify, hold harmless and assume the defense of the City, the Engineer, the Construction Manager and their elected officials, officers, agents, employees and representatives from all damages, costs, or expenses in law or equity, including attorney's fees, that may at any time arise to cause damages to property, or of personal injury received by reason of or in the course of performing work, which may be occasioned by any willful or negligent act or omission of the Contractor, any of the Contractor's employees, or any of its subcontractors arising out of work under this Contract.

Approval of any insurance contracts by the City does not relieve the Contractor or subcontractors from liability under Section 00820, Indemnification, and the Contractor shall be responsible for payment of all amounts it is obligated to pay under Section 00820, Indemnification, which have not been paid by such insurance contracts. The City shall not be liable for any accident, loss, or damage to the work prior to its completion and acceptance.

2. INSURANCE REQUIREMENTS

After award of Contract, the Contractor shall promptly obtain, at its own expense, all the insurance required under Exhibit 1 – Insurance Requirements for Construction Contracts, and shall submit coverage verification for review and approval by the City prior to execution of the Contract.

The Notice to Proceed with the Work under this Contract will not be issued, and the Contractor shall not commence work, until such insurance has been approved by the City. The Contractor shall not allow any subcontractors to commence work on its subcontract until all similar insurance required of the subcontractor has been obtained and verified by the Contractor. Such insurance shall remain in full force and effect at all times during the prosecution of the Work and until the final completion and acceptance thereof.

The Notice to Proceed does not relieve the Contractor of the duty to maintain such insurance as required by the project documents.

**TRAFFIC SIGNAL UPDATE PROJECT
CIP NO. 17058
FEDERAL PROJECT NO. HSIPL 5242 (034)
VOLUME II – SPECIAL PROVISIONS**

TRAFFIC SIGNAL UPDATE PROJECT
CIP NO. 17058
FEDERAL PROJECT NO. HSIPL 5242 (034)
VOLUME II – SPECIAL PROVISIONS
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STANDARD PLANS LIST

The standard plan sheets applicable to this Contract include those listed below. The applicable revised standard plans (RSPs) listed below are included in the project plans.

ABBREVIATIONS, LINES, SYMBOLS, AND LEGEND

A3A	Abbreviations (Sheet 1 of 3)
A3B	Abbreviations (Sheet 2 of 3)
A3C	Abbreviations (Sheet 3 of 3)
A10A	Legend - Lines and Symbols (Sheet 1 of 5)
A10B	Legend - Lines and Symbols (Sheet 2 of 5)
A10C	Legend - Lines and Symbols (Sheet 3 of 5)
A10D	Legend - Lines and Symbols (Sheet 4 of 5)
A10E	Legend - Lines and Symbols (Sheet 5 of 5)

PAVEMENTS

P70	Hot Mix Asphalt Paving (Longitudinal Tapered Notched Wedge Joint)
P75	Pavement Edge Treatments - Overlays

TEMPORARY CRASH CUSHIONS, RAILING AND TRAFFIC SCREEN

T1B	Temporary Crash Cushion, Sand Filled (Bidirectional)
T2	Temporary Crash Cushion, Sand Filled (Shoulder Installations)
T3A	Temporary Railing (Type K)
T3B	Temporary Railing (Type K)
T5	Temporary Terminal Section (Type K)

TEMPORARY TRAFFIC CONTROL SYSTEMS

T9	Traffic Control System Tables for Lane and Ramp Closures
T11	Traffic Control System for Lane Closure on Multilane Conventional Highways
T11A	Traffic Control System for Changeable Lane Closure on multilane Conventional Highways and Expressways
T12	Traffic Control System for Half Road Closure on Multilane Conventional Highways and Expressways
T13	Traffic Control System with Reversible Control on Two Lane Conventional Highways
T13A	Traffic Control System Two Lane Conventional Highways
T13B	Traffic Control System Two Lane Conventional Highways
T14	Traffic Control System for Ramp Closure

TEMPORARY PEDESTRIAN ACCESS ROUTES

T30	Temporary Pedestrian Access Routes - Typical Sidewalk Closure and Pedestrian Detour
T31	Temporary Pedestrian Access Routes - Typical Sidewalk Diversion Within Roadbed
T32	Temporary Pedestrian Access Routes - Typical Sidewalk/Crosswalk Closure and Pedestrian Detour
T33	Temporary Pedestrian Access Routes - Ramp
T34	Temporary Pedestrian Access Routes - Curb Ramp Options

TEMPORARY WATER POLLUTION CONTROL

T51	Temporary Water Pollution Control Details (Temporary Silt Fence)
T52	Temporary Water Pollution Control Details (Temporary Straw Bale Barrier)
T53	Temporary Water Pollution Control Details (Temporary Cover)

T54	Temporary Water Pollution Control Details (Temporary Erosion Control Blanket)
T55	Temporary Water Pollution Control Details (Temporary Erosion Control Blanket)
T56	Temporary Water Pollution Control Details (Temporary Fiber Roll)
T57	Temporary Water Pollution Control Details (Temporary Check Dam)
T58	Temporary Water Pollution Control Details (Temporary Construction Entrance)
T59	Temporary Water Pollution Control Details (Temporary Concrete Washout Facility)
T60	Temporary Water Pollution Control Details (Temporary Reinforced Silt Fence)
T61	Temporary Water Pollution Control Details (Temporary Drainage Inlet Protection)
T62	Temporary Water Pollution Control Details (Temporary Drainage Inlet Protection)
T63	Temporary Water Pollution Control Details (Temporary Drainage Inlet Protection)
T64	Temporary Water Pollution Control Details (Temporary Drainage Inlet Protection)
T65	Temporary Water Pollution Control Details (Temporary High-Visibility Fence)
T66	Temporary Water Pollution Control Details (Temporary Large Sediment Barrier)
T67	Temporary Water Pollution Control Details (Temporary Construction Roadway)

ROADSIDE SIGNS

RS1	Roadside Signs - Typical Installation Details No. 1
RS2	Roadside Signs - Wood Post - Typical Installation Details No. 2
RS3	Roadside Signs - Laminated Wood Box Post - Typical Installation Details No. 3
RS4	Roadside Signs - Typical Installation Details No. 4
RSP RS5	Roadside Sign-PSST Post-Typical Installation Details No. 1
RS6	Roadside Sign-PSST Post-Typical Installation Details No. 2

OVERHEAD AND ROADSIDE SIGNS PANELS

S93	Framing Details for Framed Single Sheet Aluminum Signs, Rectangular Shape
S94	Roadside Framed Single Sheet Aluminum Signs, Rectangular Shape
S95	Roadside Single Sheet Aluminum Signs, Diamond Shape

ELECTRICAL SYSTEMS - LEGEND

ES-1A	Electrical Systems (Legend)
ES-1B	Electrical Systems (Legend)
RSP ES-1C	Electrical Systems (Legend)

ELECTRICAL SYSTEMS - CONTROLLER CABINETS

ES-3C	Electrical Systems (Controller Cabinet Foundation and Pad Details)
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ELECTRICAL SYSTEMS - ELECTRONICS ASSEMBLY CONNECTION DIAGRAM

ES-3K	Electrical Systems (Electronics Assembly Connection Diagram) (Battery Backup System)
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ELECTRICAL SYSTEMS - SIGNAL HEADS, SIGNAL FACES AND MOUNTINGS

ES-4A	Electrical Systems (Signal Head Mounting)
ES-4C	Electrical Systems (Signal Heads and Mountings)
ES-4D	Electrical Systems (Signal Head Mounting)
RSP ES-4E	Electrical Systems (Signal Heads and Optical Detector Mounting)

ELECTRICAL SYSTEMS - DETECTORS

ES-5A	Electrical Systems (Loop Detectors)
ES-5B	Electrical Systems (Detectors)

ES-5D	Electrical Systems (Curb and Shoulder Termination, Trench, and Handhole Details)
	ELECTRICAL SYSTEMS – SIGNAL AND LIGHTING STANDARD DETAILS
RSP ES-7M	Electrical Systems (Signal and Lighting Standard, Detail No. 1)
ES-7N	Electrical Systems (Signal and Lighting Standard, Detail No. 2)
	ELECTRICAL SYSTEMS - PEDESTRIAN BARRICADES
ES-7Q	Electrical Systems (Pedestrian Barricades)
	ELECTRICAL SYSTEMS - SIGNAL AND LIGHTING, MISCELLANEOUS ATTACHMENT
RSP ES-7R	Electrical Systems (Signal and Lighting, Miscellaneous Attachment)
	ELECTRICAL SYSTEMS - PULL BOX
ES-8A	Electrical Systems (Non-Traffic Pull Box)
ES-8B	Electrical Systems (Traffic Pull Box)
	ELECTRICAL SYSTEMS - STRUCTURE INSTALLATIONS
ES-9B	Electrical Systems (Conduit Riser and Expansion Fitting, Structure Installations)
	ELECTRICAL SYSTEMS - ISOFOOTCANDLE CURVES AND FOUNDATION DETAILS
ES-11	Electrical Systems (Foundation Installations)
	ELECTRICAL SYSTEMS - SPLICE INSULATION METHODS, KINKING AND BANDING DETAILS
ES-13A	Electrical Systems (Splice Insulation Methods Details)
	ELECTRICAL SYSTEMS - FIBER OPTIC DETAILS
ES-17A	Electrical Systems (Fiber Optic Marker Details)

CANCELED STANDARD PLANS LIST

The standard plan sheets listed below are canceled and not applicable to this contract.

Plan No.	Date Canceled	Plan No.	Date Canceled	Plan No.	Date Canceled
A77U1	01/22/24				
A77U2	01/22/24				
A77U3A	01/22/24				
A77U3B	01/22/24				
A77U4	01/22/24				
A77U5	01/22/24				
A77V1	01/22/24				
A77V2	01/22/24				
A78A	01/22/24				
A78B	01/22/24				
A78C1	01/22/24				
A78C2	01/22/24				
A78D1	01/22/24				
A78D2	01/22/24				
A78E1	01/22/24				
A78E2	01/22/24				
A78E3	01/22/24				
A78F1	01/22/24				
A78F2	01/22/24				
A78GA	01/22/24				
A78GB	01/22/24				
A78H	01/22/24				
A78J	01/22/24				
A78K	01/22/24				

Bid Items and Applicable Sections

Bid Item No.	Item description	Applicable section
1	Mobilization	9-1.16D
2	Traffic Control System	12
3	Lead Compliance Plan	7
4	Prepare Water Pollution Control Program	13
5	Prepare Storm Water Pollution Prevention Plan	13
6	Monument Preservation	5
7	Existing Utility Verification	8-1.15
8	Central Management System	87-15
9	Fiber Testing	87-19.01D(3) & 87-19.01D(4) & 87-19.01D(5) & 87-19.01D(6)
10	Wireless Testing	87-9.12
11	Remove Existing Sign Mounted on Mast Arm	87-21
12	Remove Existing Signal Cabinet	87-21
13	Remove Existing Battery Backup Unit	87-21
14	Remove Existing Controller	87-21
15	Remove Signal Head	87-21
16	Remove Signal Head Mount	87-21
17	Remove Emergency Vehicle Pre-Emption Device	87-21
18	Furnish and Install 332LS Cabinet	86 & 87
19	Furnish and Install Battery Backup System and Enclosure and Foundation	86-1.02Q/Z & 87-1.03D
20	Furnish and Install 2070LX Controller	87-13
21	Furnish and Install Sign on Signal Standard	82
22	Furnish and Install 12x3 Signal Head with Yellow Retroreflective Border	77-1.02F
23	Furnish and Install Signal Head Mount	86 & 87
24	Furnish and Install Yellow Retroreflective Border Tape on Existing Signal Backplate	86 & 87
25	Furnish and Install Emergency Vehicle Detection System	77-2.01
26	Furnish and Install Integrated Radio and Mounting	86 & 87
27	Furnish and Install Integrated Radio, Omni-Directional Antennas, and Mounting	86 & 87
28	Furnish and Install Power Over Ethernet Cable	86 & 87
29	Furnish and Install 2" Conduit	86 & 87
30	Furnish and Install 4" Conduit with Four 1" HDPE SDR 11 Innerduct Under Train Tracks	86 & 87
31	Furnish and Install 4" Conduit with Four 1" HDPE SDR 11 Innerduct	86 & 87
32	Furnish and Install 12-Strand SMFO Cable	86 & 87
33	Furnish and Install 96-Strand SMFO Cable	86 & 87
34	Furnish and Install 144-Strand SMFO Cable	86 & 87
35	Furnish and Install Pull Tape	86 & 87
36	Furnish and Install 1-18 AWG Tracer Wire	86 & 87
37	Furnish and Install Fabric Innerduct	86 & 87
38	Furnish and Install #8 Cable	86 & 87
39	Furnish and Install No. 5 Pull Box	86 & 87
40	Furnish and Install No. 6E Pull Box	86 & 87
41	Furnish and Install Splice Vault	86 & 87
42	Furnish and Install Splice Closure	86 & 87
43	Furnish and Install 332LS Hub Cabinet and Foundation	86 & 87
44	Furnish and Install Surge Protector Power Strip	86 & 87
45	Furnish and Install 12-Strand Fiber Distribution Unit	86 & 87

Bid Items and Applicable Sections

Bid Item No.	Item description	Applicable section
46	Furnish and Install Ethernet Switch (Traffic Signal Cabinet)	86 & 87
47	Furnish and Install 20A Circuit Breaker	86 & 87
48	Furnish and Install Fiber Patch Cords	86 & 87
49	Furnish and Install Type 2 Surge Protection	86 & 87 & 87-23.02G
50	Furnish and Install Power Distribution Unit	86 & 87
51	Furnish and Install Uninterruptible Power Supply Assembly (Hub Cabinet)	86 & 87
52	Furnish and Install External batteries	86 & 87
53	Furnish and Install Ethernet Switch (Hub Cabinets)	86 & 87
54	Furnish and Install Ethernet Switch (Telecom Room)	86 & 87
55	Furnish and Install 1 Gbps Fiber Transceiver	86 & 87
56	Furnish and Install 10 Gbps Fiber Transceiver	86 & 87
57	Furnish and Install Uninterruptible Power Supply Assembly (Telecom Room)	86 & 87
58	Furnish and Install 144-Strand Fiber Distribution Unit	86 & 87
59	Furnish and Install Cellular Gateway	86 & 87
60	Furnish and Install Nema 3R Enclosure	86 & 87
61	Furnish and Install 2" Indoor Conduit	86 & 87
62	Furnish and Install Conduit Clamp Assembly	86 & 87
63	Furnish and Install Conduit Hanger Assembly	86 & 87
64	Drill Through Wall	86 & 87
65	Furnish and Install Corrugated Flexible Conduit	86 & 87
66	Furnish and Install Rack Cable Assembly	86 & 87
67	Railroad Relations and Insurance Requirements	5-1.20C & 5-1.20B
68	Trainees	7-1.11

Bid Alternate 1

Bid Items and Applicable Sections

Bid Alt 1 Item No.	Item description	Applicable section
1A	Furnish and Install 4" Conduit	86 & 87
2A	Furnish and Install Pull Tape	86 & 87
3A	Furnish and Install Splice Vault	86 & 87

Add to the end of section 1-1.01:

Where an item is specified to be in writing, use electronic means. Do not submit hard copies unless requested by the Engineer.

Add to section 1-1.07B:

Agency: City of Manteca

Office Engineer: City of Manteca Engineering Department

Replace the following definitions in section 1-1.07B:

State: City of Manteca

Department: City of Manteca Engineering Department

Director: Director of Engineering, City of Manteca

Engineer: The Director of Engineering, City of Manteca, acting directly or through properly authorized agent or consultants.

The Initial Potential Claim Record must include:

1. Your position as it differs from the Engineer's determination.
2. Any additional information obtained by you.
3. Your certification that the following were made in preparation of the bid:
 - a. An examination of the conditions above ground at the job site

Submit supplementary information, obtained after the filing of the Initial Potential Claim Record, promptly.

Delete section 4-1.07

Replace 2nd paragraph of section 4-1.13 with:

Do not remove warning, regulatory, or guide signs until direction by the Engineer.

AA

5 CONTROL OF WORK

Replace item 1 in Paragraph 2 in section 5-1.02:

1. Governing ranking of Contract Parts in descending order is:
 - 1.1 Agreement for the Construction
 - 1.2 Project Special Provisions
 - 1.3 Project Plans
 - 1.4 Caltrans Standard Specifications
 - 1.5 Caltrans Revised Standard Plans
 - 1.6 Caltrans Standard Plans
 - 1.7 Supplemental Project Information
 - 1.8 Section 00700, Standard General Conditions of the Construction Contract
 - 1.9 Section 00800, Supplementary General Conditions

Add to section 5-1.03:

The Engineer has the authority to stop work at any time there is a risk to public safety or when the work is performed in an unsafe manner.

Replace section 5-1.09 with:

5-1.09 PARTNERING

5-1.09A General

Partnering meeting will not be required for this project.

Replace section 5-1.13B with:

5-1.13B Disadvantaged Business Enterprises

5-1.13B(1) General

Section 5-1.13B applies to a federal-aid contract.

Use each DBE as listed on the DBE Commitment form unless you receive Department prior authorization for termination under section 5-1.13B(2)(c). Ensure that all subcontracts and agreements with DBEs to supply labor or materials are performed under 49 CFR 26.

Maintain records of subcontracts made with DBE subcontractors and records of materials purchased from DBE suppliers. Include in the records:

1. Name and business address of each DBE subcontractor, DBE vendor, and DBE trucking company, regardless of tier
2. Date of payment and total amount paid to each DBE business

If you are a DBE contractor, include the date of work performed by your own forces and the corresponding value of the work.

Before the 15th day of each month for the previous month's work, submit:

1. Monthly DBE Trucking Verification form
2. Monthly DBE Payment form

If a DBE is decertified before completing its work, the business must notify you in writing of the decertification date within 15 days of decertification. Notify the Engineer and submit the DBE's decertification notice within 2 business days of your receipt. Upon work completion, complete a Disadvantage Business Enterprises (DBE) Certification Status Change form and submit within 10 days of Contract acceptance.

Upon work completion, complete a Final Report – Utilization of Disadvantaged Business Enterprises (DBE), First-Tier Subcontractors form and submit within 10 days of Contract acceptance. The Department withholds the greater of 10 percent of the DBE commitment or \$10,000 until the form is submitted. The Department releases the withhold upon submission of the completed form. If additional payments are made to a DBE after submittal of the completed form, submit an updated form to reflect such payments.

Failure to carry out requirements of 49 CFR 26 is a material breach of the Contract, which may result in the termination of the Contract or other remedy as the Department deems appropriate, such as:

1. Withholding monthly progress payments
2. Assessing sanctions
3. Applying liquidated damages
4. Disqualification from future bidding as nonresponsive

5-1.13B(2) Disadvantaged Business Enterprises

5-1.13B(2)(a) General

Section 5-1.13(B)(2) applies if a DBE goal is shown on the *Notice to Bidders*.

Certification as a DBE identifies if the business has the means to perform its work under assigned North American Industry Classification System codes and work codes applicable to the type of work the DBE will perform on the Contract. Certification does not ensure the DBE will perform a commercially useful function on the Contract.

You are responsible for ensuring each DBE listed on the DBE Commitment form performs:

1. The description and value of the subcontracted work or material supplied as committed
2. A commercially useful function under 49 CFR 26.55 for committed work or materials

For DBE committed work, the Department only pays for work performed or supplied by the listed DBE and if a commercially useful function was performed by the listed DBE.

You are responsible to remediate noncompliant DBE work to meet your DBE commitment. Submit a DBE commitment remediation plan within 5 business days of the Engineer's request.

Pay your DBEs in conformance with section 5-1.13E.

Failure to promptly pay DBEs may result in a withholds corresponding to the value of the DBE's committed work from future progress payments. In addition, unpaid DBE amounts will not count towards your DBE commitment, which may result in equivalent withholds or deductions and a 2 percent penalty on the unpaid amount for every month payment is not made.

5-1.13B(2)(b) Commercially Useful Function

DBEs must perform a commercially useful function under 49 CFR 26.55 when performing work or supplying materials listed on the DBE Commitment form. The DBEs value of work will only count toward the DBE commitment if the DBE performs a commercially useful function under 49 CFR 26.55.

Provide written notification to the Engineer at least 15 days in advance of each DBE's initial performance of work or supplying materials for the Contract. Include the DBE's name, contract work to be performed, and the location, date, and time of where their work will take place.

Within 10 days of a DBE initially performing work or supplying materials on the Contract, submit your initial evaluation and validation of their performance of a commercially useful function using DBE Commercially Useful Function Evaluation form. Include the following supporting information with your submittal:

1. Subcontract agreement with the DBE
2. Purchase orders
3. Bills of lading
4. Invoices
5. Proof of payment

Monitor your DBEs' performance of commercially useful function with quarterly evaluations and validations throughout their duration of work on the Contract using DBE Commercially Useful Function Evaluation form. Submit your quarterly evaluation and validation DBE Commercially Useful Function Evaluation forms by the 5th of the month for the previous three month's work. Include any additional supplemental supporting information with your submittal. If your DBE's work-start and -end dates for the Contract exceed a three-month period, regardless of time not on the Contract, quarterly evaluations and validations are required.

Notify the Engineer immediately if you believe the DBE may not be performing a commercially useful function.

The Department will verify your DBEs performance of commercially useful functions by reviewing your initial and quarterly DBE Commercially Useful Function Evaluation forms, your submitted supporting information, field observations, and through select Department evaluations. The Department may evaluate DBEs and their commercially useful function performance at any time during the Contract. In such instances, the Department will provide written notice to you and your DBE at least 2 business days prior to the evaluation. You and your DBE must participate in the evaluation. Upon completing the evaluation, the Department will share the evaluation results with you and your DBE. The evaluation results may include items that must be remedied upon your receipt. If the Department determines the DBE is not performing a commercially function you must suspend performance of the noncompliant work.

You and your DBEs must submit any additional commercially useful function related records and documents within 5 business days of Department request such as:

1. Proof of ownership or lease and rental agreements for equipment
2. Tax records
3. Employee rosters
4. Certified payroll records
5. Inventory rosters

Failure to submit required DBE Commercially Useful Function Evaluation forms or requested records and documents will result in withhold of payment for the value of work completed by the DBE.

If you and or the Department determine a listed DBE is not performing a commercially useful function in performance of their DBE committed work, suspend performance of the noncompliant portion of the work. Submit a corrective action plan within 5 days of the noncompliant commercially useful function determination. The plan must identify how you will remediate when feasible or demonstrate commercially useful function compliance for the remaining portion of the DBE's work. Allow 5 days for plan review. The corrective actions must be implemented within 5 days of Engineer's authorization of your plan and prior to resumption of the noncompliant portion of the DBE's committed work.

If corrective actions cannot be accomplished to assure the DBE will perform a commercially useful function on the Contract, you may have good cause to request termination of the DBE under section 5-1.13B(2)(c).

5-1.13B(2)(c) Termination

Termination of a DBE may be allowable for good cause reasons under 49 CFR 26.53(f)(3) with prior written authorization from the Department. You must provide documentation supporting good cause reasoning with your termination request. If the termination request is authorized by the Department, you must then either replace the DBE with another DBE or demonstrate good faith efforts to do so under 5-1.13B(2)(d).

Use the following procedure to request the termination of a DBE or portion of their work:

1. Provide written notice to the DBE of your intent to use other forces or material sources and include one or more of the good cause reasons under 49 CFR 26.53(f)(3). Simultaneously send a copy of this written notice to the Engineer. Your written notice to the DBE must request they provide any response to both you and the Engineer.
2. Provide the DBE with 5 business days to respond to your written notice by either acknowledging their agreement or documenting their reasoning as to why the use of other forces or sources of materials should not occur. If the DBE does not respond within 5 business days, you may move forward with the request process as if the DBE had agreed to your written notice.
3. Submit your DBE termination request by written letter to the Engineer and include:
 - 3.1. One or more good cause reasons identified under 49 CFR 26.53(f)(3) along with supporting documentation.
 - 3.2. Your written notice to the DBE regarding the request, including proof of transmission and tracking documentation of your written notice.
 - 3.3. The DBE's response to your written notice, if received. If a written response was not provided, provide a statement to that effect.

The Department will respond to your complete DBE termination request as follows:

1. Where the DBE has agreed in writing or fails to timely respond to your written notice, the Department will respond within 2 business days from receipt of your request.
2. Where the DBE has disagreed in writing with your written notice, the Department will meet with you and the DBE within 5 business days from receipt of your request. The Department will respond to your request within 5 business days from this meeting.
3. If you fail to provide a complete request for DBE termination the Department will identify deficiencies within 5 business days from receipt of your request.

If the Department authorizes your DBE termination request it will do so in writing.

Work performed by a firm other than the committed DBE or authorized replacement DBE without first obtaining Department authorization for termination will be a violation of these specifications and DBE federal regulations. Such violations will result in payment deductions for the value of the work associated with the noncompliant DBE commitment. In addition, if the committed DBE is also a listed subcontractor, the Department applies an additional penalty up to 10 percent of the value of the subject work as a permanent deduction.

5-1.13B(2)(d) Replacement

After receiving Department written authorization of your DBE termination request, you must obtain separate Department authorization of your replacement plan.

Your replacement plan must identify DBE replacement firms to perform the work or demonstrate that you have made a good faith effort to use DBE replacement firms. DBE replacement firms must:

1. Perform at least the same dollar amount of work as the terminated DBE to the extent needed to meet the DBE commitment
2. Possess certifications for the most specific available North American Industry Classification System codes and work codes applicable to the work the firm will perform on the Contract
3. Perform a commercially useful function under 49 CFR 26.55

Use the following procedure to request authorization of your replacement plan:

1. Submit a request to replace a DBE with other forces or material sources by written letter to the Department which must include:
 - 1.1. Description of remaining uncommitted item work made available for replacement DBE solicitation and participation.
 - 1.2. The proposed DBE replacement firm's business information, the work they have agreed to perform, and the following:
 - 1.2.1. Quote for bid item work and description of work to be performed
 - 1.2.2. Proposed subcontract agreement and written confirmation of agreement to perform on the Contract
 - 1.2.3. Revised Subcontracting Request form
2. If you have not identified a DBE replacement firm, submit documentation of your good faith efforts to use DBE replacement firms within 7 days of Department's authorization to terminate the DBE. You may request the Department's approval to extend this submittal period to a total of 14 days. The Department considers your documented actions taken to identify a DBE replacement firm in determining whether a good faith effort was made under 49 CFR 26 app A. Submit documentation of actions taken to find a DBE replacement firm, such as:
 - 2.1. Search results of certified DBEs available to perform the original DBE work identified and or other work you had intended to self-perform, to the extent needed to meet your DBE commitment
 - 2.2. Solicitations of DBEs for performance of work identified in 2.1
 - 2.3. Correspondence with interested DBEs that may have included contract details and requirements
 - 2.4. Negotiation efforts with DBEs that reflect why an agreement was not reached
 - 2.5. If a DBE's quote was rejected, provide your reasoning for the rejection, such as why the DBE was unqualified for the work, or why the price quote was unreasonable or excessive
 - 2.6. Copies of each DBE's and non-DBE's price quotes for work identified in 2.1, as the Department may contact the firms to verify solicitation efforts and determine if the DBE quotes are substantially higher
 - 2.7. Additional documentation that you believe supports your good faith effort

The Department will respond to your complete replacement plan as follows:

1. If a DBE replacement firm has been identified and required documentation has been provided, the Department will respond within 2 business days from receipt of your plan
2. If a DBE replacement firm has not been identified, but good faith effort documents have been provided, the Department will respond within 5 business days from receipt of your plan
3. If you fail to provide a complete replacement plan, the Department will return your request and identify deficiencies within 5 business days from receipt of your plan

If the Department authorizes your replacement plan it will do so in writing.

Submit a revised Subcontracting Request form if your replacement plan is authorized.

DBE committed work performed by a nonauthorized firm, will be a violation of these specifications and DBE federal regulations. Such violations will result in payment deductions for the value of the work associated with the DBE commitment. The Department will take a permanent deduction for the value of the DBE work that was not performed by the authorized DBE. In addition, if the associated work was also to be performed by a listed subcontractor, the Department applies an additional penalty up to 10 percent of the value of the subject work as a permanent deduction.

5-1.13B(3) Use of Joint Checks

You may use a joint check between the Contractor or lower-tier subcontractor and a DBE subcontractor purchasing materials from a material supplier if you obtain prior approval from the Department for your proposed use of joint checks upon submittal of a DBE Joint Check Agreement Request form.

To use a joint check, the following conditions must be met:

1. All parties, including the Contractor, must agree in writing to the use of a joint check
2. Entity issuing the joint check acts solely to guarantee payment
3. DBE must release the check to the material supplier
4. Department must authorize the request before implementation
5. Any party to the agreement must provide requested documentation within 10 days of the Department's request for the documentation
6. Agreement to use a joint check must be short-term, not to exceed 1 year, allowing sufficient time needed to establish or increase a credit line with the material supplier

A request for a joint check agreement may be initiated by any party.

If a joint check is used, the DBE remains responsible for all elements of 49 CFR 26.55(c)(1).

Failure to comply with section 5-1.13B(3) disqualifies DBE participation and results in no credit and no payment to the Contractor for DBE participation.

A joint check may not be used between the Contractor or subcontractor and a DBE regular dealer, bulk material supplier, manufacturer, wholesaler, broker, trucker, packager, manufacturer's representative, or other persons who arrange or expedite transactions.

Replace section 5-1.13E with:

5-1.13E Prompt Payment

Section 5-1.13E applies to all contracts.

Pay your subcontractors within 7 days of receipt of each progress payment under Pub Cont Code §§ 10262 and 10262.5. Pay duly authorized motor carriers of property in dump trucks for transportation charges under Bus & Prof Code § 7108.6. Pay other entities, such as material suppliers, within 30 days of receipt of each progress payment.

Each month, after the 15th and prior to 20th, submit the following payment information to the Engineer:

1. Subcontractor's or entity's business name
2. Description of work performed
 - 2.1. Bid item numbers or change order numbers
 - 2.2. Written narrative of work performed
3. Value of work performed
4. Amount paid to subcontractor or entity
5. Withhold amount, if applicable
6. Explanation of withhold reasoning, if applicable

Your subcontractors and other entities may validate payments received using the prompt payment monitoring system.

If a subcontractor's or other entity's work is in dispute, provide a written withhold notification to the subcontractor or entity and the Engineer no later than 7 days after receipt of the corresponding progress payment that includes the following:

1. Value of the disputed work
2. Amount of the withhold being taken
3. Bid item numbers or change order numbers associated with the disputed work
4. Explanation of the deficiencies of the disputed work and how the corresponding value was calculated
5. Corrective actions to be taken for release of withheld amount

The Department may request additional documentation from you to evaluate whether you applied the withhold in good faith. Submit requested documents within 10 days of receipt of request.

The Department may withhold the same amount of your withhold from a future progress pay estimate if the Department determines any of the following has occurred:

1. Withhold was not applied in good faith

2. Requested additional withhold documentation records were not provided
3. Payment information was not submitted through the prompt payment monitoring system
4. Required withhold notification was not provided

The Department may also apply a 2 percent penalty on the withhold amount for every month payment is not made.

Add to the end of section 5-1.20A:

During the progress of the work under this Contract, work under the following contracts may be in progress at or near the job site of this Contract:

Coincident or Adjacent Contracts

Contract no.	County–Route–Post Mile	Location	Type of work
City of Manteca	Retroreflective Sign Project	Citywide	Sign Upgrades
City of Manteca C2022-106	10-SJ-120 – PM R0.9/R3.3	State Route 120 / McKinley Avenue Interchange	New Interchange
City of Manteca	Main Street Bike & Pedestrian Improvements	Main Street from Northgate Drive to Alameda Street	Install Class II bike lanes, pedestrian crossing enhancements, raised median, pedestrian fencing
City of Manteca	Yosemite Avenue Bike & Pedestrian Improvements	Yosemite Avenue from Walnut Avenue to Main Street	Install Class II bike lanes, pedestrian crossing enhancements
City of Manteca	New Water & Sewer Pipe at Corwin Drive & Suess Court	Corwin Drive & Suess Court	Installation of water & sanitary sewer line, service laterals, & fire hydrants
City of Manteca	Well 30	Palmer Park/1495 Sephos Street	New Well
City of Manteca	North Main Commons	1390 & 1590 N. Main Street	Subdivision
City of Manteca	Griffin Park Unit 1, 2, 3, 4 & 5	185 W. Sedan Avenue	Subdivision
City of Manteca	Shadowbrook	1031 Louise Avenue	Subdivision
City of Manteca	Sundance Unit 4	E Woodward Avenue	Subdivision
City of Manteca	Wackerly (Freestone)	4764 E. Woodward Avenue	Subdivision
City of Manteca	Cerri Unit 1, 2, 3, 4 & 5	2805, 2950 & 3232 E. Woodward Avenue	Subdivision
City of Manteca	Cyrus Lane	936 W. Alameda Street	Duplex
City of Manteca	Vintage II	1272, 1380 & 1418 Woodward Avenue	Subdivision
City of Manteca	Madan Das Apartments	458 E. Alameda Street	Apartments
City of Manteca	Valencia Place Apartments Phase II	1360 Lakeside Avenue	Apartments
City of Manteca	Yosemite Greens	472 & 410 N. Airport Way	Subdivision
City of Manteca	Denali	2805 W. Woodward Avenue	Subdivision
City of Manteca	BMW	531 & 539 Sequoia Avenue	Subdivision
City of Manteca	Thomas Street	1674 W. Yosemite Avenue	Subdivision
City of Manteca	Lewis Estates	1825 & 1965 S. Union Road	Subdivision
City of Manteca	Paradise Villas	339 Pestana Avenue	Townhomes
City of Manteca	Trails of Manteca	2368, 2240 & 2200 W. Woodward Avenue	Subdivision
City of Manteca	Luxury Apartments	1279 W. Lathrop Road	Apartments
City of Manteca	320 N. Airport Way	320 N. Airport Way	Subdivision
City of Manteca	Diamond Villas	Lincoln & Grant Avenue	Townhomes

City of Manteca	Machado Estates	20329 S. Airport Way	Subdivision
City of Manteca	Prose Manteca	1563 & 1625 W. Yosemite Avenue	Apartments
City of Manteca	Union Crossing Apartments	1308 W. Atherton Drive	Apartments
City of Manteca	455 N. Walnut Avenue	455 N. Walnut Avenue	Townhomes
City of Manteca	Yosemite Apartments	1919 W. Yosemite Avenue	Apartments
City of Manteca	Warehouse Remodel & Conversion	221 Oak Street	Commercial
City of Manteca	Austin Self Storage	183 S. Austin Road	Commercial
City of Manteca	7 Eleven	1110 N. Main Street	Commercial
City of Manteca	Staybridge Suites	1878 Daniels Street	Commercial
City of Manteca	Manteca Medical Building	2077 W. Yosemite Avenue	Commercial
City of Manteca	Chevron/Extra Mile	1495 S. Union Road	Commercial
City of Manteca	Nur Al-Huda Academy	1085 S. Union Road	Commercial
City of Manteca	Manteca Assisted Living	1852 W. Yosemite Avenue	Commercial
City of Manteca	U-Haul Storage	255 Northgate Drive	Commercial
City of Manteca	Second Harvest of the Greater Valley	704 Industrial Park Drive	Commercial
City of Manteca	Sunny Valley Meats	2427 W. Yosemite Avenue	Commercial
City of Manteca	Pinkberry	603 E. Yosemite Avenue	Commercial
City of Manteca	Rotten Robbie	1014 S. Airport Way	Commercial
City of Manteca	ARCO Expansion	1654 N. Main Street	Commercial
City of Manteca	Woodbridge West Retail	Lathrop Road	Commercial
City of Manteca	CenterPoint South	2205 N. Airport Way	Commercial
City of Manteca	B.E.S.T. Office Building	398 W. Lathrop Road	Commercial
City of Manteca	Maverik Service Station SPC	1527 S. Airport Way	Commercial
City of Manteca	Raymus Development Office Building SPC	617 W. Yosemite Avenue	Commercial
City of Manteca	E. Wetmore Office and Warehouse	470 E. Wetmore Street	Commercial
City of Manteca	Warehouse Remodel & Conversion	400 Industrial Park Drive	Commercial
City of Manteca	Sunny Valley Meats Expansion	2427 W. Yosemite Avenue	Commercial
City of Manteca	GBX at CenterPoint	2205 N. Airport Way	Commercial
City of Manteca	147 & 165 Commerce Avenue	147 & 165 Commerce Avenue	Commercial
City of Manteca	AT&T Cell Tower	1125 N. Union Road	Commercial
City of Manteca	Loma Brewing	1077 Milo Candini Drive	Commercial
City of Manteca	Deaf Puppy Comedy Club	127 N. Main Street	Commercial
City of Manteca	Manteca Marriott Courtyard	2303 W. Atherton Drive	Commercial
City of Manteca	Spreckels Retail	130 Spreckels Avenue	Commercial
City of Manteca	Airport Business Center (North)	3045, 3123 & 3157 N. Airport Way	Commercial
City of Manteca	Storage Building	842 W. Yosemite Avenue	Commercial

City of Manteca	Kaiser Parking Lot	1777 W. Yosemite Avenue	Commercial
City of Manteca	Star Auto Sales	757 N. Main Street	Commercial
City of Manteca	Hwy. 120 – S. Main Street	1153 Vanderbilt Circle	Commercial
City of Manteca	Whisper Car Wash Solar Car Ports	1350 Phoenix Drive	Commercial

Coordinate lane closures and traffic handling with the Engineer and with contractors of coincident or adjacent projects. Potential conflicts may not be limited to the contracts listed above. You must coordinate with the Engineer and with contractors of any additional coincident or adjacent projects not listed above.

