



City of Sacramento City Council

915 I Street, Sacramento, CA, 95814
www.CityofSacramento.org

Meeting Date: 3/13/2012

Report Type: Consent

Title: Contract: Combined Wastewater Treatment Plant Motor Control Center (CWTP MCC) "N" Replacement Project (X14010048)

Report ID: 2012-00224

Location: District 4

Recommendation: Pass a motion approving the contract plans and specifications for the CWTP MCC "N" Replacement Project (X14010048), and awarding the contract to JR Sharp Construction, Inc., for an amount not to exceed \$147,500.

Contact: Bill Busath, Interim Engineering Manager, (916) 808-1434; Dave Hansen, Supervising Engineer, (916) 808-1421 - Department of Utilities

Presenter: None

Department: Department Of Utilities

Division: Cip Engineering

Dept ID: 14001321

Attachments:

- 1- Description/Analysis
- 2- Background
- 3- Location Map
- 4- Contract with JR Sharp

City Attorney Review

Approved as to Form
Joe Robinson
3/8/2012 10:54:35 AM

City Treasurer Review

Reviewed for Impact on Cash and Debt
Russell Fehr
3/5/2012 3:25:51 PM

Approvals/Acknowledgements

Department Director or Designee: Jamille Moens - 3/7/2012 9:54:13 AM

Description/Analysis

Issue: The Combined Wastewater Treatment Plant (CWTP) is a critical combined wastewater storage and treatment facility operated by the Department of Utilities. During large storm events, the facility is operated to treat combined sewage and prevent flooding within the combined sewer area. This facility was originally built in 1954 and the existing electrical equipment is obsolete and parts are difficult to obtain and maintain. This project will replace the outdated Motor Control Center MCC “N” which is one of several motor control centers throughout the facility.

Policy Considerations: This action is in conformance with City Code Chapter 3.60 Articles I and III, which provide that the City Council may award competitively bid contracts to the lowest responsible bidder.

This report’s recommendation is consistent with the City’s Strategic Plan Goals of enhancing and preserving the neighborhoods and supporting the economic vitality of the area.

Environmental Considerations: California Environmental Quality Act: The Development Services Department, Environmental Planning Services Division, has reviewed the proposed project and has determined that this project is categorically exempt from CEQA (the California Environmental Quality Act) under Section 15301(b) of the CEQA Guidelines (minor alteration of public utility facilities involving no expansion of use).

Sustainability: The project is consistent with the Sustainability Master Plan goals to improve the reliability of the wastewater treatment system.

Commission/Committee Action: Not applicable.

Rationale for Recommendation: After the plans and specifications were completed by Engineering Services, the project was formally advertised to solicit public bids. On February 15, 2012 the City Clerk opened six (6) bids. Staff recommends award of the contract to the low bidder, JR Sharp Construction Inc., as the lowest responsive and responsible bidder.

Financial Considerations: The total estimated project cost including design, construction, inspection and contingency is \$195,000. There is sufficient funding in X14010048 (Sewer Fund (6006)) to award the contract for an amount not to exceed \$147,500 and complete the project.

Emerging Small Business Development (ESBD): This project included a participation goal of 20% for emerging and small business enterprises (ESBEs). The lowest responsible bidder, JR Sharp Construction Inc., exceeds this goal with an ESBE participation level of 100.00%.



Attachment 2

BACKGROUND

The Combined Wastewater Treatment Plant (CWTP) is a critical combined wastewater storage and treatment facility operated by the Department of Utilities. During large storm events, the facility is operated to treat combined sewage and prevent flooding within the combined sewer area. This facility was originally built in 1954 and the existing electrical equipment is obsolete and parts are difficult to obtain and maintain. This project will replace the outdated Motor Control Center “N” which is one of several motor control centers throughout the facility.

This project was advertised and six (6) bids were received and opened on February 15, 2012. The bids are summarized below:

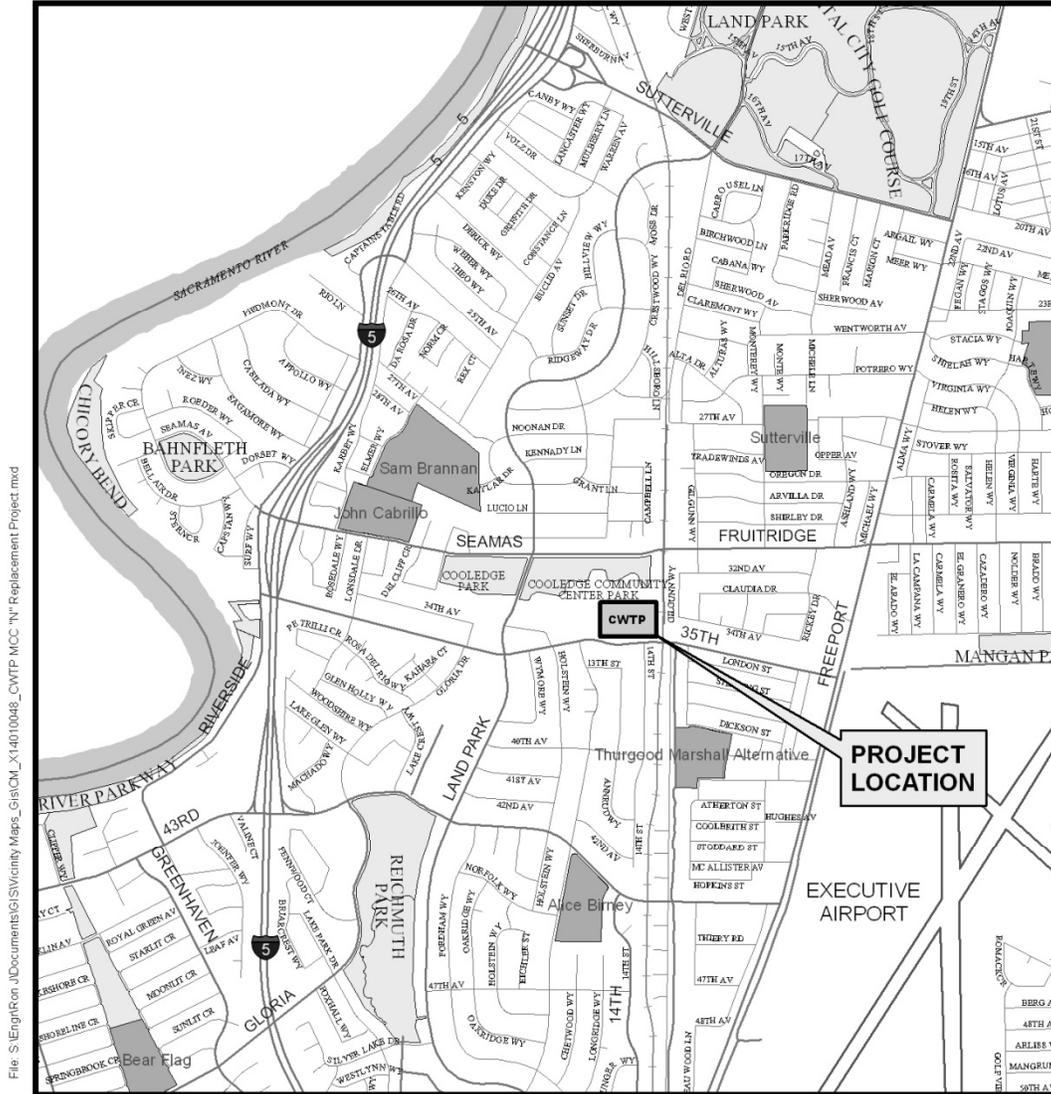
	Bidders	Bid Amount
1	JR Sharp Construction Inc.	\$147,500.00
2	Vanden Bos Electric	\$148,125.00
3	Clyde G. Steagall	\$149,652.00
4	All Power, Inc.	\$167,785.00
5	Gwinn Construction	\$174,877.00
6	Tennyson Electric	\$248,670.00

JR Sharp Construction Inc. was the low bidder, with a bid amount of \$147,500.00. The engineer’s estimate was \$181,000.



ATTACHMENT 1

CWTP MCC "N" Replacement Project PN: X14010048



File: S:\Eng\Ron J\Documents\City\Vicinity Maps_Gis\CM_X14010048_CWTP MCC "N" Replacement Project.mxd

Map Prepared By
City of Sacramento
Department of Utilities





CITY OF SACRAMENTO

DEPARTMENT OF UTILITIES

ENGINEERING SERVICES DIVISION

CONTRACT SPECIFICATIONS FOR CWTP MCC "N" REPLACEMENT

PN: X14010048
B123331014
Engineer's Estimate: \$181,000

Non-Refundable Fee
\$25.00

For Pre-Bid Information Call:

Jian Zhuang
Senior Electrical Engineer
(916) 808-1428

No Separate Plans

Bid to be received before 2:00 PM
February 15, 2012
Historic City Hall, City Clerk's Office
915 I Street, 1st Floor
Sacramento, CA 95814

ESBE Program Goals

For information on meeting the City of Sacramento's Small Business Enterprise (SBE) and Emerging Business Enterprise (EBE) project goals, please contact Noreen James at (916) 808-5470, or visit the City of Sacramento's small business web site at: http://dev.cityofsacramento.org/econdev/business-open/Sub_small-business-certificaiton.cfm

CWTP MCC "N" REPLACEMENT
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 • Payment Bond

 •

**EXCERPTS FROM THE CALIFORNIA LABOR CODE RELATING TO APPRENTICES ON
PUBLIC WORKS CHAPTER 1 OF DIVISION 2 ([HTTP://WWW.DIR.CA.GOV/DAS/DAS-10.PDF](http://www.dir.ca.gov/DAS/DAS-10.PDF))**

TAX FORMS (REQUIRED UPON AWARD)

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SPECIAL PROVISIONS

ESBD PRE-BID CONFERENCE

The City of Sacramento Code Section 3.60.270 requires all bidding contractors to meet or exceed the City's Emerging and Small Business Development (ESBD) participation goals established for this project in order to qualify as a responsible bidder. Attendance is recommended at the ESBD program meeting within 180 calendar days of the bid opening date.