You must attend joint weekly meetings, to be organized by the Engineer with other contractors and/or operations managers on adjacent projects, to minimize potential conflicts and coordinate traffic control. You must coordinate with and accommodate other contractors when preparing operations and work schedules, date of the lane closure.

Add to section 5-1.20B(1):

Make all Permits available to operating personnel during construction activities. You are responsible for all fines, damages and job delays incurred due to failure to implement the requirements of the Permits.

Add the following to section 5-1.20B(3):

Apply for all jurisdictional permits required to perform the work. You are responsible for preparing all necessary documents and paying all fees associated with getting the permits. These permits shall include all required contract work within jurisdictions listed below. Permits include, but are not necessarily limited to, the following:

1. Union Pacific Railroad Encroachment Permit

Add to the end of section 5-1.20C:

This project includes work within the railroad property. Contractor must apply and obtain an Encroachment Permit from UPRR before trespassing and performing the work within the railroad property. This must be the first order of work. Contractor is responsible for preparing all necessary documents and paying all fees associated with getting the Encroachment Permit from UPRR.

The Contract includes an agreement with a railroad company, the City of Manteca makes the provisions of the agreement available in the Information Handout in the document titled "Railroad Relations and Insurance Requirements." Comply with all the terms and conditions in the document. Full compensation shall be considered in the price paid in the following bid item "Railroad Relations and Insurance Requirements" and no additional compensation shall be allowed.

Replace "Reserved" in section 5-1.20H with:

5-1.20H City of Manteca Coordination

The Contractor is responsible for the procurement and installation of the 2070LX controller programmed with OMNI software or approved equal. The City of Manteca representative will install the traffic signal timing.

At least 30 calendar days prior to the scheduled activation of any signalized intersection, the Contractor shall submit a signal activation plan to the City for review and approval detailing the proposed date, times, and the turning-on sequence for all the signalized intersections.

At least 15 calendar days prior to the scheduled activation of any signalized intersection, the Contractor shall schedule an in-person meeting with City staff at a location of the Contractor's choice to install the traffic signal timing onto the new Contractor-furnished 2070LX controllers programmed with OMNI software or approved equal.

The assigned location must:

1. Be less than 15 miles away from Manteca City Hall.
2. Be able to accommodate at least 15 attendees.

3. Have adequate power, lighting, and ventilation systems to allow for proper installation of the traffic signal timing program.

The Contractor must layout each controller on a table for the City of Manteca staff or their representative to install the compatible traffic signal timing. The Contractor is responsible for providing the correct controller for each signalized intersection. Each 2070LX controller must be labeled by the Contractor with the accurate assigned signalized intersection. The label must be readable and fixed on the controller. The Contractor is responsible for handling and storing the new Contractor-furnished 2070LX controllers before and after the City staff or their representative complete their work. The Contractor shall allow the City up to three hours to program and troubleshoot each controller. The Contractor shall be responsible to run an operation test on each 2070LX controller after the City staff or their representative complete their work. Notify the Engineer immediately with any operation issue at least 7 calendar days prior to the scheduled activation of any signalized intersection.

The Contractor shall be responsible for all cost associated with the procurement of the required hardware, software, coordination, site rental, and fees associated with the work described in this section. Full compensation shall be considered in the price paid in the following bid item "Furnish and Install 2070LX Controller" and no additional compensation shall be allowed.

Delete item 2 in the list in the 3rd paragraph of section 5-1.23B(2).

Replace section 5-1.23B(3) with:

5-1.23B(3) Testing

Testing of materials and work shall conform to the provisions in Section 6, "Control of Materials," Section 87 "Electrical Systems", and Section 82 "Signs and Markers" of the Standard Specifications and these Special Provisions. Whenever the provisions of Section 6-2.01, "General," of the Standard Specifications refer to tests or testing, it shall mean tests to determine the acceptability of the materials and work.

The Engineer will deduct the costs for testing of materials and work found to be unacceptable from moneys due or to become due to you. The amount deducted will be determined by the Engineer. This testing, includes, but is not limited to, fiber optic cable testing, traffic signal controllers testing, traffic signal cabinets testing, wireless equipment testing before and after installation, complete network communication testing for each intersection, each corridor, and for the entire system, TMC central management system testing, compaction, gradation, concrete testing asphalt, and any other testing identified by a California Test Method (CTM). Testing of offsite material sources shall be considered quality control testing and your sole responsibility.

Replace section 5-1.24 with:

5-1.24 GRADE QUALITY CONTROL

Use a GNSS rover, robotic total station equipment, or a level to check the grades at the frequencies shown in the following table:

Grade Checking Requirements

Type of work	Area or distance represented by the grade checking	Frequency (number of grade points)
Earthwork for cut and fill slopes ≤15 feet	200 feet	2
Earthwork for cut and fill slopes >15 feet	1,000 sq yd	1
Rough grading	1,000 sq yd	1
Trenching	100 feet	10
Subgrade	1 mi	30
Subbase layer	1 mi	50
Base layer	1 mi	100
Curb and gutter	100 feet	6
Concrete barrier	100 feet	5
Finishing roadway	1,000 sq yd	2

Increase the frequency of grade checking of a roadway:

1. Wherever its curve radius is 500 feet or less
2. In areas of a superelevation transition
3. At intersections

You are responsible for providing construction surveys to establish “control stakes”, also known as “grade stakes” for basic line and grade for the project. This includes layout, horizontal and vertical control of the construction of the project, including setting of line and grade stakes.

Comply with Chapter 12, "Construction Surveys," of the Department's Surveys Manual under the supervision of a Professional Land Surveyor with a minimum of 5 year's experience providing construction surveys pursuant to the Department's Surveys Manual

Before starting any construction, submit to the Engineer for approval the frequency, information, and format of survey stakes and other construction horizontal and vertical control to be used for the project.

You are responsible to provide any traffic control in accordance with these special provisions required for providing construction surveys.

You shall perform all survey calculations. Upon completion of the work, submit to the Engineer copies of all survey calculations, results, and field notes within 24 hours. Failure to submit to copies of all survey and field notes within 24 hours shall result in a \$100 deduction for each day that the survey and field notes are not submitted. This deduction is in addition to all other retentions or deductions identified elsewhere in the Special Provisions.

Replace at your sole expense and at no cost to City, any survey marking or stakes that are disturbed or destroyed.

Replace section 5-1.27E with:

5-1.27E Change Order Bills

Maintain separate records for change order work costs. Submit change order bills to the Engineer.

Replace section 5-1.31 with:

5-1.31 JOB SITE APPEARANCE

The work shall be performed in a manner as to maintain a neat appearance at all times. The following measures shall be implemented in order to adhere to this requirement:

1. Broken concrete and debris shall be disposed of concurrently with its removal. Failure to dispose of the broken concrete or debris in the manner described shall result in a \$500 deduction per day for each occurrence. This deduction is in addition to all other retentions or deductions identified elsewhere in these Special Provisions.
2. All trash, debris, and recycle bins, cans or containers of any kind shall have a closeable top and shall be closed tightly at the end of each shift on each day. No debris shall be visible through covering. Failure to cover bins, cans or containers each day shall result in a \$500 deduction per day for each occurrence. This deduction is in addition to all other retentions or deductions identified elsewhere in these Special Provisions.
3. Barricades, delineators, cones, signs and other temporary traffic control devices shall be maintained at all times. Detour signs not in use shall be covered. Prior to the start of each shift, you shall perform an inspection of the temporary traffic control devices placed on the jobsite and perform any required maintenance. Should the Engineer or public complain through the Engineer notify you of any temporary traffic control devices that are not maintained properly, you shall remediate the deficiency within 24 hours of being notified of the deficiency by the Engineer. Failure to remediate the deficiency within 24 hours of being notified shall result in a \$500 deduction each day that the deficiency is not remediated. This deduction is in addition to all other retentions or deductions identified elsewhere in the Special Provisions.

4. Dirt, trash and debris shall not be allowed to accumulate on, or immediately adjacent to, temporary traffic control devices in paved areas and construction area signs placed on a moveable base (skids) within paved areas. You shall monitor the temporary traffic control devices and construction area signs placed on skids within paved areas for the presence of accumulated dirt, trash and debris. Any accumulation must be swept by hand or mechanical methods, such as vacuuming. The use of mechanical kick brooms are not allowed. Should the Engineer or public complain through the Engineer notify you of the accumulation of dirt, trash and debris on, or immediately adjacent to, any temporary traffic control devices or construction area signs on movable bases, you shall sweep the affected area(s) within 24 hours of the notification. Failure to remediate the deficiency within 24 hours of being notified shall result in a \$500 deduction each day that the deficiency is not remediated. This deduction is in addition to all other retentions or deductions identified elsewhere in the Special Provisions.
5. Pedestrian pathways shall be kept free of trash, debris and obstructions at all times. Prior to the start of each shift, you shall inspect all pedestrian pathways assuring that they are free from trash, debris and obstructions and perform any required sweeping or trash/debris/obstruction removal. The sweeping of pedestrian pathways must be done by hand. The use of mechanical methods is not allowed. Should the Engineer or public complain through the Engineer notify you of the presence of trash, debris or the presence of an obstruction on a pedestrian pathway, you shall remediate the deficiency within 24 hours of the notification. Failure to remediate the deficiency within 24 hours of being notified shall result in a \$500 deduction each day that the deficiency is not remediated. This deduction is in addition to all other retentions or deductions identified elsewhere in the Special Provisions.

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

Replace the 2nd paragraph of section 5-1.32:

You will secure, at your own expense, areas required for plant sites, storage of equipment or materials, or for other purposes. Your use of work areas and other City-owned areas shall be at your own risk, and the City shall not be held liable for damage to or loss of materials or equipment located within such areas.

Add to the end of section 5-1.32:

Personal vehicles of your employees must not be parked on the traveled way or shoulders, including sections closed to traffic.

Add to section 5-1.36D:

Contractor shall comply with the Professional Land Surveyors' Act - Business & Professions Code, Section 8771(b) regarding referencing, preserving, and reconstructing monuments, whether or not the monuments are shown on the plans.

Before beginning any construction on the Project, the following tasks shall be accomplished by and under the direction of a licensed land surveyor licensed in the State of California:

- a. Conduct records research to identify horizontal and vertical control monuments within 60' of any ground disturbance, prepare and submit a map to the City of the monuments or corner records within 60' of ground disturbance at the Project site. The map will identify if a monument is in a well, covered, obliterated, on the surface, or a chiseled cross. The contractor must protect in place any existing monument or corner records. Work done by this project must not impact any existing monument or corner records.

Before the certificate of completion for the Project is issued by the City, the following tasks shall be accomplished by and under the direction of a licensed land surveyor licensed in the State of California, if an existing monument or corner records are impacted or damaged by your construction activities:

- a. Monuments shall be reset in the surface of the new construction in a monument box and lid listed below:
 - I. Box: Bingham & Taylor, Mark V 10-in Rim Heavy with Flange, part number CUL10RHVYF or approved equal.
 - II. Lid: Bingham & Taylor, Mark V 10-in Lid Standard, with the word "MONUMENT" stamped on lid, part number CUL10LHVYCPT or approved equal.
- b. Monuments wells shall be raised to the new surface elevation.
- c. For section corners, quarter section corners, or center quarter section corners located in unimproved areas, the monuments shall be reset by placing heavily galvanized iron pipe or galvanized iron stake not less than 2-inches in diameter, minimum 3 ft long and 1 ft below the surface.
- d. Right of Way iron pipes and chisel crosses monumentation shall be reset in kind.
- e. File a post-construction record of survey or corner records with the County Surveyor for the reset monuments. The City shall receive a copy of the submitted and the final recorded record of survey or corner records documents.

The Contractor shall not disturb any monuments not installed by the Contractor without permission of the Department. The Contractor shall bear the expense of locating, surveying and resetting any monuments which may be disturbed without permission. If the monuments not installed by the Contractor are destroyed, and the Department replaces, The Department may deduct the cost from the Contract. In cases of accidental damage or displacement of the monuments where, in the opinion of the Department, new concrete monuments are required, reset or replace and reference monuments. A corner record or record of survey shall be filed with the County Surveyor. The City shall receive a copy of the submitted and recorded corner record or record of survey documents. New monuments shall be of a type and quality in accordance with San Joaquin County Standard Drawings and shall be placed in a manner consistent with good and recognized engineering and surveying practices in accordance with State of California regulations. Replacement of monuments shall be paid for at the Contractor's sole expense.

If you cause damage, you are responsible.

Install suitable safeguards to preserve and protect facilities from damage.

Preservation of monuments shall be measured and paid on a lump sum basis. The contract unit price shall include full compensation for providing all labor, material, tools, equipment and appurtenances for all the work involved in locating and preserving monuments, and all survey documents recording fees with the County Surveyor in accordance with the Plans and these Specifications.

Replace section 5-1.43A with:

5-1.43A General

Minimize and mitigate impacts of potentially claimed work or event.

For each potential claim, assign an identification number determined by chronological sequencing and the 1st date of the potential claim.

Use the identification number for each potential claim on the:

1. Initial Potential Claim Record
2. Supplemental Potential Claim Record
3. Full and Final Potential Claim Record

Failure to comply with this procedure is a waiver of the potential claim and a waiver of the right to a corresponding claim for the disputed work in the administrative claim procedure.

Submit a Closed Potential Claim Record form if you choose not to pursue an Initial Potential Claim Record that has been submitted.

I am aware local material from a noncommercial source or a source not regulated under CA jurisdiction must be sampled and analyzed for pH and lead and may require sampling and analysis under section 6-1.03B(3) for other constituents of concern based on the land use history. I am aware that local material sources must not contain ADL at concentrations greater than 80 mg/kg total lead or equal to or greater than 5 mg/L soluble lead as determined by the Waste Extraction Test (WET) Procedures, 22 CA Code of Regs § 66261.24(a)(2) App II. I am aware that a maximum quantity of material may be excavated at the site based on the minimum number of samples taken before excavating at the site under section 6-1.03B(3).

2. Land use history of the local material location and surrounding property
3. Sampling protocol
4. Number of samples per volume of local material
5. QA and QC requirements and procedures
6. Qualifications of sampling personnel
7. Stockpile history
8. Name and address of the analytical laboratory that will perform the chemical analyses
9. Analyses that will be performed for lead and pH
10. Other analyses that will be performed for possible hazardous constituents based on:
 - 10.1. Source property history
 - 10.2. Land use adjacent to source property
 - 10.3. Constituents of concern in the ground water basin where the job site is located

The plan must be sealed and signed by an engineer who is registered as a civil engineer in the State or a professional geologist licensed as a professional geologist by the State.

If the plan requires revisions, the Engineer provides comments. Submit a revised plan within 7 days of receiving comments. Allow 7 days for the review.

6-1.03B(3) Analytical Test Results

At least 15 days before placing local material, submit analytical test results for each local material obtained from a noncommercial source or a source not regulated under CA jurisdiction. The analytical test results must include:

1. Certification signed by an engineer who is registered as a civil engineer in the State or a professional geologist licensed as a professional geologist by the State stating:

The analytical testing described in the local material plan has been performed. I performed a statistical analysis of the test results using the US EPA's ProUCL software with the applicable 95 percent upper confidence limit. I certify that the material from the local material source is suitable for unrestricted use at the job site, it has a pH above 5.0, does not contain soluble lead in concentrations equal to or greater than 5mg/l as determined by the Waste Extraction Test (WET) Procedures, 22 CA Code of Regs § 66261.24(a)(2) App II, does not contain lead in concentrations above 80 mg/kg total lead, is free from all other contaminants identified in the local material plan, and will comply with the job site's basin plan and water quality objectives of the RWQCB.

2. Chain of custody of samples
3. Analytical results no older than 1 year
4. Statistical analysis of the data using US EPA's ProUCL software with a 95 percent upper confidence limit
5. Comparison of sample results to hazardous waste concentration thresholds and the RWQCB's basin plan requirements and water quality objectives for the job site location

6-1.03B(4) Sample and Analysis

Sample and analyze local material from a (1) noncommercial source or (2) source not regulated under CA jurisdiction:

1. Before bringing the local material to the job site
2. As described in the local material plan

3. Under US EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)

The sample collection must be designed to generate a data set representative of the entire volume of proposed local material.

Before excavating at the (1) noncommercial material source or (2) a source not regulated under CA jurisdiction, collect the minimum number of samples and perform the minimum number of analytical tests for the corresponding maximum volume of local material as shown in the following table:

Minimum Number of Samples and Analytical Tests for Local Material

Maximum volume of imported borrow (cu yd)	Minimum number of samples and analytical tests
< 5,000	8
5,000–10,000	12 for the first 5,000 cu yd plus 1 for each additional 1,000 cu yd or portion thereof
10,000–20,000	17 for the first 10,000 cu yd plus 1 for each additional 2,500 cu yd or portion thereof
20,000–40,000	21 for the first 20,000 cu yd plus 1 for each additional 5,000 cu yd or portion thereof
40,000–80,000	25 for the first 40,000 cu yd plus 1 for each additional 10,000 cu yd or portion thereof
> 80,000	29 for the first 80,000 cu yd plus 1 for each additional 20,000 cu yd or portion thereof

Do not collect composite samples or mix individual samples to form a composite sample.

Analyze the samples using the US EPA's ProUCL software with a 95 percent upper confidence limit. All chemical analysis must be performed by a laboratory certified by the SWRCB's Environmental Laboratory Accreditation Program (ELAP).

The analytical test results must demonstrate that the local material:

1. Is not a hazardous waste
2. Has a pH above 5.0
3. Has an average total lead concentration, based upon the 95 percent upper confidence limit, at or below 80 mg/kg
4. Is not contaminated with local material plan-identified constituents of concern at average concentrations (95 percent upper confidence limits) in excess of their respective commercial/industrial San Francisco Bay RWQCB environmental screening levels ESLs, except for arsenic.
5. Does not contain any of the following compounds, chemicals, or elements at an estimated average concentration (95 percent upper confidence limit) above the maximum allowed concentration defined in the following table:

Compound/Chemical	Maximum allowed concentration (mg/kg)
Arsenic	11
Barium	1500
Benzene	1
Beryllium	10
Cadmium	10
Chromium (total)	1000
Cobalt	100
Diesel	150
Ethylbenzene	10
Gasoline	500
Mercury	10
Motor oil	500
Nickel	150
Selenium	10
Toluene	10
Trichloroethene	1
Vanadium	200
Xylenes	10
Zinc	600

6-1.03C Local Material Management

Do not place local material until authorized.

If the Engineer determines the appearance, odor, or texture of any delivered local material suggests possible contamination, sample and analyze the material. The sampling and analysis is change order work unless (1) hazardous waste is discovered or (2) the analytical test results indicate the material does not comply with section 6-1.03B(3).

Dispose of noncompliant local material at an appropriately permitted CA Class I, CA Class II or CA Class III facility. You are the generator of noncompliant local material.

Replace section 6-1.04 with:

6-1.04 BUY AMERICA

6-1.04A General

Buy America requirements do not apply to the following:

1. Tools and construction equipment used in performing the work
2. Temporary work that is not incorporated into the finished project

6-1.04B Crumb Rubber (Pub Res Code § 42703(d))

Furnish crumb rubber with a certificate of compliance. Crumb rubber must be:

1. Produced in the United States
2. Derived from waste tires taken from vehicles owned and operated in the United States

6-1.04C Steel and Iron Materials

Steel and iron materials must be melted and manufactured in the United States except:

1. Foreign pig iron and processed, pelletized, and reduced iron ore may be used in the domestic production of the steel and iron materials
2. If the total combined cost of the materials produced outside the United States does not exceed the greater of 0.1 percent of the total bid or \$2,500, the material may be used if authorized

Furnish steel and iron materials to be incorporated into the work with certificates of compliance and certified mill test reports. Mill test reports must indicate where the steel and iron were melted and manufactured.

All melting and manufacturing processes for these materials, including an application of a coating, must occur in the United States. Coating includes all processes that protect or enhance the value of the material to which the coating is applied.

6-1.04D Manufactured Products

Iron and steel used in precast concrete manufactured products must meet the requirements of section 6-1.04C regardless of the amount used.

Iron and steel used in other manufactured products must meet the requirements of section 6-1.04C if the weight of steel and iron components constitute 90 percent or more of the total weight of the manufactured product.

6-1.04E Construction Materials

Buy America requirements apply to the following construction materials unless otherwise specified:

1. Non-ferrous metals
2. Plastic and polymer-based products such as:
 - 2.1. Polyvinylchloride
 - 2.2. Composite building materials
3. Glass
4. Fiber optic cable including drop cable
5. Optical fiber
6. Lumber
7. Engineered wood
8. Drywall

Where one or more of these construction materials have been combined by a manufacturer with other materials through a manufacturing process, Buy America requirements do not apply unless otherwise specified.

All manufacturing processes for these materials as defined in 2 CFR 184.6 must occur in the United States.

Furnish construction materials to be incorporated into the work with certificates of compliance with each project delivery. Manufacturer's certificate of compliance must identify where the construction material was manufactured and attest specifically to compliance with its 2 CFR 184.6 standard.

Minor additions of articles, materials, supplies, or binding agents to these construction materials do not change the categorization of the construction material.

Replace the last sentence in the 1st paragraph in section 6-1.05 with:

You may submit requests for substitution of "or equal" items during the bidding process only. Your request must allow 30 days for review and cause no delay.

Delete the 2nd paragraph in section 6-1.05

Add to section 6-1.05:

Engineer's decision to accept substitution is final.

Beginning of each week, develop a 4-week schedule identifying the previous week's work and a 3-week look-ahead. Include sufficient detail:

1. By including your and your subcontractors' actual and planned activities for offsite and construction work
2. To address all future activities
3. To identify issues requiring Engineer's action or input
4. To identify all construction activities that may affect the public through:
 - a. Traffic
 - b. Noise
 - c. Vibration
 - d. Work that requires:
 - i. Shoulder closure
 - ii. Lane closure
 - iii. Traffic signal shut down

Provide the 4-week schedule to the Engineer at the weekly progress meeting.

Replace the 1st paragraph in section 8-1.03 with:

Attend a preconstruction conference with key personnel, including your assigned representative, at a time and location determined by the Engineer. Submit documents as required before the preconstruction conference.

Replace the row for *Schedule* in the table in the 2nd paragraph of section 8-1.03 with:

Schedule	Baseline schedule and weekly statement of working days report
----------	---

Replace section 8-1.04 with:

8-1.04 START OF JOBSITE ACTIVITIES

The Engineer will issue a Notice to Proceed letter within 30 days after contract approval. The Notice to Proceed letter will state the earliest date on which you may commence jobsite activities. You shall not commence jobsite activities, subject to the exceptions listed in this section, prior to:

1. The date stated in the Notice to Proceed letter or
2. You receive authorization to start or
3. The following listed items are authorized or accepted by the Engineer:
 - a. CPM baseline schedule
 - b. SWPPP
 - c. Contingency plan for opening closures to public traffic
 - d. QC plan
 - e. Utility verification plan
 - f. Traffic Signal activation plan
 - g. Pre-construction Monument Preservation Documents

Other than the submittals listed above, the Engineers' review times for any other submittals will not begin until the working days for the project have begun.

For purposes of determining time of completion pursuant to section 8-1.05, if you fail to accomplish all of the above listed items to the Engineer's satisfaction within 20 calendar-days following the earliest date for starting work as stated in the Notice to Proceed letter, work will be deemed to commence on the 21st calendar-day after the earliest date for starting work as stated in the Notice to Proceed letter, and each subsequent day until you accomplish the above listed items to the Engineer's satisfaction will be considered to be a working-day as defined in section 1-1.07B.

Provided you have accomplished all of the above listed items to the Engineer's satisfaction, you shall begin work within 20 calendar-days after the earliest date for starting work as stated in the Notice to Proceed letter. You shall diligently prosecute the work to completion within the time limit provided in the section 8-1.05. For purposes of determining time of completion pursuant to the section 8-1.05, work will be deemed to commence on the day you begin work or 21 calendar-days after the date specified in the Notice to Proceed letter, whichever is earlier, and in accordance with contract requirements.

You may enter the jobsite only to:

1. Measure controlling field dimensions and locating utilities per section 8-1.15.
2. Implementation of SWPPP best management practices once the SWPPP has been accepted.

Submit a notification 72 hours before starting job site activities.

Replace the 4th and 5th paragraphs of section 8-1.05 with:

The Engineer issues a weekly statement of working days report by the end of the following week. If you disagree with a weekly statement of working days report, submit an RFI within 5 business days of receipt of the report.

The weekly statement of working days report shows:

1. Working days and non-working days during the reporting week
2. Time adjustments
3. Calculations of work completion dates, including working days remaining
4. Controlling activities

Delete the 6th paragraph of section 8-1.05.

Add to the end of section 8-1.05:

Your attention is directed to section 8-1.04 of these special provisions.

You shall complete all work before the expiration of 210 calendar days from the commencement date set forth in the Notice to Proceed letter.

Add to the end of section 8-1.10B:

Liquidated damages for not completing all work within 210 calendar days are \$ 4800 per day.

Replace "Reserved" in section 8-1.15 with:

8-1.15 Existing Utility Verification

You shall submit a Utility Verification Plan to the Engineer for review and approval within 20 calendar days following the earliest date for starting work as stated in the Notice to proceed letter. The Engineer shall have 10 business days to review the Utility Verification Plan. Potholing and/or verifications may not start until your Utility Verification Plan has been approved by the Engineer.

The Utility Verification Plan shall be developed for the locations with ground disturbance only and include the location of all existing utilities (including but not limited to drainage, sewer, water, raw water, gas, petroleum, electric, communication, fiber, irrigation piping and electrical, highway lighting, street lighting, signals, traffic operating systems and railway facilities) that are shown or not shown on the plans, marked in the field, or could reasonably be inferred from the presence of the proposed improvements.

The Utility Verification Plan shall detail the location of each proposed pothole, proposed depth of pothole, method of potholing, proposed method of backfilling and surface restoration. The Utility Verification Plan shall also include a schedule of when you plan to perform the work demonstrated in the Utility Verification Plan noting the dates, times and locations of all lane closures required to perform the potholing and/or verifications. Activities for developing and submitting the Utility Verification Plan, the Engineers review of the Utility Verification Plan and performing the work detailed in the Utility Verification Plan shall be

12 TEMPORARY TRAFFIC CONTROL

Replace section 12-3.03 with:

12-3.03 TRAFFIC DRUMS

12-3.03A General

12-3.03A(1) Summary

Section 12-3.03 includes specifications for placing, maintaining, and removing traffic drums.

12-3.03A(2) Definitions

Not Used

12-3.03A(3) Submittals

Submit a certificate of compliance for traffic drums.

12-3.03A(4) Quality Assurance

Not Used

12-3.03B Materials

A traffic drum must:

1. Be orange low-density polyethylene (LDPE)
2. Be flexible and collapsible upon vehicle impact
3. Have 6-inch-wide Type V or VIII, white and orange retroreflective stripes
4. Have a weighted base to maintain an upright position and prevent displacement by passing high-speed truck traffic
5. Have a height such that the top of the drum is at least 39 inches above the traveled way

Retroreflective stripes must be visible from 1,500 feet, during the hours of darkness under an illumination of legal high-beam headlights by persons with 20/20 vision or vision corrected to 20/20.

The weighted base must:

1. Be a preformed rubber base or a tire sidewall base
2. Be detachable
3. Have a maximum 50-lb weight and a minimum weight of:
 - 3.1. 22 lb for a posted speed limit less than 30 mph
 - 3.2. 30 lb for a posted speed limit 30 to 50 mph
 - 3.3. 40 lb for a posted speed greater than 50 mph
4. Be shaped to prevent rolling upon impact
5. Have a maximum 36-inch outside diameter

A preformed rubber base must:

1. Be manufactured to fit the traffic drum
2. Have a 4-inch maximum height above the ground surface

A tire sidewall base must:

1. Be no more than 2 tire sidewalls
2. Have a combined 5-inch maximum height above the ground surface
3. Have circumferential contact with the road surface

12-3.03C Construction

Use one type of traffic drum on the project.

Use the same type and brand of retroreflective sheeting for all traffic drums used on the project.

Do not use sandbags or sand filled ballasts.

Place traffic drum weighted base edge outside of the lane width open to traffic.

Move traffic drums to the adjacent edge of shoulder at the end of each work period.

Check for traffic drums that are displaced or cease to operate or function as specified at least once per day during non-working days. Immediately replace or repair them to their original condition and place back in their original locations.

12-3.03D Payment

Traffic drums used in traffic control systems are paid under the Traffic Control System bid item of work.

Add to the beginning of section 12-3.32C:

Place PCMSs at the locations in advance of the 1st warning sign for each:

1. Stationary lane closure
2. Street closure
3. Connector closure
4. Shoulder closure
5. Traffic Signal Shutdown
6. Underground conduit installation

Add to section 12-4.02A(2):

special days: Mother’s Day, Easter weekend including Friday prior, Martin Luther King Jr Day, President’s Day, Del Osso Farms activities, Christmas Eve, and Day after Thanksgiving.

Add between the 1st and 2nd paragraphs of section 12-4.02A(3)(c) of the RSS for section 12-4:

Submit a contingency plan for each of the following activities:

1. Complete roadway closure
2. Partial or complete intersection closure
3. Roadway signal head & sign installation on exiting signal mast arm
4. Removal and Installation of Signal Cabinet
5. Removal and Installation of Signal Controller
6. Traffic Signal Shutdown
7. Underground power, fiber optic, and all conduit installation

Add to the end of section 12-4.02C(1):

Keep the full width of the traveled way open to traffic when no active construction activities are occurring in the traveled way or within 6 feet of the traveled way.

For each 10-minute interval or fraction thereof past the time specified to open the closure, the amount for liquidated damages per interval shown in the table below is deducted. Liquidated damages are not assessed if the Engineer orders the closure to remain in place beyond the scheduled pickup time.

Type of facility	Route	Direction or segment	Period	Liquidated damages/interval
Mainline	All City Streets	Both	1st half hour	\$330/10 minutes
			2nd half hour	\$330/10 minutes
			2nd hour and beyond	\$330/10 minutes

Add to the end of section 12-4.02C(3)(a):

If work vehicles or equipment is parked on the shoulder within 6 feet of a traffic lane at all City streets, close the shoulder area with fluorescent-orange traffic cones or portable delineators. Place the cones or delineators on a taper in advance of the parked vehicles or equipment and along the edge of the traveled way at 25-foot intervals to a point not less than 25 feet past the last vehicle or piece of equipment. Use at least 9 cones or delineators for the taper. Place advance warning signs as specified in section 12-4.02C (8).

Replace Reserved in section 12-4.02C(3)(d) with:

Do not perform work on city streets that interferes with traffic or requires a shoulder, lane, or complete closure from 5 AM to 9 AM or from 3 PM to 8 PM hours.

You may close city-street lanes using a one-way-reversing traffic-control lane closure only if reviewed and approved by the Engineer.

When switching over from existing signal cabinet and/or existing signal controller to new signal cabinet and/or new signal controller, it shall be the Contractor responsibility to schedule their work such that the turn over shall be completed and the signal is fully operation in one working day during off-peak period. Do not perform traffic signal shutdown from 5 AM to 9 AM or from 3 PM to 8 PM. Contractor shall not schedule the traffic signal shutdown for two or more intersections on the same corridor at once.

Add to section 12-4.02C(3)(f):

Lanes and shoulders shall not be closed on designated holidays and special days.

Add to the end of section 12-4.02C(8)(a):

If shoulders are closed within the project limits, use the following advance warning signs:

1. W21-5 (Shoulder Work)
2. W21-5b (Right/Left Shoulder Closed Ahead)
3. C30A(CA) (Shoulder Closed)

If lanes are closed within the project limits, use the following advance warning signs:

1. W20-1 (Road Work Ahead)
2. W20-5 (Right/Left Lane Closed Ahead)
3. C30(CA) (Lane Closed)

When existing accommodations for bicycle travel are disrupted or closed by your construction activities, install temporary advance warning signs of the Bicycle (W11-1) sign and the SHARE THE ROAD (W16-1P) plaque to advise motorists of the presence of bicyclists in the travel way lanes.

Add between the 1st and 2nd paragraphs of section 12-4.04C:

A pedestrian facility closure on the same side of the highway is limited to no more than 1 block. When working on one side of the highway, the pedestrian facility on the opposite side of the highway within the same block must be open.

Concurrent pedestrian facility closures on the same side of the highway must be spaced at least 2 blocks apart.

For an intersection with 4 quadrants, close the side serving the 2 quadrants in the same direction of travel.

Provide a temporary pedestrian access route if all 4 intersection quadrants, crosswalks, or sidewalks are required to be closed for construction. The temporary pedestrian access must be able to protect pedestrians from any unsafe roadway conditions.

Provide and maintain temporary lighting for the temporary pedestrian access route.

Replace section 12-8 with:

12-8 RESIDENTIAL AND BUSINESS NOTIFICATION

12-8.1 General

No road closure shall occur without prior authorization from the Department. A closure is defined as partial or complete closure of a traffic lane or lanes, including shoulder, ramp, intersection, traffic signal shutdown, or connector lanes, within a single traffic control system. The Contractor shall:

39 ASPHALT CONCRETE

Replace the 2nd paragraph of section 39-2.02A(1) with:

Produce Type A HMA using a WMA additive technology.

77 LOCAL INFRASTRUCTURE

77-1 SIGNAL AND LIGHTING

77-1.01 GENERAL

77-1.01A Summary

Section 77-1 includes specifications for signal and lighting.

Signal and lighting include removing, adjusting, or adding:

1. Foundations
2. Pull boxes
3. Conduit
4. Conductors
5. Cables
6. Standards
7. Signal heads
8. Controller assembly
9. Emergency vehicle detection system

77-1.01B Equipment List and Drawings

The controller cabinet schematic wiring diagrams and intersection sketch must be combined into one drawing, so that, when the cabinet door is fully open, the drawing is oriented with the intersection.

The Contractor must furnish a maintenance manual for all controller units, auxiliary equipment, and vehicle detector sensor units, control units and amplifiers and any other auxiliary equipment furnished. The maintenance manual and operations manual may be combined into one manual. The maintenance manual or combined manual must be submitted at the time the controllers are delivered for testing or, if ordered by the Engineer, previous to purchase. The maintenance manual must include, but need not be limited to, the following items:

1. Specifications
2. Design characteristics
3. General operation theory
4. Function of all controls
5. Trouble shooting procedure (diagnostic routine)
6. Block circuit diagram
7. Geographical layout of components
8. Schematic diagrams
9. List of replacement component parts with stock numbers

77-1.01C Order of Work

The first order of work must be to place the order for the traffic signal and communication equipment as shown on the project plans and submit an encroachment permit for UPRR to complete the work as shown on the project plans. Comply with all the requirements as shown on the Railroad Relations and Insurance Requirements information handout.

Before the procurement of the wireless antennas system, Contractor must perform a wireless site survey test per manufacture guidance in the presence of the Engineer and a manufacture representative. Within the first 25 working days, you shall physically complete the wireless site survey test, and certify in writing that there are no conflicts with the proposed wireless links. Any nonoperational wireless link submitted

after the procurement or the installation of the wireless system will not be accepted, and it will be your responsibility to repair. The City will not compensate you for any repair.

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

Prior to commencement of the traffic signal functional test at any location, all items of work related to signal control must be completed and roadside signs must be in place at that location.

At the pre-construction meeting, the Contractor must submit for approval a construction sequence, schedule, and plans for safety signing in the work areas of the project. The progress schedule must show the sequence in which the work will begin and end and the sequence of the traffic signal shutdown. The Contractor must adhere to the progress schedule. In the event of a proposed change in the progress schedule, the Contractor, prior to the time of the proposed change, must submit the request in writing to the Engineer for approval. The Contractor will be held responsible for all claims received from adversely affected residences and businesses resulting from changes in their originally approved progress schedule.

77-1.01D Submittals

Contractor must forward to the City Engineer four (4) copies of all required submittals, including submittals for all traffic signal equipment and poles, signage, and communication systems materials to be used on the project, for review and approval.

Contractor must submit to the City the Certificates of Compliance from the manufacturer in accordance with the provisions of Section 6-2.03C "Certificates of Compliance" of the standard specifications for all items listed below at the time they are delivered to the job site:

1. Concrete mix design
2. Controller cabinet and components
3. Signal display and hardware
4. Signal mounting hardware
5. Conduits
6. Conductors
7. Fiber optic cables
8. Pull boxes and splice vaults
9. HUB UPS, PDU, and External batteries
10. Telecom room UPS
11. Fiber distribution unit
12. HUB Ethernet Switch
13. Telecom room Ethernet Switch
14. Signal cabinet Ethernet Switch
15. Fiber transceiver
16. Cellular Gateway
17. Central Management System
18. Type 2 surge protection
19. Circuit breakers

20. Traffic signs sheeting and panel materials
21. Battery backup systems
22. Wireless systems
23. Vehicle Emergency Pre-emption system
24. POE cable

77-1.02 MATERIALS

77-1.02A General

The electrical materials must comply with City of Manteca Standards, Section 86, and these special provisions.

77-1.02B Pull box

Pull boxes must have penta bolt locking mechanism capability as a theft deterrent. Penta bolts must be a Penta Head 1/2-13UNC and must have a thread lock material and must comply with section 86-1.02C of these special provisions.

77-1.02C Bonding and Grounding

Grounding jumper must be attached by a 3/16 inch or larger brass bolt in the signal standard or controller cabinet.

77-1.02D Solid State Traffic Actuated Controllers

Solid-State traffic actuated controller unit, cabinet and auxiliary equipment must be furnished by the Contractor, Traffic signal controller must be Model 2070LX with OMNI software, and must conform to the most recent provisions of the State of California, Department of Transportation Specifications titled "Traffic Signal Control Equipment Specifications."

Operational testing of the controller, cabinet and auxiliary equipment must be the responsibility of the Contractor. Testing must be done by pre-qualified agencies listed by the City for performing the operational and environmental testing. After completion of testing, the original signed inspection tag must be sent directly to the City by the testing laboratory. All costs for testing, including shipping and picking up, must be borne by the Contractor.

The Contractor must utilize one of the pre-qualified agencies listed by the City for performing the operational and environmental testing.

Detector sensor units must automatically double re-tune upon field break, without requiring manual reset.

The Contractor must arrange to have a signal technician, qualified to work on the controller and employed by the controller's manufacturer or his representative, present at the time the equipment is turned on.

The Engineer has the sole right to reject any and all alternate agencies excluding those listed on the pre-qualified list.

Additional requirements for the traffic signal controllers can be seen in section 87-13 of these special provisions.

77-1.02E Traffic Logging System

The Traffic Logging System or approved equal hardware must consist of an input interface cable.

77-1.02E(1) Input Interface:

Interface connections must be with a male 37-pin "D" sub miniature connector and mate with a female 37-pin "D" sub miniature connector on the cable side. The connector retainer must be a TRW/Cinch super "D" snap- on type.

The cable harness supplied must be 48" long and wired for all 28 inputs. All wires must be labeled with the input channel number 1 to 28 and number 29 ground wire.

The cable harness must connect to the detector input terminals and must use the detector loop input of the Model C-1000 series detector.

Power must be supplied with a UL-approved and listed plug-in class 2 transformer. Pins 36 and 37 on the interface connector must be used for this low voltage input.

77-1.02F Vehicle Signal Faces and Signal Heads

Backplates must be metal type of the McCAIN BACKPLATE WITH YELLOW REFLECTIVE BORDERS or an approved equal.

All lamps for traffic signal units must be furnished and installed by the Contractor. Arrow lenses must have prismatic engravings to deflect light downward and baked enamel arrows. Multidirectional arrow lenses must not be installed. All signal lenses must have 12-inch diameters, except where noted on plans.

Signal section housings must be metal, with glass lenses and glass or anodized aluminum reflectors. Terminal compartments, MAS mounts and slip fitters must be bronze.

All red ball indications must be LED, GELCORE model DR6-RTFB-20A, or approved equal. All yellow ball indications must be LED, GELCORE model DR6-YTFB-20A, or approved equal. All green ball indications must be LED, GELCORE model DR6-GTFB-20A, or approved equal.

LED signal modules must be manufactured in accordance with a vendor quality assurance (QA) program. The QA program must include two types of quality assurance: (1) design quality assurance, and (2) production quality assurance. The production quality assurance must include statistically controlled routine tests to ensure the minimum performance levels of LED signal modules built to meet this specification.

QA process and test results documentation must be kept on file for a minimum period of seven years.

Each LED signal module must be identified by a manufacturer's serial number for warranty purposes. Identification of the component and sub-assembly level may be required if the reliability and performance of the module must be traceable to the original item manufacturer(s).

Any failure within an LED signal module after burn-in must be cause for rejection.

All LED signal modules must be visually inspected for any exterior physical damage or assembly anomalies. Careful attention must be paid to the surface of the lens to ensure there are no scratches (abrasions), cracks, chips, discoloration, or other defect. Any such defects must be cause for rejection.

Manufacturer must provide a Certificate of Compliance to this specification for each shipment of LED signal modules.

77-1.02G Detectors

The detector units must be Model C-1000 series, manufactured by Reno A&E, or approved equal. Detector sensor units must automatically double re-tune upon field break, without requiring manual reset.

Loop detector wire must be Type 1, and the loop lead-in cable from the field to the cabinet sensor unit must be Type B lead-in cable.

The cable must be suitable for prolonged exposure to temperatures ranging from - 60 to 80 C. Cable properties must not be degraded by prolonged exposure to pavement run-off components. Inductive Loop Detector Installation Details must be as follows:

1. Loop sealant must be elastomeric, as specified in Section 86.5.01 A (5), "Installation Details," of the Standard Specifications.
2. Detector loops must be 6-foot Type E except as otherwise noted on the plans.
3. Loop lead-ins must be individually identified as shown on the plans. Identifications must be by means of bands placed on the lead-in near the first splice.
4. The ends of all lead-in cables and all loop conductors must be sealed and made waterproof prior to being installed in conduit and prior to being left for splicing.
5. Conductors from loop to termination pull box must be twisted a minimum of three turns per foot, requiring a double-wide slot.

6. Installation and test must conform to the Standard Specifications and as shown on the plans.
7. Unless shown otherwise, each loop must consist of three turns of conductors; extension loops must have four turns.
8. Slots cut in pavement must immediately be cleaned by washing with water to remove all sawing residue and blown out and dried before installing inductive loop detectors.
9. After conductors are installed in the slots cut in the pavement, the slots must be filled with sealant. The sealant must be at least 5/8 inch thick above the top conductor in the saw cut and must completely fill the saw cut.

77-1.03 CONSTRUCTION

77-1.03A General

Install electrical material under City of Manteca Standards, Caltrans Standards Section 87, and these special provisions.

77-1.03B Conduit

Minimum radius of bends must be 36". All bends and/or off-sets must be accomplished with factory sections, and no field bends will be allowed.

After conductors have been installed, the ends of the conduits terminating in pull boxes and controller cabinets must be sealed with Conduit Sealing Plugs as specified.

Conduit must have a 3.5-foot clearance at detector loops.

At locations where conduit is to be installed, if the delay to any vehicle exceeds 5 minutes, then the horizontal directional drilling method must be used, if the delay to any vehicle will not exceed 5 minutes, then conduit may be installed as follows:

77-1.03B(1) Trenching Installation of Conduit

Conduit must be placed under existing pavement in a trench approximately 2 inches wider than the outside diameter of the conduit to be installed.

The trench width must not exceed 6 inches. The top of the installed conduit must be a minimum of 36 inches below finish grade, except that at pull boxes the trench may be hand-dug to required depth.

Areas of pavement to be removed must be cut with a rock cutting excavator specifically designed for this purpose. Cuts must be neat and true with no shatter outside the removal area. All AC pavement between trench and gutter-lip must be removed to 0.25-foot below grade.

The conduit must be placed in the bottom of the trench on a 0.10-foot minimum bed of finer compacted sand. The trench must be backfilled with concrete conforming to Section 90-10 of the Standard Specifications and these special provisions, and machine-vibrated to 0.25-foot below the roadway surface. The top 0.25-foot must be filled with AC and machine compacted flush with roadway grade.

All excavated areas in the street must be completely backfilled at the end of each work day.

77-1.03C Pull box

Grout in bottom of pull boxes must be installed.

77-1.03D Conductors and Wiring

Conductors must be copper, and it must not be pulled into conduits until the pull boxes have been set to grade, crushed rock sumps have been installed, conduits have been terminated, and conduits have been bonded and grounded. All pull boxes must be inspected and approved prior to pulling any conductors and fiber optic cables including existing pull boxes. Conductors must not be pulled into new or existing conduits unless the Engineer is present to observe the operation. The ends of all unused conductors must be sealed prior to being installed into the conduits. A 1/4" pull rope must be installed into all conduits.

Conductors must be spliced by use of "C"-shaped compression connectors as shown on the plans. Splices must be insulated by "Method B."

77-1.03E Bonding and Grounding

Grounding jumper must be run to the conduit, ground rod or bonding wire in adjacent pull box.

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

77-1.03F Loop Testing procedures

The Contractor must have a qualified field technician present for the testing and final configuration measurement evaluation and installation as hereinafter described. The field technician must test the detection system before and after the traffic signal cabinet and or the traffic signal controller installation.

The Contractor must provide the Engineer with the testing results in a report format. Each report must be signed by the representatives performing the test. Testing of the detector loops or any other detection system before and after the installation must be the responsibility of the Contractor. Testing must be done by a pre-qualified agencies listed by the City. All costs for testing must be borne by the Contractor.

77-1.03G Remove, Re-Installing or Salvaging Electrical Equipment

Salvaged City electrical, traffic signal cabinet assemblies, traffic signal controller, and traffic signage materials must be delivered to the City of Manteca Corporation Yard (265 E.Wetmore Street, Manteca, CA 95337) by the Contractor and stockpiled.

Full compensation for hauling and stockpiling electric materials must be considered as included in the contract price paid for the item requiring the material to be salvaged, and no additional compensation will be allowed.

77-2.01 EMERGENCY VEHICLE DETECTION SYSTEM

77-2.01(A) GENERAL

Traffic signal that is noted on the project plans to have a new emergency vehicle detector system must comply with the details shown and this special provisions.

Each emergency vehicle detector system must consist of an optical emitter assembly or assemblies located on the appropriate vehicle and an optical detector/discriminator assembly or assemblies located at the traffic signal.

Emitter assemblies are not required for this project except units for testing purposes to demonstrate that the systems perform as specified. Tests must be conducted in the presence of the Engineer as described in section 77-2(4) during the signal test period. The Engineer must be provided a minimum of 2 business days notice before performing the tests.

Each system must allow detection of 2 classes of authorized vehicles. Class I (mass transit) vehicles must be detected at ranges of up to 1,000 feet from the optical detector. Class II (emergency) vehicles must be detected at ranges up to 1,800 feet from the optical detector.

Class I signals (those emitted by Class I vehicles) must be distinguished from Class II signals (those emitted by Class II vehicles) on the basis of the modulation frequency of the light from the respective emitter. The modulation frequency for Class I signal emitters must be $9.639 \text{ Hz} \pm 0.110 \text{ Hz}$. The modulation frequency for Class II signal emitters must be $14.035 \text{ Hz} \pm 0.250 \text{ Hz}$.

A system must establish a priority of Class II vehicle signals over Class I vehicle signals and must comply with the requirements in section 25352 of the California Vehicle Code.

77-2.02 MATERIALS

77-2.02(A) Emitter Assembly

77-2.02(A)(i) General

Each emitter assembly provided for testing purposes must consist of an emitter unit, an emitter control unit, and connecting cables.

Each emitter assembly, including lamp, must operate over an ambient temperature range of -34 to +60 degrees C at both modulation frequencies and operate continuously at the higher frequency for a

minimum of 3,000 hours at 25 degrees C ambient temperature before failure of the lamp or other components.

Each emitter unit must be controlled by a single, maintained-contact switch on the respective emitter control unit. The switch must be located to be readily accessible to the vehicle driver. The control unit must contain a pilot light to indicate that the emitter power circuit is energized and must generate only 1 modulating code, either that for Class I vehicles or that for Class II vehicles.

77-2.02(A)(ii) Functional

Each emitter unit must transmit optical energy in 1 direction only.

The signal from each Class I signal emitter unit must be detectable at a distance of 1,000 feet when used with a standard optical detection/discriminator assembly and filter to eliminate visible light. Visible light must be considered eliminated when the output of the emitter unit with the filter is less than an average of 0.0003 candela per energy pulse in the wavelength range of 380 nm to 750 nm when measured at a distance of 10 feet. Submit a certificate of compliance for each Class I emitter unit.

The signal from each Class II signal emitter unit must be detectable at a distance of 1,800 feet when used with a standard optical detection/discriminator assembly.

The standard optical detection/discriminator assembly to be used in making the range tests must be available from the manufacturer of the system. A certified performance report must be furnished with each assembly.

77-2.02(A)(iii) Electrical

Each emitter assembly must provide full light output with input voltages of between 12.5 V (dc) and 17.5 V (dc). An emitter assembly must not be damaged by input voltages up to 7.5 V (dc) above supply voltage. The emitter assembly must not generate voltage transients, on the input supply, that exceed the supply voltage by more than 4 volts.

Each emitter assembly must consume not more than 100 W at 17.5 V (dc) and must have a power input circuit breaker rated at 10 A to 12 A, 12 V (dc).

The design and circuitry of each emitter must allow its use on vehicles with either negative or positive ground without disassembling or rewiring of the unit.

77-2.02(A)(iv) Mechanical

Each emitter unit must be housed in a weatherproof corrosion-resistant housing. The housing must be provided with facilities to allow mounting on various types of vehicles and must have provision for aligning the emitter unit properly and for locking the emitter unit into this alignment.

Each emitter control unit must be provided with hardware to allow the unit to be mounted in or on an emergency vehicle or mass transit vehicle. Where required for certain emergency vehicles, the emitter control unit and exposed controls must be weatherproof.

77-2.02(B) Optical Detection/Discriminator Assembly

77-2.02(B)(i) General

Each optical detection/discriminator assembly must consist of 1 or more optical detectors, connecting cable and a discriminator module.

Each assembly, when used with standard emitters, must have a range of at least 1,000 feet for Class I signals and 1,800 feet for Class II signals. Standard emitters for both classes of signals must be available from the manufacturer of the system. Range measurements must be taken with all range adjustments on the discriminator module set to "maximum".

77-2.02(B)(ii) Optical Detector

Each optical detector must be a waterproof unit capable of receiving optical energy from 2 horizontal directions.

The reception angle for each photocell assembly must be a maximum of 8 degrees in all directions about the aiming axis of the assembly. Measurements of reception angle will be taken at a range of 1,000 feet for a Type I emitter and at a range of 1,800 feet for a Type II emitter.

Internal circuitry must be solid state and electrical power must be provided by the associated discriminator module.

Each optical detector must be contained in a housing, which must include 2 photocell assemblies, an electronic assembly and a base. The base must have an opening to allow mounting on a mast arm or a vertical pipe nipple, or suspension from a span wire. The mounting opening must have female threads for 3/4 inch conduit. A cable entrance must be provided which must have male threads and gasketing to allow a waterproof cable connection. Each detector must have weight of less than 2.5 pounds and must present a maximum wind load area of 36 square inches. The housing must be provided with weep holes to allow drainage of condensed moisture.

Each optical detector must be installed, wired and aimed as specified by the manufacturer.

77-2.02(C) Cable

Optical detector cable (EV-C) must comply with the requirements of IPCEA-S-61-402/NEMA WC 5, section 7.4, 600-V (ac) control cable, 75 degrees C, Type B, and the following:

1. The cable must contain 3 conductors, each of which must be No. 20 (7 x 28) stranded, tinned copper with low-density polyethylene insulation. Minimum average insulation thickness must be 25 mils. Insulation of individual conductors must be color coded: 1-yellow, 1-blue, 1-orange.
2. The shield must be either tinned copper braid or aluminized polyester film with a nominal 20 percent overlap. Where film is used, a No. 20 (7 x 28) stranded, tinned, bare drain wire must be placed between the insulated conductors and the shield and in contact with the conductive surface of the shield.
3. The jacket must be black polyvinyl chloride with minimum ratings of 600 V (ac) and 80 degrees C and a minimum average thickness of 43 mils. The jacket must be marked as required by IPCEA/NEMA.
4. The finished outside diameter of the cable must not exceed 0.35-inch.
5. The capacitance, as measured between any conductor and the other conductors and the shield, must not exceed 48 pf per foot at 1000 Hz.
6. The cable run between each detector and the controller cabinet must be continuous without splices or must be spliced only as directed by the detector manufacturer.

77-2.02(D) Discriminator Module

Each discriminator module must be designed to be compatible and usable with a Model 170E/2070E/2070LX controller unit and to be mounted in the input file of a Model 332L/332LS or Model 336L controller cabinet, and must comply with the requirements in chapter 1 of TEES.

Each discriminator module must be capable of operating 2 channels, each of which must provide an independent output for each separate input.

Each discriminator module, when used with its associated detectors, must perform the following:

1. Receive Class I signals at a range of up to 1,000 feet and Class II signals at a range of up to 1,800 feet.
2. Decode the signals, on the basis of frequency, at $9.639 \text{ Hz} \pm 0.119 \text{ Hz}$ for Class I signals and $14.035 \text{ Hz} \pm 0.255 \text{ Hz}$ for Class II signals.
3. Establish the validity of received signals on the basis of frequency and length of time received. A signal must be considered valid only when received for more than 0.50-second. No combination of Class I signals must be recognized as a Class II signal regardless of the number of signals being received, up to a maximum of 10 signals. Once a valid signal has been recognized, the effect must be

held by the module in the event of temporary loss of the signal for a period adjustable from 4.5 seconds to 11 seconds in at least 2 steps at 5 seconds ± 0.5 second and 10 seconds ± 0.5 second.

4. Provide an output for each channel that will result in a "low" or grounded condition of the appropriate input of a Model 170E/2070LX controller unit. For Class I signals the output must be a 6.25 Hz ± 0.1 percent, rectangular waveform with a 50 percent duty cycle. For Class II signals the output must be steady.

Each discriminator module must receive electric power from the controller cabinet at either 24 V (dc) or 120 V (ac).

Each channel together with the channel's associated detectors must draw not more than 100 mA at 24 V (dc) or more than 100 mA at 120 V (ac). Electric power, 1 detector input for each channel and 1 output for each channel must terminate at the printed circuit board edge connector pins shown in the following table:

Board Edge Connector Pin Assignment

A	DC ground		
B	+24 V (dc)	P	(NC)
C	(NC)		
D	Detector input, Channel A	R	(NC)
E	+24V (dc) to detectors	S	(NC)
F	Channel A output (C)	T	(NC)
		U	(NC)
H	Channel A output (E)	V	(NC)
J	Detector input, Channel B	W	Channel B output (C)
K	DC ground to detectors	X	Channel B output (E)
L	Chassis ground	Y	(NC)
M	AC-	Z	(NC)
N	AC+		

(C) Collector, slotted for keying

(E) Emitter, slotted for keying

(NC) Not connected, cannot be used by manufacturer for any purpose.

Two auxiliary inputs for each channel must enter each module through the front panel connector. Pin assignment for the connector must be as follows:

1. Auxiliary detector 1 input, Channel A
2. Auxiliary detector 2 input, Channel A
3. Auxiliary detector 1 input, Channel B
4. Auxiliary detector 2 input, Channel B

Each channel output must be an optically isolated NPN open collector transistor capable of sinking 50 mA at 30 V (ac) and must be compatible with the Model 170E/2070LX controller unit inputs.

Each discriminator module must be provided with means of preventing transients received by the detector from affecting the Model 170E/2070E/2070LX controller assembly.

Each discriminator module must have a single connector board and must occupy 1 slot width of the input file. The front panel of each module must have a handle to facilitate withdrawal and the following controls and indicators for each channel:

1. Three separate range adjustments each for both Class I and Class II signals.
2. A 3-position, center-off, momentary contact switch, 1 position (down) labeled for test operation of Class I signals, and 1 position (up) labeled for test operation of Class II signals.

3. A "signal" indication and a "call" indication each for Class I and for Class II signals. The "signal" indication denotes that a signal above the threshold level has been received. A "call" indication denotes that a steady, validly coded signal has been received. These 2 indications may be accomplished with a single indication lamp; "signal" being denoted by a flashing indication and "call" with a steady indication.

In addition, the front panel must be provided with a single circular, bayonet-captured, multi-pin connector for 2 auxiliary detector inputs for each channel. Connector must be a mechanical configuration complying with the requirements in Military Specification MIL-C-26482 with 10-4 insert arrangement, consisting of the following:

1. Wall mounting receptacle, with gold plated pins.
2. Plug with gold plated sockets, cable clamp and strain relief that must provide for a right angle turn within 2-1/2 inches maximum from the front panel surface of the discriminator module.

77-2.02(E) Cabinet Wiring

The Model 332L/332LS cabinet has provisions for connections between the optical detectors, the discriminator module and the Model 170E/2070E/2070LX controller unit.

Wiring for a Model 332L/332LS cabinet must comply with the following:

1. Slots 12 and 13 of input file "J" have each been wired to accept a 2-channel module.
2. Field wiring for the primary detectors, except 24-V (dc) power, must terminate on either terminal board TB-9 in the controller cabinet or on the rear of input file "J," depending on cabinet configuration. Where TB-9 is used, position assignments must be as shown in the following table:

Position	Assignment
4	Channel A detector input, 1st module (Slot J-12)
5	Channel B detector input, 1st module (Slot J-12)
7	Channel A detector input, 2nd module (Slot J-13)
8	Channel B detector input, 2nd module (Slot J-13)

The 24-V (dc) cabinet power will be available at Position 1 of terminal board TB-1 in the controller cabinet.

Field wiring for the auxiliary detectors must terminate on terminal board TB-O in the controller cabinet. Position assignments are as shown in the following table:

For module 1 (J-12)		For module 2 (J-13)	
Position	Assignment	Position	Assignment
1	+24V (dc) from (J-12E)	7	+24V (dc) from (J-13E)
2	Detector ground From (J-12K)	8	Detector ground from (J-13K)
3	Channel A auxiliary detector input 1	9	Channel A auxiliary detector input 1
4	Channel A auxiliary detector input 2	10	Channel A auxiliary detector input 2
5	Channel B auxiliary detector input 1	11	Channel B auxiliary detector input 1
6	Channel B auxiliary detector input 2	12	Channel B auxiliary detector input 2

77-2.03 CONSTRUCTION

77-2.03(A) General

77-2.03(A)(i) System Operation

The Contractor must demonstrate that the components of each system are compatible and will perform satisfactorily as a system. Satisfactory performance must be determined using the following test procedure during the functional test period:

Add to the end of section 86-1.02F(2)(a):

All conductors shall be copper.

Replace the 2nd paragraph of section 86-1.02F(2)(c)(ii) with:

An equipment grounding conductor must be bare.

Replace the 15th paragraph of section 86-1.02P(2) with:

Circuit breakers used as disconnects must match the existing service pedestal interrupting capacity

Replace the 1st sentence in the 16th paragraph of section 86-1.02P(2) with:

The interior of the enclosure must accept cable-in/cable-out circuit breakers. The circuit breakers must be mounted on nonenergized clips and vertically with the up position of the handle being the *ON* position.

Add to section 86-1.02Q(2)(a):

The cabinet components include:

1. Multiple AC outlet strip
2. RJ-11 modular jack
3. RJ-45 modular jack
4. DC terminal block

The multiple AC outlet strip must:

1. Be 19 inch, rack mountable
2. Have a minimum of 6 receptacle outlets
3. Be rated for 15 A, 125 V(ac)
4. Have internal 12 A, 125 V(ac) circuit breaker
5. Be rated for 36,000 A surge current protection from Hot to Neutral
6. Have a UL 1449 rating for a minimum 400 V
7. Have a minimum 6-foot-long cord

The RJ-11 modular jack must:

1. Be DIN rail mounting
2. Have 6 interface positions
3. Be rated for 120 V and 1 A
4. Have dimensions of 2 inches (D) by 1.5 inches (W) by 3.25 inches (H)
5. Have a screw clamp connection

The RJ-45 modular jack must:

1. Be DIN rail mounting
2. Have 8 interface positions
3. Be rated for 120 V and 1 A
4. Have dimensions of 2 inches (D) by 1.5 inches (W) by 3.25 inches (H)
5. Have a screw clamp connection

The DC terminal block must:

1. Be rated for 250 V(ac)/DC voltage and 30 A current
2. Have an operating temperature from -13 to 122 degrees F
3. Have a maximum size of 3.9 inches (D) by 2.7 inches (W) by 2.7 inches (H)
4. Have a wire size for the input terminals of 26-10 AWG solid/strand
5. Have a wire size for the output terminals of 26-12 AWG solid/strand
6. Have a torque of at least 4.4 in-lb

Replace section 87-1.03D with:

Contractor to furnish and install the battery backup system cabinet to the right side of the controller cabinet. If installation on the right side is not possible, obtain authorization for installation on the left side.

Construct access opening for power conductors between controller cabinet and battery backup cabinet using:

1. 2-inch nylon-insulated, steel chase nipple
2. 2-inch steel sealing locknut
3. 2-inch nylon-insulated, steel bushing

Remove the jumper between the terminals labeled BBS-1 and UBS-1 and the jumper between the terminals labeled BBS-2 and UBS-2 in the 7-position terminal block in the controller cabinet before connecting the contractor-furnished and installed electronics assembly.

Furnish and Install the electronics assembly and batteries in the battery backup system cabinet. Full compensation shall be considered as included in the price paid in the following bid items "Furnish and Install Battery Backup System and Foundation", and no additional compensation shall be allowed therefor. Refer to Section 9 for a full description.

Replace the 2nd paragraph of section 87-1.03H(2) with:

Use Method B to insulate a splice.

Replace section 87-9 "Reserved" with:

87-9 WIRELESS COMMUNICATION SYSTEM

87-9.01 GENERAL

This section includes a description of requirements set forth on the Contractor to provide a complete operational intelligent transportation system. The wireless communication equipment shall include a dual 802.11a access point, directional antennas, cabling, mounting equipment, shelving equipment in the existing controller cabinet, and software required to transmit communication between controller assemblies. The Contractor shall have an authorized manufacturer's representative present on the day of the wireless interconnect system turn-on to program and fine-tune the wireless communication equipment.

For all wireless communication devices, the contractor shall work with the City engineer and IT department to determine the IP addressing scheme. Contractor shall have all IP addresses approved by City engineer.

Contractor shall also work with City engineer and City IT department in the device naming scheme.

Contractor shall provide network topology diagram to City before installation of equipment.

87-9.02 ELECTRICAL AND COMMUNICATIONS SYSTEMS

All electrical and communication systems shall be complete, tested, and demonstrated to be in perfect operating condition.

87-9.03 VERIFICATION OF DIMENSIONS

Where apparatus and equipment have been indicated on the drawings, dimensions have been taken from typical equipment of the type indicated. The Contractor shall carefully check drawings to make certain that equipment he contemplates installing will fit into space provided, with adequate maintenance space and service clearance and will perform in accordance with the intentions of the specifications and the plans.

87-9.04 ACCESSIBILITY

Contractor shall fully inform himself regarding any and all peculiarities and limitations of spaces available for installation of all work and materials furnished and installed under this Contractor. Contractor shall exercise due and particular caution to determine that all parts of the work are made quickly and easily accessible after installation. Although the location of equipment may be shown on drawings in certain positions, Contractor shall be guided by details and conditions at job; drawings are essentially diagrammatic, intended to indicate scope of work to be done, and are not to be used for fabrication.

87-9.05 EQUIPMENT

For the sake of establishing a reference point and quality only, drawings and specifications for each item of equipment are based upon dimensions, capacities and ratings. It shall be the responsibility of the Contractor to make sure that the equipment he proposes to use will fit into the available space with proper clearances.

87-9.06 CERTIFICATES

Execute on behalf of the City and deliver all manufacturers' warranty certificates and instructions, etc. required to assure that the manufacturers' warranties are properly documented and in full effect for the warranty period. Certificates and warranties shall be submitted to the City prior to the Notice of Completion.

87-9.07 INSTALLERS' QUALIFICATIONS

For the actual fabrication, installation and testing of work under this section use only thoroughly trained and experienced workmen completely familiar with the items required and the manufacturers' current recommended methods of installation.

In acceptance or rejection of the finished installation, no allowance will be made for lack of skill or knowledge on the part of the installers.

All components, furnished, assembled, fabricated or installed shall be new and in strict accordance with all the details shown in the contract documents or as specified by the Engineer.

The following shall be the minimum requirements for a 5.8 GHz high capacity broadband wireless system.

87-9.08 SYSTEM REQUIREMENTS

This specification covers the minimum technical requirements for a 5.8 GHz high capacity wireless broadband Ethernet system for ITS communications. The system shall consist of connectorized radios and/or radios with integrated panel antennas with options for external panel antennas. Also, the devices must be offered in both single radio units, dual radio units and gateway units.

87-9.09 FUNCTIONAL REQUIREMENTS

The system shall function in mesh, point-to-point or point-to-multipoint modes, repeater, gateway and hotspot radio for a range of up to twenty (20) miles.

87-9.10 GENERAL REQUIREMENTS

All radios must meet FCC part 15 and IC RSS-210 rules/regulations. Support and provide the following wireless protocols:

1. IEEE 802.11a/n
2. Proprietary Wireless Protocol

Radios shall be available as an Integrated Panel Antenna, Dual (2 radio modules) or Stand-Alone Enclosure (1 or 2 radio modules).

Embedded GPS units available in Integrated Panel Antenna, Stand-Alone Enclosure and Dual (2 Radio Modules).

Radios shall be configurable as an Access Point, Remote Station, Repeater or Mesh Node.

Radios must be configurable using network monitoring software. Software must include a complete toolset to assist in advanced network monitoring and radio configuration. Radio software must be capable

of monitoring real time bi-directional data. The software must utilize drag and drop radio programming, and Microsoft SQL Lite for managing radio and wireless network information.

Radios must include Adaptive Modulation, Dynamic Frequency Selection, Automatic Transmit Power Control – RF link must be monitored to automatically adjust the data rate to optimize the maximum link performance.

Features must include GPS-based geo-location on unit with external status panel displaying a Received Signal Strength Indicator (RSSI) and an external reset button to help with installation.

Suppliers and product manufacturing must be located in the United States of America.

Radios shall meet IP67 and exceed NEMA environmental specifications with performance testing over operating temperatures of -40°to +65°C.

Radios will be powered by an IEEE 802.3 af/at Power-over-Ethernet (PoE) Injector with surge protection or a certified IEEE 802.3 af/at (POE) Switch. This will include 160ft of outdoor-rated Ethernet cable.