Effective July 2010, the meetings are scheduled as requested:

For information on meeting the City of Sacramento's Small Business Enterprise (SBE) and Emerging Business Enterprise (EBE) project goals, please contact Noreen James at (916) 808-5470, or visit the City of Sacramento's small business web site at: http://dev.cityofsacramento.org/econdev/business-open/Sub_small-business-certificaion.cfm

NOTICE TO CONTRACTORS

CITY OF SACRAMENTO

Sealed Proposals will be received by the City Clerk of the City of Sacramento at the Office of the City Clerk, Historic City Hall, located at 915 I Street, 1st Floor, up to the hour of 2:00 p.m. on **February 15, 2012** and opened at 2:00 p.m. **February 15, 2012**, or as soon thereafter as business allows, in the Hearing Room, Historic City Hall, 2nd Floor, for construction of:

CWTP MCC "N" REPLACEMENT (PN: X14010048) (B123331014)

as set forth in the Construction Documents.

Proposals received and work performed thereunder shall comply with the requirement of Chapter 3 of the Sacramento City Code. Each Bid Proposal shall be accompanied by bid security of at least 10% of the sum the Bid Proposal. The right to reject proposals or to waive any error or omission in any Bid Proposal received is reserved by the City. Signed proposals shall be submitted on the printed forms contained herein and enclosed in an envelope marked:

SEALED PROPOSAL FOR CWTP MCC "N" REPLACEMENT (PN: X14010048) (B123331014)

Copies of the contract documents are available at:

**Signature Reprographics
620 Sunbeam Avenue
Sacramento, CA 95814
(916) 454-0800**

A non-refundable fee of \$25.00 will be charged.

Subcontractors shall comply with the rates of wages currently established by the Director of Industrial Relations under provisions of Sections 1773 of the Labor Code of the State of California, a copy of which is on file in the office of the City Clerk. In accordance with the Sacramento City Code Section 3.60.180 and Section 1771.5 of the California Labor Code, the payment of the general prevailing rate of per diem wages or the general prevailing rate of per diem wages for holiday and overtime is not required for any Public Construction project of \$25,000 or less, or Public Maintenance project of \$15,000 or less. The City of Sacramento has an approved Labor Compliance Program. **Electronic Web submittal of Labor Compliance Reports is effective May 1, 2008.** Each contractor and every lower-tier subcontractor is required to submit certified payrolls and labor compliance documentation electronically at the discretion of and in the manner specified by the City of Sacramento.

Electronic submittal will be web-based system, accessed on the World Wide Web by a web browser. Each contractor and subcontractor will be given a Log On identification and password to access the City of Sacramento reporting system.

Use of the system may entail additional data entry of weekly payroll information including; employee identification labor classification, total hours worked and hours worked on this project, wage and benefit rates paid, etc. The contractor's payroll and accounting software might be capable of generating a 'comma delimited file' that will interface with the software.

This requirement will be "flowed down" to every lower-tier subcontractor and vendor required to provide labor compliance documentation.

All questions regarding the Labor Compliance Program should be directed to the Labor Compliance Section at (916) 808-5524.

Pursuant to Sacramento City Code Section 3.60.250, any agreement awarded pursuant to this Invitation to Bid shall contain a provision permitting the substitution of securities for any monies withheld to ensure performance under the Agreement. The terms of such provisions shall be according to the requirements and the form required by the City.

Bid protests must be filed and maintained in accordance with the provisions of Chapter 3.60.460 through 3.60.560 of the Sacramento City Code. Bid protests that do not comply with Chapter 3.60.040 through 3.60.560 of the Sacramento City Code shall be invalid and shall not be considered. A bid protest fee of \$750.00 us required at the time of filing to be considered valid in accordance with City of Sacramento Resolution No. 2003-231 dated April 29, 2003. As used herein, the term "bid protests" includes any bid protest that (1) claims that one or more bidders on this contract should be disqualified or rejected for any reason, or (2) contests a City staff recommendation to award this contract to a particular bidder, or (3) contests a City staff recommendation to disqualify or reject one or more bidders on this contract. A copy of Chapter 3.60.010 of the Sacramento City Code may be obtained from the Project Manager or from the Office of the City Clerk, located at 915 I Street, 1st Floor, Sacramento, CA 95814.

The right to reject any and all bids or to waive any informality in any bid received is reserved by the City Council.

THE FOLLOWING DOCUMENTS
ARE TO BE COMPLETED AND
SUBMITTED WITH THE BID PACKAGE

Contractor's Name: _____
(Please print)

CITY OF SACRAMENTO

SEALED PROPOSAL

(MUST BE SIGNED BY BIDDER)

The Sealed Proposal will be received not later than **February 15, 2012**, at the Office of the City Clerk, Historic City Hall, at 915 I Street, 1st Floor, Sacramento, California and opened at 2:00 PM, or as soon thereafter as business allows, on **February 15, 2012**, by the Office of the City Clerk, 915 I Street, Historic City Hall, Hearing Room 2nd Floor, Sacramento, California.

TO THE HONORABLE CITY COUNCIL:

The undersigned hereby proposes and agrees to furnish any and all required labor, material, transportation, and services for

**CWTP MCC "N" REPLACEMENT
(PN: X14010048) (B123331014)**

in the City and County of Sacramento, California.

TOTAL BID: _____ (\$_____).

The work herein described is to be performed in strict conformity with the Plans, City of Sacramento Standard Specifications (Resolution No. 89-216) and these Special Provisions, all as on file in the Office of the City Clerk, at the following unit prices.

Item No.	Description	Estimated Quantity	Unit	Total
1	CWTP MCC "N" Replacement	1	LS	\$_____

TOTAL BID: \$_____

If awarded the contract, the undersigned shall execute said contract and furnish the necessary bonds within ten (10) days after the notice of award of said contract and begin work within fifteen (15) days after the signing of the contract by the Contractor and the City or the Notice to Proceed has been prepared, whichever is applicable.

In determining the amount bid by each bidder, City shall disregard mathematical errors in addition, subtraction, multiplication and division that appear obvious on the face of the Proposal. When such a mathematical error appears on the Proposal, the City shall have the right to correct such error and to compute the total amount bid by said bidder on the basis of the corrected figure or figures.

When the unit price of an item is required to be set forth in the Proposal, and the total for the item set forth separately does not agree with a figure derived by multiplying the item unit price times the Engineer's estimate of the quantity of work to be performed for said item, the item unit price shall prevail over the sum set forth as the total for the item unless, in the sole discretion of the City, such a procedure would be inconsistent with the policy of the City's bidding procedures. The total paid for each such item of work shall be based upon the item unit price and not the total price.

Should the Proposal contain only a total price for an item and the item unit price is omitted, the City shall determine the item unit price by dividing the total price of the item by the Engineer's estimate of the quantity of work to be performed for the item of work.

If the Proposal contains neither the item price nor the total price for the item, then it shall be deemed incomplete and the Proposal shall be disregarded.

It is understood that this bid is based upon completion of the work within a period **of one hundred ten (110) working days** commencing on the date specified in the Notice to Proceed.

The amount of liquidated damages to be paid by the Contractor for failure to complete the work by the completion date (as extended, if applicable) shall be **two hundred dollars (\$200.00) for each calendar day**, continuing to the time at which the work is completed. Such amount is the actual cash value agreed upon as the loss to the City resulting from the default of the Contractor.

The undersigned represents and warrants that he/she has examined the location of the proposed work and is familiar with the conditions at the place where the work is to be done. The undersigned further represents that he/she has reviewed and understands the Plans, Special Provisions, and other contract documents, and the undersigned is satisfied with all conditions for the performance of the work

The undersigned has carefully checked all of the above figures and understands that the City of Sacramento will not be responsible for any errors or omissions on the part of the undersigned in making up this bid.

This proposal shall not be withdrawn for the time periods specified in Section 3-2 of the City of Sacramento Standard Specifications for award of contract to respective low bidders. This proposal is submitted in accordance with Chapter 3.60 of the Sacramento City Code and Sections 1, 2, and 3 of the City of Sacramento Standard Specifications.

In accordance with Standard Specification Section 3-2, the City shall award this contract to the lowest responsible bidder, if such award is made, within forty-five (45) working days after opening of the Proposals. The City reserves the right to reject any and all bids.

BID DEPOSIT ENCLOSED IN THE FOLLOWING FORM:

\$_____ not less than ten (10) percent of amount bid.

____ CERTIFIED CHECK

____ MONEY ORDER

____ CASHIERS'S CHECK

____ BID BOND

FOR CITY USE ONLY

TYPE OF DEPOSIT

- Bid Bond
- Cashier/Certified Check
- Other _____

Reviewer's Initials: _____

CONTRACTOR

Addendum No. 1 _____

Addendum No. 2 _____ By: _____
(Signature)

Addendum No. 3 _____ Title: _____

Addendum No. 4 _____ Address: _____

No PO Box – Physical Address ONLY

City STATE ZIIP Code

Telephone No. _____

Fax No. _____

Email _____

(Federal Tax ID # or Social Security #)

Under penalty of perjury, I certify that the Taxpayer Identification Number and all other information provided here are correct.

Valid Contractor's License No. _____, Classification _____ is held by the bidder.