87-9.10A Radio Requirements

1. Operating Frequency:
 - a. 5180-5250, 5740-5850 – Band availability dependent on FCC Regulations.
2. RF Data Rate:
 - a. Up to 300 Mbps (per radio module)
3. Receiver Sensitivity:
 - a. -75 to -96 dBm
4. Radio Output Power:
 - a. Up to 27dBm – 500mW
5. Channel Width:
 - a. 5, 10, 20, 40 MHz
6. Typical Range:
 - a. 20 miles – LOS Antenna Dependent
7. Power-over-Ethernet (PoE) Injector:
 - a. Surge Protection included in the injector
8. Antenna Type:
 - a. Type N(F) – stand-alone solution
 - b. 20dBi – integrated panel solution
 - c. 19dBi – sector antenna solution
 - d. Higher Gain antennas for specific applications are available
9. Network Operating Modes:
 - a. Point to Point
 - b. Point to Multipoint
 - c. Mesh
10. Security:
 - a. 128 and 256 bit AES Encryption
 - b. Radius Authentication
 - c. MAC Address Access List
11. Embedded GPS:
 - a. Auto populates Latitude and Longitude
 - b. Mobile Tracking
12. Support the following IEEE Networking Features:
 - a. 802.11e (WMM & QoS)
 - b. 802.11h (DFS & TPC)
 - c. 802.1d (Ethernet Bridging)
 - d. 802.1p (Traffic Prioritization)
 - e. 802.1q (VLAN)
 - f. 802.1s (Spanning Tree)
 - g. 802.1w (Rapid Spanning Tree)
 - h. 802.3ab (Gigabit Ethernet – AP Cluster Radios)
 - i. 802.3ac (802.1q & 802p support)

- j. 802.3ad (Link Aggregation)
- k. 802.3i (10Mbps Ethernet)
- l. 802.3u (100Mbps Ethernet & Auto-Negotiation)
- m. 802.3x (Full Duplex and Flow Control)
- n. 802.3z (1Gb Ethernet & Auto Negotiation)

13. Compliance:

- a. FCC Part 15, IC RSS-210

Radios must be configurable and monitored using network monitoring software. Software must include a complete toolset to assist in advanced network monitoring and radio configuration. Below is a list of required features that must be available in the proposed network monitoring software.

87-9.10B Software Requirements

1. Software must utilize drag and drop programming
2. Software must monitor and display real-time, bi-directional data on map
3. Software must have a Configurable network topology view
4. Software must evaluate the overall network health
5. Software must maintain a minimum 72 hour event log for network errors
6. Software must allow for role-based security
7. Software display must include network health on map by RSSI, signal to noise ratio, CCQ (transmit and receive), throughput (transmit and receive), and ping latency
8. Software must be capable of producing separate data and wireless statistics graphing (in real-time and bi-directional)
9. Software must be able to generate broken links reports
10. Software must be capable of network and individual unit wireless statistics reporting
11. Software must allow for alarm email notification
12. Software must generate alarm monitoring by RSSI, signal to noise ratio, CCQ (transmit and receive), throughput (transmit and receive), and ping latency

87-9.10C System Requirements

City IT department will provide a virtual machine suitable to handle the traffic management server application.

87-9.11 CONSTRUCTION DETAILS

The contractor shall install the equipment in accordance with the contract documents, standard sheets, manufacturer's instructions, requirements of the City's representative and the Engineer's requirements.

The contractor is required to verify the line of sight for all wireless communication devices (including integrated radio and mounting, omni-directional antennas, power over Ethernet cables, POE injectors, and surge protector power strips) before any equipment is procured.

Prior to procuring the wireless communication devices, the contractor must perform a wireless site survey test to confirm that the proposed wireless links and each line of sight for each wireless link shown are functioning and operational. The wireless site survey test must be per the manufacture requirements. Perform the wireless site survey in the presence of the Engineer and manufacture representative. Submit wireless site survey plan to the Engineer. Do not proceed until the wireless site survey plan has been submitted, reviewed, and authorized by the Engineer.

Per the passing results of the wireless site survey test, prepare and submit to the Engineer detailing plans showing the location of the pole, location on the pole, and height at which the wireless communication device must be installed in order to ensure seamless communication between the upstream and downstream wireless devices. Contractor shall be permitted to revise the pole location for the wireless communication devices per the wireless site survey test results and after the City representative has approved the new location. Once locations of each wireless device has been approved by the City's representative, the wireless communication devices may be procured.

Prior to the installation of intersection equipment by the Contractor's personnel, they shall have received training from the supplier and/or manufacturer on installation, operations, testing and maintenance of all equipment. No intersection equipment shall be installed nor accepted without proof of training.

The Contractor shall prepare a shop drawing which details the complete wireless broadband radio assemblies and all components to be supplied. Prior to submittal of the shop drawing and prior to procuring the wireless communication devices, the Contractor shall conduct a site survey, including frequency scans, which shall identify any problems and/or pinpoint setup procedures for the radio system. The results of this survey shall determine the type of antenna required for the wireless link in accordance with the manufacturer's recommendations and shall be documented in the shop drawing. Particular care shall be given to the interconnection of all the components and the cabling. The Engineer reserves the right to inspect and/or factory test any completed assemblies prior to delivery of the material to the project site. Any deviations from these specifications that are identified during such testing shall be corrected prior to shipment of the assembly to the project site. No compensation will be provided to Contractor if wireless radios do not operate as intended.

Each radio shall be provided with the proper mounting hardware for proper installation as shown on the plans. The cost for this mounting hardware shall be included in the cost of the radio assembly.

The Cat6 cable shall be installed on the span and into the signal pole back to the controller cabinet unless otherwise shown on the plans. Splices in the cable shall not be allowed between the equipment and field terminals. The contractor shall install the equipment in accordance with the contract documents, standard sheets, and manufacturer's instructions. The contractor shall perform all of the tests necessary to confirm acceptable operation, in the presence of the Engineer.

After the initial directional setup is made, the procedure outlined below shall be implemented to maximize the signal strength for each radio link. The Contractor shall adjust the output power to optimize the receive signal level at the slaves in compliance with FCC regulations. The master radio shall then be setup to transmit a continuous signal. The radio technician shall then adjust the beam heading at each slave location by measuring the radio signal level monitor output while adjusting the antenna beam heading for maximum signal. The contractor shall make a record of the channel settings and power levels to which each radio is set and the measured signal level measurement received at each radio. These test results shall be submitted to the Engineer in a written report.

Once the Antenna/feed-line and Antenna alignment tests have been completed, an Operational Stand-Alone test shall be initiated. For this test, the broadband radios to be tested shall be connected to the designated Ethernet port at each field equipment location as indicated in the plan set. The Contractor shall program the radios and adjust for proper operation. The Contractor shall then connect a portable computer to the master radio. Utilizing fully functioning network visualization and management software to be provided by the contractor, each slave unit shall be addressed and successful two-way communications shall be demonstrated. Message throughput shall exceed ninety (99) percent over at least a fifteen (15) minute period. The contractor shall keep an accurate record of each Operational Subsystem Test and shall provide a written report to the Engineer.

87-9.12 WIRELESS TESTING REQUIREMENTS

Testing shall be performed in accordance with the manufacturer's recommendations. The testing procedure shall be submitted for approval prior to installation of the equipment. The testing shall be performed in the presence of the Engineer.

The following test tools must be performed by the Contractor to monitor wireless link health and stability.

1. Wireless link status
2. Bandwidth test
3. Network traffic
4. Ping test
5. Spectrum scan

In order to use any of these tools, program one broadband radio as the Master and one as the Remote. This is the most basic wireless link known as Point-to-point link. Establish a point-to-Point link and then

single click on either of the master or remote radio in the Radio List to automatically start using the test tools.

87-9.12A Wireless Link Status

The Wireless Link Status Tool shows the radios that are connected to the selected radio along with a graphical representation of the Received Signal Strength indicator (RSSI) and Client Connection Quality (CCQ%) between two radios in the wireless link.

Manually aim the antennas such that the highest possible connection quality is achieved in the wireless link. For 802.11n radios, an RSSI of -35dBm to -60dBm is recommended. An RSSI value closer to -40dBm is recommended to obtain optimal bandwidth. For all other broadband radios an RSSI of -40dBm to -70dBm is recommended.

87-9.12B Bandwidth Test

This test determines throughput for a selected wireless link in the network. Run the test in one direction at a time. It is important to estimate the available throughput for the wireless link before interfacing with equipment that utilizes the available bandwidth. To maximize the bandwidth of a network, enable eMax and set the Channel Mode to the highest available width (ie. 80 Mhz) without sacrificing connection quality.

Important After installation of a network, an onsite bandwidth test must be performed from the Master radio to establish and ensure wireless link integrity in real time given the geographic elements present onsite.

87-9.12C Network Traffic

The Network Traffic Tool is used to see what data is travelling on the Ethernet and wireless interfaces of the selected radio. The sending and receiving transmission information is displayed, allowing a user to see the flow of data once external equipment is connected to the wireless network (ie. Controllers, PTZ cameras)

87-9.12D Ping Test

The Ping Test panel displays the results of an on-going broadband radio ping test. A ping test consists of periodically sending ICMP message (pings) to a group of radios and recoding the latency of the responses. The latency is the interval between the time at which the ICMP message is sent and the time at which the response is received.

87-9.12E Spectrum Scan

The Spectrum Scan panel allows you to visualize the external wireless traffic that exists in a broadband radio's frequency band. You can use this information to decide the best frequency to assign to the radio. In most situations, you want to use a frequency that has the least amount of traffic, as interference from external sources will adversely affect a wireless connection's effective bandwidth. Set the Master radio to this selected channel. There is no need to set this at remote radios because they will follow the Master automatically.

87-9.13 TRAINING REQUIREMENTS

A half day class shall be provided for each system installed for the persons designated by the Engineer. Training shall be conducted at the regional office closest to the project. All training materials shall be provided by the vendor/ manufacturer for the class. No separate payment will be made to the contractor to perform the training requirements.

87-9.14 WARRANTY

The manufacturer shall warranty and guarantee that all material supplied shall be free from all defects in materials and workmanship for a period of three (3) years from date of acceptance.

87-9.15 NETWORK EQUIPMENT INSIDE THE CONTROLLER CABINET FOR INTERSECTIONS WITH WIRELESS EQUIPMENT INSTALLATION

The following networking equipment shall be installed in the Controller Cabinet for each intersection with wireless communication upgrade.

87-9.15A 19" Wide x 8" Deep Data Shelf (two (2) Each):

1. Minimum 16 AWG CRS cold rolled steel w/ black powder coating
2. Minimum 100 lbs. capacity

87-9.15B 19" Wide x 6U (10.5") Hinged Vent Panel:

1. Minimum 16 AWG CRS cold rolled steel w/ black powder coating
2. Horizontal Ventilation Slots
3. Captive thumbscrews on one side, hinged on the opposite side
4. Minimum 100 lbs. capacity
5. Velcro Tie Straps as necessary

87-9.15C IP Remote Power Management Unit:

1. Rugged small enclosure: 5.40"x1.75"x6.15"
2. Handles equipment up to 13A @120VAC and 10A @220 VAC
3. Minimum 2 power outlets
4. Minimum 1 RJ45 Ethernet port
5. Auto ping and power reboot for each power outlet
6. Event timers for each power outlet so that an outlet is capable of executing recycling power with desired calendar date, real-time clock, and period or duty cycle
7. Menu driven or command-in-line configuration setup
8. Embedded Web server enables user to easily change settings, view or alter system status
9. Minimum Operational Temperature Environment -13F° to 122F° (-25C° to 50C°) FCC rated

87-9.15D Ethernet Switch

See section 87-11 for traffic signal cabinet Ethernet switch details.

87-9.15E Surge Protector Power Strip:

1. The power strip be rack-mountable in a standard 19-inch rack (1 RU).
2. The power strip shall be contained in a rugged, all-metal housing.
3. The power strip shall have at least 6 right-angle NEMA 5-15 outlets.
4. The power strip shall have a built-in 15-amp circuit breaker.
5. The power strip shall provide surge protection.
6. The power strip shall have an on/off switch with a cover to prevent accidental shut-offs.

87-9.15F Power Over Ethernet Cable

This section includes a description of requirements set forth on the Contractor to provide power over Ethernet cables from the Ethernet switch in the cabinet to the wireless communication device on the signal pole and from the traffic signal controller to the Ethernet switch inside of the cabinet. Cable shall be required to provide both data communication and power to the wireless communication device.

87-9.15F(1) General Specifications

1. Cable Type: F/UTP (foil shielded cable/unshielded twisted pair).
2. Number of Pairs: 4.
3. Conductor Gauge: 22-24 AWG.
4. Conductor Type: Solid.
5. Pair Colors:
 - a. White/Blue Stripe & Blue.
 - b. White/Orange Stripe & Orange.
 - c. White/Green Stripe & Green.
 - d. White/Brown Stripe & Brown.
6. Drain Wire: Tinned copper.

87-9.15F(2) Electrical Specifications

1. ANSI/TIA Category: Category 6.
2. DC Resistance Unbalance, maximum: 5%.

3. DC Resistance, maximum: 9.38 ohms / 100 meters.
4. Mutual Capacitance: 5.6 nF / 100 meters @ 1kHz.
5. Nominal Velocity of Propagation (NVP): 68%.
6. Operating Frequency, minimum: 250 MHz.
7. Operating Voltage, maximum: 80 V.
8. Transmission Standards: ANSI/TIA-568-C.2.
9. Safety Voltage Rating: 300V.
10. Dielectric Strength, minimum: 1500 V ac; 2500 V dc.

87-9.15F(3) Construction

1. Jacket Material: PVC.
2. Conductor Material: Bare copper.
3. Insulation Material: Polyolefin.
4. Separator Material: Polyolefin.
5. Shield Material: Aluminum/poly.

87-9.15F(4) Environmental Specifications

1. Environmental Space: Non-plenum.
2. Flame Test Method: CMR.
3. Operating Temperature: -20 degrees C to +60 degrees C.
4. Installation Temperature: 0 degrees C to +60 degrees C.

87-9.15F(5) Mechanical Specifications

1. Outer Jacket Diameter: 0.285 inches.
2. Jacket Thickness: 0.020 inches.
3. Pulling Tension: 25 lbs.

87-9.15F(6) Execution

87-9.15F(6)(a) Installation

1. All installation shall be done in conformance with ANSI/TIA/EIA-568-C standards, BICSI methods, industry standards, and manufacturer's installation guidelines.
2. Failure to follow the appropriate guidelines shall require the Contractor to provide in a timely fashion the additional material and labor necessary to properly rectify the situation. This shall also apply to any and all damages sustained to the cables by the Contractor during the implementation.
3. The Contractor shall install cable as required below:
 - a. Shielded Category 6 cable shall be installed between field devices and internal cabinet equipment.
 - b. Install all cabling following telecommunications industry best practices, techniques, and methods that are consistent with specified data cabling and manufacturer recommendations.
 - c. Install cabling in continuous lengths between devices.
 - d. Pull cabling in smooth and regular motions in methods to prevent cable kinking.
 - e. If necessary, use approved cable pulling lubricant.
 - f. Keep all cabling jacks, terminal contacts, and patch panels protected before and after installation with dust and moisture proof barrier materials. If wiring is terminated on prior to painting and general finish clean up, the jacks shall be protected to ensure dust, debris, moisture, and other foreign material do not settle onto jack or terminal contacts. It shall be the Contractor's responsibility to ensure the integrity of these protective measures throughout the life/installation of the project.
 - g. Do not bind cabling tightly together with tie-wraps or other cable ties. Wraps shall slip loosely around cables. Use Velcro wraps instead of cable ties for all bundling in the relay house.
 - h. Pull cabling simultaneously if more than one is being installed in the same conduit.
 - i. Use pulling means, including but not limited to fish tape, cable, rope, and basket weave wire/cable grips that will not damage media or conduit.
 - j. Install open cabling parallel and perpendicular to surfaces or structural members following surface contours where possible.
 - k. Do not bend cable greater than a bend radius of 1.00 inch.

87-9.15F(6)(b) Field Quality Control

1. Contractor shall test each cable prior to acceptance.
2. Contractor shall supply all of the required test equipment used to conduct acceptance tests.
3. Contractor shall submit acceptance documentation as defined below. No cabling installation is considered complete until test results have been completed, submitted and approved.
4. Standards Compliance and Test Requirements:
 - a. Copper Cabling shall meet ANSI/TIA-568-C.2 Horizontal cabling requirements.
5. Cable test documentation shall be submitted in hard copy and electronic formats. If proprietary software is used, disk or CD shall contain any necessary software application required to view test results. If the results are delivered in a standard format like Excel, Access, CSV files, etc., software to read these files is not required. Electronic reports shall be accompanied by a Certificate signed by an authorized representative of the Contractor warranting the truth and accuracy of the electronic report. Certificate shall reference traceable circuit numbers that match the electronic record.
6. Test reports shall include the following information for each cabling element:
 - a. Wire map results that indicate that 100% of the cabling has been tested for shorts, opens, miss-wires, splits, polarity reversals, transpositions, presence of AC voltage and end to end connectivity.
 - b. Length, propagation delay, and delay skew relative to the relevant limit. Any individual test that fails the relevant performance specification shall be marked as a FAIL.
 - c. Attenuation, NEXT, PSNEXT, Return Loss, ELFEXT, and PSELFEXT data that indicate the worst case result, the frequency at which it occurs, the limit at that point, and the margin.
 - i. These tests shall be performed in a swept frequency manner from 1 MHz to highest relevant frequency, using a swept frequency interval that is consistent with TIA and ISO requirements.
 - ii. Information shall be provided for all pairs or pair combinations and in both directions when required by the appropriate standards.
 - iii. Any individual test that fails the relevant performance specification shall be marked as a FAIL.
 - iv. Test shall also include mutual capacitance and characteristic impedance.
7. Cable manufacturer, cable model number/type, and NVP.
8. Test equipment manufacturer, model, serial number, hardware version, software version, and calibration certification.
9. Cable ID and project name.
10. Date of test.

87-9.16 PAYMENT

Full compensation for "Wireless Communication System" shall be considered as included in the price paid for the equipment listed above and in the following bid items "Furnish and Install Integrated Radio and Mounting", "Furnish and Install Integrated Radio, Omni-Directional Antennas, and mounting", "Furnish and Install Power Over Ethernet Cable", "Wireless Testing", "Furnish and Install Surge protector Power Strip", and no additional compensation shall be allowed therefor. Refer to Section 9 for full description.

Replace section 87-10 "Reserved" with:

87-10 UNINTERRUPTIBLE POWER SUPPLY ASSEMBLY (HUB CABINETS)

87-10.01 GENERAL

This section includes a description of requirements set forth on the Contractor to provide a complete operational online double conversion uninterruptible power supply assembly (UPS) and power conditioner system. The UPS and power conditioner system shall provide power regulation and battery service to all new equipment installations and be retrofitted for all existing equipment. This section references only the UPS assemblies that will be installed inside of the hub cabinets. The telecom room will have a separate UPS assembly which can be seen in section 87-24.

The UPS System shall be a true on-line, solid state, microprocessor controlled power conditioner and Uninterruptible Power supply Assembly (UPS) rated at minimum of 2000 VA, 120 V. The system shall continuously regenerate and condition the AC sine wave, such that 100% of the power to the load,

whether on utility or batteries, is generated by the on-board inverter. It shall be an “On-line, Double Conversion UPS System” meaning that the utility power shall be converted to DC and then converted back to 120 VAC, 60HZ. It shall be capable of operating up to its rated power level in extreme environments (- 40° to + 74° C) with existing cabinet equipment.

Model of UPS Assembly shall be APS SmartUPS Industrial 2000VA/1800W, 120 VAC In/OUT RM Conformal Coated or approved equivalent

For all UPS, the contractor shall work with the City engineer and IT department to determine the IP addressing scheme. Contractor shall have all IP addresses approved by City engineer.

Contractor shall also work with City engineer and City IT department in the device naming scheme.

87-10.02 OPERATION

Unit shall be capable of on-site programming without the uses of attached computers.

On-line technology shall be supported and 100% of the load shall flow through the inverter 100% of the time to isolate and protect the attached equipment.

Power connection shall be made to the front or back of the UPS chassis to support NEMA or rack Mounted cabinetry.

The system shall utilize Online Double Conversion technology.

The UPS shall be capable of providing continuous, fully conditioned and regulated sinusoidal (AC) power to selected devices such as modems, communication hubs, NTCIP adapters and communication equipment.

Up to the maximum rating, the UPS shall be capable of supporting all system components, regardless of power factor rating.

Upon loss of utility power the UPS shall switch to battery power. In cases of UPS failure, while on utility, the UPS will auto-bypass and remain in that mode until repaired. Should batteries deplete, while on batteries, the unit will auto-shutdown and return to normal operating mode once the utility power is restored.

The By-pass switch shall enable removal and replacement of the UPS without shutting down the traffic control system (i.e. “hot swap” capability). The UPS shall support generator input without going to batteries.

The UPS system shall be capable of “cold starting”, starting when no utility AC is available, i.e. starting while on batteries.

To facilitate emergency crews and police activities, the UPS shall be compatible with the police panel functions.

The UPS System shall deliver 120 V ac output, +/- 3%, when the AC input is between 75 to 155 Vac without going to batteries.

The 2000Va system shall support power loads to 1400 continuous watts through the full NEMA temperature range of - 40° to + 74° C while on utility or battery power.

The 2000Va Inverter chassis shall not exceed 20lbs in weight when fully configured to facilitate ease of installation or repair removal.

The 2000Va Inverter chassis shall be manufactured from aluminum and include a fan access panel for removal of fans without removing top cover.

The inverter system shall be a dual conversion, on-line system.

87-10.03 DESCRIPTION

The UPS System shall consist of three major components, the Electronics Module, the Manual By-pass Switch, and the Battery System.

The Electronics Module:

1. True sine wave, micro Processor controlled high frequency inverter utilizing IGBT technology.
2. A three-stage, temperature compensated, battery charger.
3. Local and remote control of UPS functions.
4. Local and remote communications capabilities.
5. Utility By-pass Switch for by-passing the UPS for repair or removal.

The Bypass Switch Module:

1. The UPS shall incorporate an automatic, internal safety bypass capability and a manual Bypass Switch module that contain a manual switch and a terminal strip for input and output power connections.
2. An optional interface connector shall be available that allows an external generator or vehicle inverter to supply utility power when commercial utility has failed.
3. The UPS shall supply 120Vac, 60Hz, True Sinewave power when connected to either a generator or digital inverter power system in addition to maintaining the 3 stage battery charging system.

The Battery System:

1. The batteries shall be external and shall be Smart UPS Industrial Battery 100Ah 12VDC Extended Temperature Shelf Mount or approved equivalent.
2. Shall include a Battery harness that matches the Battery and UPS manufacturer for each battery to allow for proper connection between the external batteries and UPS Assembly
3. Shall include a standard shelf that will mount to the proposed 332LS cabinet for the external batteries to be mounted on
4. Two external batteries are required for each UPS in the Hub Cabinets.

87-10.04 MOUNTING/ CONFIGURATION

Mounting method for the UPS shall be rack-mounted.

Mounting method for the External Batteries shall be shelf-mounted.

Cabinet Style: mounting method shall be Rack-mount for UPS and Shelf-mount for External batteries. Rack-mount and shelf shall fit 19" EIA rack.

87-10.05 EXTERNAL BATTERIES

The battery system shall consist of SmartUPS Industrial Battery 100Ah 12VDC Extended Temperature or approved equivalent that have been field tested.

The battery system shall be external.

Batteries shall be capable of operating at extreme temperatures from -40°C to +55°C.

Battery construction shall include heavy-duty, inter-cell connections for low-impedance between cells, and heavy-duty plates to withstand shock and vibration.

The top cover shall use tongue and groove construction and shall be epoxied to the battery case for maximum strength and durability.

87-10.06 ELECTRICAL SPECIFICATIONS

Input Specification:

Nominal Input Voltage	120 VAC, Single Phase
Efficiency at Full Load	85 VAC to 155 VAC
Input Frequency	40 or 70 Hz Auto-Sensing (+/- 5%)
Input Configuration	3 Wire (Hot, Neutral & Ground)

Input Current (Maximum)

2000Va, 48Vdc system 26 amps, Power Factor corrected
Input Protection Input Fuse (20 amps)

Output Specification:

Nominal Output Voltage 120 VAC, Single Phase

Power Rating

2000Va, 120Vac system 2KVa
Dynamic Response +/- 4% for 100% step load change 0.5ms Recovery Time
Output Frequency 50 or 60 Hz (+/- 5%)
Output Configuration Keyed, connectors and duplex receptacle
Output Wave Form True Sine wave

Overload capability

2000Va 120Vac 110% for 10 minutes, 200% for 50MS
Fault clearing Current limit and automatic shutdown
Short circuit protection Current limit and automatic shutdown
Efficiency 88% at full load

87-10.07 PHYSICAL SPECIFICATIONS, UPS ELECTRONICS MODULE

Dimensions:

2000Va 120Vac Width = 19", Depth = 10.24", Height = 3.5"

Weight:

2000Va 120Vac 22 lbs, shipping weight: 25 lbs.

87-10.08 ENVIRONMENTAL SPECIFICATIONS

The UPS shall meet or exceed NEMA temperature standards from -40°C to +74°C.

The UPS shall be field proven to meet or exceed NEMA temperature standards.

The UPS shall have a maximum relative Humidity of 95% non-condensing.

87-10.09 BATTERY SPECIFICATIONS

The battery system shall be field proven to meet or exceed NEMA temperature standards of -20°C to +55°C.

The battery system shall consist of SmartUPS Industrial Battery 100Ah 12VDC Extended Temperature or approved equivalent.

Batteries shall be capable of providing power to network equipment in cabinet for 10 hours minimum

Hydrogen gas emissions: must meet Mil-Spec, MIL-B-8565J

87-10.10 COMMUNICATIONS, CONTROLS & DIAGNOSTICS

Alarm Function Monitoring: The traffic UPS shall come standard with a DB-9F connector with open collectors (40 V @ 20 MA) indicating; loss of utility power,

Inverter failure, or low battery condition and USB connectivity for system up/down loads.

An RS232 or USB Interface shall be provided that allows full interactive remote computer monitoring and control of the UPS functions.

Front Panel Controls shall included: Power ON, Cold Start, Alarm Silence, Battery Test, Bypass Breaker, and DC/Battery Breaker, Battery Test Points, Auxiliary Temperature Connector, and Programmable Keys.

87-10.11 RELIABILITY

Calculated MTBF is 100,000 hours based on component ratings.

When Manual Bypass Switch is included, system MTBF increases to 150,000 hours.

87-10.12 OPTIONS

Shall include an optional, removable SNMP module that provides TCP/IP capability.

Shall include an enhanced battery charger that provides accelerated charging capacity.

87-10.13 SNMP INTERNAL/EXTERNAL ADAPTER

87-10.13A General

The optional SNMP/HTTP unit functions as an SNMP agent and includes an embedded HTTP server (web server). This means that one industry standard management tool can be used to monitor and control all your UPS system from one central location, and power management can now be integrated into your existing traffic network management strategy. Alarms ('traps') can be configured to ensure automatic notification of events such as low battery, power outage or UPS overload. MIBs are included with the product for integration into users 3rd party traffic management system software. Control and management functions are also available through any standard web browser (Internet Explorer, Netscape or Fire Fox). Simply point your browser to the network address assigned to the card, and the embedded web server returns web pages providing access to monitor or control all system parameters. The easy-to-use browser interface with online help enable staff to effectively manage the UPS and protected intersections. A full featured Java applet provides full system monitoring in real time, along with comprehensive event and history logs.

87-10.13B Additional SNMP Features

1. Configurable from ethernet port or web browser
2. Management from SNMP manager or web browser
3. Supports most network management system via MIB definitions
4. Firmware upgrades by TFTP via ethernet port
5. Full-featured GUI runs in web browser
6. Accessible from any workstation on the network using SNMP/HTTP
7. UPS warning broadcast capability
8. Real time monitoring of all functions
9. Full history logs
10. Scheduling functions
11. Certifications: CE, FCC Class B

87-10.13C SNMP Technical Specifications

1. CPU - 16-bit micro controller
2. Ram - 1Mbits x 16
3. Flash ROM - 1Mbits x 16
4. LAN Interface - Auto-sensing 10/100Mbps Fast Ethernet
5. Ethernet Port
6. SNMP MIB - RFC1213, RFC1268, USHA MIB

7. Network Protocol - TCP/IP, UDP, SNMP, Telnet, SNTP, HTTP, SMTP
8. LED - Power, Status, LAN 10/100 Link
9. Power Input DC - SPO-09A2: 8volts – 15volts dc
10. Power Input DC - SP-09H: 12Volts unregulated (External)
11. Power Consumption - 3 Watts maximum
12. Environment - Temperature: -40OC to 74OC
13. Miscellaneous - Real-Time-Clock, Reset button
14. Firmware upgrading - Network Upgrade and Serial Upgrade
15. System Security - Provides IP-based filtering & password protection
16. Approvals - CE, FCC Class B
17. Warranty - Two Years, Parts & labor

87.10.13D SNMP Extended Device Support - EMD Module

The Environmental Monitoring Device is a connectivity device that allows users to remotely monitor the temperature, humidity, and status of two connected devices. It's connection to the USHA Card enables monitoring or notification of alarms via a standard Web Browser Java Applet.

87.10.13D(1) SNMP EMD Features

1. Real-time temperature/humidity and other environmental conditions monitoring
2. Monitors the status of two user-provided contact devices
3. Can be located up to 15m from USHA module connects via Cat5 network cable
4. User selectable alarm and thresholds for temperature and humidity monitoring
5. Flexible configuration management via standard Web browser
6. Automatic event notification via email, or SNMP Trap
7. Records EMD parameters for statistical analysis
8. Automatically assigns IP address via DHCP or BOOTP
9. Works in 10/100Mbps modes
10. Configuration utility simplifies firmware upgrades
11. Quick and easy to install
12. Hot swappable

87.10.13D(2) SNMP Operating System Supported

1. Microsoft Windows 2000, ME, XP, XP/2003, Windows 7
2. Novell 4.x thru 6.x
3. Solaris (x86 version) 2.6/2.7/2.8
4. Solaris (Sparc version) 7/8/9/10
5. SCO UNIX 5.x
6. SCO UnixWare 7.x
7. HP_UX 10.2/11i
8. IBM_AIX 4.3/5.3
9. Free BSD 4.3/5.1/6
10. Other Linux-derivatives OS (Kernel 2.x or later).

87-10.14 WARRANTY

Two year's parts and labor F.O.B. factory.

87-10.15 SERVICEABILITY & MAINTAINABILITY

MTTR (Mean-Time-To-Replace or Repair) Electronics: 15 minutes or less

Battery System: 15 minutes or less

87-10.16 PAYMENT

Full compensation for "Uninterruptible Power Supply" shall be considered as included in the price paid for the equipment listed above and in the following bid items "Furnish and Install Uninterruptible Power Supply

(Hub Cabinet)", "Furnish and Install External Batteries", and no additional compensation shall be allowed therefor. Refer to Section 9 for full description.

**Replace section 87-11 "Reserved" with:
87-11 ETHERNET SWITCH**

87-11.01 DESCRIPTION

The Ethernet network shall be comprised of an environmentally hardened Ethernet switch (i.e. Ethernet switch), herein referred to as a 'switch', compliant with IEEE 802.3 (10Mbps) and IEEE 802.3u (100Mbps) and 802.3z-1000BaseLX.

For all Ethernet switches, the contractor shall work with the City engineer and IT department to determine the IP addressing scheme. Contractor shall have all IP addresses approved by City engineer.

Contractor shall also work with City engineer and City IT department in the device naming scheme.

Ethernet Switch (Traffic Signal Cabinet)

Herein referred to as Traffic Signal Cabinet Switch shall be furnished and installed in the traffic signals noted on the plans. See section 87-11.03 below for Port requirements.

The traffic signal cabinet Ethernet switch shall be Moxa Layer 2 Managed Switches Model No. EDS-G512E-8PoE-4G SFP or approved equivalent.

Ethernet Switch (Hub Cabinets)

Herein referred to as hub switch shall be furnished and installed in the two hub cabinets as shown on the plans. See section 87-11.03 below for Port requirements.

The hub switches shall be Cisco Catalyst IE9320 w/ 24 Ports GE SFP Downlinks and 4 Ports 10G SFP+ uplinks Model No. IE-9320-22S2C4X-A or approved equivalent.

Switch shall also come with two power supply units per switch. Power supply units shall be Cisco PWR-RGD-AC-DC-H or approved equivalent.

Ethernet Switch (Telecom Room)

Herein referred to as Telecom Room Switch shall be furnished and installed in the City Hall telecom room as shown on the plans. See section 87-11.03 below for Port requirements.

The Telecom Room Switch shall be Aruba 6300M w/ 24 Ports SFP+ Downlinks and 4 Ports SFP56 Model No. JL658A or approved equivalent.

Switch shall also come with two power supply units per switch. Power supply units shall be Aruba JL085A or approved equivalent.

87-11.02 OPERATING ENVIRONMENT

The Ethernet switch (Traffic Signal Cabinet) and Ethernet Switch (Hub Cabinets) shall be capable of operating properly over an ambient temperature range of -40°C to +75°C without the use of internal or external cooling fans in accordance with IEC 60068-2-1 and 60068-2-2. The switch shall be capable of operating properly in relative humidity conditions of 95% non-condensing at 55°C in accordance with IEC 60068-2-30. The switch shall meet the environmental requirements of traffic control equipment in accordance with NEMA TS 2 (1998), Section 2: Environmental Requirements. Specifically, NEMA TS 2 1998 (Section 2.2.8)

- a. Vibration in each of the 3 mutually perpendicular planes.
- b. Vibration frequency sweep of 5 to 30 Hz
- c. Vibration strength = 0.5g
- d. Duration = 3 hours, 1 hour at each plane

The manufacturer shall provide evidence of independent testing verifying that performance. In general, the switch shall comply with the environmental requirements outlined in Environmental Requirements –

Table 1. The switch shall be capable of operating properly when exposed to radiated electric fields of up to 10V/m continuously and magnetic fields of up to 40A/m continuously. In general, the switch shall comply with the EMI Immunity requirements given in IEC 61850-3 and IEEE1613. The switch shall also pass the minimum EMC immunity requirements of EN61800-3. EN61800-3 A11 is the IEC standard for EMC emissions and immunity requirements for Adjustable Speed Power Drive Systems.

The Ethernet switch (Telecom Room) shall be capable of operating properly over an ambient temperature range of 0°C to +45°C without the use of internal or external cooling fans in accordance with IEC 60068-2-1 and 60068-2-2. The switch shall also have the following requirements:

1. Operating Relative Humidity: 5% to 95% @ 104°F (40°C) noncondensing
2. Non-Operating: -40°F to 158°F (-40°C to 70°C) up to 15,000 ft
3. Non-Operating Storage relative humidity: 5% to 95% @ 149°F (65°C) noncondensing
4. Max. Operating Altitude: 10,000 feet (3.04 km)
5. Max Non-operating Altitude: 15,000 feet (4.6 km)
6. Acoustics:
7. Sound Power (LWAd) range: 4.6- 5.2 Bel
8. Sound Pressure (LpAm) (Bystander) range: 28.7-34.9 dB
9. Primary airflow: Front and side to back. JL762A has back to front and side.

The manufacturer shall provide evidence of independent testing verifying that performance. In general, the switch shall comply with the environmental requirements outlined in Environmental Requirements. In general, the switch shall comply with the EMI Immunity requirements given in IEC 61850-3 and IEEE1613. The switch shall also pass the minimum EMC immunity requirements of EN61800-3. EN61800-3 A11 is the IEC standard for EMC emissions and immunity requirements for Adjustable Speed Power Drive Systems.

87-11.03 PORT REQUIREMENTS

Traffic Signal Cabinet switches shall be Layer 2 switches and have 8 10/100/1000BaseT(X) POE/POE+ ports, and 4 100/1000BaseSFP slots. Hub switches shall be Layer 3 Switches and have 22 100/1000M SFP, 2 ports Dual-Media, and 4 ports 1/10G SFP+. Telecom Room switch shall be Layer 3 Switch and have 24 Ports SFP+ Downlinks and 4 Ports SFP56. All fiber optic link ports shall be capable of Single mode. The switch shall have the option of both small form pluggable (SFP) optics. Single mode optics should support distances up to 70km. The switch shall support the following requirements and options:

Ethernet ports:

1. 10/100/1000BaseTX 802.3af and 802.3at PoE compliant ports
2. Auto sensing ports that provide power only to PoE end devices
3. RJ45 connectors
4. Data and power over a single ethernet port
5. Cable type: Category 6, unshielded twisted pair (CAT 6 UTP)
6. Segment Length: 100m
7. Auto-negotiation support (10/100Mbps)
8. Auto MDIX crossover capability
9. TVS (Transient voltage suppression) between Line +/-, Line +/--ground, to protect
10. the circuitry.
11. Full Duplex operation (IEEE 802.3x)

1000BaseX fiber optical ports:

1. SFP (small form pluggable)
2. LC Connectors for SFP or SC/LC Connectors (single-mode) fixed
3. Optical Characteristics: 1310nm single-mode, 1550nm single-mode
4. Supports Fiber Type: 62.5/125 um multi-mode fiber, 9/125 um single-mode fiber
5. Segment Length: + 2 km with multi-mode fiber, Minimum Optical Budget 14 dB @ 850 nm
6. Optical Budget single-mode fiber: minimum 17 dB @ 1310 nm

7. Full Duplex operation (IEEE 802.3x)

BODY:

1. Cast Aluminum Enclosure
2. H: 6.96"
3. W: 3.63"
4. D: 6.08"
5. Weight: 5.5 lbs

87-11.04 FIBER TRANSCEIVERS

Small form-factor Pluggable (SFP) transceivers shall be hot-swappable.

All SFPs must meet requirements per Switch manufacturer guidelines. Contractor shall be responsible to determine SFPs will work with the Switch chosen at designated speeds.

Preferred vendors for optics include the following:

1. OEM
2. FS.COM
3. CDW Proline
4. Approved Equivalent

SFP ports shall be 1310nm standardized across the entirety of the project.

SFPs shall support 1 Gbps or 10 Gbps. Below is a guidelines of where to use each SFP. Contractor is responsible for determining the quantity of transceivers based on connectivity requirements.

10 Gbps SFP ports shall be used for Hub to Hub communication and Hub to Telecom Room communication.

1 Gbps SFP ports shall be used for Traffic Signal Cabinet to Hub communication and Traffic Signal to Telecom Room communication.

Contractor shall provide City engineer with quantity of each type transceiver prior to purchasing transceivers.

87-11.05 NETWORKING REQUIREMENTS

The switch shall support automatic address learning of up to 8192 MAC addresses. The switch shall support the following advanced layer 2 functions:

1. IEEE 802.1Q VLAN, with support for up to 255 VLANs and 4096 VLAN ID's.
2. IEEE 802.1p priority queuing
3. IEEE 802.1w rapid spanning tree with enhanced rapid spanning tree protocol (eRSTP) network fault recovery
4. IEEE802.1Q-2005 MSTP (formerly 802.1s)
5. IEEE 802.3x flow control
6. IEEE.802.3ad-Link Aggregation
7. IGMPv2 with 256 IGMP groups
8. Port Rate Limiting in increments of 128kbps, 256, 512, 4, 8Mbps
9. Configuration via test file which can be modified through standard text editor
10. Forwarding/filtering rate shall be 14,880 packets per second (PPS) for 10Mps, 148,800 for 100Mps, 1,488,000 for 1000Mps
11. DHCP Option 82

87-11.05A Network Management Functionality Requirements

The switch shall provide the following network management functions

1. eRSTP, RSTP
2. SNMPv2, SNMPv3

3. RMON
4. GVRP
5. GMRP
6. Port Mirroring
7. 802.1x port security
8. SSL – Secure Socket Layer
9. SSH – Secure Shell
10. TFTP
11. Network Time Protocol (NTP),
12. Simple Network Time Protocol (SNTP)
13. Management via web or Telnet
14. Radius
15. TACACS+
16. Cable diagnostics (test-mode).

Built in Protocol Analyzer which enables traces to be run from within the switch operating system. Must be able to forward traces to an IP address or UDP port. Traces for must include but not be limited to the following: STP, MAC, Link, IGMP, GVRP, PPP, Transport, DHCPRA, 802.1X, WEBS, SNMP, IP, TACACS+, Radius, FORW, IPASSIGN, TRANSPORT.

Additionally, the switch shall demonstrate to provide sub 15 ms failover per switch hop in a ring topology.

87-11.06 PROGRAMMABLE CRITICAL FAILURE RELAY

The switch shall provide a programmable critical failure out relay that may be configured to activate upon critical error detection such as loss of link or detection of critical system errors. This function shall be user enabled and programmable. The output contacts shall be available in a Form-C configuration with Max Current at 2A@250 VAC, .15A@125VDC, 2@20VDC.

87-11.07 POWER SUPPLY REQUIREMENTS

The switch shall be supplied with provisions for operation at the following power supply inputs, 85 to 264 Vac (50/60Hz). Power supply shall have two stage isolation accomplished via two transformers which step down from primary AC/DC to VDC. A power cord of not less than 5 feet in length shall be supplied as well.

The switch shall require no more than 10W of power.

'Hipot' Testing in the Field. The switch shall allow for dielectric strength ('hipot') tests in the field, in accordance with IEC 60255-5, by trained personnel. It shall be capable of enduring a test voltage of at least 2kVrms on power supply inputs above 60V and 0.5kVrms on power supply inputs below 60V. A removable grounding wire shall be provided to allow disconnecting of any transient suppression circuitry at the power supply input to allow for 'hipot' testing without activating the transient suppression circuitry.

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87-11.08 MOUNTING REQUIREMENTS

The switch shall provide options for DIN Rail mounting or panel mounting via brackets.

87-11.09 ENVIRONMENTAL REQUIREMENTS

Ingress Protection: IP40 (1mm objects)

The switch shall comply with the atmospheric, vibration, shock and bump requirements outlined in Table 1. This compliance shall be demonstrated by type withstands tests (i.e. 'type tests') as outlined in Table 1 and summarized in a Type Test Report per the test report requirements of each of the standards given in Table 1.

87-11.10 SAFETY REQUIREMENTS / AGENCY APPROVALS

The switch shall comply with the following electrical safety requirements or equivalents: UL60950 or CSA C22.2 No. 60950 (safety requirements for IT equipment). The switch shall also have CE (Europe) qualification. The switch shall also comply with FCC Part15 Class A for EMI emissions.

TEST

Test Levels Severity Levels

Table 1: Environmental Type Tests Description

1. IEC 60068-2-1 Cold Temperature Test Ad -40 deg. C, 16 Hours N/A
2. IEC 60255-21-2 Bump Tests Eb
3. IEC 60255-21-1 Vibration Tests Fc
4. IEC 60255-21-2 Shock Tests Ea
5. Test Bd +85 deg. C, 16 Hours N/A
6. IEC 60068-2-30 Humidity (Damp Heat, Cyclic) Test Db 95% (non-condensing), 55 deg C, 6 cycles N/A
7. IEC 60068-2-2 Dry Heat

87-11.11 WARRANTY

The Switch shall be warranted for defects in material and workmanship for five (5) years after shipment. The Warranty shall include software updates and 7x24x365 phone support for the 5-year warranty period.

87-11.12 PAYMENT

Full compensation for "Ethernet Switch" shall be considered as included in the price paid for the equipment listed above and in the following bid items "Furnish and Install Ethernet Switch (Traffic Signal Cabinet)", "Furnish and Install Ethernet Switch (Hub Cabinets)", "Furnish and Install Ethernet Switch (Telecom Room)", "Furnish and Install 1 Gbps Fiber Transceiver", "Furnish and Install 10 Gbps Fiber Transceiver", and no additional compensation shall be allowed therefor. Refer to Section 9 for full description.

Replace section 87-13 "Reserved" with: 87-13 TRAFFIC SIGNAL CONTROLLER

87-13.01 GENERAL

The signal controller software shall be OMNI eX or approved equal to be compatible with the following specifications in section **87-13**

The signal controller software shall be compatible with the following ATC controller hardware platforms:

- Caltrans 2070LX

The signal controller software shall be compatible with the following ATC controller interface:

- Caltrans 332LS

87-13.02 CABINET TYPE SPECIFICATIONS

The signal controller software shall be compatible with the following cabinet types:

- Caltrans 332LS

Traffic signal cabinet model 332LS must comply to Caltrans TEES specifications.

87-13.03 STANDARDS CONFORMANCE

The signal controller software shall conform to the mandatory and optional requirements of NTCIP 1201.

The signal controller software shall conform to the mandatory and optional requirements of NTCIP 1202:2005 v02.19.

The signal controller software shall conform to the mandatory and optional requirements of NTCIP 1103.

The signal controller software shall conform to the requirements of AB3418E.

87-13.04 SIGNAL CONTROLLER SOFTWARE FEATURES

87-13.04A Phase Sequence and Rings

The signal controller software shall support a minimum of 16 vehicle phases.

The signal controller software shall support a minimum of 16 pedestrian phases.

The signal controller software shall support a minimum of 16 vehicle overlaps.

The signal controller software shall support a minimum of 16 pedestrian overlaps.

The signal controller software shall support a minimum of 16 user definable phase sequences.

The signal controller software shall support 4 concurrent rings.

The signal controller software shall permit users to assign phases to any ring.

The signal controller software shall provide a user configurable phase concurrency table.

The signal controller software shall automatically calculate barriers based on phase sequence, ring assignments and concurrency table.

87-13.04B Input & Output Assignments

The signal controller software shall permit users to assign all inputs and outputs, including the Auxiliary switch.

The signal controller software shall permit users to assign inputs and outputs for the following cabinet types:

- Caltrans 332LS

The signal controller software shall permit users to select flash indication colors for MUTCD flash operation (red or yellow).

The signal controller software shall permit "wig-wag" flashing on a per channel basis during MUTCD flash operation.

The signal controller software shall support Texas diamond operations.

The signal controller software shall automatically assign inputs and outputs when configured for Texas diamond operations.

The signal controller software shall permit users to modify detector configuration after applying Texas diamond mode.

Texas diamond mode shall support flashing yellow arrow operations.

The signal controller software shall support the following Texas Diamond modes:

- 3 phase
- 4 phase
- Separate intersection control

87-13.04C Programmable Logic

The signal controller software shall support user programmable 64 logic gates.

All cabinet inputs and outputs shall be available as logic gate inputs and outputs.

Logic gates shall be programmable via signal controller front panel menus (i.e. no separate software required).

Logic gates shall support AND, OR, NOR, NAND, NOT, One-Shot, and latching operations.

Logic gates shall support 4 user programmable inputs.

Logic gates shall support delay and extension timing for all inputs and outputs.

Logic gate outputs shall provide selectable flash rates.

87-13.04D Startup Operations

The signal controller software shall permit users to assign startup phases.

The signal controller software shall permit users to the next phases to run after the startup phases.

The signal controller software shall permit users to assign vehicle and pedestrian calls on startup.

The signal controller software shall permit users to assign startup flash duration.

The signal controller software shall permit users to assign startup all red duration.

87-13.04E Phase Timing Parameters

The signal controller software shall provide a minimum of 4 unique sets of phase timing parameters that can be associated to any coordinated or free pattern.

The signal controller software shall permit users to define the minimum amount of green time for all phases.

The signal controller software shall permit users to define the amount of time necessary between detector actuations to cause a gap out for any phase. (Gap)

The signal controller software shall permit users to define the maximum amount of green time for any phase.

The signal controller software shall permit users to define an additional 3 maximum amounts of green times (max 2, max 3, and max 4) for any phase.

The signal controller software shall permit users to define the amount of yellow clearance time for any phase.

The signal controller software shall permit users to define the amount of red clearance time for any phase.

The signal controller software shall permit users to define the duration of Walk time for any phase.

The signal controller software shall permit users to define the duration of Flashing Don't Walk time for any phase.

The signal controller software shall permit users to define the amount of time to be added to the Added Initial timer for each actuation of user specified count detectors.

The signal controller software shall permit users to define the maximum duration of minimum initial plus added initial time. (Max Initial)

The signal controller software shall support gap reduction operations with the following parameters:

- Time before reduction
- Cars before reduction
- Time to reduce
- Reduce every .x seconds
- Minimum gap

The signal controller software shall automatically increase the running phase maximum by a user specified amount when a phase maxes out consecutively and on each successive max out thereafter.

The running phase maximum shall increase to the larger of the programmed maximum or user specified dynamic max limit.

The signal controller software shall automatically decrease the running phase maximum by a user specified amount when a phase gaps out consecutively and on each successive gap out thereafter. The running phase maximum shall decrease to the smaller of the programmed maximum or user specified dynamic max limit. (Dynamic Max)

The signal controller software shall permit users to define the duration of red time to be displayed prior to the next display of green of the same phase. (Red Revert)

The signal controller software shall permit users to define the duration of time required to conditionally re-service any phase.

The signal controller software shall permit users to define an alternate minimum green time for any phase. Alternate minimum green time shall be activated by user-defined vehicle detectors.

The signal controller software shall permit users to define alternate pedestrian walk and pedestrian flashing don't walk durations for any phase. Alternate pedestrian walk, and/or flashing don't walk, shall be activated by userdefined detectors.

The signal controller software shall permit users to define an alternate passage/gap-out time for any phase. Alternate passage/gap-out time shall be activated by user-defined vehicle detectors.

The signal controller software shall permit any phase walk indication to become active before the beginning of the phase vehicle green, for a duration specified by users. (Leading Pedestrian Interval, LPI)

The signal controller software shall permit any phase walk indication to become active after the beginning of the phase vehicle green, for a duration specified by users.

The signal controller software shall permit users to define the duration of start delay of any phase green and pedestrian walk interval.

The signal controller software shall permit users to define an extension of the green interval beyond the phase's normal termination.

87-13.04F Phase Option Parameters

The signal controller software shall provide a minimum of 4 unique sets of phase option parameters.

The signal controller software shall support phase omit of any active phases.

The signal controller software shall support pedestrian omit of any active phases.

The signal controller software shall support minimum recall of any active phases.

The signal controller software shall support maximum recall of any active phases.

The signal controller software shall support a recall to user-defined phases in the absence of any other vehicle or pedestrian calls.(Soft Recall)

The signal controller software shall support pedestrian recall of any active phases.

The signal controller software shall support pedestrian recycle to walk in the presence of conflicting demand if pedestrian phase has a hold applied.

The signal controller software shall support selected phases to re-service a preceding phase when enough time remains before max time of the compatible/concurrent phase(s). (Conditional Service)

The signal controller software shall permit a vehicle call to be locked on any phase when that phase is in a yellow or red indication.

The signal controller software shall permit compatible phases to be called on both sides of the ring barrier when only one ring phase has demand (Dual Entry).

The signal controller software shall permit users to define phases that will not gap out until other ring phases gap out. (Simultaneous Gap)

During volume density operations in Guaranteed Passage, the signal controller software shall permit user-defined phases to retain the right of way for the unexpired portion of the passage time following the decision to terminate the green due to reduced gap.

The signal controller software shall permit pedestrian phases to rest in walk until the presence of a conflicting demand.

The signal controller software shall permit users to define phases that shall rest in red.

The signal controller software shall permit users to define compatible flash entry phases when programmed/software flash is initialized. Upon servicing the flash entry phases, the signal controller software shall begin flashing operation.

The signal controller software shall permit users to define the first phases to service upon termination of programmed/software flash.

The signal controller software shall provide an option to prevent a yellow trap via anti-backup options assignable per phase.

The signal controller software shall provide an option to utilize the phase max time as the pedestrian walk time, followed by the programmed phase walk time upon re-service of the pedestrian phase.

The signal controller software shall provide a discrete option to begin the phase maximum timer after phase green min and/or minimum initial timers have expired.

The signal controller software shall provide a discrete option to begin the phase extension timer after phase green min and/or minimum initial timers have expired.

The signal controller software shall permit users to override the programmed unit minimum yellow time.

The signal controller software shall permit a pedestrian recycle to occur during the pedestrian flashing don't walk interval.

87-13.04G Vehicle Overlaps

The signal controller software shall provide a minimum of 4 unique sets of vehicle overlap parameters.

The signal controller software shall provide the following overlap types:

- Normal or Advanced warning flashers – The overlap is controlled by parent/included phases. Advanced warning flashers are also easily set up with Overlap programming.
- Minus Green Yellow – The overlap is controlled by parent/included and modifier phases.
- Flashing Yellow Arrow for Protected/Permissive Left Turn - Permissive movement is programmed as the parent/included phase and protected movement is programmed as a modifier phase.
- Flashing Yellow Arrow without Red Clearance – Red clearance is skipped on overlap when transitioning from protected to permissive phase.
- Flashing Red Arrow for Protected/Permissive Left Turn – Permissive indication flashes red instead of yellow.

The signal controller software shall permit users to define parent/included phases to an overlap phase, such that whenever the assigned parent/included phases are green the overlap will be green.

The signal controller software shall permit users to program phases that are incompatible with the overlap. The overlap shall not be active when any of the incompatible phases are active.

The signal controller software shall permit users to program pedestrian movements that are incompatible with the overlap. The overlap shall not be active when any of the incompatible pedestrian movements are active.

The signal controller software shall permit users to program pedestrian walk intervals that are incompatible with the overlap. The overlap shall not be active when any of the incompatible pedestrian walk intervals are active; however, are allowed to be active during flashing don't walk.

The signal controller software shall permit users to define parent/included phases that will cause the overlap to skip overlap trailing green when terminating with said phases. The signal controller software shall permit overlaps to be actuated via user-defined detectors.

The signal controller software shall permit actuated overlaps to place calls on user-defined parent/included phases.

The signal controller software shall permit detector lock options for actuated overlaps.

The signal controller software shall permit overlaps to ONLY serve when actuated by user-defined detectors.

The signal controller software shall permit overlaps to extend overlap green time beyond the termination of parent/included phases.

The signal controller software shall permit users to define the yellow clearance of each overlap.

The signal controller software shall permit users to override the programmed unit minimum yellow time for each overlap.

The signal controller software shall permit users to define the red clearance of each overlap.

87-13.04H Pedestrian Overlaps

The signal controller software shall provide a minimum of 4 unique sets of pedestrian overlap parameters.

The signal controller software shall permit users to define parent/included phases to a pedestrian overlap, such that whenever the first assigned parent/included phase is green, the pedestrian overlap will be activated.

The signal controller software shall permit users to program phases that are incompatible with the pedestrian overlap. If the incompatible phase is to be served next, the pedestrian overlap shall terminate and remain in don't walk.

The signal controller software shall permit users to define if the pedestrian overlap will remain in walk or flashing don't walk when transitioning from one parent/included phase to the next parent/included phase.

The signal controller software shall permit pedestrian overlaps to be actuated via user-defined detectors.

The signal controller software shall permit pedestrian overlaps to ONLY serve when actuated by user-defined detectors.

87-13.04I Detectors

The signal controller software shall support 128 vehicle detectors.

The signal controller software shall provide a minimum of 4 unique sets of vehicle detector parameters.

The signal controller software shall permit users to define one or more phases and/or vehicle overlaps to be called upon activation of the vehicle detector.

The signal controller software shall permit detectors to extend an additional user-defined phase upon termination of the calling phase(s).

The signal controller software shall permit users to assign attributes to each vehicle detector including call, passage, added initial, queue, yellow lock, and red lock.

The signal controller software shall permit users to define any of the vehicle detectors as a volume and occupancy detector.

The signal controller software shall permit users to define delay and extend intervals for each vehicle detector with 10th of a second resolution.

The signal controller software shall permit users to define the length of time a queue detector can extend the assign phase green.

The signal controller software shall permit users to define the effective detection zone length for use in speed calculations.

The signal controller software shall permit users to assign any vehicle detector to activate alternate passage and/or alternate minimum green.

The signal controller software shall permit users to assign any vehicle detector as an adaptive detector for use in adaptive signal control operations.

The signal controller software shall support 16 pedestrian detectors.

The signal controller software shall provide a minimum of 4 unique sets of pedestrian detector parameters.

The signal controller software shall permit users to define one or more phases and/or pedestrian overlaps to be called upon activation of the pedestrian detector.

The signal controller software shall permit users to assign any pedestrian detector to activate alternate pedestrian timing.

The signal controller software shall permit users to define parameters for vehicle and pedestrian detector error monitoring.

The signal controller software shall provide a minimum of 4 unique sets of vehicle and pedestrian detector error parameters.

The signal controller software vehicle detector error monitoring parameters shall include: no activity time, maximum presence time, and erratic counts per minute.

Upon failure of a detector, the signal controller software shall place a call, during the non-green interval of the assigned phases, for a duration specified by users.

87-13.04J Coordination

The signal controller software shall provide a minimum of 250 signal coordination patterns.

The signal controller software shall permit users to define the sync point of coordination (begin or end of green sync phase green).

The signal controller software shall permit users to define the offset correction/transition mode: shortway, dwell or add only.

The signal controller software shall permit users to define the maximum number of cycles when offset seeking/transition.

The signal controller software shall permit users to define the cycle length of each pattern. The signal controller software shall permit users to define the offset time of each pattern.

The signal controller software shall permit users to define the split values of each phase present for each pattern.

The signal controller software shall permit users to define the phase sequence of each pattern.

The signal controller software shall permit users to define the phase timing set of each pattern.

The signal controller software shall permit users to define the phase options set of each pattern.

The signal controller software shall permit users to define the vehicle overlap set of each pattern.

The signal controller software shall permit users to define the pedestrian overlap set of each pattern.

The signal controller software shall permit users to define the transit signal priority set of each pattern.

The signal controller software shall permit users to define the vehicle and pedestrian detector set of each pattern.

The signal controller software shall permit users to define the vehicle and pedestrian detector error set of each pattern.

The signal controller software shall permit users to define the max timer mode of each pattern.

Maximum timer modes shall include: Maximum Inhibit, Max 1, Max 2, Max 3, or Max 4.

The signal controller software shall permit users to define phases that shall activate max 2, max 3, or max 4 recalls for each pattern.

The signal controller software shall permit users to define how unused time will be utilized, providing the option to float or fix force-off points.

The signal controller software shall permit users to define the phase permissive strategy of each pattern.

The signal controller software shall provide an option to automatically calculate phase permissive points during coordination.

The signal controller software shall permit users to manually define the phase permissive points during coordination.

The signal controller software shall permit users to define the phase omit strategy for each pattern.

The signal controller software shall provide an option to automatically calculate phase omit points during coordination.

The signal controller software shall permit users to manually define the phase omit points during coordination.

The signal controller software shall provide the option to prevent an early return to sync phase green.

The signal controller software shall provide a minimum of 250 phase split tables.

The split tables shall permit users to define the split time of each phase.

The split tables shall permit users to define the recall mode of each phase.

The split tables shall permit users to assign any phase in each ring as a synchronized phase.

The reservice operation shall provide a mechanism to calculate the unused non-coordinated phase time in a cycle and select the phase(s) that can be reserviced based on a weighted process and still be back into the coordinated phase(s) to not compromise the expected Green band.

87-13.04K Date and Time Functions

The signal controller software shall permit users to input the current date and time.

The signal controller software shall permit users to define the time zone offset.

The signal controller software shall provide the capability to automatically adjust the controller clock to reflect daylight savings time.

Dates and time for start and end of daylight savings time shall be user programmable.

The signal controller software shall accept date/time updates from a central management system.

The signal controller software shall accept date/time updates from GPS and/or WWV time sources.

The signal controller software shall accept date/time updates from a network device.

The signal controller software shall be capable of acting as an NTP server or client.

The signal controller software shall be capable of automatically setting the time of any MMU

The signal controller software shall support a minimum of 64 annual calendar schedules.

Each schedule shall permit users to define the months, days of week, and date of month of the assigned day plan.

The most restrictive calendar event shall supersede general calendar events.

The scheduler shall support a minimum of 64-day plans.

Each day plan shall support a minimum of 48 events.

Each day plan event shall permit users to define the hour, minute, and assigned action.

The scheduler shall support a minimum of 128 actions.

The scheduler shall permit users to define active time-of-day patterns, auxiliary outputs, special function outputs, detector reset, detector VOS data collection, speed trap data collection, split MOE data collection, and high-resolution data collection.

By way of the scheduled pattern, the scheduler shall permit users to define the active phase timing set, phase sequence, phase options set, vehicle overlap set, pedestrian overlap set, transit signal priority set, and max 2 recall phases.

87-13.04L Preemption

The signal controller software shall support a minimum of 16 preemption sequences.

Each preemption sequence shall be programmable as an emergency vehicle or railroad preemption routine.

The signal controller software shall permit users to define a preemption sequence for railroad flash or limited service.

The signal controller software shall permit users to define the cycling phases, pedestrian movements, vehicle overlaps, and pedestrian overlaps of each preemption sequence during limited service operation.

The signal controller software shall permit users to define the dwell phases, pedestrian movements, vehicle overlaps, and pedestrian overlaps of each preemption sequence.

The signal controller software shall support locked preemption calls such that, the preemption will be serviced if the preemption call is removed during the preempt delay interval.

The signal controller software shall support the activation of preemption during automatic/programmed flash operation.

The signal controller software shall permit user to define an all red state prior to entering track clearance phases.

The signal controller software shall permit users to define preemption sequences that shall ignore anti-backup.

The signal controller software shall permit active service phases to maintain the green interval while terminating concurrent flashing yellow arrow overlaps.

The signal controller software shall permit users to define the duration of track clearance phase timing.

The signal controller software shall permit users to define the amount of time that the preempt call must be active prior to initiating the preemption sequence.

The signal controller software shall return to normal operations after a preemption has exceeded the user-defined preemption call maximum time.

The signal controller software shall permit users to define the minimum duration of the preemption service.

The signal controller software shall permit users to define the minimum duration of the dwell interval of the preemption sequence.

The signal controller software shall permit the user to define the exit phases for each preemption sequence.

The signal controller software shall permit users to define the relative priority of each preemption sequence.

The signal controller software shall support linked preemption such that, a linked preemption sequence shall receive an automatic call at the end of the preempt dwell green of the originating preemption sequence.

The signal controller software shall permit users to define a minimum green, yellow, and red clearance time before termination of non-service phases.

The signal controller software shall permit users to define a minimum walk and flashing don't walk time before the termination of pedestrian movements.

The signal controller software shall permit users to define the pedestrian flashing don't walk interval upon exiting the preemption sequence.

The signal controller software shall permit users to define the yellow and red clearance time upon exiting the preemption sequence.

87-13.04M Transit Signal Priority

The signal controller software shall support 16 transit signal priority strategies.

The signal controller software shall provide a minimum of 4 unique sets of transit signal priority strategy parameters.

The signal controller software shall permit users to enable or disable any one of the 16 transit signal priority strategies.

The signal controller software shall permit users to define the relative priority of each transit signal priority strategy.

The signal controller software shall permit users to define the priority service phases.

The signal controller software shall permit users to define phases that shall receive a call upon activation of the priority strategy.

The signal controller software shall permit users to define phases and pedestrian movements to omit upon activation of the priority strategy.

The signal controller software shall support queue jump operations.

The signal controller software shall permit users to define the estimated time of arrival (ETA) from the detection point to intersection stop bar.

The ETA timer shall begin upon receipt of the priority request.

The signal controller software shall permit users to define the priority request as a signal priority or emergency vehicle preempt.

The signal controller software shall permit users to define a priority request input type of either steady/solid or pulsing input.

The signal controller software shall permit users to define request check-in modes.

The signal controller software shall permit users to enable a priority request for the duration of the priority input presence.

The signal controller software shall permit users to latch a priority request upon the leading edge of the check-in request input. The priority request shall remain active until receipt of the check-out input and/or check-out timer has expired.

The signal controller software shall permit users to latch a priority request upon the trailing edge of the check-in request input. The priority request shall remain active until receipt of the check-out input and/or check-out timer has expired.

The signal controller software shall permit users to define request check-out modes.

The signal controller software shall terminate the priority strategy upon the leading edge of the check-out input.

The signal controller software shall terminate the priority strategy upon the trailing edge of the check-out input.

The signal controller software shall terminate the priority strategy upon expiration of a user-defined timeout.

The signal controller software shall terminate the priority strategy upon activation of the service phase green.

The signal controller software shall terminate the priority strategy upon gap-out of the service phase.

The signal controller software shall ignore the priority request after the request has exceeded the user-defined maximum presence.

The signal controller software shall permit users to define the minimum time that an input shall be on prior to activation of the priority request.

The signal controller software shall permit users to define the amount of delay time prior to the activation of the priority request.

The signal controller software shall permit users to define the amount of time that a request shall be extended upon cancellation of the priority request.

The signal controller software shall permit users to define the headway time between successive priority requests.

The signal controller software shall permit users to define the amount of time to suppress priority requests after the service of a preemption.

The signal controller software shall accommodate a user-defined service window which defines the amount of time that the service phase shall be green during the priority service.

The signal controller software shall match the activation of the service phase with the arrival of the priority vehicle(s) by intelligently determining how much time to reduce or extend preceding phases prior to the arrival of the priority vehicle(s).

The signal controller software shall NOT use fixed reduction and/or extension times.

The signal controller software shall permit users to define the maximum green reduction for each non-service phase per priority strategy.

The signal controller software shall permit users to define the maximum green extension for each service phase per priority strategy.

The signal controller software shall provide the user with advanced event handling for complex transit signal priority routines.

The advanced event handling shall enable users to combine the state of signal controller inputs and/or outputs for user-specified functions including transit signal priority operations.

The advanced event handling shall process multiple trigger points on an approaching priority vehicle(s) to accurately estimate the arrival time of the vehicle(s).

The advanced event handling shall determine whether or not to service the priority vehicle(s) based on adherence to bus schedule and/or ridership.

The advanced event handling shall accommodate one-lane transit lanes and provide provisions for preventing vehicles from entering one-lane roadways while occupied by another vehicle.

The advanced event handling shall accommodate user inputs from the front panel of the traffic controller.

The advanced event handling shall produce user specified logs.

The state of advanced event handling shall have a status menu accessible from the front panel of the traffic controller.

The controller shall be able to provide up to four (4) status responses to the LA Metro protocol request, also known as Foothills protocol.

87-13.04N Controller Event Logs

The signal controller software shall permit users to view and clear log data from the traffic controller front panel.

The signal controller software shall permit users to enable event types to be logged.

The signal controller software shall permit users to export logs to USB in a user-readable format.

The signal controller software shall accommodate the retrieval and management of events logs by central traffic management software.

The signal controller software shall provide date/time stamped logs pertaining to the operational status of the intersection, including events of the following categories:

- Date/time stamped detector events.
- Date/time stamped communication events.
- Date/time stamped user access events.
- Date/time stamped user command events.
- Date/time stamped preemption events.
- Date/time stamped transit signal priority events.

The signal controller software shall provide date/time stamped logs of system detector volume, occupancy, and speed (VOS).

The signal controller software shall permit users to define the collection period of VOS data.

The signal controller software shall permit users to combine collection periods of VOS data.

The signal controller software shall provide date/time stamped speed trap logs.

The signal controller software shall support a minimum of 16 speed traps.

The signal controller software shall permit users to define the collection period of speed trap log data.

The signal controller software shall permit users to define a pair of detectors and distance between the detectors for each speed trap.

The signal controller software shall permit users to define speed trap bins such that each bin will count the number of cars which have exceeded the MPH assigned to the bin.

The signal controller software shall provide date/time stamped split MOE logs.

The split MOE log data shall be recorded cycle by cycle.

The split MOE log data shall contain the active pattern of each cycle.

The split MOE log data shall contain the coordination mode of each cycle including: free, coordinated in sync, coordinated in transition, free cycle fault, free coordination fail, and flash cycle fail.

The split MOE log data shall contain cycle events including: preempt, transit signal priority, and manual control.

The split MOE log data shall contain the cycle length of each cycle.

The split MOE log data shall contain the programmed phase split time of each phase in each cycle.

The split MOE log data shall contain the phase split time used by each phase in each cycle.

The split MOE log data shall contain the split reason for termination of each phase in each cycle.

87-13.04O High Resolution Event Logs

The signal controller shall collect and store high resolution event log data.

The signal controller shall locally store a minimum of 24hrs of high resolution event log data.

The signal controller shall collect all high-resolution event types defined by the "Indiana Traffic Signal Hi Resolution Data Logger Enumerations".

The signal controller shall permit users to define the groups of high resolution events to be collected and stored.

The signal controller shall permit users to determine when the date/time of the traffic controller has been updated by illustrating the previous and new date/time.

The signal controller shall permit users to export high-resolution event log data to USB.

The signal controller shall permit users to collect high-resolution event log data remotely.

High resolution event log data shall be portable to a file that is readable by the user.

87-13.04P Communication

The signal controller software shall support Ethernet communications on multiple Ethernet ports.

The signal controller software shall permit users to define the communication timeout interval for Central system communication using the Backup timer.

The signal controller software shall permit users to execute a ping test on a minimum of 4 network devices at one time.

The signal controller software shall support retrieving time using the Network Time Protocol (NTP) over ethernet communications. Users may define the target NTP server to serve as the time source as well as the sync interval.

The signal controller software shall support Network Time Protocol (NTP) server operations to allow other NTP client devices to retrieve the time from the local signal controller using ethernet communications.

87-13.04Q Web Server and Browser Interface

The signal controller software shall support a remote connection utilizing a browser based interface.

The signal controller shall support a remote connection for the front panel of the controller

The signal controller shall support a remote connection for the cabinet input and outputs.

The browser based remote front panel shall emulate the front panel of the 16-line LCD controller.

The browser based remote front panel shall provide 16 lines of display, 8 of which provide status and 8 are for programming.

The browser based remote front panel shall be capable of uploading and downloading databases to a remote PC or other devices.

The web browser interface shall support HTTPS and will automatically redirect HTTP requests to HTTPS.

The web browser interface shall utilize a responsive layout conforming to the form factor of the browser or devices from which it is viewed.

The web browser interface shall be viewable in Google Chrome, or Firefox

The web browser interface shall be accessible from networked mobile devices.

The web browser interface shall display the current date/time of the traffic controller.

The web browser interface shall display the current operating mode and pattern of the traffic controller.

The web browser interface shall display the running version of signal controller software.

The web browser interface shall display the current phase, pedestrian, vehicle overlap, preemption and vehicle detector status.

The web browser interface shall permit users to modify all programmable signal timing parameters of the signal controller software.

The web browser interface shall display validation errors upon entering invalid parameters.

87-13.04R Front Panel Interface

The signal controller software shall provide easy to use menu and parameter navigation.

The signal controller software shall permit users to place calls from the front panel of the traffic controller.

The signal controller software shall permit users to override the programmed operational mode from the front panel of the traffic controller.

The signal controller software shall permit users to open a help screen, which shall define the highlighted object, signal timing parameter.

The signal controller software shall provide or deny access to the controller through user ids and passcodes.

The signal controller software shall enable system administrators to assign individual user identification codes

The signal controller software shall enable system administrators to identify menus accessible by each user.

The signal controller software shall enable system administrators to identify menus accessible by each user.