Expiration date _____. Representation made herein are true and correct under penalty or perjury

PN: X14010048 (B123331014)

KNOW ALL MEN BY THESE PRESENTS,

That we, _____

as Principal, and _____

a corporation duly organized under the laws of the State of _____ and duly licensed to become sole surety on bonds required or authorized by the State of California, as Surety, are held and firmly bound unto the City of Sacramento, hereinafter called the City, in the penal sum of ten percent (10%) of the (BASE OR LUMP SUM) Proposal of the Principal above named, or other amount as set forth in the Invitation to Bidders, submitted by said Principal to the City for the Work described below, for the payment of which sum in lawful money of the United States, 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 whereas the Principal has submitted the above mentioned proposal to the City, for which Proposals are to be opened in the Office of the City Clerk, Historic City Hall, Hearing Room 2nd Floor, 915 I Street, Sacramento, California, on **February 15, 2012**, for the Work specifically described as follows:

CWTP MCC "N" REPLACEMENT
(PN: X14010048) (B123331014)

NOW, THEREFORE, if the aforesaid Principal is award the Agreement and within the time and manner required under the Contract Documents, enters into a written Agreement, in the prescribed form, in accordance with the Proposal, and files two (2) bonds with the City, one to guarantee faithful performance and the other to guarantee payment for labor and materials, and files the required insurance policies with the City, all as required by the Contract Documents or by law, then the obligation shall be null and void; otherwise it shall be and remain in full force and effect.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorney's fee to be fixed by the court, which sums shall be additional to the principal amount of this bond.

IN WITNESS THEREOF, We have hereunto set our hands and seal this _____ day of _____, 2012.

PRINCIPAL Seal
By: _____

Title

SURETY Seal
By _____

Title

Agent Name and Address

Agent Phone #

Surety Phone #

California License #

DRUG-FREE WORKPLACE POLICY AND AFFIDAVIT

BID MAY BE DECLARED NONRESPONSIVE IF THIS FORM (COMPLETED) IS NOT ATTACHED.
Pursuant to City Council Resolution CC90-498 dated 6/26/90 the following is required.

The undersigned contractor certifies that it and all subcontractors performing under this contract will provide a drug-free workplace by:

1. Publishing a "Drug-Free Workplace" statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Establishing a Drug-Free Awareness Program to inform employees about:
 - a. The dangers of drug abuse in the workplace.
 - b. The contractor's policy of maintaining a drug-free workplace.
 - c. Any available drug counseling, rehabilitation, and employee assistance program.
 - d. The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace.
3. Notify employees that as a condition of employment under this contract, employees will be expected to:
 - a. Abide by the terms of the statement.
 - b. Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace.
4. Making it a requirement that each employee to be engaged in the performance of the contract be given a copy on the "Drug-Free Workplace" statement.
5. Taking one of the following appropriate actions, within thirty (30) days of receiving notice from an employee or otherwise receiving such notice, that said employee has received a drug conviction for a violation occurring in the workplace:
 - a. Taking appropriate disciplinary action against such an employee, up to and including termination; or
 - b. Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a federal, state, or local health, law enforcement or other appropriate agency.

* I certify that no person employed by this company, corporation, or business has been convicted of any criminal drug statute violation on any job site or project where this company, corporation, or business was performing work within three years of the date of my signature below.

EXCEPTION:

Date	Violation Type	Place of Occurrence
If additional space is required use back of this form.		

*The above statement will also be incorporated as a part of each subcontract agreement for any and all subcontractors selected for performance on this project.

IN THE EVENT THIS COMPANY, CORPORATION, OR BUSINESS IS AWARDED THIS CONSTRUCTION CONTRACT, AS A RESULT OF THIS BID; THE CONTRACTOR WITH HIS/HER SIGNATURE REPRESENTS TO THE CITY THAT THE INFORMATION DISCLOSED IN THIS DOCUMENT IS COMPLETE AND ACCURATE. IT IS UNDERSTOOD AND AGREED THAT FALSE CERTIFICATION IS SUBJECT TO IMMEDIATE TERMINATION BY THE CITY.

The Representations Made Herein On This Document Are Made Under Penalty Of Perjury.

CONTRACTOR'S NAME: _____

BY: _____ Date: _____
Signature Title

Effects of violations: a. Suspension of payments under this contract. b. Suspension or termination of the contract. c. Suspension or debarment of the contractor from receiving any contract from the City of Sacramento for a period not to exceed five years.
FM 681 7/10/9

MINIMUM QUALIFICATIONS QUESTIONNAIRE

Sacramento City Code Section 3.60.020 authorizes the Sacramento City Council to adopt standard minimum qualifications for bidders on competitively bid public works construction projects, and requires, among other provisions, that a bidder meet such minimum qualifications at the time of bid opening in order to bid. On July 31, 2007, the City Council adopted Resolution No. 2007-574 establishing these standard minimum qualifications. Pursuant to City Code section 3.60.020, a bidder failing to meet these minimum qualifications at the time of bid opening shall not be considered a responsible bidder for purposes of bidding on the subject project.

All bidders must demonstrate compliance with the minimum qualifications established by Resolution No. 2007-574 by completing all of the questions contained in this questionnaire. Bidder responses shall be limited to those operating business units, offices, branches and/or subsidiary divisions of the bidder that will be involved with the performance of any project work if awarded the contract. If a bidder answers "yes" to any single question, fails to submit a fully completed questionnaire, or submits false information, this will result in a determination that the minimum qualifications are not met, and the bidder shall not be considered a qualified bidder for purposes of bidding on this contract. If two or more entities submit a bid on a contract as a Joint Venture, each entity within the Joint Venture must separately meet these minimum qualifications for the Joint Venture to be considered a qualified bidder.

The City of Sacramento ("City") shall make its determination on the basis of the submitted questionnaire, as well as any relevant information that is obtained from others or as a result of investigation by the City. While it is the intent of this questionnaire to assist the City in determining whether bidders possess the minimum qualifications necessary to submit bids on the City's competitively bid public works construction contracts, the fact that a bidder submits a questionnaire demonstrating that it meets these minimum qualifications shall not in any way limit or affect the City's ability to: (1) review other information contained in the bid submitted by the bidder, and additional relevant information, and determine whether the contractor is a responsive and/or responsible bidder; or (2) establish pre-qualification requirements for a specific contract or contracts.

By submitting this questionnaire, the bidder consents to the disclosure of its questionnaire answers: (i) to third parties for purposes of verification and investigation; (ii) in connection with any protest, challenge or appeal of any action taken by the City; and (iii) as required by any law or regulation, including without limitation the California Public Records Act (Calif. Gov't Code sections 6250 et seq.). Each questionnaire must be signed under penalty of perjury in the manner designated at the end of the form, by an individual who has the legal authority to bind the bidder submitting the questionnaire. If any information provided by a bidder becomes inaccurate, the bidder shall immediately notify the City and provide updated accurate information in writing, under penalty of perjury.

QUESTIONNAIRE

NOTICE: For firms that maintain other operating business units, offices, branches and/or subsidiary divisions that will not be involved with the performance of any project work if the firm is awarded the contract, references hereafter to “your firm” shall mean only those operating business units, offices, branches and/or subsidiary divisions that will be involved with the performance of any project work.

All of the following questions regarding “your firm” refer to the firm (corporation, partnership or sole proprietor) submitting this questionnaire, as well as any firm(s) with which any of your firm’s owners, officers, or partners are or have been associated as an owner, officer, partner or similar position within the last five years

The firm submitting this questionnaire shall not be considered a responsible bidder if the answer to any of these questions is “yes”, or if the firm submits a questionnaire that is not fully completed or contains false information.

1. **Classification & Expiration Date(s) of California Contractor’s License Number(s)** held by firm:

2. Has a contractor's license held by your firm and/or any owner, officer or partner of your 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 your firm’s behalf, or paid for completion of a contract to which your firm was a party, because your 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 minimum qualifications questionnaire, is your firm ineligible to bid on or be awarded a public works contract, or perform as a subcontractor 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 during the last five years, has your firm, or any of its owners, officers or partners been convicted of a crime involving the awarding of a contract for a government construction project, or the bidding or performance of a government contract?

Yes No

6. Answer either subsection A or B, as applicable:

A. Your firm has completed three or more government construction contracts in Sacramento County within the last five years: Within those five years, has your firm been assessed liquidated damages on three or more government construction contracts in Sacramento County for failure to complete contract work on time?

NOTE: If there is a pending administrative or court action challenging the assessment of liquidated damages on a government contract within the last five years, you need not include that contract in responding to this question.

Yes No Not applicable

OR

B. Your firm has not completed at least three government construction contracts in Sacramento County within the last five years: Within the last three years, has your firm been assessed liquidated damages on three or more government construction contracts for failure to complete contract work on time?

NOTE: If there is a pending administrative or court action challenging an assessment of liquidated damages on a government contract within the last three years, you need not include that contract in responding to this question.

Yes No Not applicable

7. In the last three years has your firm been debarred from bidding on, or completing, any government agency or public works construction contract for any reason?

NOTE: If there is a pending administrative or court action challenging a debarment, you need not include that debarment in responding to this question.

Yes No

8. Has CAL OSHA assessed a total of three or more penalties against your firm for any "serious" or "willful" violation occurring on construction projects performed in Sacramento County at any time within the last three years?

NOTE: If there is a pending administrative or court action appealing a penalty assessment, you need not include that penalty assessment in responding to this question.

Yes No

9. Answer either subsection A or B, as preferred:

A. In the last three years has your firm had a three year average Workers' Compensation experience modification rate exceeding 1.1?

Yes No

OR

B. In the last three years has your firm had a three-year average incident rate for total lost workday cases exceeding 10?

NOTE: Incident rates represent the number of lost workday cases per 100 full-time workers and is to be calculated as: $(N/EH) \times 200,000$, where

N = number of lost workday cases (as defined by the U.S. Dept. of Labor, Bureau of Labor Statistics)
EH = total hours worked by all employees during the calendar year
200,000 = base for 100 equivalent full-time working (working 40 hours per week, 50 weeks per year)

Yes No

10. In the past three years, has the federal EPA, Region IX or a California Air Quality Management District or Regional Water Quality Control Board assessed penalties three or more times, either against your firm, or against the project owner for a violation resulting in whole or in part from any action or omission by your firm on a project on which your firm was a contractor in Sacramento County?

NOTE: If there is a pending administrative or court action appealing a penalty assessment, you need not include that penalty assessment in responding to this question.

Yes No

11. In the past three years, has the federal EPA, Region IX or a California Air Quality Management District or Regional Water Quality Control Board assessed a single penalty of \$100,000 or more, either against your firm, or against the project owner for a violation resulting in whole or in part from any action or omission by your firm on a project on which your firm was the contractor in Sacramento County?

NOTE: If there is a pending administrative or court action appealing a penalty assessment, you need not include that penalty assessment in responding to this question.

Yes No

12. In the past three years, have civil penalties been assessed against your firm pursuant to California Labor Code 1777.7 for violation of California public works apprenticeship requirements, three or more times?

NOTE: If there is a pending administrative or court action appealing a penalty assessment, you need not include that penalty assessment in responding to this question.

Yes No

13. In the past three years, has a public agency in California withheld contract payments or assessed penalties against your firm for violation of public works prevailing wage requirements, three or more times?

NOTE: If there is a pending administrative or court action appealing a withholding or penalty assessment, you need not include that withholding or penalty assessment in responding to this question.

Yes No

14. Has your firm been assessed penalties for violation of public works prevailing wage requirements in California, in an aggregate amount for the past three years of \$50,000 or more?

NOTE: If there is a pending administrative or court action appealing a penalty assessment, you need not include that penalty assessment in responding to this question.

Yes No

VERIFICATION AND SIGNATURE

I, the undersigned, certify and declare that I have read all the foregoing answers to this Minimum Qualifications Questionnaire, and know their contents. The matters stated in these Questionnaire answers are true of my own knowledge and belief, except as to those matters stated on information and belief, and as to those matters I believe them to be true. I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Signed at _____, on _____.
(Location) (Date)

Signature: _____

Print name: _____

Title: _____

NOTE: If two or more entities submit a bid on a contract as a Joint Venture, each entity within the Joint Venture must submit a separate Minimum Qualifications Questionnaire.

REQUIREMENTS OF THE NON-DISCRIMINATION IN EMPLOYEE BENEFITS CODE

INTRODUCTION

The Sacramento Non-Discrimination In Employee Benefits Code (the "Ordinance"), codified as Sacramento City Code Chapter 3.54, prohibits City contractors from discriminating in the provision of employee benefits between employees with spouses and employees with domestic partners, and between the spouses and domestic partners of employees.

APPLICATION

The provisions of the Ordinance apply to any contract or agreement (as defined below), between a Contractor and the City of Sacramento, in an amount exceeding \$25,000.00. The Ordinance applies to that portion of a contractor's operations that occur: (i) within the City of Sacramento; (ii) on real property outside the City of Sacramento if the property is owned by the City or if the City has a right to occupy the property; or (iii) at any location where a significant amount of work related to a City contract is being performed.

The Ordinance does not apply: to subcontractors or subcontracts of any Contractor or contractors; to transactions entered into pursuant to cooperative purchasing agreements approved by the Sacramento City Council; to legal contracts of other governmental jurisdictions or public agencies without separate competitive bidding by the City; where the requirements of the ordinance will violate or are inconsistent with the terms or conditions of a grant, subvention or agreement with a public agency or the instructions of an authorized representative of any such agency with respect to any such grant, subvention or agreement; to permits for excavation or street construction; or to agreements for the use of City right-of-way where a contracting utility has the power of eminent domain.

DEFINITIONS

As set forth in the Ordinance, the following definitions apply:

"Contract" means an agreement for public works or improvements to be performed, or for goods or services to be purchased or grants to be provided, at the expense of the City or to be paid out of moneys deposited in the treasury or out of the trust money under the control or collected by the City. "Contract" also means a written agreement for the exclusive use ("exclusive use" means the right to use or occupy real property to the exclusion of others, other than the right reserved by the fee owner) or occupancy of real property for a term exceeding 29 days in any calendar year, whether by singular or cumulative instrument, (i) for the operation or use by others of real property owned or controlled by the City for the operation of a business, social, or other establishment or organization, including leases, concessions, franchises and easements, or (ii) for the City's use or occupancy of real property owned by others, including leases, concessions, franchises and easements.

"Contract" shall not include: a revocable at-will use or encroachment permit for the use of or encroachment on City property regardless of the ultimate duration of such permit; excavation, street construction or street use permits; agreements for the use of City right-of-way where a contracting utility has the power of eminent domain; or agreements governing the use of City property that constitute a public forum for activities that are primarily for the purpose of espousing or advocating causes or ideas and that are generally protected by the First Amendment to the United States Constitution or that are primarily recreational in nature.

“Contractor” means any person or persons, firm partnership or corporation, company, or combination thereof, that enters into a Contract with the City. “Contractor” does not include a public entity.

“Domestic Partner” means any person who has a currently registered domestic partnership with a governmental entity pursuant to state or local law authorizing the registration.

“Employee Benefits” means bereavement leave; disability, life, and other types of insurance; family medical leave; health benefits; membership or membership discounts; moving expenses; pension and retirement benefits; vacation; travel benefits; and any other benefit given to employees. “Employee benefits” shall not include benefits to the extent that the application of the requirements of this chapter to such benefits may be preempted by federal or state.

CONTRACTOR’S OBLIGATION TO PROVIDE THE CITY WITH DOCUMENTATION AND INFORMATION

Contractor shall provide the City with documentation and information verifying its compliance with the requirements of the Ordinance within ten (10) days of receipt of a request from the City. Contractors shall keep accurate payroll records, showing, for each City Contract, the employee’s name, address, Social Security number, work classification, straight time pay rate, overtime pay rate, overtime hours worked, status and exemptions, and benefits for each day and pay period that the employee works on the City Contract. Each request for payroll records shall be accompanied by an affidavit to be completed and returned by the Contractor, as stated, attesting that the information contained in the payroll records is true and correct, and that the Contractor has complied with the requirements of the Ordinance. A violation of the Ordinance or noncompliance with the requirements of the Ordinance shall constitute a breach of contract.

EMPLOYER COMPLIANCE CERTIFICATE AND NOTICE REQUIREMENTS

- (a) All contractors seeking a Contract subject to the Ordinance shall submit a completed Declaration of Compliance Form (attachment “A”), signed by an authorized representative, with each proposal, bid or application. The Declaration of Compliance shall be made a part of the executed contract, and will be made available for public inspection and copying during regular business hours.
- (b) The Contractor shall give each existing employee working directing on a City contract, and (at the time of hire), each new employee, a copy of the notification provided as attachment “B.”
- (c) Contractor shall post, in a place visible to all employees, a copy of the notice provided as attachment “C.”

**DECLARATION OF COMPLIANCE
Equal Benefits Ordinance**

Name of Contractor

Address

The above named contractor ("Contractor") hereby declares and agrees as follows:

1. I have read and understand the Requirements of the Non-Discrimination In Employee Benefits Code (the "Requirements") provided to me by the City of Sacramento ("City") in connection with the City's request for proposals or other solicitations for the performance of services, or for the provision of commodities, under a City contract or agreement ("Contract").
2. As a condition of receiving the City Contract, I agree to fully comply with the Requirements, as well as any additional requirements that may be specified in the City's Non-Discrimination in Employee Benefits Code codified at Chapter 3.54 of the Sacramento City Code (the "Ordinance").
3. I understand, to the extent that such benefits are not preempted or prohibited by federal or state law, employee benefits covered by the Ordinance, are any of the following:
 - a. Bereavement Leave
 - b. Disability, life, and other types of insurance
 - c. Family medical leave
 - d. Health benefits
 - e. Membership or membership discounts
 - f. Moving expenses
 - g. Pension and retirement benefits
 - h. Vacation
 - i. Travel benefits
 - j. Any other benefit offered to employees

I agree that should I offer any of the above listed employee benefits, that I will offer those benefits, without discrimination between employees with spouses and employees with domestic partners, and without discrimination between the spouses and domestic partners of such employees.

4. I understand that I will not be considered to be discriminating in the provision or application of employee benefits under the following conditions or circumstances:
 - a. In the event that the actual cost of providing a benefit to a domestic partner or spouse, exceeds the cost of providing the same benefit to a spouse or domestic partner of an employee, I will not be required to provide the benefit, nor shall it be deemed discriminatory, if I require the employee to pay the monetary difference in order to provide the benefit to the domestic partner or to the spouse.
 - b. In the event I am unable to provide a certain benefit, despite taking reasonable measures to do so, if I provide the employee with a cash equivalent, I will not be deemed to be discriminating in the application of that benefit.
 - c. If I provide employee benefits neither to employee's spouses nor to employee's domestic partners.
 - d. If I provide employee benefits to employees on a basis unrelated to marital or domestic partner status.
 - e. If I submit, to the Program Coordinator, written evidence of making reasonable efforts to end discrimination in employee benefits by implementing policies which are to be enacted before the

first effective date after the first open enrollment process following the date the Contract is executed with the City.

I understand that any delay in the implementation of such policies may not exceed one (1) year from the date the Contract is executed with the City, and applies only to those employee benefits for which an open enrollment process is applicable.

- f. Until administrative steps can be taken to incorporate, in the infrastructure, nondiscrimination in employee benefits

The time allotted for these administrative steps will apply only to those employee benefits for which administrative steps are necessary and may not exceed three (3) months from the date the Contract is executed with the City.

- g. Until the expiration of a current collective bargaining agreement(s) where, in fact, employee benefits are governed by a collective bargaining agreement(s).
- h. I take all reasonable measures to end discrimination in employee benefits by either requesting the union(s) involved agree to reopen the agreement(s) in order for me to take whatever steps are necessary to end discrimination in employee benefits or by my ending discrimination in employee benefits without reopening the collective bargaining agreement(s).
- i. In the event I cannot end discrimination in employee benefits despite taking all reasonable measures to do so, I provide a cash equivalent to eligible employees for whom employee benefits (as listed previously), are not available.

Unless otherwise authorized in writing by the City Manager, I understand this cash equivalent must begin at the time the union(s) refuse to allow the collective bargaining agreement(s) to be reopened or no longer than three (3) months from the date the Contract is executed with the City.