The signal controller software shall automatically logout the last user after a user-specified amount of time with no front panel activity.

The signal controller software shall allow access to permit users to edit all signal timing parameters and operations from the traffic controller front panel.

The signal controller software shall require each user to confirm changes to the controller database prior to accepting the change.

The signal controller software shall validate changes to the controller database and provide detailed errors when changes do not pass data validation tests.

The signal controller software shall permit users to copy any one set of timing parameters to another set of timing parameters.

This allows the user to set up similar timing parameters, patterns, split tables, and schedules without having to duplicated efforts for each data point.

The signal controller software shall permit users to copy the parameters of any pattern number to another pattern number.

The signal controller software shall permit users to copy the parameters of any split table to another split table.

The signal controller software shall permit users to copy the parameters of any schedule and/or day plan number to another schedule and/or day plan number.

The signal controller software shall permit the authorized users to manage the operating system and traffic signal application.

The signal controller software shall provide the current version of software.

The signal controller software shall provide the current version of Linux.

The signal controller software shall permit authorized users to update the traffic signal application via USB.

The signal controller software shall provide the intersection id, name of intersection, and location.

The signal controller software shall provide detailed status displays.

The main status screen shall display: date/time of traffic controller, phase interval status and timers; operating mode; preemption interval timers; distinguish the type of active phase, pedestrian, and overlap calls; coordination timers and coordination status; active holds and omits; transit signal priority timers.

The coordination status screen shall display programmed cycle length, programmed offset; local cycle timer, master cycle timer, operating mode, active phase split timers for each ring, and permitted phases.

The time base status screen shall display the active schedule number, day plan number, and event number, schedule time, action number, pattern, special function, and auxiliary function. The time base status screen shall also display the properties of the next/upcoming schedule.

The vehicle detector status screen shall display the phase assigned to each detector, actuations of each detector, detector faults, and detector alarm status.

The pedestrian detector status screen shall display the phase assigned to each pedestrian detector, the actuation of each pedestrian detector, and the fault status of each pedestrian detector.

The preemption status screen shall display the ring status of each ring, the operational status of the intersection, the status of active preemption routines, the call status of each phase, pedestrian, pedestrian overlap, and vehicle overlap, and phase holds and omits.

The communication status screen shall provide users with information regarding active NTCIP status polling, NTCIP sets, NTCIP communication errors, database transactions, and database transaction errors.

The Ethernet status screen shall provide users with information regarding the status of Ethernet communication.

The signal controller software shall provide a screen detailing the status of NTCIP dynamic objects.

The signal controller software shall provide a screen detailing the status of peer-to-peer communication, including the duration of sent and/or received peer message, errors and delay.

The signal controller software shall display the active status of peer-to-peer functions.

The signal controller software shall display the status of all inputs and outputs for any of the supported cabinet types.

The signal controller software shall display the status of all traffic controller alarms.

The signal controller software shall display the detailed status of each transit signal priority strategy including headway timers.

The signal controller software shall display the active ring barrier and sequence structure.

The signal controller software shall display the active set for: phase timings, phase options, vehicle overlaps, pedestrian overlaps, transit signal priority, vehicle detectors, pedestrian detectors, vehicle detector diagnostics, and pedestrian detector diagnostics.

The signal controller software shall permit users to import and/or export signal timing parameters to USB drive.

The signal controller software shall contain a diagnostics mode which permits users to run diagnostics on the traffic controller hardware.

87-13.05 PEER-TO-PEER OPERATIONS

87-13.05A Configure of Peer Devices

The signal controller software shall enable users to establish peer-to-peer communication between intersections.

The signal controller software shall support peer-to-peer communication over Ethernet networks.

The signal controller software shall permit users to define a specific IP Address and Port Number for peer-to-peer communication.

The signal controller software shall permit any traffic controller to simultaneously operate as the transmitter of local inputs/outputs and receiver of remote inputs/outputs.

The signal controller software shall permit the local peer to transmit messages to a maximum of 8 remote peers.

The signal controller software shall not limit the number of remote peers to receive messages from any local peer.

87-13.05B Peer-to-Peer Functions

The signal controller software shall support a minimum of 32 unique peer-to-peer functions/routines.

Each peer function shall enable users to define the remote peer intersection to provide received data.

Each peer function shall enable users to define the specific remote input/output states to be received by the local peer.

The signal controller software shall support the transmission of phase signal status from one peer to another peer.

The signal controller software shall support the transmission of vehicle detector, pedestrian detector, and preempt detector status from one peer to another peer.

The signal controller software shall support the transmission of vehicle detector fault status from one peer to another peer.

The signal controller software shall support the transmission of special function input/output status from one peer to another peer.

The signal controller software shall support the transmission of the signal flash state of one peer to another peer.

The signal controller software shall support the transmission of logic inputs and/or outputs from one peer to another peer.

The signal controller software shall support the transmission of alarm input/output status from one peer to another peer.

The signal controller software shall support the transmission of preemption status from one peer to another peer.

The signal controller software shall support the transmission of auxiliary output status from one peer to another peer.

The signal controller software shall support the transmission of transit signal priority status from one peer to another peer.

The signal controller software shall support the transmission of active pattern status from one peer to another peer.

The signal controller software shall permit users to alter the state of local peer inputs and/or outputs via the status of remote peer inputs and/or outputs.

The signal controller software shall permit users to utilize the peer-to-peer functions to establish synchronization between intersections during free operations.

The signal controller software shall support the use of peer-to-peer functions for transit signal priority applications.

87-13.06 Central System Compatibility

87-13.06A Traffic Management Systems

The signal controller software shall be fully compatible with the full feature set of the Central Management System.

The signal controller software shall support Adaptive Signal Control Operations.

87-13.06B NTCIP Compliant Central Management Systems

The signal controller software shall have references of NTCIP compliant central systems currently supporting the signal controller software.

The signal controller software shall support the display of signal status by NTCIP compliant central systems.

The signal controller software shall implement pattern commands issue by NTCIP compliant central systems.

The signal controller software shall support the mandatory and optional signal timing objects of NTCIP 1202:2005 v2.19 within an NTCIP compliant central system.

87-13.07 Diagnostics

The diagnostics pages are for managing services and users, as well as troubleshooting the hardware if necessary. Provides logs and other information outside of the software application itself

There shall be a diagnostics section of the software that provides detailed information about the operating system such as Linux kernel, U-Boot, BSP, Memory, Ethernet information and current date and time.

The diagnostics section shall provide menu driven options to test controller hardware features such as CPU, inputs and outputs, ethernet ports, and Front panel.

The diagnostics section shall provide menu driven options to view logs of the operation of the controller and software

The diagnostics section shall provide menu driven options to set Ethernet services, to select a utility to Install software, Manage Services, and manager users.

87-13.08 Other Features

Software is a feature rich software with specific user base functionality which is provided to enhance the user experience.

87-13.08A Capture Capabilities

The primary use of this function is to create a recording of the traffic engine that can be electronically sent to support staff for software diagnostics and advanced troubleshooting. Remote upload and emailing of these files are designed to greatly reduce response times for any type of issue.

The controller software shall have the capability of being programmed to capture events to provide back to the manufacturer to help aid in troubleshooting and reviewing issues that are not expected from the controller software.

The capture functionality shall be started and stopped manually upon request from a user, and can be done remotely, to record an event that occurs and needs to be evaluated. This can be timing issues, preemption issues, power issues, or events that don't seem to work as expected.

87-13.08B Database Entry

This has been added as a safety feature to ensure that nothing interferes with the safe operation of a preemption

Databases changes shall be restricted during any preempt actively timing in the controller

This function shall limit the user from committing changes to the database during a preempt activity.

87-13.08C SPAT Messaging

The controller shall be capable of providing SPaT messaging to up to four (4) separate IP addressable devices with a user definable destination port.

The signal controller software shall support Signal Phase and Timing (SPaT) data for V2I connected vehicle applications.

The signal controller software support for SPaT messages shall have been verified by the FHWA Saxton Transportation Operations Laboratory Test Bed.

Replace section 87-15 “Reserved” with: 87-15 CENTRAL MANAGEMENT SYSTEM (CMS)

87-15.01 DEVICE SUPPORT

The system shall support communication to traffic controller software with support for mandatory and optional NTCIP 1202 objects.

The system shall support the full MIB of Omni eX signal controller software objects.

The system shall support second-by-second polling of traffic controller status.

- The system shall permit users to define the rate of device status polling.
- The system shall support Ethernet communication to NTCIP traffic controllers.
- The system shall support viewing of network devices with browser interfaces.
- The system shall support CCTV PTZ controls via integration with Digital Spectrum IPVMS.
- The system shall support the viewing of CCTV and Video detection video streams over RTSP.
- The system shall permit users to broadcast date/time to any number of traffic controllers defined in the system.

87-15.02 COMMUNICATION STANDARDS AND INTERFACES

NTCIP Communications for Actuated Signal/Traffic Controllers:

- The system shall support the use of dynamic objects via NTCIP 1103.
- The system shall support mandatory NCTIP 1201 objects.
- The system shall support mandatory and optional NTCIP 1202 objects.

NTCIP Communications for Center-to-Center Interfaces:

- The system shall support center-to-center communication via NTCIP 2306 (TMDD).
- The system shall support center-to-center communications for ICMS applications.

The system shall support center-to-center communications for connected vehicle applications.

87-15.02A Regional Extensibility

The system shall support integration with neighboring Central systems.

The regional integration shall provide the following data from neighboring Central systems within the local agency central software application:

- Regional inventory of devices including: controllers, detectors, and coordination groups.

- Current status of regional controllers including: operational status, active pattern, active cycle length, active offset, master cycle timer, local cycle timer, vehicle phase calls, pedestrian calls, vehicle detector status, pedestrian detector status, phase status, overlap status, preemption status, alarm status and date-time.
- Regional maps and sub-system displays providing device location and real-time operational data.
- Regional time-date source for all traffic controllers within the communication network.

87-15.03 DISPLAYS AND SYSTEM FUNCTIONALITY

87-15.03A Graphical User Interface (GUI)

The user interface shall be intuitive and provide a uniform and consistent scheme of buttons, menus, and forms.

The user interface shall provide common operation elements such as dialog boxes, main menus, sub-context menus, reports, device summaries, and real-time status displays.

The user interface shall provide controls for stacking, docking, un-docking, hiding, or splitting the window panes which can be easily organized on multiple monitors in an advanced traffic management center.

The user interface shall provide a list of active alarms from each device.

- The active alarms window shall automatically update as alarms are triggered and/or removed.

The user interface shall prevent users from performing conflicting command actions.

The user interface shall permit authorized users to “unlock” control of commands from users.

The user interface shall provide a means for labeling the following elements:

- External Controller Alarms
- Vehicle Detectors
- Pedestrian Detectors
- Overlaps
- Phases
- Special Functions

87-15.03B System Wide Map Displays

The system shall support the import of GIS map files for display of device inventory, location and status.

- The system shall incorporate industry standard ESRI vector and/or image files.
- The system shall permit users to define the map layers.

The system shall support a Web-based system map for display of device inventory, location and status.

- Users shall be able to change the background view of the Web-map to: Aerial, Physical, Shaded Relief, Road View, Terrain Base, or Topographic View.
- Users shall be able to easily add devices to the Web-map by clicking on the location of the device within the map.

The GIS and Web-based system maps shall support common GIS map navigation controls (i.e. panning, zooming, small/large scale hiding).

The GIS and Web-based system maps shall provide a legend detailing status color indications.

The system shall support the use of static background images for system maps and subsystem displays.

The system shall permit users to “un-dock” system maps from the main application and display maps on separate monitors/screens.

On mouse hover, a tool-tip shall appear, displaying intersection name, operational status and alarm status.

The system maps shall provide the following status indicators:

- Controller operational status (inactive, free, coordinated, preempt, flash, transition, offline).
- Controller alarm status (Critical alarms, Minor alarms, Non-critical alarms, offline).
- Link status (volume, occupancy, congestion index color).
- Detection cameras (location).
- CCTV cameras (location).
- Field devices - such as battery backup units, etc. (location).

The system shall enable to hide unused phases, overlaps, detectors, patterns, splits, schedules, timing sets, and other optional but unutilized features at each intersection.

87-15.03C Device Lists

The system shall provide a list of devices currently configured within the system.

The device list shall provide the operational status of the device.

The device list shall be easily sorted or filtered by the properties of the devices.

The device lists shall be printable providing the user with the ability to define the data included in the printed report.

87-15.03D Groups

The system shall permit users to create coordination, adaptive, and jurisdiction groups.

The system shall permit users to assign a traffic controller to one or many groups.

The system shall permit users to define any number of groups with any number of traffic controllers as members of the group.

The system shall enable operators to manually issue pattern change commands to signals within a coordination group.

- Commands issued by the system shall override conflicting commands issued by other command sources.

87-15.03E Signal Control Source

The system shall provide an interface detailing a list of active operational commands.

The list of operational command sources shall be listed in order of categorical priority.

Command sources with the same categorical priority shall be listed in order of relative priority.

The list of operational command sources shall include:

- Current pattern and command source
- Manual pattern
- Reginal patterns
- Special events
- Responsive patterns
- Adaptive patterns
- Time-of-day patterns

87-15.03F Time-Space Diagram

The system shall support the display of a time-space diagram.

The user shall be provided with a graphical interface for the creation of routes to be used in the time-space diagram.

- Users shall be able to create routes by selecting intersections from a map display of device inventory.
- Users shall be able to identify any phase as the phase of interest within the route.

The time-space diagram shall display the relative distance between intersections within the user-defined route.

The time-space diagram shall display the green times produced by the phases configured within the route.

The time-space diagram shall display the green band between intersections based on the design speed of the route.

The time-space diagram shall display either two-way or one-way progression.

87-15.03G Traffic Controller Timing Editor

The system shall support the automatic and partial conversion of signal timing parameters from legacy BiTran software to Omni eX software.

The system shall provide a timing editor displaying all programmable timing supported by the traffic controller software.

The timing editor shall provide an intuitive and nested navigation scheme for displaying timing parameters.

The timing editor shall print all or a subset of timing parameters.

- Users shall have the option of printing the phase diagram on printed timing sheets.

The timing editor shall support timing any number of archives and restoration of previously archived parameters.

The timing editor shall permit users to import and export timing.

- Exported timing shall be capable of being applied to USB memory and applied to traffic controllers supporting import of timing from USB memory.

The timing editor shall permit users to run a full timing audit of timing parameters.

- The timing audit shall output a report displaying mismatches between the central and controller databases of timing parameters.
- The timing audit shall report shall include the values of the mismatched parameters.
- The timing audit shall permit users to select the mismatch timing parameters and open the timing editor for further action.
- The system shall permit the user to schedule the timing audits and receive notification of timing parameter mismatches between the central and controller databases.

The timing editor shall provide immediate feedback when users have entered invalid data.

The timing editor shall provide immediate feedback when users have unsaved changes.

The timing editor shall support single page or full timing database uploads/downloads to and from the traffic controller.

Upon downloading timing from the central system to the local controller, the system shall display any and all errors encountered by the system and/or controller during the transaction.

The timing editor shall display side-by-side comparison of timing parameters from different sources.

The timing editor shall permit users to compare timing parameters between:

- Central database vs. controller database
- Controller "A" database vs. controller "B" database
- Controller database vs. archived timing
- Controller database vs. imported timing from external source

The system shall permit users to import and export timing parameters from any number of controllers.

The system shall provide a Coordination Group timing editor for the management of coordination parameters.

87-15.03H Real-time Status Displays

The system shall present detailed real-time signal controller status displays which include:

- Operational status
- Active pattern
- Active cycle length
- Active offset
- Master cycle timer
- Local cycle timer
- Vehicle phase calls
- Pedestrian calls
- Vehicle detector status
- Pedestrian detector status
- Phase status
- Overlap status
- Preemption status
- Alarm status
- Current date-time

The real-time signal controller status shall be viewable within an aerial depiction of the intersections geometry.

The aerial display shall support user-defined backgrounds in format of png, bitmap, jpeg, gif, and/or tiff.

The aerial display shall permit users to place the precise location of status objects.

The aerial display shall depict the actuation of individual vehicle detectors.

The system shall permit the user to activate the aerial display from within the system wide and/or sub-system displays.

The system shall support a suitcase tester display which requires no configuration by the user.

The suitcase tester display shall illustrate the data available from the real-time signal controller status.

The real-time signal controller status displays shall permit users to issue the following commands:

- Phase calls
- Pedestrian calls
- Emergency preemption calls
- Special Functions

The system shall provide a “one click” access to any Ethernet connected EDI cabinet monitor units via the EDI ECom monitor software, allowing the user to view status and collect monitor logs directly across the ethernet network.

System Links shall enable the user to assign different data sources for the reporting of volume, occupancy, and speed data (for example, a single system detector can be utilized for volume, while a speed trap is utilized for the speed of the same link).

87-15.03I Event Notifications

The system shall provide event notifications for traffic controller and arterial link alarms.

System administrators shall be permitted to select users to receive special event notifications.

Users shall receive notifications when alarms are added and removed. Users shall receive notification via their system assigned email address.

System administrators shall be permitted to identify the controllers and arterial links from which notifications will be issued.

Traffic controller events from which notifications shall be issued include:

- Coordination alarms (coord fail and coord fault)
- Cycle fail
- Critical alarms
- Vehicle detector fault
- Pedestrian detector fault
- External alarms
- Local override
- Manual plan activation
- Preemption events
- Cabinet flash

Arterial link events from which notifications shall be issued include:

- Congestion events
- Occupancy events
- Speed events

Event notifications shall be able to select to Request Acknowledgement or Not Request Acknowledgement from the User screen.

The system shall support three tiers of event escalation.

- Each tier from 1-3 shall have a delay time in hours and minutes associated with it. This is the maximum amount of time to wait for an acknowledgement before notifying the user(s) in the next tier.
- The system shall support event acknowledgement which suppresses event escalation.

The system shall enable the user to configure automatic timing audits when the keyboard entry alarm is activated.

The system shall issue an event notification when the central system timing database doesn't match the database of the traffic controller.

87-15.03J Central Scheduler

The system shall provide a single interface for all centrally scheduled events.

The central scheduler shall permit users to purge and aggregate data from the system database.

The central scheduler shall permit users to collect logs from traffic controllers on a recurring interval defined by the user.

Logs collected by the central scheduler shall include:

- Volume, occupancy, and speed
- Split MOE
- Speed
- General traffic controller log of all events

Users shall be permitted to identify and select any number of controllers from which to collect logs.

The central scheduler shall permit users to issue a date/time broadcast to any number of traffic controllers.

The central scheduler shall permit users to audit the date/time from any number of traffic controllers.

The central scheduler shall permit users to automatically audit signal timing and report discrepancies between the central database and controller database.

The central scheduler shall permit users to run traffic adaptive and/or traffic responsive operations.

The central scheduler shall permit users to execute user-defined coordination patterns/plans.

The central scheduler shall permit users to define special events which have higher priority over normal time-based operations.

87-15.03K Document and Resource Management

Resource documents shall be stored in the TMS database and not externally, allowing easy access to the resources across remote connection without the added requirement of accessing a server datastore.

The system shall enable users to affiliate documents of any type with any signal controller.

The system shall enable users to view and open documents affiliated with any signal controller.

87-15.04 TRAFFIC CONTROLLER OPERATIONS

87-15.04A Time-of-Day Schedule

The system shall permit users to define DOM, DOW, TOD schedules for the operation of select traffic controllers.

Time-based operations may be downloaded to each signal controller and issued by the signal controller scheduler.

The system shall permit users to define levels of priority for each time-based schedule.

87-15.04B Traffic Responsive Operations

The system shall support traffic responsive operations.

The traffic responsive routine shall utilize data collected from user-defined system detectors to select a timing pattern/plan that is best suited for the traffic conditions.

Users shall be able to define the volume and occupancy thresholds that best suit each coordination pattern/plan.

Traffic responsive shall utilize a user-defined "lockout" period to prevent excess transitions.

The system shall provide a graphical interface depicting the user-defined volume or occupancy thresholds and reported volume or occupancy from field detectors.

87-15.04C Traffic Adaptive Operations

The system shall support traffic adaptive in conjunction with other modes of operation.

Traffic adaptive operations shall not require an external field or central processor.

Traffic adaptive operations shall support Ethernet based communications.

Traffic adaptive operations shall support agency preferred detection technology.

The system shall provide a graphical interface depicting all adaptive parameters and controller status reported during adaptive operations.

87-15.04D Regional Commands

The system shall elicit signal controller patterns issued by external regional systems that adhere to the TMDD standards for center-to-center commands.

87-15.04E Manual Commands

The system shall enable operators to manually issue pattern/plan change commands to individual signals.

The system shall enable operators to manually issue pattern change commands to signals within a coordination group.

Manual override commands issued by the system shall override conflicting commands issued by other command sources.

Manual commands shall remain in effect until replaced by another manual command or until the user cancels the manual command from the central system or controller front panel.

87-15.04F Special Functions

The system shall enable operators to issue NTCIP compliant commands in order to override traditional modes of operation and implement unique operational scenarios.

The system shall enable users to place remote detector calls in order to manually control the phase duration.

The system shall enable users to execute remote “manual control enable” and “manual advance” commands in order to implement remote “police control.”

The system shall enable users to create a cascade of commands with the ability to extend and delay commands for operations such as remote emergency vehicle preemption routes.

The system shall enable users to remotely execute any NTCIP compliant command supported by the traffic controller software (subject to vendor specific MIB availability and licensing).

The system shall enable operators to execute user-defined commands and/or special functions from the real-time displays of the system to provide the user with confirmation of each command / unique operation.

87-15.05 SECURITY AND ACCESS LEVELS

87-15.05A User Authentication

The system shall require users to login before gaining access to the application.

The system shall require System Administrators to create unique usernames and passwords for each system user.

The system shall permit System Administrators to define password complexity and length.

The system shall permit System Administrators to define password expiration timeframes.

The system shall provide users with the ability to reset passwords after answering userdefined security answers.

87-15.05B User Authorization

The system shall allow System Administrators to assign user to Access Levels which define the user's permissions within the application.

At a minimum, system shall enforce the following user permissions:

- System configuration
- Broadcast controller date/time
- Import/Export device timing
- Save/edit device timing
- Set vehicle/ped calls
- Set preemption calls

87-15.06 EVENT LOGS AND REPORTS

87-15.06A Automated Traffic Signal Performance Measures Reports (ATSPM)

The system shall automatically collect hi-resolution event data from each enabled traffic controller in near real-time.

The agency shall be able to maintain and operate the ATSPM reports without recurring fees affiliated with the collection, storage, and visualization of ATSPM reports.

The ATSPM reports shall utilize the user management of the Central Management System in order to authenticate and authorize users.

The ATSPM reports shall utilize the configuration database of the Central Management System for traffic controllers, detection, and additional system attributes.

The system shall provide web-based reports charts with interactive features such as zoom, scroll, and add/remove data series in order to improve qualitative analysis of traffic conditions and signal performance.

The system shall provide a high-resolution events report which enables the time-ordered review of controller events.

The system shall enable users to compare signal performance measures of different:

- Intersections
- Approaches / Phases
- Date/time ranges

In order to improve the evaluation of phase performance, the system shall provide a single performance report that combines the following signal performance measures:

- Phase Split Duration
- Phase Reason for Termination
- Phase Split Failure
- Pedestrian Activity
- Pedestrian Delay

In order to improve the evaluation of approach performance, the system shall provide a single performance report that combines:

- Approach Volume
- Arrivals on Red
- Arrivals on Green
- Arrivals on Yellow

The system shall provide Turning Count Movement Reporting.

The system shall provide Peak Hour Reporting.

The Purdue Coordination Diagram shall enable users to clearly distinguish events between cycles.

87-15.06B System event logs

The system shall store a database record of the following events:

- Signal controller alarms:
 - Cabinet flash
 - Stop-time
 - External alarms
 - Local override
 - Keyboard entry
 - Coordination alarm (NTCIP controllers only)

- Detector fault
- Offline
- Signal controller operating mode:
 - Coordinated
 - Transition
 - Free
 - Software flash
 - Preempt o EV preempt o Transit priority

The system shall log events related to user activity, such as:

- Login / logoff
- Timing parameter modifications
- User commands to traffic controller
- System configuration changes

The system shall provide a communication error log.

The communications error log shall depict the total number of polls, poll errors, total messages, and total message errors of each signal controller defined in the system.

87-15.06C Volume Occupancy Speed Reports

The system shall store and provide reports for System Detector Volume, Occupancy, and Speed.

- The system detector VOS report shall permit users to define the date/time period of the report.
- The system detector VOS report shall permit users to define the period for which system detector data will be aggregated ranging from 1 minute to 60 minute intervals.
- The system detector VOS report shall permit users to select the central system or signal controller as the source of the VOS records.

The system shall store and provide reports for Arterial Link Volume, Occupancy, and Speed.

- The link VOS report shall permit users to define the date/time period of the report.
- The link VOS report shall permit users to define the period for which system detector data will be aggregated ranging from 1 minute to 60 minute intervals.
- The link VOS report shall permit users to select the central system or signal controller as the source of the VOS records.

87-15.06D Split Measures of Effectiveness

The system shall provide a split MOE report containing the following information:

- Programmed split of each phase for each cycle
- Split utilization of each phase for each cycle
- Active pattern for each cycle
- Cycle length of each cycle
- Reason for phase termination of each phase for each cycle, including:
 - Phase not serviced
 - Coord. force-off
 - Vehicle gap out
 - Vehicle max out
 - External force-off
 - Ped extend

87-15.06E Turning Count Movement Report

The system shall provide a turning count movement report.

The system shall permit users to define the date and time range of the turning count movement report.

The turning count movement report shall be exportable to PDF.

The turning count movement report shall aggregate data in 15 minute intervals.

The turning count movement report shall provide a graphical chart illustrating the volume of each movement/approach for the time period specified by the user.

87-15.06F Peak Hour Volume Report

The system shall provide a peak hour volume report.

- The system shall permit users to define the date of the peak hour volume report.
- The peak hour volume report shall be exportable to PDF.
- The peak hour volume report shall aggregate data in 15 minute intervals.
- The peak hour volume report shall automatically identify the peak hour volume for A.M., Midday, and P.M.
- The peak hour volume report shall sum the volume of each approach for the peak hours.
- The peak hour volume report shall provide a graphical chart illustrating the volume of each 15 minute period for the date specified by the user.

87-15.07 DEMONSTRATION TEST PLAN

This Demonstration Test Plan (“Plan”) is intended to demonstrate that the TMS software (the “System”) that is installed in and licensed to the City of Manteca meets or exceeds the functional requirements specified in the contract documents and is properly configured such that all System components are operating properly as a complete, cohesive, and comprehensive system. This test plan will also demonstrate that the communication infrastructure, installed and tested separately, is communication to all intersections traffic controllers in each traffic cabinet with the TMS system.

87-15.07A Logistics

87-15-07A(1) Location

The Demonstration Test Plan will be conducted onsite at the City of Manteca.

87-15-07A(2) Duration

The Plan shall be conducted for a continuous period of (5) business days. Testing will only be halted in the event of a Category A Fault (defined later in this document) and continue upon correction of any such faults from the point at which it was halted.

87-15-07A(3) Personnel

The Plan shall be conducted by the contractor with support from authorized personnel from the manufacturer and the City.

87-15.07B Prerequisites

87-15.07B(1) Hardware

The following hardware is required to conduct the Plan:

1. The TMS server installed with system software.
2. All field equipment, including traffic controllers and other devices that are to be tested in the Plan.
3. Communications equipment currently in use by the City. Said equipment shall be configured to provide robust and error-free communications between the server and the traffic controllers and other devices that are to be tested in the Plan.

87-15.07B(2) Software

The following software is required to conduct the Plan:

1. The latest version of the TMS shall be running on the server.
2. Compatible traffic controller firmware running on each traffic controller that is to be tested in the Plan.

87-15.07C Test Procedure

The Plan consists of Test Procedures listed on Section 87-15.07C(4) that each cover a specific set of features and area of functionality.

The Test Procedures shall be executed by the contractor and City personnel using standard operating procedures and the traffic controllers, user accounts, groups, and other objects that are already configured in the City's production System. The user account under which the Test Procedures are executed must have permission to execute the functionality under test.

Upon completion of each Test Procedure, City personnel shall initial and date the Pass/Fail block for that Test Procedure, noting the appropriate result. A Test Procedure shall be assigned a result of Fail if the functionality under test cannot be successfully validated and/or the functionality does not meet or exceed the contractual requirements. Otherwise, the Test Procedure shall be assigned a result of Pass.

87-15.07C(1) Fault Classification

Test Procedures assigned a result of Fail shall be classified as one of three types of faults: A, B, or C.

Category A Faults are high priority, serious faults that result in a gross system malfunction or cause safety considerations in the field. They are showstoppers or of such importance as to radically affect the functionality of the System:

1. If, because of a consistent crash during processing of a new application, a user could not complete that application.
2. Incorrect data is passed to system resulting in corruption or system crashes
3. Incorrect status being displayed
4. Displays not functioning
5. Incorrect values being displayed
6. Inability to access remote information
7. Object security not being enforced properly
8. Operation that causes a safety issue to occur in the field.

Category B Faults are serious level, medium-priority faults that affect that functionality defined in a Test Procedure, but do not prevent the execution and verification of other Test Procedures because they affect a less important element of functionality, such as:

1. A field that is not initialized to a correct default and the user must provide the correct value
2. A problem occurs for which there is an alternative method of completing a process (workaround)
3. A serious cosmetic fault in the user interface

Category C Faults are minor level, low-priority faults that do not prevent or hinder functionality, and are chiefly aesthetic faults in the user interface such as:

1. Incorrect or misspelled text
2. Drop down lists with missing or repeated items
3. Awkward or inconsistent look and feel with other areas of the System

87-15.07C(2) Fault Handling

In the event of a Fault, testing shall be halted and shall only resume when the manufacturer of the TMS has corrected all defects that caused the fault and there are reasonable expectations of successfully conducting the remainder of the Plan.

87-15.07C(3) Exit Criteria

For the Plan to be considered complete and successful, all the following must be true:

1. All Category A Faults must be corrected and tested.
2. Any Test Procedure with a Category B Fault or Category C Fault must be waived by the City as Acceptable Implementation Risk.
3. All remaining Test Procedures must have a status of "Pass".

87-15.07C(4) Test Procedures

Test Procedure 1: Access Control

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* provides a means to allow and deny access to functions and features in the user interface.

Test Observer's Notes:

Test Procedure 2: User Accounts

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* supports the following account management functions:

1. Create and edit user accounts
2. Reset a password for a user account (assumes appropriate permissions)
3. Delete a user account (assumes appropriate permissions)

Test Observer's Notes:

Test Procedure 3: Resources

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* supports the creation of Resources and allows them to be associated with a Traffic Controller.

Test Observer's Notes:

Test Procedure 4: Client Options

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* supports editing the following settings:

1. Enable/disable session timeout
2. Set timeout value (in minutes)

Test Observer's Notes:

Test Procedure 5: System Options

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* supports the addition of an agency-specific logo and that the logo appears on the Info → Product Information screen.

Test Observer's Notes:

Test Procedure 6: Map Options

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* supports opening the Map Web Display to a user-specified Latitude, Longitude, and Zoom Level.

Test Observer's Notes:

Test Procedure 7: Browsable Devices - Summary

<i>Pass</i>	<i>Fail</i>

Objective

- a. Verify that the user can add columns to the summary list
- b. Verify that the user can sort by columns
- c. Verify that the user can filter for specific Browsable devices
- d. Verify that the user can print and save summary list

Test Observer's Notes:

Test Procedure 8: Traffic Controllers

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* supports creating, editing, and deleting traffic controllers. Verify that controllers appear in the Device Explorer and that the list of controllers can be filtered by typing a controller name.

Test Observer's Notes:

Test Procedure 9: Traffic Controllers - Summary

<i>Pass</i>	<i>Fail</i>

Objective

- a. Verify that the user can add columns to the summary list
- b. Verify that the user can sort by columns
- c. Verify that the user can filter for specific traffic controllers
- d. Verify that the user can print and save summary list

Test Observer's Notes:

Test Procedure 10: User Workspace

<i>Pass</i>	<i>Fail</i>

Objective

Verify the following:

1. A drop-down menu appears after clicking the down arrow under any of the buttons in the ribbon
2. A drop-down list of tabbed windows appears when additional tabbed windows are opened after the tab display area is full.
3. Any tabbed window can be undocked from the main workspace, dragged to any monitor (screen), resized, and re-docked to the main workspace.
4. The width of the Device Explorer can be adjusted, or it can be hidden entirely.

Test Observer's Notes:

Test Procedure 11: Map Web Display

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* supports a system-wide map with background tiles (images) served by a third-party provider via the Internet. Verify the following:

1. The traffic controller icons reflect the correct operating mode, alarms, and coordination pattern number to within one second of the data in the equipment.
2. There is a collapsible overview (mini) map and legend.
3. A tooltip window appears when the pointer is hovered over a traffic controller icon. The current operational status any and current alarms (flash, stop time, external alarm, detector fault, etc) are shown in the tooltip.
4. A popup menu with traffic-controller-specific commands appears upon right-clicking a traffic controller icon.
5. A popup menu with commands to create and relocate devices appears upon right-clicking an empty area of the map (between icons).
6. The map can be zoomed and panned via the mouse by double-clicking or using the mouse wheel, or via the controls on the bottom-center of the map.

Test Observer's Notes:

Test Procedure 12: Traffic Controller Aerial Display

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* supports the following in per-traffic-controller aerial displays:

1. The display can be customized with a background image of the intersection.
2. The vehicle phase, pedestrian phase, and overlap icons reflect the correct state of the respective object to within one second of the data in the equipment.
3. The coordination status, plan, offset, master cycle timer, local cycle timer, force offs, and time of day clock labels reflect the correct values of their respective data fields to within one second of the data in the equipment.
4. Remote vehicle, pedestrian, and preemption calls can be controlled via the respective buttons.

Test Observer's Notes:

Test Procedure 13: Traffic Controller Suitcase Display

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* supports the following in per-traffic-controller suitcase displays:

1. The vehicle phase, pedestrian phase, and overlap icons reflect the correct state of the respective object to within one second of the data in the equipment.
2. The coordination status, plan, offset, master cycle timer, local cycle timer, force offs, and time of day clock labels reflect the correct values of their respective data fields to within one second of the data in the equipment.
3. Remote vehicle, pedestrian, and preemption calls can be controlled via the respective buttons.

Test Observer's Notes:

Test Procedure 14: Traffic Controller Configuration

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* supports the following per-traffic-controller configuration data:

1. A Name field that accepts a value between 2 and 100 characters
2. A System ID field that is unique on a system-wide basis
3. IP Address and IP Port fields
4. Longitude and latitude fields
5. Notes
6. Resources

Test Observer's Notes:

Test Procedure 15: Traffic Controller Timing Editor

<i>Pass</i>	<i>Fail</i>

Objective

1. Verify that *TMS* supports display and editing of traffic controller parameters that are specific to each supported traffic controller type.
2. Verify that the timing editor supports the following:
 - a. Creation of timing archives
 - b. Creation of timing templates
 - c. Importing and exporting of timing files
 - d. Display of mismatches between the system and equipment data (audits) whereby differences are displayed on a per-field basis and clicking any mismatch provides direct navigation from the audit to the editor
 - e. Comparison of data between the system copy and any of the following:
 - i. Archive
 - ii. System
 - iii. Device
 - iv. File (export)
 - v. Template
 - f. Copying of data from one timing page to another (for the same traffic controller)
 - g. Copying of data from the comparison source to system source on a per-page and traffic controller-wide basis.
 - h. Saving of data on a per-page, selected (multiple) page, the system alone, the equipment (device) alone, or both simultaneously.
 - i. Printing timing data.
 - j. Saving timing data to PDF or Excel.