- 5. I understand that failure to comply with the provisions of Section 4. (a) through 4. (i), above, will subject me to possible suspension and/or termination of this Contract for cause; repayment of any or all of the Contract amount disbursed by the City; debarment for future contracts until all penalties and restitution have been paid in full; deemed ineligible for future contracts for up to two (2) years; the imposition of a penalty, payable to the City, in the sum of \$50.00 for each employee, for each calendar day during which the employee was discriminated against in violation of the provisions of the Ordinance.
- 6. I understand and do hereby agree to provide each current employee and, within ten (10) days of hire, each new employee, of their rights under the Ordinance. I further agree to maintain a copy of each such letter provided, in an appropriate file for possible inspection by an authorized representative of the City. I also agree to prominently display a poster informing each employee of these rights.
- 7. I understand that I have the right to request an exemption to the benefit provisions of the Ordinance when such a request is submitted to the Procurement Services Division, in writing with sufficient justification for resolution, prior to contract award.

I further understand that the City may request a waiver or exemption to the provisions or requirements of the Ordinance, when only one contractor is available to enter into a contract or agreement to occupy and use City property on terms and conditions established by the City; when sole source conditions exist for goods, services, public project or improvements and related construction services; when there are no responsive bidders to the Ordinance requirements and the contract is for essential goods or services; when emergency conditions with public health and safety implications exist; or when the contract is for specialized legal services if in the best interest of the City.

8. In consideration of the foregoing, I shall defend, indemnify and hold harmless, the City, its officers and employees, against any claims, actions, damages, costs (including reasonable attorney fees), or other liabilities of any kind arising from any violation of the Requirements or of the Ordinance by me.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am authorized to bind the Contractor to the provisions of this Declaration.

Signature of Authorized Representative

Date

Print Name

Title



YOUR RIGHTS UNDER THE CITY OF SACRAMENTO'S
NON-DISCRIMINATION IN EMPLOYEE BENEFITS BY CITY CONTRACTORS ORDINANCE

On (date), your employer (the "Employer") entered into a contract with the City of Sacramento (the "City") for (contract details), and as a condition of that contract, agreed to abide by the requirements of the City's Non-Discrimination In Employee Benefits By City Contractors Ordinance (Sacramento City Code Section 3.54).

The Ordinance does not require the Employer to provide employee benefits. The Ordinance does require that if certain employee benefits are provided by the Employer, that those benefits be provided without discrimination between employees with spouses and employees with domestic partners, and without discrimination between the spouse or domestic partner of employees.

The Ordinance covers any employee working on the specific contract referenced above, but only for the period of time while those employees are actually working on this specific contract.

The included employee benefits are:

- | | |
|---|---|
| - Bereavement leave | - Moving expenses |
| - Disability, life and other types of insurance | - Pension and retirement benefits |
| - Family medical leave | - Vacation |
| - Health benefits | - Travel benefits |
| - Membership or membership discounts | - Any other benefits given to employees |

(Employee Benefits does not include benefits that may be preempted by federal or state law.)

If you feel you have been discriminated or retaliated against by your employer in the terms and conditions of your application for employment, or in your employment, or in the application of these employee benefits, because of your status as an applicant or as an employee protected by the Ordinance, or because you reported a violation of the Ordinance, and after having exhausted all remedies with your employer,

You May . . .

- Submit a written complaint to the City of Sacramento, Contract Services Unit, containing the details of the alleged violation. The address is:

City of Sacramento
Contract Services Unit
915 I St., 2nd Floor
Sacramento, CA 95814

- Bring an action in the appropriate division of the Superior Court of the State of California against the Employer and obtain the following remedies:
 - Reinstatement, injunctive relief, compensatory damages and punitive damages
 - Reasonable attorney's fees and costs



YOUR RIGHTS UNDER THE CITY OF SACRAMENTO'S

NON-DISCRIMINATION IN EMPLOYEE BENEFITS BY CITY CONTRACTORS ORDINANCE

If your employer provides employee benefits, they must be provided to those employees working on a City of Sacramento contract without discriminating between employees with spouses and employees with domestic partners.

The included employee benefits are:

- Bereavement leave
- Disability, life and other types of insurance
- Family medical leave
- Health benefits
- Membership or membership discounts
- Moving expenses
- Pension and retirement benefits
- Vacation
- Travel benefits
- Any other benefits given to employees

If you feel you have been discriminated against by your employer . . .

You May . . .

- Submit a written complaint to the City of Sacramento, Contract Services Unit, containing the details of the alleged violation. The address is:

City of Sacramento
Contract Services Unit
915 I St., 2nd Floor
Sacramento, CA 95814
- Bring an action in the appropriate division of the Superior Court of the State of California against the employer and obtain reinstatement, injunctive relief, compensatory damages, punitive damages and reasonable attorney's fees and costs.

Discrimination and Retaliation Prohibited.

If you feel you have been discriminated or retaliated against by your employer in the terms and conditions of your application for employment, or in your employment, because of your status as an applicant or as an employee protected by the Ordinance, or because you reported a violation of this Ordinance . . .

You May Also . . .

Submit a written complaint to the City of Sacramento, Contract Services Unit, at the same address, containing the details of the alleged violation.

Guidelines for City of Sacramento Boycott of Arizona and Arizona-Headquartered Businesses

Sacramento City Council Resolution No. 2010-346 calls for a boycott of the State of Arizona and businesses headquartered in Arizona. The boycott provisions prohibit employee travel to Arizona at City expense, and restrict the purchase of goods and services with Arizona headquartered businesses.

Resolution No. 2010-346 provides that “where ***practicable*** and where there is no ***significant*** additional cost to the City, the City of Sacramento shall not enter into any new, amended, extended or supplemental contracts to purchase or procure goods or services from any business or entity that is ***headquartered*** in Arizona ...”

The guidelines below are provided to city staff for implementing the Resolution.

● Definitions

- **Headquartered**: State in which a company is headquartered. This may be different than the state of incorporation, where subsidiaries are located. You may determine a company headquarters from the declaration provided in a solicitation response or by calling the company directly.
- **Practicable**: The proposed or existing vendor can be replaced without interruption to services and/or supplies, and the replacement of the vendor does not adversely affect the Sacramento economy. For example, excluding a company headquartered in Arizona, but with a Sacramento-area office would not be practicable, as it would adversely affect the local economy. The cost of transition should not be significant.
- **Significant**: Costs that exceed the following percentages or dollar thresholds:
 - For contracts valued \$250k and less – the lesser of 10% or \$25k
 - For contracts valued between \$250k and \$1m – the lesser of 10% or \$100k
 - For contracts valued between \$1m and 10m – the lesser of 8% or \$100k
 - For contracts valued at \$10m and more – the lesser of 6% or 100k
- **Related companies, subcontractors**: The policy applies only to the company with which the City enters into a contract.

● Exceptions Checklist

If the lowest bidder is headquartered in Arizona, in order to have a valid exception to the boycott Resolution, you must be able to answer yes to **at least** one of the following questions:

- Is the difference between the low bid and the second low bid “significant”? (see definitions) OR if the vendor has a current contract and we evaluating a renewal, is there a significant cost to switch vendors?
- Does the lowest bidder have a local office in Sacramento, providing benefit to the local economy, if awarded the contract?
- Is the vendor the sole-source for this particular service/commodity?
- Is the contract award or extension in the “best interest of the City” for reasons not listed above?

City of Sacramento Boycott of Arizona-Headquartered Businesses

On June 15, 2010, the Sacramento City Council adopted Resolution No. 2010-346 opposing two Arizona laws (SB 1070 and HB 2162) that will allow Arizona police to arrest individuals suspected of being unlawfully present in the United States and to charge immigrants with a state crime for not carrying immigration documents. Sacramento City Council Resolution No. 2010-346 also called for a boycott of the State of Arizona and businesses headquartered in Arizona until Arizona repeals or a court nullifies SB 1070 and HB 1262. Resolution No. 2010-346 provides, in pertinent part, that “where practicable and where there is no significant additional cost to the City, the City of Sacramento shall not enter into any new, amended, extended or supplemental contracts to purchase or procure goods or services from any business or entity that is headquartered in Arizona ...”

Pursuant to the provisions of Resolution No. 2010-346, the City may determine that a bid from a business or entity that is headquartered in Arizona is nonresponsive and the City may reject the bid on that basis.

Bidders that are headquartered in the United States shall certify in the space below the state where the bidder is headquartered:

State Where Firm is Headquartered

Signature of Authorized Representative

Date

Print Name

Title

This Page to be completed and submitted with bid proposal

ESBE REQUIREMENTS

(City Contracts no Federal Funds Used)

I. ESBE PARTICIPATION REQUIREMENT

On February 9, 1999, the Sacramento City Council adopted an Emerging and Small Business Development (ESBD) program to provide enhanced opportunities for the participation of small business enterprises (SBEs) and emerging business enterprises (EBEs) in the City's contracting and procurement activities. The ESBD program establishes an annual emerging and small business enterprise (ESBE) participation goal for the City's contracts, and authorizes City departments to require minimum ESBE participation levels in individual contracts so that the annual ESBE participation goal can be met. Under City Code section 3.60.270, when the bid specifications for a City contract establishes a minimum participation level for ESBEs, no bidder on the contract shall be considered a responsive bidder unless its bid meets the minimum ESBE participation level required by the bid specifications.

The City has established **a minimum 20% participation level for ESBEs on this contract.** Pursuant to City code Section 3.60.270, no bidder on this contract shall be considered a responsive bidder unless its bid meets or exceeds this minimum participation level.

Bidders shall include copies of their Certification as a SBE or EBE and the SBE or EBE Certifications for each subcontractor, trucker, material supplier, or other business entity listed on the forms submitted within two (2) working days of submitting the sealed proposal. Failure to submit the required ESBE information will be grounds for finding the bid non-responsive.

II. ESBE CERTIFICATION

- A. A SBE designated in the bid must be certified as such by the State of California, Department of General Services, or by the City, as defined herein, prior to the time bids are received.
- B. An EBE designated in the bid must be certified as such by the City, as defined herein, prior to the time bids are received.