Test Observer's Notes:

Test Procedure 16: Traffic Controller Operations

<i>Pass</i>	<i>Fail</i>

Objectives

Verify that *TMS* supports various remote functions for traffic controllers:

1. Sets the time-of-day clock of selected or all traffic controllers
2. Displays the correct proper signal control source data
3. Send and stop manual override

Test Observer's Notes:

Test Procedure 17: Group Configuration

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* supports groups of traffic controllers with the following features:

1. Any arbitrary collection of traffic controllers can be combined into a group.
2. Any traffic controller can belong to multiple groups.
3. Different modes of operation can be pre-defined for each traffic controller in a group and activated and deactivated in an on-demand or scheduled basis.
4. A mode of operation can be activated and deactivated in an on-demand or scheduled basis to the group.

Test Observer's Notes:

Test Procedure 18: Event Configuration

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* can notify users via email when selected events occur and has a means to configure the following therein:

1. The types of events that will generate a notification
2. The users that will be notified
3. The traffic controllers that will generate a notification

Test Observer's Notes:

Test Procedure 19: Scheduler

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* can perform the following on both a recurring basis and on user-specified dates:

1. Retrieve user-specified traffic controller logs
2. Check traffic controller time of day clock drift
3. Perform a timing audit and notify selected users
4. Send pattern commands to traffic controllers
5. For scheduled operations, the user shall be able to:
 - a. Set the date(s) when a special event shall be active.
 - b. Set the days of week or days of the month for a recurring event.
 - c. Set recurrence for controller log retrieval
 - d. Ability to set the start and end time for the event.
 - e. Ability to select the controllers that will be affected by the event.
 - f. Ability to enable and disable and event.
 - g. Ability to manually implement the event immediately.
6. Correctly implement and log each of the scheduled events.

Test Observer's Notes:

Test Procedure 20: Channel Configuration

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* can exchange data with field equipment (devices) via UDP/IP channels. Verify that UDP/IP channels can be configured with a user-specified name and IP Port. Verify that channels appear in the Channel Summary, and that user-specified columns can be selectively shown or hidden. Verify that channels can be deleted.

Test Observer's Notes:

Test Procedure 21: Logs

<i>Pass</i>	<i>Fail</i>

Objective

Verify that *TMS* stores device-specific logs and supports the following functionality therein:

1. View events between a user-specified date and time range
2. Record events in the Activity Logs
3. Classify events as either User, Schedule, Alarm, or Operation types

Test Observer's Notes:

SIGNATURE PAGE

This certifies that the onsite testing was successfully completed.

Date of Completion: _____

Date of Acceptance: _____

Name and Title: _____

Signature: _____

87-15.08 STAFF TRAINING

Train 8 City staff in the programming, operation, troubleshooting, and maintenance of the Central Management System.

The training instructor must be a factory-authorized representative of the Central Management System manufacturer.

The training must include:

1. Books, manuals, and other training material for Department personnel
2. Consist of a formal class with a certificate.
3. Hands-on experience in programming techniques and operation
4. Provide a minimum of 8 hours of classroom.

87-15.09 PAYMENT

Full compensation for "Central Management System" shall be considered as included in the price paid for the equipment listed above and in the following bid item "Central Management System", and no additional compensation shall be allowed therefor. Refer to Section 9 for full description

Add to the end of section 87-19.01C:

Submit hub cabinet assembly shop drawings for authorization.

Submit optical time-domain reflectometer data files for each test in a Microsoft Excel format in both hard copies and electronic format. Test reports are to be submitted including OTDR traces and event tables for both wavelengths. Test report documentation must include cut-sheets of test equipment used with calibration date, launch and tail cables, test set-up, test equipment parameter settings, and name of test operator. Traces are to be of sufficient resolution for a reviewer to verify events.

Submit documentation of factory test results for connectors durability and strength for authorization.

Submit pre-delivery documentation (reel tags from the manufacturer) of factory fiber attenuation test results of fiber reels and other fiber documentation. Submit pre-installation documentation of fiber attenuation test results of fiber reels with a comparison of pre-delivery and pre-installation test results.

Submit As-Built record drawing of the fiber optic cable systems elements that you furnish and install.

Complete and submit the following Worksheets as specified:

Link Loss Budget (System Gain Margin) Worksheet

Contract No.:		Contractor:	
“Calculated” By:		“Calculated” Date:	
“Actual” By:		“Actual” Date:	
Link No.:		Fiber Color:	
Buffer Color:		Cable No.:	

Test Wavelength (Circle One):	1310 nm	1550 nm
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Section		Calculated	Actual
Section 1: Total System Gain			
1A	Optical Transmitter Average Power (dB)		
1B	Optical Receiver Sensitivity (dB)		
1C	Total System Gain (Line 1A – 1B) (dB)		
Section 2: Total System Loss			
2A	Length of the link (km)		
2B	Loss per km of the fiber (dB/km)		
2C	Total Fiber Loss (Line 2A x 2B) (dB)		
2D	Total Connector Losses in the link (dB)		
2E	Total Splice Losses in the link (dB)		
2F	Other Component Losses (dB)		
2G	Total System Loss (Line 2C + 2D + 2E + 2F) (dB)		
Section 3: System Gain Margin			
3A	System Gain Margin (Line 1C – 2G) (dB)		

CONTRACT NUMBER/CO/RTE/PM		PROJECT IDENTIFICATION NUMBER	
CONTRACTOR NAME		CERTIFIED FIBER OPTIC TECHNICIAN	
		Certificate Number	Date Issued
CERTIFIED FIBER OPTIC TECHNICIAN (Print Name)		SIGNATURE	DATE
Cable Number	Total Number of Fibers	Cable Length from OTDR (km)	

UPON ARRIVAL TO JOB SITE						
	Measure Attenuation (dB)		Calculated Attenuation = Measured (dB)/Cable Length from OTDR (km)		105% Shipping Record Attenuation(dB/km) = (Shipping Record Attenuation) X (1.05) (dB/km)	Calculated Attenuation < 105% Shipping Record Attenuation?
+ Buffer Tube	Wavelength		Wavelength		Wavelength	
- Buffer Tube	1310nm	1550nm	1310nm	1550nm	1310nm	1550nm
	Buffer Tube ▼					
1 Blue						
2 Orange						
3 Green						
4 Brown						
5 Slate						
6 White						
7 Red						
8 Black						
9 Yellow						
10 Violet						
11 Rose						
12 Aqua						

RESIDENT ENGINEER REVIEW		
Cable OTDR Test Results	List any Anomaly	
<input type="checkbox"/> Pass <input type="checkbox"/> Fail		
RESIDENT ENGINEER (Print Name)	SIGNATURE	DATE
COPY TO TRAFFIC OPERATIONS (Print Name)	SIGNATURE	DATE

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GENERAL INFORMATION

This form is to provide documentation that individual fibers in the fiber optic cables are in compliance with the specification upon arrival to the job site.

FORM

Complete the form for each spool of fiber optic cable that arrives to the job site and ensure individual fibers in the cable comply with the specifications. This form includes multiple pages. Complete a table for every buffer tube in the cable (two (2) per page). Provide a copy of the completed form to the engineer.

- **CONTRACT NUMBER/CO/RTE/PM:** For local agency encroachment permit projects, write the encroachment permit number in the CONTRACT NUMBER field.
- **PROJECT IDENTIFICATION NUMBER:** For local agency encroachment permit projects, write N/A in the field.
- **CONTRACTOR NAME:** Write the name of the contractor or subcontractor installing the fiber optic cables.
- **CERTIFIED FIBER OPTIC TECHNICIAN:** Enter the certification information for the employee performing the fiber optic tests.
 - **Certificate Number:** Enter the certificate number.
 - **Date Issued:** Write the date issued.
 - **Expiration Date:** Write the certificate expiration date.
- **Cable Number:** Enter the cable number obtained from cable reel label.
- **Total Number of Fibers:** Enter the total number of fibers in the cable.
- **Cable Length:** Enter the total cable length measured by the OTDR in kilometers. If length is measured in feet, divide it by 3,280.84.
- **Buffer Tube:** Use the drop down box to select the number and color of the buffer tube containing the fiber being tested.
- **Buffer Tube:** Use the +/- Buffer Tube buttons to add or subtract buffer tubes (tables) as needed.
- **Measured Attenuation:** Enter the attenuation value (dB) measured by the OTDR for both wavelengths 1310nm and 1550nm.
- **Calculate Attenuation:** Divide the measured attenuation (dB) by the cable length (km) and enter the result. Repeat the calculations for both wavelength, 1310nm and 1550nm. If length is measured in feet, divide length by 3,280.84.
- **105% Shipping Record Attenuation:** Multiply the attenuation value obtained from the shipping records by 1.05 and enter the result. Repeat the calculation for both wavelength, 1310nm and 1550nm.
- **Calculated Attenuation < 105% Shipping Record Attenuation:** Compare the calculated attenuation to the 105% shipping record attenuation. If the calculated attenuation is less than the 105% shipping records attenuation, select "pass" to note the individual fiber meets the attenuation requirements, otherwise select "fail" to note the individual fiber does not meet the attenuation requirements.
- **Cable OTDR Test Results:** Verify all fibers meet the attenuation requirements and select "pass," if at least one of the fibers failed the test, select "fail."
- **List any anomaly:** Enter additional information, why the fiber optic cable does not meet the requirements.

ATTENUATION COMPLIANCE

The engineer inspecting the fiber optic installation must:

- Review the completed form and verify the fiber optic cable complies with the attenuation requirements before authorizing installation of the cable.
- Reject the fiber optic cable, if at least one of the fibers does not comply with the attenuation requirements. The spool of fiber optic cable must be replaced, if rejected.
- Inform the contractor of the requirements to test the replacement cable.
- Have a representative from the District Traffic Operations office to complete the name, sign, and date.
- Provide a copy of the signed form to the District Traffic Operations representative and file a copy in Category 58.

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Cable Verification Worksheet
End-to-End Attenuation (Power Meter and Light Source) Testing
And OTDR Testing

<u>Contract No.:</u>	<u>Contractor:</u>
<u>Operator:</u>	<u>Date:</u>
<u>Link Number:</u>	<u>Fiber Number:</u>

<u>Test Wavelength (Circle one):</u>	<u>1310 nm</u>	<u>1550 nm</u>
<u>Expected Location of fiber ends:</u>	<u>End 1:</u>	<u>End 2:</u>

Power Meter and Light Source Test Results:

<u>Power In:</u>	<u>dBm</u>	<u>1A</u>
<u>Output Power:</u>	<u>dBm</u>	<u>1B</u>
<u>Insertion Loss [1A - 1B]:</u>	<u>dBm</u>	<u>1C</u>

OTDR Test Results:

<u>Forward Loss:</u>	<u>dB</u>	<u>2A</u>
<u>Reverse Loss:</u>	<u>dB</u>	<u>2B</u>
<u>Average Loss [(2A + 2B)/2]:</u>	<u>dB</u>	<u>2C</u>

To Be Completed by Contractor

Resident Engineer's Signature:

Cable Link Accepted:

Add to the end of section 87-19.01D(2):

Do not proceed with the testing until authorized and a test plan has been submitted and approved. Perform each test in the presence of the Engineer.

Provide submittal documentation of proposed fiber installer's qualifications prior to any installation and testing activities.

87-19.01D(3) Link Loss Budget (System Gain Margin) Requirement

The installed fiber optic system including all the fiber cable, fiber connectors, patch panels, splices, etc. must meet or exceed the minimum 4 dB system gain margin requirement for each link. Complete the link loss budget (system gain margin) worksheet, including documentation of the calculated system gain margin and the actual system gain margin, to demonstrate meeting or exceeding this requirement for each link.

The calculated system gain margin is determined based on gain and loss values based on cable and component selection and manufacturers specifications. Each link must compute its calculated margin on its own worksheet. If the calculated margin for link is less than the requirement, notify the Engineer in writing and propose a corrective plan to comply with the requirement.

Submit the completed worksheets with calculated system gain margin for authorization.

The actual system gain margin is determined based on data measurements gathered throughout the installation and testing process. Compute the actual margin for each link on its respective worksheet containing its calculated margin. Active network equipment power measurements can be documented through the use of the fiber power meter.

Document the actual system gain margin for each link on the worksheet with the calculated margin for the same link. The actual margin must validate the calculated margin and confirm that each installed link complies with or exceeds the requirement.

Fiber splices must be the fusion type. The mean splice loss must not exceed 0.1 dB per splice. The mean splice loss must be obtained by measuring the loss through the splice in both directions and then averaging the resultant values.

Fiber link connector loss must not exceed 0.4 dB for SM.

87-19.01(D)(4) Fiber Optic Cable Testing

87-19.01(D)(4)(a) General

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

1. Factory test (prior to shipping to job site)
2. Arrival onsite, test before installation (while on the reels at the construction yard)
3. After cable installation, test after breakout and terminations, but before connecting network equipment conduct a full fiber system test.

Demonstrate and document meeting or exceeding the system gain margin requirement under section 87-19.01D(3) for each link in the fiber optic system.

Test the active components after installation. Testing must include personnel, equipment, instrumentation and materials necessary to perform the tests. Notify the Engineer 2 working days before field tests with exact location of test. Test equipment must have current calibration certificate dated within 1 year of the test.

Conduct power meter fiber attenuation and continuity tests in 1 direction with an OTDR on 100 percent of the fiber strands, whether the strands are terminated or not. Performing these tests will require the use of launch and tail/receive cables. Test single mode cables (SM) at 1310 nm and at 1550 nm.

Conduct OTDR tests bi-directionally with an OTDR on 100 percent of the fiber strands, whether the strands are terminated or not. If not terminated, then submit temporary splice/connector (i.e., bare fiber

adapter kit, corning camsplice, etc.) for review and approval prior to testing. Performing these tests will require the use of launch and tail/receive cables. Test single mode cables (SM) at 1310 nm and at 1550 nm.

The OTDR must be:

1. Calibrated by a qualified and certified vendor within 1 year of the test
2. Certified to NIST standards
3. Capable of recording and displaying minimum anomalies of 0.02 dB
4. Capable of inputting test parameters, thresholds and passing criteria
5. Capable of producing and exporting each test trace results with fiber identification, numerical loss values, the date and the operator's name

Conduct power meter and light source tests in 1 direction on 100 percent of the fiber strands, whether the strands are terminated or not. Performing this test will require the use of a launch and tail/receive cables. Test single mode cables (SM) at 1310 nm and at 1550 nm. Conduct these tests under EIA Optical Test Procedure 171.

The power meter and light source machine must be:

1. Calibrated by a qualified and certified vendor within 1 year of the test
2. Certified to NIST standards
3. Capable of testing the required cable components

87-19.01D(4)(b) Factory Test

Before packaging and shipping of the fiber optic cable from the manufacturer's facilities, attenuation testing of 100 percent of the fibers on the cable reel must be completed. Obtain the test results from the manufacturer to verify that the cable complies with the requirements. Reject cables that do not comply with the requirements.

Factory Test results for the reel of cable must include:

1. Fiber identification number and physical characteristics
2. Attenuation test results in total attenuation (dB), average attenuation per unit length (dB/km), and maximum (peak) attenuation per unit length (dB/km)

The test results and data documentation must be:

1. Maintained on file by the manufacturer for a minimum of 3 years
2. Attached to the cable reel in a waterproof pouch
3. Received electronically by you
4. Submitted for review and authorization prior to any further testing or installation

87-19.01D(4)(c) Arrival Onsite Test

When each reel of fiber optic cable arrives at your facilities or on job site, you must physically inspect on delivery, and attenuation test 100 percent of the fibers to confirm that the cable complies with requirements. Record, date, and compare test results for fiber strands with attenuation results from the factory test.

Arrival onsite test data and results for the reel of cable must include attenuation test results and other information for comparison against the factory test results.

Submit test data, results and the comparison with factory test results for review and authorization. Test results comparison must highlight attenuation deviations greater than 5 percent from the factory testing results.

Do not install the cable until the Engineer provides written authorization of test results and reel of cable.

Cable reels with unsatisfactory test results will be rejected. Unsatisfactory reels of cable must be replaced with new reels of cable at your expense. The new reels of cable must be retested through the testing process, starting from the factory test.

87-19.01D(5) Fiber System Test

87-19.01D(5)(a) General

After the complete passive fiber cabling system has been installed, terminated, connected and ready for activation, conduct the fiber system test to confirm that the system complies with specifications. The complete passive system includes installed segments, cabling, splices, terminations, interconnecting parts, components, and system hardware.

The fiber system test includes the following tests:

1. OTDR test
2. Power meter and light source test

Complete the system gain margin worksheet for each link in the fiber optic system to demonstrate the fiber system's conformance to the system gain margin requirement of section 87-19.01D(3). Determine the actual system gain margin for each link using the previously completed worksheets with each link's calculated system gain margin.

Do not activate the fiber optic cable system until the Engineer provides written authorization of test results and system gain margin worksheets. Include the completed and approved worksheets in the system as-built documentation.

If any part of the fiber system test results fails to comply with the specification requirements, the fiber optic cable will be rejected. Remove the unsatisfactory segments of cable and replace with a new segment of cable at your expense. Retest the new segment of cable through the testing process, starting from the factory test.

The removal and replacement of an unsatisfactory segment of cable must be a single contiguous length of cable connecting 2 splices, 2 connectors, or a splice and a connector. Removal and replacement of only the unsatisfactory section within a contiguous length of cable is not allowed. Introducing unplanned splices for removal and replacement is not allowed.

87-19.01D(5)(b) OTDR Test

OTDR test 100 percent of fiber strands in fiber links, from end-to-end. Test data and results must include attenuation traces, event maps and tables of test results and other information for comparison against prior test results.

Include splice test data and results for each splice. The data and results must include splice loss (dB), in each direction of transmission through the splice, and the total bi-directional average attenuation. Provide connector insertion losses and reflectances for all terminated fibers along with an assessment of every flagged event and failure within the fiber run.

Submit test data, results and comparison for authorization. Test results comparison must highlight attenuation deviations greater than 5 percent.

87-19.01D(5)(c) Power Meter and Light Source Test

Test 100 percent of the fiber strands in fiber links, from end-to-end, with a power meter and light source. The data and results of this test will be used to determine the actual system gain margin.

Use the power meter and light source to test the following:

1. Active Components:
 - 1.1. Test each transmitter for transmitter average output power (dBm)
 - 1.2. Test each receiver for receiver sensitivity (dBm)
2. Interconnecting Parts:
 - 2.1. Test each ST termination for insertion loss (dB)
 - 2.2. Test each single mode terminations for return reflection loss (dB)
3. End-to-End:
 - 3.1. Test each link from pigtail end to jumper lead end to assure continuity and overall attenuation loss values (dB)

Tabulate, sign and date, the final test results. Attach a copy of the tabulated results in a plastic envelope to each assembled FDU, maintained on file by you and be submitted for record.

Insertion loss and return reflection loss must comply with the loss requirements, and must be recorded on a tag attached to the pigtail or jumper.

Once the interconnecting assembly is complete, visually verify that tagging, including loss values, is complete.

87-19.01D(6) System Acceptance and Handover

Fiber optic cable systems must be constructed, tested, and verified for acceptance and handover to City and the Engineer according to work parts as specified.

System acceptance and handover must be coordinated and completed with City and the Engineer. Complete a field site inspection for each system acceptance and handover with the Engineer and City, with a checklist to verify that the system complies with the plans and specifications. The checklist must include the following elements:

1. Fiber optic cable
 - 1.1. Documentation demonstrating passing of all required tests
 - 1.2. Fiber optic cable splice charts and diagrams
 - 1.3. Fiber optic cable port connection diagram
 - 1.4. Documentation of revisions or modifications to plans and specifications
 - 1.5. The fiber optic splice vaults, fiber optic pull boxes, conduits, pull boxes, pull tapes, innerducts, foundations, standards, grounding, wireless system assemblies, hubs, signal heads, signal controllers, battery backup system, City Telecom room connection, and cabinet foundation pads are constructed as shown on the project plans.
 - 1.6. Communication and power conduits are installed at cabinet foundation pads as shown on the project plans. Pull tape and tracer wire is provided for each conduit.
 - 1.7. Conduits, pull boxes, and bending radiuses are as shown and as specified. Confirm communication cable paths are not required to turn sharp turns at any location.
 - 1.8. Pull tapes are provided for conduit runs. Check ease of movement at each conduit run to verify conduit is not crushed.
 - 1.9. Pull boxes with Penta head bolts are installed as shown.
 - 1.10. Verify pull box lids have correct marking/text designation as shown.
 - 1.11. Verify fiber optic cable have correct label identification as specified.
 - 1.12. A grounding electrode is installed for all power pull box and fiber optic splice vaults.
 - 1.13. New conduits are trimmed inside the pull box or vault. The bell ends or metallic busing are installed. Existing Conduits are modified as required to have the same requirements as the new conduits including conduit sweep, conduit termination, and bell end installation.
 - 1.14. New and existing conduits are sealed with a sealing plug after the fiber optic cable installation.
 - 1.15. Fiber optic splice vaults are constructed as shown including the installation of the rack and hook assembly.
 - 1.16. The Fiber optic slack is provided in each fiber optic pull box, fiber optic splice vault, and cabinets as shown on the project plans.
 - 1.17. Provide cable management to neatly bundle, arrange, or firmly lace all wiring and cabling.
 - 1.18. Maintaining the minimum loading and unloading bending radius for the fiber optic cable at all the times and locations.
 - 1.19. Provide boring depth profile as specified in plans.
 - 1.20. The fiber optic splice enclosure is constructed as shown on the project plans.
 - 1.21. PDU, UPS, External batteries, FDU, Fiber patch cords, type 2 surge protection, and Fiber Transceiver are constructed as shown on the project plans.
 - 1.22. Ethernet switches, Cellular Gateway, NEMA 3R Enclosure, and Central Management System are constructed as shown on the project plans.
 - 1.23. The Central Management System is fully installed and tested and in operation.

- 1.24 The Central Management System is communicating with all new and existing infrastructure as intent by the project plans.
2. Hub cabinet assemblies
 - 2.1. Verification of functional requirements of its components
 - 2.2. Verification of compliance with the electrical requirements
 - 2.3. Conduits are installed into foundation within 9-by-15-inch conduit area as shown in the Revised Standard Plan ES-3C (Controller Cabinet Foundation and Pad Details). Pull tape is provided inside each conduit.
 - 2.4. Number and size of conduits serving cabinet foundation are verified under plans.
 - 2.5. Cabinet foundation dimensions are built as shown in the Revised Standard Plan ES-3C (Controller Cabinet Foundation and Pad Details).
 - 2.6. Anchor Bolts are placed correctly under cabinet hole locations as shown in the Revised Standard Plan ES-3C (Controller Cabinet Foundation and Pad Details).
 - 2.7. Grounding electrodes are installed at each cabinet foundation location.

Provide necessary traffic control and closures for supporting acceptance and handover activities.

Testing of fiber optic cable must be completed and accepted by the Engineer and City of Manteca before system and network testing, acceptance, and handover.

Submit a detailed schedule and checklist for system acceptance and handover activities for authorization 30 days before start of planned acceptance and handover activities.

Unaccepted portions of the system must be corrected and re-verified for acceptance and handover. Complete re-verification within completion date as specified. No additional compensation paid for correcting and re-verifying for acceptance and handover.

Maintain and secure system until system acceptance and handover is complete. Damaged, incomplete, or malfunctioning system or system components must be corrected to comply with plans and specifications before conducting system acceptance and handover activities.

Provide supporting documentation, including manufacturer documentation, as-builts, maintenance manuals and cut-sheets.

Replace Item 2 and Item 3 of the first paragraph of section 87-19.02B with:

2. Be a minimum of 48 inches in length by 30 inches in width by 34 inches in height nominal inside dimensions for box type.
3. Not used.

Delete Item 3 of the third paragraph of section 87-19.02B

Add to the end of section 87-19.02B

4. Have hold down bolts or cap screws and nuts and must be brass, stainless steel or other non-corroding metal material.
5. Have Penta bolts and must be with a Penta Head 1/2-13UNC and must have a thread lock material.
6. Have markings CITY OF MANTECA FIBER OPTIC.

Conduits must not protrude more than 2 inches inside the vault and must enter the vault at about 20 degrees in both the vertical and horizontal directions.

Pull box must be level with surrounding grade accounting for final finished grade.

Provide a minimum of 100 feet slack for each fiber optic cable at each vault. Divide the slack equally on each side of the splice enclosure.

Add to the end of section 87-19.02C:

7. Comply with ITU-T G.652.D

Detailed specifications for Class IVa dispersion un-shifted, low water peak, SM optical fibers as described by TIA-492-CAAB as shown in the following table:

FO Single-mode Cable

Property	FOTP(s)	Test Conditions	Requirement
Cladding diameter (µm)	45 or 48 or 176		125±0.7
Cladding non-circularity (%)	45 or 48 or 176		< 1.0
Core/cladding concentricity error (µm)	45 or 176		< 0.5
Coating diameter (µm)	163 or 173		250±15
Coating/cladding concentricity error (µm)	163 or 173		< 20
Tensile strength proof test (GPa)	31		0.69
Coating strip force (N)	178	30 mm length	1.0 min, 9.0 max
Attenuation coefficient (dB/km)	78 or 61 or 120	@ 1310 nm	0.35
	78 or 61 or 120	@ 1500 nm	0.25
Mode field diameter (µm)	164 or 174 or 191	@ 1310 nm	9.1±0.4
		@ 1500 nm	10.4±0.5
Point discontinuity (dB/pt)	59 or 78		<0.05

FOTP: Fiber optic test procedure(s) as defined by ANSI TIA/EIA standards

Provide fiber optic cable that has been tested in accordance and compliance with TIA-455 as specified in ANSI/ICEA S-87-640 part 7 and part 8, resulting in no permanent change in attenuation, no signs of water leakage, no mechanical damage to the cable, and no adverse effects to the jacket or fibers. Provide a statement of compliance to TIA-455 testing from the fiber cable manufacturer.

FO cable must include the following components:

1. Fiber
2. Central strength member
3. Color coded buffer tubes
4. Outer strength member
5. Core wrap
6. Ripcord

7. Outer jacket

The optical fiber must be made of glass and consist of a doped silica core surrounded by concentric silica cladding. All fibers in the buffer tube must be usable fibers, and must be free of surface imperfections and inclusions. The required fiber grade must reflect the maximum individual fiber attenuation, to guarantee the required performance of each fiber in the cable.

The optical fiber coating must be a dual layered, UV cured acrylate. The coating must be mechanically or chemically strippable without damaging the fiber. The cable central strength member which functions as an anti-buckling element must be a glass reinforced plastic rod with similar expansion and contraction characteristics as the optical fibers and buffer tubes. Apply a linear overcoat of low density polyethylene to the central member to achieve the optimum diameter to provide the proper spacing between buffer tubes during stranding.

The cable buffer tubes must be loose buffer tubes and provide clearance between the fibers and the inside of the tube to allow for expansion without constraining the fiber. The fibers must be loose or suspended within the tubes and must not adhere to the inside of the tube. Each buffer tube must contain 6 or 12 fibers. The loose buffer tubes must be stranded around an all dielectric central member.

Apply a flooding compound or material to the interstitial cable core to prevent water migration and penetration.

Buffer tubes must contain a water blocking swellable polymer yarn or tape to provide water blocking capabilities.

The optic fibers and buffer tubes must also be color coded with distinct and recognizable colors complying with TIA-598-D and the following table:

Color Coding

1. Blue (BL)	7. Red (RD)
2. Orange (OR)	8. Black (BK)
3. Green (GR)	9. Yellow (YL)
4. Brown (BR)	10. Violet (VL)
5. Slate (SL)	11. Rose (RS)
6. White (WT)	12. Aqua (AQ)

Color must be stable during temperature cycling and aging. Colors must not fade or smear onto each other.

The cable must contain at least 1 ripcord under the jacket for easy sheath removal.

The cable outer jacket must be smooth, concentric, free of holes, splits, and blisters and must be medium or high-density polyethylene (PE), or medium density cross-linked polyethylene with minimum nominal jacket thickness of 40.0 ± 3 mil. Jacketing material must be applied directly over the tensile strength members and flooding compound and must not adhere to the aramid strength material. The polyethylene must contain carbon black to provide ultraviolet light protection and must not promote the growth of fungus.

The cable outer jacket or sheath must have clear, distinctive and permanent markings showing the manufacturer's name, the words "Optical Cable", the number of fibers, "SM", year of manufacture, and sequential measurement markings every 3 feet. The actual length of the cable must be within -0/+1 percent of the length marking. The marking must be in a contrasting color to the cable jacket. The height of the marking must be approximately 0.1-inch.

Package the completed cable for shipment on reels. The cable must be wrapped in weather- and temperature-resistant covering. All fibers on the reel must have protective end-caps to prevent the ingress of moisture into the end of the cable.

Both ends of the cable must be securely fastened to the reel. Six feet of cable length on each end of the cable must be accessible for testing.

Each cable reel must have a durable weatherproof label or tag showing the manufacturer's name, the cable type, the actual length of cable on the reel, your name, the contract number, and the reel number. Provide a shipping record in a weatherproof envelope showing the above information and include the manufacturer's name, date of manufacture, cable type and characteristics length of cable on reel, contract number, factory test results, cable identification number and any other pertinent information.

The minimum hub diameter of the reel must be at least 30 times the diameter of the cable. The FO cable must be in 1 continuous length per reel with no factory splices in the fiber. Each reel must be marked to indicate the direction of rolling to prevent loosening of the cable.

The permanent Post-Installation label tags for fiber optic cables must be constructed of stainless steel.

Replace Item 1 of the first paragraph of section 87-19.02D with:

1. Be sized to accommodate the maximum number of splices as called out on the plans and to fit inside fiber optic splice vaults without exceeding the minimum fiber cable bend radius requirements.

Replace Item 3 of the first paragraph of section 87-19.02D with:

3. Accommodate a minimum of 12 internal splice trays. Protect each fusion-spliced fiber by housing the spliced fiber within the splice tray with a minimum of 1.5 in (40 mm) reinforced, heat shrink, and waterproof sleeves.

Add to the end of section 87-19.02D:

8. Be rodent proof, water proof, and re-enterable.
9. Comply with latest Telcordia GR-771 requirements for splice enclosure.
10. Accommodate a minimum of 2 express-through trunk cables and up to 6 drop cables.
11. Suitable for "butt" or "through" cable entry configurations.
12. Place no stress on finished splices within the splice trays.
13. Suitable for a temperature of -40 to +70 degrees C.
14. be bonded and grounded to a ground rod in each fiber optic splice vault.
15. be complete with enclosure case, splice trays, brackets, clips, cable ties, and sealant, as needed.

The enclosure must fit into the fiber optic splice vault and must leave sufficient space for routing of the fiber optic communication cables, without exceeding the minimum bending radius of any cable.

The outer closure must protect the splices from mechanical damage, must provide strain relief for the cable, and must be resistant to salt corrosion.

The outer closure must be flash-tested at 14.9 psi.

The inner closure must be of metallic construction. The inner closure must be compatible with the outer closure and the splice trays and must allow access to and removal of individual splice trays. The splice trays must be compatible with the inner closure.

Each splice must be individually mounted and mechanically protected in the splice tray.

The fiber optic splice enclosure must be model SCF canister type from Corning/Siecor, model Fiber Dome from 3M, or Dome Closures from Coyote, or approved equal.

Add to the list in the 1st paragraph of section 87-19.02H:

4. Labeled as shown including Call Before You Dig phone number as shown.

Add to the list in the 1st paragraph of section 87-19.02I:

3. LC and as shown. Provide connectors that comply with TIA-568-B.3 and TIA-604-10B for type LC.

Add to the end of section 87-19.02:

87-19.02J Conduit Sealing Plugs

Conduit sealing plugs must be installed at all existing and new conduit ends where the fiber optic cable is installed.

Conduit sealing plugs must be removable and reusable, and be the split type that allows installation or removal without removing cables.

Sealing plug that seals an empty conduit must have an eye or other type of capturing device (on the side of the plug that enters the conduit) to attach to the pull tape.

87-19.02K Conduit Concrete Backfill

The concrete backfill for the installation of fiber optic conduits in trench must be a medium to dark, red color to clearly distinguish the concrete backfill from other concrete and soil. The concrete must be pigmented by the addition of commercial quality cement pigment to the concrete mix. The red concrete pigment must be LM Scofield Company; Orange Chromix Colorant; Davis Colors; or approved equal. The concrete must conform to section 90-2.

87-19.02L Warning Tape

The warning tape must comply with section 86-1.02D(3).

Warning tape must be furnished and installed in a trench over new communication conduits for fiber optic cable as shown.

The printed warning must not be removed by the normal handling and burial of the tape and must be rated to last the service life of the tape.

The warning tape must have a printed message that reads: CAUTION: CITY OF MANTECA FIBER FACILITIES BELOW

87-19.02M Fiber Optic Pull Box

Fiber optic pull boxes must have penta bolt locking mechanism capability as a theft deterrent. Penta bolts must be a Penta Head 1/2-13UNC and must have a thread lock material.

Conduits must not protrude more than 2 inches inside the pull box and must enter the pull box at about 20 degrees in both the vertical and horizontal directions.

Nontraffic fiber optic pull box must comply with specifications for nontraffic pull boxes and no. 6(E) pull boxes in section 86-1.02C.

Traffic fiber optic pull box must comply with specifications for traffic pull boxes and no. 6(T)(E) pull boxes in section 86-1.02C.

Pull box must be level with surrounding grade accounting for final finished grade. The access cover must have markings CITY OF MANTECA FIBER OPTIC.

Provide a minimum of 50 feet slack for each fiber optic cable at each fiber optic pull box.

Add after the first paragraph of section 87-19.03C:

The certified installer must have at least 5 years of experience in the installation of fiber optic cables, including fusion splicing, and the terminating and testing of single mode fiber optic cables. Installer must have successfully performed and tested 2,000 fusion splices within the last 5 years. Required experience includes installation of fiber optic connectors, inspection of fiber optic strands via optical time-domain reflectometer (OTDR) devices, and completion of end-to-end attenuation tests using power meter/light source equipment.

Installation procedures of fiber optic cable must comply with manufacturer's instructions. Submit the manufacturer's instructions procedures for pulling fiber optic cable and the fiber installer's qualifications at least 20 working days before installing cable.

The minimum bend radius must be at least 20 times the outside diameter (OD) of the cable under load. The cable grips for installing the FO cable must have a ball bearing swivel/pulling eye to prevent the cable from twisting during installation.