III. DETERMINATION OF ESBE PARTICIPATION LEVEL

- A. The percent of ESBE participation shall be determined based on the dollar value of the work to be performed or supplies to be furnished by certified ESBEs designated in the bidder's Subcontractor and ESBE Participation Verification Form, relative to the total dollar amount of the bid.
- B. To receive credit for participation, an ESBE must perform a commercially useful function; i.e., must be responsible for the execution of a distinct element of the work and must carry its responsibility by actually performing, managing, or supervising the work.

- C. ESBE Bidders: The dollar value listed for an ESBE bidder on the bidder's Subcontractor and ESBE Participation Verification Form shall include only the amount of work to be performed by the ESBE bidder, and shall not include any amount to be paid by the ESBE bidder for the cost of materials or supplies.
- D. Suppliers: Credit for an ESBE vendor of materials or supplies is counted as one hundred (100) percent of the amount paid to the vendor for the material or supplies. To receive this credit, ESBE vendors of supplies and materials must be listed on the bidder's Subcontractor and ESBE Participation Verification Form.
- E. Truckers: Credit for an ESBE trucker is counted as one hundred (100) percent of the amount paid to the trucker for trucking services, not including any amount paid to the trucker for the cost of any materials or supplies being transported by the trucker.
- F. Subcontractors (including truckers): To receive credit for an ESBE subcontractor, the subcontractor must be listed on the bidder's Subcontractor and ESBE Participation Verification Form. The dollar value listed for a subcontractor on the bidder's Subcontractor and ESBE Participation Verification Form shall not include any amount to be paid to the subcontractor for the cost of materials or supplies.

IV. ESBE REQUIREMENTS FOR CONTRACTOR

- A. ESBE Records: The Contractor shall maintain records of all subcontracts with certified ESBE subcontractors and records of materials purchased from certified ESBE vendors/suppliers for one (1) year after receiving final payment from the City. Such records shall show the name and business address of each ESBE subcontractor or vendor/supplier and the total dollar amount actually paid each ESBE subcontractor or vendor/supplier.

Upon completion of the contract, a summary of these records shall be prepared, certified correct by the Contractor's authorized representative and furnished to the City. The Contractor shall provide such other information, records, reports, certifications or other documents as may be required by City, to determine compliance with any provision of the ESBD program or these specifications.

- B. Reporting Requirements and Sanctions: Failure to provide specific information, records, reports, certifications, or any other documents required for compliance with these specifications shall be considered noncompliance with the contract. If the Contractor fails to correct a deficiency within fifteen (15) days after notification, a deduction may be made from the contract amount. The deduction shall be ten (10) percent of the estimated value of the work performed during the month, not to be less than \$1,000 nor exceed \$10,000 and shall be deducted from the next progress payment.
- C. Performance of ESBE Subcontractors and Suppliers: The ESBEs listed by the Contractor shall perform the work and supply the materials for which they are listed unless the Contractor has received prior written authorization from the City to perform the work with other forces or to obtain the material from other sources. Reasons for requesting such authorization would include:

1. The listed ESBE fails to execute a written contract based upon the general terms, conditions, plans, and specifications for the project.
2. The listed ESBE becomes bankrupt or insolvent.
3. The listed ESBE subcontractor fails to meet the bond requirements of the Contractor.
4. The work performed by the listed ESBE subcontractor is unsatisfactory and/or is not in accordance with the plans and specifications, or the subcontractor fails to perform his/her obligations under the subcontractor contract.
5. It would be in the best interest of the City.

The Contractor shall not be entitled to any payment for such work or materials unless it is performed or supplied by the listed SBE or EBE or other forces (including those of the Contractor) authorized by the City in writing.

- D. Subcontractor Substitution: No substitution of an ESBE subcontractor shall be made at any time without compliance with the Subcontracting Listing Law and the written consent of the City. If an ESBE subcontractor is unable to perform successfully and is to be replaced, the Contractor will be required to make good faith efforts to replace the original ESBE subcontractor with another certified ESBE subcontractor. The new ESBE subcontractor must be certified at the time of substitution.

V. DEFINITIONS

- A. Emerging Business Enterprise (EBE): The City shall certify EBEs utilizing the small business certification criteria and standards of the State of California, General Services Department, Office of Small Business Certification and Resources, that were in effect on December 1, 1998, provided that the size standard, industry by industry, shall be set at 50% of the State small business certification criteria and standards that were in effect on December 1, 1998.
- B. Small Business Enterprise (SBE): The City shall certify SBEs utilizing the small business certification criteria and standards of the State of California, General Services Department, Office of Small Business Certification and Resources. The City will also accept State certified SBEs.
- C. Contractor: The individual, partnership, corporation, joint venture or other legal entity entering into a contract with the City of Sacramento.
- D. Subcontractor: The individual, partnership, corporation, or other legal entity entering into a contract with the prime contractor to perform a portion of the work.

FOLLOWING FORMS TO BE FILLED OUT AND SIGNED

ONLY

IF AWARDED CONTRACT

WORKER'S COMPENSATION INSURANCE CERTIFICATION

TO THE CITY OF SACRAMENTO:

The undersigned does hereby certify that he is aware of the provisions of Section 3700 et seq. of the Labor Code which require every employer to be insured against liability for worker's compensation claims or to undertake self-insurance in accordance with the provisions of said Code, and that he/she will comply with such provisions before commencing the performance of the work on this contract.

Bidder

BY: _____

Title: _____

Address: _____

Date: _____

PLEASE READ CAREFULLY BEFORE SIGNING

To be signed by authorized corporate officer or partner or individual submitting the bid. If bidder is: (example)

1. An individual using a firm name, sign: "John Doe, and individual doing business as Blank Company".
2. An individual doing business under his own name, sign: Your name only.
3. A co-partnership, sign: "John Doe and Richard Doe, co-partners doing business as Blank Company, by, John Doe, Co-Partner".
4. A corporation, sign: "Blank Company, by John Doe, Secretary". (Or other title)

AGREEMENT
(Construction Contract Over \$25,000)

THIS AGREEMENT, dated for identification _____, 2012, is made and entered into between the CITY OF SACRAMENTO, a municipal corporation ("City"), and

("Contractor").

The City and Contractor hereby mutually agree as follows:

1. CONTRACT DOCUMENTS

The Contract Documents, sometimes also referred to as the "Contract," consist of the following items, which are hereby incorporated by reference as if set forth in full in this Agreement:

The Notice to Contractors

The Proposal Form submitted by the Contractor

The Instructions to Bidders

The Emerging and Small Business Enterprise (ESBE) Requirements

The Requirements for the Non-Discrimination in Employee Benefits by City Contractors Ordinance and the Declaration of Compliance

The City's Reference Guide for Construction Contracts

The Addenda, if any

This Agreement

The Standard Specifications

The Special Provisions

The Plans and Technical Specifications

The drawings and other data and all developments thereof prepared by City pursuant to the Contract

Any modifications of any of the foregoing made or approved by City, including but not limited to duly authorized change orders.

Unless specifically noted otherwise, references to the "Standard Specifications" shall mean and refer to the Standard Specifications for Public Construction of the City of Sacramento approved by the Sacramento City Council on June 4, 2007 (Resolution No. 2007-350), and any subsequent amendments thereto approved by the Sacramento City Council or the Sacramento City Manager. Work called for in any one Contract Document and not mentioned in another is to be performed and executed as if mentioned in all Contract Documents. The table of contents, titles and headings contained in the Contract Documents are provided solely to facilitate reference to various provisions of the Contract Documents and in no way affect or limit the interpretation of the provisions to which they refer.

2. DEFINITIONS

Unless otherwise specifically provided herein, all words and phrases defined in the Standard Specifications shall have the same meaning and intent in this Agreement.

3. AGREEMENT CONTROLS

In the event of a conflict between any of the terms and conditions set forth in this Agreement and the terms and conditions set forth in other Contract Documents, the terms

and conditions set forth in this Agreement shall prevail, except that the provisions of any duly authorized change order shall prevail over any conflicting provisions of this Agreement.

4. SCOPE OF CONTRACT

Contractor agrees to furnish all tools, equipment, apparatus, facilities, labor, material and transportation necessary to perform and complete in a good and workmanlike manner to the satisfaction of City, all the Work called for in the Contract Documents entitled:

CWTP MCC "N" REPLACEMENT (PN:X14010048)

including the Work called for in the following alternative bid items described in the Proposal Form:

Contractor agrees to perform such Work in the manner designated in and in strict conformity with the Contract Documents.

5. CONTRACT AMOUNT AND PAYMENTS

City agrees to pay and Contractor agrees to accept, as complete payment for the above Work, in accordance with the schedule and procedures set forth in the Contract Documents and subject to deductions, withholdings and additions as specified in the Contract Documents, a total sum that shall not exceed the total bid amount set forth in Contractor's Proposal Form. In addition, subject to deductions, withholdings and additions as specified in the Contract Documents, payment for individual items of the Work shall be computed as follows:

(A) For items of the Work for which a lump sum price is specified in Contractor's Proposal Form, Contractor shall be paid the lump sum price(s) specified in Contractor's Proposal Form; and

(B) For items of the Work for which a unit price is specified in Contractor's Proposal Form, Contractor shall be paid the sum computed at such unit price, or computed at a different price if such different price is determined by City in accordance with the Standard Specifications, based on the actual amount of each such item performed and/or furnished and incorporated in the Work; provided that in no event shall the total sum for a unit price item exceed the total bid amount set forth for such item in the Contractor's Proposal Form, unless authorized by Change Order.

6. PROGRESS PAYMENTS

Subject to the terms and conditions of the Contract, City shall cause payments to be made upon demand of Contractor as follows:

(A) On or about the first of the month, the Engineer shall present to the Contractor a statement showing the amount of labor and materials incorporated in the Work through the twentieth (20) calendar day of the preceding month. After both Contractor and Engineer approve the statement in writing, and the City's labor compliance officer provides written approval, the City shall issue a certificate for ninety (90) percent of the

amount it shall find to be due, subject to any deductions or withholdings authorized or required under the Contract or any applicable Laws or Regulations.

(B) No inaccuracy or error in said monthly estimates shall operate to release Contractor from damages arising from such Work or from enforcement of each and every provision of the Contract Documents, and City shall have the right subsequently to correct any error made in any estimate for payment.