Do not exceed the maximum pulling tension rating of the fiber cable. Consult with cable manufacturer for guidelines on tension ratings and lubricant use. Use a breakaway swivel that is rated at the proper pulling tension of the fiber. The swivel must break before reaching the maximum tension rating of the fiber.

Do not install the cable until performing mandrel test for all existing empty power and communication conduits that you will use for this project as shown on the project plans. Confirm that the existing conduits are suitable for installing fiber optic cables and will not cause any damage to the operation of the fiber optic cables. Provide passing documentation of mandrel test completion to the Engineer and City.

Add the following table to the table in 13th paragraph of section 87-19.03C:

Fiber Optic Cable Identification

Sequence order	Description	Code	Numbers of Characters
Before 1	Cable Ownership	Manteca	7

Add at the end of section 87-19.03D:

Field splices must be done either in splice vaults or cabinets as shown. Splices in splice vaults must be done in splice trays and housed in splice enclosures. Splices in cabinets must be done in splice trays and housed in Fiber Distribution Units.

Fiber splices must be the fusion type. The mean splice loss must not exceed 0.1 dB per splice. The mean splice loss must be obtained by measuring the loss through the splice in both directions and then averaging the resultant values.

Fusion splicers and cleavers must be recently calibrated as recommended by the equipment manufacturer. Fusion splice technicians must be experienced and certified by the equipment manufacturer.

Use the mid-span access method to access the individual fibers in a cable for splicing to another cable as shown. Use cable manufacturer's instructions and approved tools when performing a mid-span access. Only the fibers to be spliced may be cut. Take measures to prevent damage to buffer tubes and individual fibers not being used in the mid-span access.

Loop the individual fibers 1 full turn within the splice tray to avoid micro bending. Maintain a 2-inch minimum bend radius during installation and after final assembly in the fiber optic splice tray. Each bare fiber must be individually restrained in the splice tray. The optical fibers in buffer tubes and the placement of the bare optical fibers in the splice tray must not exert discernable tensile force on the optical fiber.

Protect splices with a metal reinforced thermal shrink sleeve.

You are allowed up to 2 unplanned fiber strand splices for a fiber optic cable between its termination points without penalty. You will be assessed a fine of \$400.00 for each additional unplanned fiber strand splice.

Submit a written request to the Engineer and City for authorization for using unplanned splice. Do not proceed with unplanned splice until written authorization is received from the Engineer and City. Perform unplanned fiber strand splices under the Cable Splicing requirements.

If fiber strand of a fiber optic cable between its termination points requires more than 3 unplanned splices, then replace the entire length of fiber optic cable between its termination points at your expense.

Replace section 87-19.04with:

87-19.04 PAYMENT

Full compensation for "Fiber Optic Cable System" shall be considered as included in the price paid for the equipment listed above and in the following bid items "Fiber Testing", "Furnish and Install 12-Strand SMFO Cable", "Furnish and Install 96-Strand SMFO Cable", "Furnish and Install 144-Strand SMFO Cable", "Furnish and Install 1-18 AWG Tracer Wire", "Furnish and Install Splice Vault", "Furnish and Install Splice Closure", "Furnish and Install 12-Strand Fiber Distribution Unit", "Furnish and Install 144-Strand Fiber Distribution Unit", and no additional compensation shall be allowed therefor. Refer to Section Section 9 for full description.

Add 87-22 332LS CABINET AND FOUNDATION

87-22.01 GENERAL

Ground-mounted cabinets shall be Caltrans Type 332LS and shall conform to the requirements of the Caltrans TEES.

Cabinet shall meet Caltrans requirements for Type 332L Cabinet with the addition of the requirements below:

1. Touch Safe Cabinet The Model 332LS Cabinet uses the same output file and PDA as the Model 342LX cabinet which was designed as touch safe.
2. Redesign (SPA) The Service Panel Assembly (SPA) was redesigned in Errata No.4 to accommodate the new BBS design. It includes a 7-position terminal block accommodating the 5 conductor BBS interconnect.
3. Aux-RR, Model 520 The Model 332LS cabinet includes the Aux-RR as standard equipment to accommodate the new Standard for Traffic Signal Preemption at Railroad Crossings.
4. LED Lighting The 332LS cabinet includes LED Lights as a standard feature.
5. Powder Coated Cabinet The Model 332LS cabinet is powder coated with an Aluminum finish, Federal Standard 595C, #17179. This was done to get rid of anodizing which is known to be harmful to the environment and employees.
6. Circuit Breaker Guard The Service Panel Assembly (SPA) and service Power Distribution Assembly (PDA) now include a switch guard for the circuit breaker switches. This will help prevent the switch from being flipped accidentally.
7. Easy Access Fan Cover The Model 332LS includes an easy-access and removal Fan Cover. This will allow for maintenance to easily replace Fans as they failed.
8. 120 V AC Removed from Input File The 120VAC power is removed from the Input File as part of the touch-safe requirements.
9. Modified Output File #1LX and PDA #2LX The 332LS Cabinet includes the Output File #1LX and PDA #2LX which were designed to be touch-safe. This comprises the requirement for a touch-safe cabinet.

87-22.02 PAYMENT

Full compensation for "332LS Cabinet and Foundation" shall be considered as included in the price paid for "Furnish and Install 332LS Cabinet and Foundation" and no additional compensation shall be allowed therefor. Refer to Section 9 for full description.

Add 87-23 332LS HUB CABINET AND FOUNDATION

87-23.01 GENERAL

Ground-mounted hub cabinets shall be Caltrans Type 332LS and shall conform to the requirements of the Caltrans TEES with the following modifications under Section 87-23.02.

87-23.02 NETWORK EQUIPMENT INSIDE THE HUB CABINETS

87-23.02A General

The following networking equipment shall be installed in the Hub Cabinets at the intersections of Yosemite Avenue at Union Road and Yosemite Avenue at South Main Street.

87-23.02B ETHERNET SWITCH (HUB)

Two hub Ethernet switches shall be installed at each hub location. Ethernet switch details can be seen in **Section 87-11**.

87-23.02C 12-STRAND FIBER DISTRIBUTION UNIT

12-Strand Fiber Distribution Unit shall be installed at each hub location as shown. It shall meet Caltrans Standards Specifications. Equipment shall be compatible to be mounted on standard 332LS cabinet. Fiber distribution unit must be Panduit or Corning or approved equal.

87-23.02D 144-STRAND FIBER OPTIC DISTRIBUTION UNIT

Two 144-Strand Fiber Distribution Unit shall be installed in the hub cabinet at the intersection of Yosemite Avenue and Union Road as shown. One 144-Strand Fiber Distribution Unit shall be installed in the hub cabinet at the intersection of Yosemite Avenue and South Main Street as shown. Fiber optic distribution unit shall meet Caltrans Standards Specifications.

The Hub fiber optic distribution units shall meet the following requirements:

1. Have a front cover or Plexiglass shield to prevent contact with the front side of the connector panels.
2. Each patch panel shall have 12 LC connector ports.
3. Shall have a capacity of 144 fiber strands with 12 patch panels/splice trays.
4. Shall be 4 rack units.
5. Fiber distribution unit (FDU) must be EIA-310 standard rack mount type as shown.
6. FDU must consist of a connector module housing (CMH) and a splice module housing (SMH). The CMH must have enough connection panels to handle the associated fiber terminations for all fiber strands in the fiber optic cable as shown. The SMH must have the capacity to secure and store the required splice trays and break out cables.
7. Connector module housing (CMH) must have a Lexan front cover so as not expose fiber optic connections. Each connection panel must have a minimum of 6 coupler capacity and panel positions must be filled with couplers. Spare couplers must have dust covers on both sides. Secure each connection panel to the CMH frame with 2 plastic push snap fastener on each side of the panel.
8. Splice module housing (SMH) must have enough splice trays to handle the transition splices between the field cables and their respective breakouts. Cable accesses to the SMH must have grommets. SMH must have a rear metal cover of the same gauge and color as the remainder of the FDU rack.

The front and back covers of the FDU must be retractable or removable to facilitate internal installation. FDUs must have cable clamps to secure fiber optic cables to the chassis.

Pigtails must be of simplex (one fiber) construction, in 900 µm tight buffer form, surrounded by aramid for strength, with a PVC jacket with manufacturer identification information and a normal outer jacket with diameter of 0.12 inch.

Single-mode cable jackets must be yellow in color.

Pigtails must be factory terminated and tested and at least 3 feet in length.

Splice trays must have brackets to spool incoming fibers a minimum of 2 turns.

Fiber distribution unit must be Panduit or Corning or approved equal

87-23.02E POWER DISTRIBUTION UNIT

The power distribution unit shall meet the following standards:

1. Shall be a minimum of APC PDU, basic, 20A, 120 V or approved equal.
2. Shall be standard 19" rack-mountable
3. Shall have a minimum of 8 outlets

Each Hub cabinet should have two (2) Power Distribution units

87-23.02F UNINTERRUPTIBLE POWER SUPPLY ASSEMBLY (UPS) & EXTERNAL BATTERIES

See **Section 87-10** for details.

87-23.02G TYPE 2 SURGE PROTECTION

Type 2 Surge Protection shall be Model DS72US-120S or approved equivalent.

Shall meet SEC code requirements.

Provide UL listed surge protection devices according to the UL 1449.

Provide Backhaul Hub cabinet with surge protection at the service entrance meeting the following SPD requirements:

1. Provide a Type 2 SPD for the Hub cabinet's main AC power input on the load side of the Hub cabinet circuit breaker.
2. Provide SPD that is listed per UL 1449 4th edition, open-type 1, or latest edition. The SPD must be listed by NRTL.
3. Provide SPD that meets the following minimum performance requirements:
 - 3.1 Posted UL.com under certification with 20kA I-nominal rating.
 - 3.2 Short circuit current rating (SCCR) that equals or exceeds 100 kA.
 - 3.3 Does not exceed the VPR and MCOV requirement listed in the table.
 - 3.4 Maximum surge current rating (Imax) that equals or exceeds 50 kA per mode and 100 kA per phase (sum of L-N plus L-G).

VPR and MCOV Surge Requirements

	L-N	L-G	N-G
VPR	800 V	1,500 V	1,200 V
MCOV	150 V	150 V	150 V

4. Provide SPD that has no leakage current to ground.
5. Provide SPD that supports bi-directional operation.
6. Provide SPD with response time no greater than five nanoseconds for individual protection modes.
7. SPD designed to withstand maximum continuous operating voltage (MCOV) of not less than 115 percent of nominal RMS voltage.
8. Include directly connected thermally protected MOVs.
9. Provide pluggable SPD modules.
10. Provide SPD that complies with IEEE C62.45, C62.41.1 and C62.41.2 rated for NEMA TS 2 temperature and humidity requirements.
11. Provide SPD enclosure with a NEMA 4 rating.
12. Provide SPD that can be either wall/panel or DIN rail mounted.
13. Provide SPD that are equipped with a visual indicator for each MOV and remote alarm monitoring.

87-23.02H Power Distribution Assembly

PDA shall include the following equipment:

Ground Bus

Neutral Bus

Terminal Blocks with 3 positions.

Main circuit Breaker that shall be 20A , 120V 1P, UL listed, and have an interrupt capacity of 5,000 amperes and insulation resistance of 100 MΩ at 500 V(dc).

Duplex receptacle that is 20A and Non-GFCI

All conductors between the service breaker, cabinet circuit breaker, ground bus, neutral bus, ground rod, and duplex receptacle shall be No. 8.

Grounding Rod

PDA shall be grounded based on manufacturer's requirements and Caltrans Standards Plans and Specifications.

Contractor is responsible for supplying all equipment for a fully functional hub cabinet as shown on the plans. PDA Recessed back panel that is 7RU maximum.

Contractor shall confirm all items above as part of the Hub Cabinet submittal to the City Engineer prior to procurement.

87-23.02I CELLULAR GATEWAY

Cellular Gateway shall be Opengear Resilience Gateway Model ACM7004-5-L or approved equivalent.

The cellular gateway shall provide a communication link between the Hub Cabinets and the City's existing cellular communication devices.

Device shall have external detachable antennas.

Device shall operate have an operating temperature range of -10° F to 140° F

87-23.02J FIBER PATCH CORDS

The contractor shall furnish single-mode LC jumper cables, 2 meters in length to provide connectivity between fiber optic distribution units and ethernet switches.

Patch cords must be of simplex or duplex design. Duplex jumpers must be of duplex round cable construction, and must not have zipcord (siamese) construction. Terminate the patch cord with LC connectors at both ends. The fiber strands must comply with specifications for fiber optic cable. Patch cords must be at least 6 feet in length, sufficient to avoid stress and to provide orderly routing. The outer jacket of duplex patch cords must be colored yellow. The 2 inner simplex jackets must be color coded white and slate, respectively, to provide easy visual identification for polarity.

Provide connectors that comply with TIA-568-B.3. Provide connectors that comply with TIA-604-10B for type LC. Test connectors according to Telcordia GR-326-CORE. Provide connectors that are factory-assembled and tested. No field installed connectors are permitted. Provide industry standard approved connector for optical fiber that meets or exceeds the applicable provisions of TIA-455-X related to fiber optic connectors. Connector Insertion loss must not exceed 0.4 dB.

87-23.03 PAYMENT

Full compensation for "332LS Hub Cabinet and Foundation" and all relevant equipment listed above shall be considered as included in the price paid for "Furnish and Install 332LS Hub Cabinet and Foundation", "Furnish and Install Ethernet Switch(Hub)", "Furnish and Install 144-Strand Fiber Distribution Unit", "Furnish and Install Power Distribution Unit", "Furnish and Install Uninterruptible Power Supply Assembly", "Furnish and Install Type 2 Surge protection", "Furnish and Install External Batteries", "Furnish and Install Cellular Gateway", "Furnish and Install Fiber Patch Cords", "Furnish and Install 12-Strand Fiber Distribution Unit", and no additional compensation shall be allowed therefor. Refer to Section 9 for full description.

Add 87-24 CITY TELECOM ROOM FIBER INSTALLATION

87-24.01 GENERAL

This section includes a description of requirements set forth on the Contractor to provide a fiber connection into the city telecom room. The details for this installation can be seen in the plan set.

All work within and in proximity of the City Telecom Room shall comply with the California Buildings Standard Code.

Notify Engineer 15 days before scheduling any work. Schedule work within the hours shown in the following table:

Location	Times of operations, except on legal holidays
City Telecom Room	8:00 am to 6:00 pm, Monday to Thursday

Do not block any access. Maintain a neat workspace. Access only hardware, electronics, and peripheral equipment necessary to perform the work.

87-24.02 EXISTING SERVER RACK EQUIPMENT

87-24.02A GENERAL

This section includes a description of requirements set forth on the Contractor to provide a complete equipment rack to hold all of the equipment shown on the plans in the City Hall Telecom Room.

87-24.02B SERVER RACK CABLE ASSEMBLY

Provide horizontal crossover cable manager at the top of each relay rack, with a minimum height of two rack units each.

Contractor shall ensure proposed Cable Assembly shall fit existing server rack dimensions and room limitations.

87-24.02C EQUIPMENT ON SERVER RACK

87-24.02C(1) 12-STRAND FIBER DISTRIBUTION UNIT

Shall meet Caltrans Standards Specifications. Equipment shall be compatible with server rack to be mounted on standard 19" rack. Fiber distribution unit must be Panduit or Corning or approved equal.

87-24.02C(2) 144-STRAND FIBER DISTRIBUTION UNIT

Refer to section 87-23.02D of this special provisions.

87-24.02C(3) ETHERNET SWITCH (TELECOM ROOM AND HUBS)

One hub Ethernet switch shall be installed on the server rack. Ethernet switch details can be seen in **Section 87-11**.

87-24.02C(4) UNINTERRUPTIBLE POWER SUPPLY ASSEMBLY(TELECOM ROOM)

87-24.02C(4)(a) GENERAL

This section includes a description of requirements set forth on the Contractor to provide a complete operational online double conversion uninterruptible power supply assembly (UPS) and power conditioner system. The UPS and power conditioner system shall provide power regulation and battery service to all new equipment installations and be retrofitted for all existing equipment. This section references only the UPS assemblies that will be installed inside of the Telecom Room. The Hub Cabinets will have a separate UPS assembly which can be seen in **Section 87-10**.

The UPS assemblies that will be installed inside of the Telecom Room shall be APC Smart-UPS Line interactive, 1000VA, Lithium-ion, Rack, 2U, 120V, 6x NEMA 5-15R outlets, SmartConnect Port+Network Card, Short Depth, AVR or approved equivalent.

The UPS System shall be a true on-line, solid state, microprocessor-controlled power conditioner and Uninterruptible Power supply Assembly (UPS) rated at minimum of 1000 VA. The system shall continuously regenerate and condition the AC sine wave, such that 100% of the power to the load, whether on utility or batteries, is generated by the on-board inverter. It shall be an "On-line, Double Conversion UPS System" meaning that the utility power shall be converted to DC and then converted back to 120 VAC, 60HZ.

Unit shall be capable of on-site programming without the uses of attached computers.

On-line technology shall be supported and 100% of the load shall flow through the inverter 100% of the time to isolate and protect the attached equipment.

Power connection shall be made to the front or back of the UPS chassis to support NEMA or rack Mounted cabinetry.

The system shall utilize Online Double Conversion technology.

The UPS shall be capable of providing continuous, fully conditioned and regulated sinusoidal (AC) power to selected devices such as modems, communication hubs, NTCIP adapters and communication equipment.

Up to the maximum rating, the UPS shall be capable of supporting all system components, regardless of power factor rating.

Upon loss of utility power the UPS shall switch to battery power. In cases of UPS failure, while on utility, the UPS will auto-bypass and remain in that mode until repaired. Should batteries deplete, while on batteries, the unit will auto-shutdown and return to normal operating mode once the utility power is restored.

The By-pass switch shall enable removal and replacement of the UPS without shutting down the traffic control system (i.e. “hot swap” capability). The UPS shall support generator input without going to batteries.

The UPS system shall be capable of “cold starting”, starting when no utility AC is available, i.e. starting while on batteries.

To facilitate emergency crews and police activities, the UPS shall be compatible with the police panel functions.

The UPS System shall deliver 120 V ac output, +/- 3%, when the AC input is between 75 to 155 Vac without going to batteries.

The 1000Va system shall support power loads to 800 continuous watts through the full NEMA temperature range of 0° to + 40° C while on utility or battery power.

The 1000Va Inverter chassis shall not exceed 36 lbs in weight when fully configured to facilitate ease of installation or repair removal.

The 1000Va Inverter chassis shall be manufactured from aluminum and include a fan access panel for removal of fans without removing top cover.

The inverter system shall be a dual conversion, on-line system.

87-24.02C(4)(b) DESCRIPTION

The UPS System shall consist of three major components, the Electronics Module, the Manual By-pass Switch, and the Battery System.

The Electronics Module:

1. True sine wave, micro Processor controlled high frequency inverter utilizing IGBT technology.
2. A three-stage, temperature compensated, battery charger.
3. Local and remote control of UPS functions.
4. Local and remote communications capabilities.
5. Utility By-pass Switch for by-passing the UPS for repair or removal.

The Bypass Switch Module:

1. The UPS shall incorporate an automatic, internal safety bypass capability and a manual Bypass Switch module that contain a manual switch and a terminal strip for input and output power connections.
2. An optional interface connector shall be available that allows an external generator or vehicle inverter to supply utility power when commercial utility has failed.
3. The UPS shall supply 120Vac, 60Hz, True Sinewave power when connected to either a generator or digital inverter power system in addition to maintaining the 3 stage battery charging system.

The Battery System:

1. The batteries shall be internal and 79W rated.

87-24.02C(4)(c) MOUNTING/CONFIGURATION

Mounting method for the UPS shall be rack-mounted.

Cabinet Style: mounting method shall be Rack-mount for UPS. Rack-mount shall fit 19” EIA rack.

87-24.02C(4)(d) ELECTRICAL SPECIFICATIONS

Input Specification:

Nominal Input Voltage 120 VAC, Single Phase

Efficiency at Full Load 75 VAC to 155 VAC

Input Frequency	50 or 60 Hz (+/- 5%)
Input Configuration	3 Wire (Hot, Neutral & Ground)

87-24.02C(4)(e) PHYSICAL SPECIFICATIONS, UPS ELECTRONICS MODULE

Dimensions: Width = 17.24", Depth = 12.52", Height = 3.39"

Weight: 36 lbs

87-24.02C(4)(f) ENVIRONMENTAL SPECIFICATIONS

The UPS shall meet or exceed NEMA temperature standards from 0° to + 40° C.

The UPS shall be field proven to meet or exceed NEMA temperature standards.

87-24.02C(4)(g) BATTERY SPECIFICATIONS

The battery system shall be field proven to meet or exceed NEMA temperature standards

Batteries shall be capable of providing power to network equipment in rack until generators at city hall can provide power. Approximately 5 minutes. Battery Charge Power must be 79 W.

87-24.02C(4)(h) COMMUNICATIONS, CONTROLS & DIAGNOSTICS

Alarm Function Monitoring: The traffic UPS shall come standard with a DB-9F connector with open collectors (40 V @ 20 MA) indicating; loss of utility power,

Inverter failure, or low battery condition and USB connectivity for system up/down loads.

An RS232 or USB Interface shall be provided that allows full interactive remote computer monitoring and control of the UPS functions.

Front Panel Controls shall included: Power ON, Cold Start, Alarm Silence, Battery Test, Bypass Breaker, and DC/Battery Breaker, Battery Test Points, Auxiliary Temperature Connector, and Programmable Keys.

87-24.02C(4)(i) RELIABILITY

Calculated MTBF is 100,000 hours based on component ratings.

When Manual Bypass Switch is included, system MTBF increases to 150,000 hours.

87-24.02C(4)(j) OPTIONS

Shall include an optional, removable SNMP module that provides TCP/IP capability.

Shall include an enhanced battery charger that provides accelerated charging capacity.

87-24.02C(4)(k) WARRANTY

Five year's parts and labor repair or replace.

87-24.02C(5) SNMP INTERNAL/EXTERNAL ADAPTER

87-24.02C(5)(a) GENERAL

The optional SNMP/HTTP unit functions as an SNMP agent and includes an embedded HTTP server (web server). This means that one industry standard management tool can be used to monitor and control all your UPS system from one central location, and power management can now be integrated into your existing traffic network management strategy. Alarms ('traps') can be configured to ensure automatic notification of events such as low battery, power outage or UPS overload. MIBs are included with the product for integration into users 3rd party traffic management system software. Control and management functions are also available through any standard web browser (Internet Explorer, Netscape or Fire Fox). Simply point your browser to the network address assigned to the card, and the embedded web server returns web pages providing access to monitor or control all system parameters. The easy-to-use browser interface with online help enable staff to effectively manage the UPS and protected intersections. A full featured Java applet provides full system monitoring in real time, along with comprehensive event and history logs.

87-24.02C(5)(b) Additional SNMP Features

12. Configurable from ethernet port or web browser
13. Management from SNMP manager or web browser
14. Supports most network management system via MIB definitions
15. Firmware upgrades by TFTP via ethernet port
16. Full-featured GUI runs in web browser
17. Accessible from any workstation on the network using SNMP/HTTP
18. UPS warning broadcast capability
19. Real time monitoring of all functions
20. Full history logs
21. Scheduling functions
22. Certifications: CE, FCC Class B

87-24.02C(5)(c) SNMP Technical Specifications

18. CPU - 16-bit micro controller
19. Ram - 1Mbits x 16
20. Flash ROM - 1Mbits x 16
21. LAN Interface - Auto-sensing 10/100Mbps Fast Ethernet
22. Ethernet Ports
23. SNMP MIB - RFC1213, RFC1268, USHA MIB
24. Network Protocol - TCP/IP, UDP, SNMP, Telnet, SNTP, HTTP, SMTP
25. LED - Power, Status, LAN 10/100 Link
26. Power Input DC - SPO-09A2: 8volts – 15volts dc
27. Power Input DC - SP-09H: 12Volts unregulated (External)
28. Power Consumption - 3 Watts maximum
29. Environment - Temperature: -40OC to 74OC
30. Miscellaneous - Real-Time-Clock, Reset button
31. Firmware upgrading - Network Upgrade and Serial Upgrade
32. System Security - Provides IP-based filtering & password protection
33. Approvals - CE, FCC Class B
34. Warranty - Two Years, Parts & labor

87-24.02C(5)(d) SNMP Extended Device Support - EMD Module

The Environmental Monitoring Device is a connectivity device that allows users to remotely monitor the temperature, humidity, and status of two connected devices. It's connection to the USHA Card enables monitoring or notification of alarms via a standard Web Browser Java Applet.

87-24.02C(5)(e) SNMP EMD Features

13. Real-time temperature/humidity and other environmental conditions monitoring
14. Monitors the status of two user-provided contact devices
15. Can be located up to 15m from USHA module connects via Cat5 network cable
16. User selectable alarm and thresholds for temperature and humidity monitoring
17. Flexible configuration management via standard Web browser
18. Automatic event notification via email, or SNMP Trap
19. Records EMD parameters for statistical analysis
20. Automatically assigns IP address via DHCP or BOOTP
21. Works in 10/100Mbps modes
22. Configuration utility simplifies firmware upgrades
23. Quick and easy to install
24. Hot swappable

87-24.02C(5)(f) SNMP Operating System Supported

11. Microsoft Windows 2000, ME, XP, XP/2003, Windows 7
12. Novell 4.x thru 6.x

13. Solaris (x86 version) 2.6/2.7/2.8
14. Solaris (Sparc version) 7/8/9/10
15. SCO UNIX 5.x
16. SCO UnixWare 7.x
17. HP_UX 10.2/11i
18. IBM_AIX 4.3/5.3
19. Free BSD 4.3/5.1/6
20. Other Linux-derivatives OS (Kernel 2.x or later).

87-24.02C(5)(g) SERVICEABILITY & MAINTAINABILITY

MTTR (Mean-Time-To-Replace or Repair) Electronics: 15 minutes or less

Battery System: 15 minutes or less

87-24.02C(6) FIBER PATCH CORDS

Refer to 87-23.02J FIBER PATCH CORDS for this special provisions.

87-24.03 NEMA 3R ENCLOSURE

This section includes a description of requirements set forth on the Contractor to provide a NEMA 3R Enclosure to house a fiber optic cable coil entering the city telecom room.

NEMA 3R enclosure shall meet the following requirements:

1. Shall be 20" tall x 24" wide x 18" depth and shall have enough room to coil 20' of 144-strand fiber optic cable.
2. Shall meet NEMA 3R standards
3. The enclosure's machine screws and bolts must not protrude outside the cabinet wall.
4. The fasteners on the exterior of an enclosure must be vandal resistant and not be removable. The exterior screws, nuts, bolts, and washers must be stainless steel.
5. Contractor shall confirm with city the color of the outside coating/painting before ordering.
6. Includes all necessary mounting equipment to mount enclosure to the outside wall of the city telecom room. The enclosure should not protrude more than 20" from the wall.

87-24.04 CONDUIT HANGER ASSEMBLY

Unless otherwise shown on Contract Drawings, provide hangers and supports as specified below. Where more than one type of hanger or support is suitable for intended use, selection is at the Contractor's option, subject to approval by city engineer.

Types of Conduit hangers that may be used:

1. Clevis Hangers
2. Trapeze Hangers

Install hangers and supports, and fasteners in accordance with approved printed manufacturer's installation procedures, and as specified.

Install hangers and supports and attachments to properly support conduits from building structure. Install hangers and supports with maximum spacing not to exceed that permitted by NFPA 70 and NECA 120, as applicable.

Do not support conduits from mechanical ductwork, ductwork supports, piping, or piping supports.

87-24.05 CONDUIT CLAMP ASSEMBLY

Unless otherwise shown on Contract Drawings, provide conduit straps as specified below. Where more than one type of hanger or support is suitable for intended use, selection is at the Contractor's option, subject to approval by city engineer.

Contractor shall use shall use Two-Hole Conduit Straps: 3/4" strap width.

Conduit Straps shall be fastened with one of the following fasteners. Selection of fastener is at the Contractor's option, subject to approval by city engineer.

1. Toggle Bolts
2. Expansion Anchors
3. Power Activated Fasteners

Fastener selected shall be the proper length and penetration for the equipment/strap to be installed and the base material.

All hardware shall be galvanized or plated steel. Plastic, wooden, "nail-in", and lead anchors must not be used.

87-24.06 2" INDOOR CONDUIT

Conduit shall be installed along wall where possible. Conduit shall be attached to the wall via conduit straps listed above.

Where conduits cannot be installed along wall, conduits may be supported via hangers/supports as shown on plans. Conduit type shall remain same within the telecom room.

Conduit shall be 2" and Rigid Galvanized Steel (RGS) type 1 conduit.

87-24.07 CORRUGATED FLEXIBLE CONDUIT

Corrugated flexible conduit shall be provided inside of City Telecom Room when fiber cable is not enclosed in a conduit. This includes along the existing raceway. Conduit shall meet Caltrans specifications and California Building Code Standards.

87-24.08 DRILL THROUGH WALL

Contractor shall verify locations on both sides of wall before drilling. Locations of hole and drilling methods shall meet Caltrans specifications and California Building Code Standards.

Contractor shall mark both sides of wall where hole shall be drilled and have location and size of hole approved by City Representative before any drilling occurs. Any existing equipment that must be moved in order to drill as indicated on plans shall be done with the permission of the City Representative and placed at the same location once the drilling work has been completed.

Do not drill, bore, or notch structural members in such a manner that will impair their structural value.

Install fire-stopping sealant to fill opening around electrical or communication services penetrating walls so to provide fire-stops and fire-resistance ratings indicated for wall assemblies with penetrations.

Install weatherproof sealant for all holes through external walls. Any hole facing outdoors shall be completely sealed with weatherproof material.

87-24.09 PAYMENT

Full compensation for "City Telecom Room Fiber Installation" shall be considered as included in the price paid for the equipment listed above and in the following bid items "Furnish and Install 144-Strand Fiber Distribution Unit", "Furnish and Install 12-Strand Fiber Distribution Unit", "Furnish and Install Ethernet Switch(Telecom Room and Hubs)", "Furnish and Install Fiber Patch Cords" "Furnish and Install Rack Cable Assembly", "Furnish and Install Uninterruptible Power Supply Assembly(Telecom Room)" "Furnish and Install NEMA 3R Enclosure", "Furnish and Install Conduit Hanger Assembly", "Furnish and Install Conduit Clamp Assembly", "Furnish and Install Indoor Conduit", "Furnish and Install Corrugated Flexible Conduit", "Drill through wall", and no additional compensation shall be allowed therefor. Refer to Section 9 for full description.

Add 87-25 FIBER OPTIC CONDUITS AND INNERDUCT

87-25.01 FIBER OPTIC CONDUITS

Conduits trenched or directionally drilled underground shall be HDPE type 3 conduit unless installed under the railroad or otherwise noted on the plans. Conduits shall meet Caltrans specifications sections 86 and 87.

HDPE conduit shall be solid-wall high density polyethylene (HDPE) duct intended for underground use. Conduit can be manufactured and coiled or reeled in continuous transportable lengths and uncoiled for installation without affecting its properties or performance.

Each fiber optic conduit bend, elbow and joint in communications conduits must not exceed 20 degrees or minimum of 3 feet sweep radius.

All communication conduit entry and exit from pull box must be through the bottom with appropriate sweep radius as specified.

Install all empty conduits and innerducts with pull tape for future conductors and cables. Install pull tape in a continuous length between pull boxes with no tying or splicing.

Types of fiber optic conduits as part of this project:

- 4" Conduit with four 1" HDPE SDR 11 Innerduct
 - For conduits installed by directional drill, the 4" conduit shall be type 3 HDPE SDR 9 and comply with ASTM F2160. For conduits installed by trenching, the 4" conduit shall be type 3 HDPE SDR 11.
 - Innerduct Shall be four 1" HDPE SDR 11 Innerducts.
- 4" Conduit with four 1" HDPE SDR 11 Innerduct under Train Tracks
 - The 4" conduit installed under the railroad shall be Type 2 Conduit.
 - Innerduct Shall be four 1" HDPE SDR 11 Innerducts.
 - Contractor must apply for UPRR encroachment permit before performing any work within UPRR Right of Way.
 - Contractor must follow UPRR engineering specifications for wireline crossings.
- 2" Indoor Conduit
 - Indoor conduit shall be Rigid Galvanized Steel (RGS) type 1 conduit unless shown otherwise on the plans

Contractor shall install tracer wire in each fiber optic conduit. See section below for tracer wire details.

87-25.02 INNERDUCT

87-25.02A General

Innerduct must comply with Caltrans Revised Standard Specifications section 86-1.02B(1). Each innerduct must be one continuous unit without splices or joints.

Two types of innerduct shall be installed as part of this project and as shown on the project plans:

- Fabric innerduct
- Four 1" HDPE SDR 11 Innerduct

87-25.02B 1" HDPE SDR 11 Innerduct

The four 1" HDPE SDR 11 Innerduct shall be ribbed inside and outside when used inside the 4" conduit. Innerduct must be color coded as follows:

1. Innerduct A – black
2. Innerduct B – orange
3. Innerduct C – white
4. Innerduct D – blue

Innerduct shall be 1" HDPE SDR 11 Innerduct. 4 innerducts shall be installed in each 4" fiber optic conduit as shown on the plans.

Innerduct within a conduit run must be continuous without splices or joints.

A separate pull tape must be installed in each innerduct. Pull tape shall meet Caltrans specifications sections 86 and 87.

High density polyethylene for innerduct must:

1. Comply with ASTM D3485, D3035, D2239, and D2447, and NEMA TC7 and TC2
2. Have a minimum tensile yield strength of 3300 psi under ASTM D638
3. Have a density of 59.6187 lb/ft³ ± 0.3121 lb/ft³ under ASTM D1505

87-25.02C Fabric Innerduct

Fabric innerduct shall be Maxcell or approved equivalent. This innerduct shall be installed in existing conduit only.

Fabric Innerduct must be installed as indicated on the plans. Innerduct consists of flexible fabric chambers that is installed inside conduit, and which in turn the fiber optic cable is installed.

Innerduct within a conduit run must be continuous without splices or joints.

Innerduct for this project must have a minimum of 3 cells as specified in the Project Plans.

Innerduct shall have a Melting point of 419°F (215°C), be Halogen-free, and be Constructed of PET (Polyethylene Terephthalate) and Nylon 6.

Innerduct cells must include 1250lb minimum flat woven pull tape inside each cell for installation.

Innerduct shall be protected and installed per manufacturer specifications.

87-25.03 Tracer Wire

Tracer wire must be a minimum no. 18 copper conductor with orange insulation Type TW, THW, RHW, or USE.

Contractor shall install tracer wire in each underground fiber optic conduit.

87-25.04 PAYMENT

Full compensation for "Fiber Optic Conduits and Innerducts" shall be considered as included in the price paid for "Furnish and Install Fabric Innerduct", "Furnish and Install 4" Conduit with four 1" HDPE SDR 11 Innerduct", "Furnish and Install 4" Conduit with four 1" HDPE SDR 11 Innerduct Under Train Tracks", "Furnish and Install 2" Indoor Conduit", "Furnish and Install Pull Tape", "Furnish and Install 1-18 AWG Tracer Wire" and no additional compensation shall be allowed therefor. Refer to Section 9 for full description.