(C) Contractor shall not be paid for any defective or improper Work.

(D) The remaining ten (10) percent of the value of the Work performed under the Contract, if unencumbered and subject to any deductions or withholdings authorized or required under the Contract or any applicable Laws or Regulations, shall be due and payable beginning thirty-five (35) days after completion and final acceptance of the Work by City; provided that the City may determine, in its sole discretion, to release up to fifty (50) % of such retention, in whole or in part, at any time. Acceptance by Contractor of the final payment shall constitute a waiver of all claims against the City arising under the Contract Documents, except for disputed claims in stated amounts that the Contractor specifically reserves in writing, but only to the extent that the Contractor has complied with all procedures and requirements applicable to the presentation and processing of such claim(s) under the Contract Documents. Contractor shall be entitled to substitute securities for retention or to direct that payments of retention be made into escrow, as provided in Public Contract Code Section 22300, upon execution of the City's Escrow Agreement for Security Deposits in Lieu of Retention.

(E) The parties agree that, for purposes of the timely progress payment requirements specified in Public Contract Code Section 20104.50, the date that the City receives a statement jointly approved by the Contractor and the Engineer as provided above shall be deemed to constitute the date that City receives an undisputed and properly submitted payment request from the Contractor. Progress payments not made within 30 days after this date may be subject to payment of interest as provided in Section 20104.50.

7. RETENTION OF SUMS CHARGED AGAINST CONTRACTOR

When, under the provisions of this Contract or any applicable Laws or Regulations, City is authorized or required to withhold, deduct or charge any sum of money against Contractor, City may deduct and retain the amount of such charge from the amount of the next succeeding progress estimate(s), or from any other moneys due or that may become due Contractor from City. If, on completion or termination of the Contract, sums due Contractor are insufficient to pay City's charges, City shall have the right to recover the balance from Contractor or its Sureties.

8. COMMENCEMENT AND PROSECUTION OF WORK

Contractor shall commence the Work not later than fifteen (15) working days after the date of the written Notice to Proceed from City to Contractor and shall diligently prosecute the Work to final completion. The phrase "commence the Work" means to engage in a continuous program on-site including, but not limited to, site clearance, grading, dredging, land filling and the fabrications, erection, or installation of the Work. The Notice to Proceed shall be issued within fifteen (15) calendar days following execution of the Agreement by the City and the filing by Contractor of the required Bonds and proof of insurance, provided that the Engineer may delay issuance of the Notice to Proceed if the Engineer determines in the Engineer's sole discretion that conditions on the site of the

Work are unsuitable for commencement of the Work. After the Notice to Proceed is issued, the continuous prosecution of Work by Contractor shall be subject only to Excusable Delays as defined in this Agreement.

9. TIME OF COMPLETION

The entire Work shall be brought to completion in the manner provided for in the Contract Documents on or before **one hundred ten (110) working days** from the date of the Notice to Proceed (hereinafter called the "Completion Date") unless extensions of time are granted in accordance with the Contract Documents.

Failure to complete the entire Work by the Completion Date and in the manner provided for in the Contract Documents shall subject Contractor to liquidated damages as provided in this Agreement. Time is and shall be of the essence in the performance of the Contract and the Work.

10. PAYMENTS DO NOT IMPLY ACCEPTANCE OF WORK

The payment of any progress payment, or the acceptance thereof by Contractor, shall not constitute acceptance of the Work or any portion thereof and shall in no way reduce the liability of Contractor to replace unsatisfactory work or material, whether or not the unsatisfactory character of such work or material was apparent or detected at the time such payment was made.

11. ACCEPTANCE NOT RELEASE

Contractor shall correct immediately any defective or imperfect work or materials that may be discovered before final acceptance of the entire Work, whether or not such defect or imperfection was previously noticed or identified by the City. The inspection of the Work, or any part thereof, shall not relieve Contractor of any of its obligations to perform satisfactory work as herein specified.

Failure or neglect on the part of City or any of its officers, employees or authorized agents to discover, identify, condemn or reject defective or imperfect work or materials shall not be construed to imply an acceptance of such work or materials, if such defect or imperfection becomes evident at any time prior to final acceptance of the entire Work, nor shall such failure or neglect be construed as barring City from enforcing Contractor's warranty(ies) or otherwise recovering damages or such a sum of money as may be required to repair or rebuild the defective or imperfect work or materials whenever City may discover the same, subject only to any statutes of limitation that may apply to any such claim.

12. CITY'S RIGHT TO TAKE POSSESSION OF THE WORK IN WHOLE OR IN PART

The City shall have the right at any time to enter upon the Work and perform work not covered by this Contract, or to occupy and use a portion of the Work, prior to the date of the final acceptance of the Work as a whole, without in any way relieving Contractor of any obligations under this Contract.

13. NO WAIVER OF REMEDIES

Neither the inspection by City, its officers, employees or agents, nor any certificate or other approval for the payment of money, nor any payment for, nor acceptance of the

whole or any part of the Work by City, nor any extensions of time, nor any position taken by City, its officers, employees or its agents shall operate as a waiver of any provision of the Contract Documents nor of any power herein reserved to City or any right to damages herein provided, nor shall any waiver of any breach of this Agreement be held to be a waiver of any other or subsequent breach. All remedies provided in the Contract Documents shall be taken and construed as cumulative; in addition to each and every other remedy herein provided, the City shall have any and all equitable and legal remedies that it would in any case have.

14. WARRANTY

Except as otherwise expressly provided in the Contract Documents, and excepting only items of routine maintenance, ordinary wear and tear and unusual abuse or neglect by City, Contractor warrants and guarantees all Work executed and all supplies, materials and devices of whatsoever nature incorporated in or attached to the Work, or otherwise provided as a part of the Work pursuant to the Contract, to be absolutely free of all defects of workmanship and materials for a period of one year after final acceptance of the entire Work by the City. Contractor shall repair or replace all work or material, together with any other work or material that may be displaced or damaged in so doing, that may prove defective in workmanship or material within this one year warranty period without expense or charge of any nature whatsoever to City.

In the event that Contractor shall fail to comply with the conditions of the foregoing warranty within ten (10) days after being notified of the defect in writing, City shall have the right, but shall not be obligated, to repair, or obtain the repair of, the defect and Contractor shall pay to City on demand all costs and expense of such repair. Notwithstanding anything herein to the contrary, in the event that any defect in workmanship or material covered by the foregoing warranty results in a condition that constitutes an immediate hazard to public health or safety, or any property interest, or any person, City shall have the right to immediately repair, or cause to be repaired, such defect, and Contractor shall pay to City on demand all costs and expense of such repair. The foregoing statement relating to hazards to health, safety or property shall be deemed to include both temporary and permanent repairs that may be required as determined in the sole discretion and judgment of City.

In addition to the above, the Contractor shall make a written assignment of all manufacturer's and other product warranties to the City, prior to completion and final acceptance of the Work by City.

The Contractor's Performance Bond shall secure the performance of the Contractor's obligations under this Section 14, and the Contractor and its Surety shall be jointly and severally liable for these obligations.

15. LIQUIDATED DAMAGES IF WORK NOT COMPLETED ON TIME

(A) The actual fact of the occurrence of damages and the actual amount of the damages that City would suffer if the entire Work, and/or any specified portion thereof, were not completed within the time(s) specified herein are dependent upon many circumstances and conditions that could prevail in various combinations, and for this reason, it is impracticable and extremely difficult to fix the actual damages. Damages that City would suffer in the event of such delay include: loss of the use of the project;

expenses of prolonged assignment to the project of an architectural and/or engineering staff; prolonged costs of administration, inspection, and supervision; increased operational expenses and/or impaired operation of other facilities dependent upon completion of the project; and the loss and inconvenience suffered by the public within the City of Sacramento by reason of the delay in the completion of the project or portion thereof. Accordingly, the parties agree, and by execution of this Agreement, Contractor acknowledges that it understands and agrees, that the amount(s) set forth herein as liquidated damages reflect the parties' best efforts at the time of entering into the Contract to estimate the damages that may be incurred by City and the public due to the Contractor's delay in completion of the Work and/or any specified portion thereof, and shall be presumed to be the amount of damages sustained by the failure of Contractor to complete the entire Work and/or any specified portion thereof within the time(s) specified herein.

(B) Contractor shall pay liquidated damages to City for failure to complete the entire Work by the Completion Date (as extended in accordance with the Contract Documents, if applicable) in the amount of two hundred dollars (\$200.00) for each calendar day after the Completion Date (as extended in accordance with the Contract Documents, if applicable), continuing to the time at which the entire Work is completed. Such amount is the actual cash value agreed upon by the City and Contractor as the loss to City and the public resulting from Contractor's default.

The parties agree, and by execution of this Agreement, Contractor acknowledges that it understands and agrees, that the foregoing provisions provide for the imposition of liquidated damages from the Completion Date (as extended in accordance with the Contract Documents, if applicable) until the date of completion of the entire Work as determined by the Engineer in accordance with Section 8-4 of the Standard Specifications, whether or not the Work or any portion thereof is claimed or determined to be substantially complete prior to such date of completion.

(C) In the event Contractor shall become liable for liquidated damages, City, in addition to all other remedies provided by law, shall have the right to withhold any and all payments that otherwise would be or become due Contractor until the liability of Contractor under this section is finally determined. City shall have the right to use and apply such payments, in whole or in part, to reimburse City for all liquidated damages due or to become due to City. Any remaining balance of such payments shall be paid to Contractor only after discharge in full of all liability incurred by Contractor under this section or otherwise under any provision of the Contract Documents or any applicable Law or Regulation. If the sum so retained by City is not sufficient to discharge all such liabilities of Contractor, Contractor shall continue to remain liable to City until all such liabilities are satisfied in full. No failure by City to withhold any payment as specified above shall in any manner be construed to constitute a release of any such liabilities nor a waiver of the City's right to withhold payment for such liabilities.

16. INDEMNITY AND HOLD HARMLESS

(A) Contractor shall defend, hold harmless and indemnify the City, its officers, employees, and agents, and each and every one of them, from and against any and all actions, damages, costs, liabilities, claims, demands, losses, judgments, penalties, costs and expenses of every type and description, whether arising on or off the site of the Work, including, but not limited to, any fees and/or costs reasonably incurred by City's staff attorneys or outside attorneys and any fees and expenses incurred in enforcing this provision (hereafter collectively referred to as "Liabilities"), including but not limited to

Liabilities arising from personal injury or death, damage to personal, real or intellectual property or the environment, contractual or other economic damages, or regulatory penalties, arising out of or in any way connected with performance of or failure to perform the Work by the Contractor, any subcontractor or agent, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, whether or not (i) such Liabilities are caused in part by a party indemnified hereunder, or (ii) such Liabilities are litigated, settled or reduced to judgment; provided that the foregoing indemnity does not apply to liability for damages for death or bodily injury to persons, injury to property, or other loss, damage or expense to the extent arising from (i) the sole negligence or willful misconduct of, or defects in design furnished by, City, its agents, servants, or independent contractors who are directly responsible to City, or (ii) the active negligence of City.

(B) The existence or acceptance by City of any of the insurance policies or coverages described in this Agreement shall not affect or limit any of City's rights under this Section 16, nor shall the limits of such insurance limit the liability of Contractor hereunder. The provisions of this Section 16 shall survive any expiration or termination of the Contract.

17. CONTRACTOR SHALL ASSUME RISKS

Until the completion and final acceptance by City of all Work under this Contract, the Work shall be under Contractor's responsible care and charge, and Contractor, at no cost to City, shall rebuild, repair, restore and make good all injuries, damages, re-erectments, and repairs occasioned or rendered necessary by accidental causes of any nature, to all or any portions of the Work.

18. GENERAL LIABILITY OF CONTRACTOR

Except as otherwise herein expressly stipulated, Contractor shall perform all the Work and furnish all the labor, materials, tools, equipment, apparatus, facilities, transportation, power and light, and appliances, necessary or proper for performing and completing the Work herein required in the manner and within the time herein specified. The mention of any specific duty or liability of Contractor shall not be construed as a limitation or restriction of any general liability or duty of Contractor, and any reference to any specific duty or liability shall be construed to be solely for the purpose of explanation.

19. INSURANCE

During the entire term of this Contract and until completion and final acceptance of the Work as provided in the Contract Documents, Contractor shall maintain in full force and effect the insurance coverage described in this section.

Full compensation for all premiums that Contractor is required to pay for the insurance coverage described herein shall be included in the compensation specified for performance of the Work under the Contract. No additional compensation will be provided for Contractor's insurance premiums.

It is understood and agreed by the Contractor that its liability to the City shall not in any way be limited to or affected by the amount of insurance coverage required of or carried by the Contractor.

(A) Minimum Scope and Limits of Insurance Coverage

(1) Commercial General Liability Insurance, providing coverage at least as broad as ISO CGL Form 00 01 on an occurrence basis for bodily injury, including death, of one or more persons, property damage and personal injury, with limits of not less than one million dollars (\$1,000,000) per occurrence. The policy shall provide contractual liability and products and completed operations coverage for the term of the policy.

(2) Automobile Liability Insurance providing coverage at least as broad as ISO Form CA 00 01 on an occurrence basis for bodily injury, including death, of one or more persons, property damage and personal injury, with limits of not less than one million dollars (\$1,000,000) per occurrence. The policy shall provide coverage for owned, non-owned and/or hired autos as appropriate to the operations of the Contractor.

(3) Workers' Compensation Insurance with statutory limits, and Employers' Liability Insurance with limits of not less than one million dollars (\$1,000,000). The Worker's Compensation policy shall include a waiver of subrogation.

(B) Additional Insured Coverage

(1) Commercial General Liability Insurance: The City, its officials, employees and volunteers shall be covered by policy terms or endorsement as additional insureds as respects general liability arising out of activities performed by or on behalf of Contractor, products and completed operations of Contractor, and premises owned, leased or used by Contractor. The general liability additional insured endorsement must be signed by an authorized representative of the insurance carrier.

If the policy includes a blanket additional insured endorsement or contractual additional insured coverage, the above signature requirement may be fulfilled by submitting that document with a signed declaration page referencing the blanket endorsement or policy form.

(2) Automobile Liability Insurance: The City, its officials, employees and volunteers shall be covered by policy terms or endorsement as additional insureds as respects auto liability.

(C) Other Insurance Provisions

The policies are to contain, or be endorsed to contain, the following provisions:

(1) Contractor's insurance coverage shall be primary insurance as respects City, its officials, employees and volunteers. Any insurance or self-insurance maintained by City, its officials, employees or volunteers shall be in excess of Contractor's insurance and shall not contribute with it.

(2) Any failure to comply with reporting provisions of the policies shall not affect coverage provided to City, its officials, employees or volunteers.

(3) Coverage shall state that Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

(4) City will be provided with thirty (30) days written notice of cancellation or material change in the policy language or terms.

(D) Acceptability of Insurance

Insurance shall be placed with insurers with a Bests' rating of not less than A:V. Self-insured retentions, policy terms or other variations that do not comply with the requirements of this Section 19 must be declared to and approved by the City Risk Management Division in writing prior to execution of this Agreement.

(E) Verification of Coverage

(1) Contractor shall furnish City with certificates and required endorsements evidencing the insurance required. The certificates and endorsements shall be forwarded to the City representative designated by City. Copies of policies shall be delivered to the City on demand. Certificates of insurance shall be signed by an authorized representative of the insurance carrier.

(2) The City may withdraw its offer of contract or cancel the Contract if the certificates of insurance and endorsements required have not been provided prior to execution of this Agreement. The City may withhold payments to Contractor and/or cancel the Contract if the insurance is canceled or Contractor otherwise ceases to be insured as required herein.

(F) Subcontractors

Contractor shall require and verify that all subcontractors maintain insurance coverage that meets the minimum scope and limits of insurance coverage specified in subsection A, above.

20. FAILURE TO MAINTAIN BONDS OR INSURANCE

If, at any time during the performance of this Contract, Contractor fails to maintain any item of the bonds and/or insurance required under the Contract in full force and effect, Contractor shall immediately suspend all work under the Contract and notify City in writing of such failure. After such notice is provided, or if City discovers such failure and notifies Contractor, the City thereafter may withhold all Contract payments due or that become due until notice is received by City that such bonds and/or insurance have been restored in full force and effect and that the premiums therefor have been paid for a period satisfactory to the Division of Risk Management. Contractor shall not resume work until notified by City to do so, and the City shall have no responsibility or liability for any costs incurred by Contractor as a result of such suspension of Work.

In addition to the foregoing, any failure to maintain any item of the required bonds and/or insurance at any time during the performance of this Contract will be sufficient cause for termination of the Contract by City.

The Contractor shall be solely responsible for, and shall defend, indemnify and hold harmless the City, its officers, employees and agents against and from, any and all damages, claims, losses, actions, costs or other expenses of any kind incurred by any party as a direct or indirect result of any suspension of Work or termination of the Contract under the provisions of this Section.

21. EXCUSABLE DELAYS

For the purpose of these Contract Documents, the term "Excusable Delay" shall mean, and is limited to, delay caused directly by: acts of God; acts of a public enemy; fires; inclement weather as determined by the Engineer; riots; insurrections; epidemics; quarantine restrictions; strikes; lockouts; sitdowns; acts of a governmental agency; priorities or privileges established for the manufacture, assemble, or allotment of materials necessary in the Work by order, decree or otherwise of the United States or by any department, bureau, commission, committee, agent, or administrator of any legally constituted public authority; changes in the Work ordered by City insofar as they necessarily require additional time in which to complete the Work; the prevention of Contractor from commencing or prosecuting the Work because of the acts of others, excepting Contractor's subcontractors or suppliers; or the prevention of Contractor from commencing or prosecuting the Work because of a Citywide failure of public utility service.

The term "Excusable Delay" shall specifically not include: (i) any delay that could have been avoided by the exercise of care, prudence, foresight and diligence on the part of Contractor; (ii) any delay in the prosecution of any part of the Work that does not constitute a Controlling Operation, whether or not such delay is unavoidable; (iii) any reasonable delay resulting from time required by City for review of any Contractor submittals and for the making of surveys, measurements and inspection; and, (iv) any delay arising from an interruption in the prosecution of the Work on account of reasonable interference by other Contractors employed by City that does not necessarily prevent the completion of the entire Work within the time specified. Excusable Delays, if any, shall operate only to extend the Completion Date (not in excess of the period of such delay as determined by City) and shall not under any circumstances increase the amount City is required to pay Contractor except as otherwise provided in these Contract Documents.

22. CONTRACTOR TO SERVE NOTICE OF DELAYS

Whenever Contractor foresees any delay in the prosecution of the Work, and in any event as soon as possible (not to exceed a period of ten (10) calendar days) after the initial occurrence of any delay that Contractor regards as or may later claim to be an Excusable Delay, the Contractor shall notify the Engineer in writing of such delay and its cause, in order that the Engineer: (i) may take immediate steps to prevent if possible the occurrence or continuance of the delay; or (ii) if this cannot be done, may determine whether the delay is to be considered excusable, how long it continues, and to what extent the prosecution and completion of the Work are delayed thereby. Said written notice shall constitute an application for an extension of time only if the notice requests such an extension and sets forth the Contractor's estimate of the additional time required together with a full description of the cause of the delay relied upon.

After the completion of any part or whole of the Work, the Engineer, in estimating the amount due Contractor, will assume that any and all delays that may have occurred in its prosecution and completion were not Excusable Delays, except for such delays for which the Contractor has provided timely written notice as required herein, and that the

Engineer has found to be excusable. Contractor shall not be entitled to claim Excusable Delay for any delay for which the Contractor failed to provide such timely written notice.

23. EXTENSION OF TIME

If the Contractor complies with Section 22, above, and the Engineer finds a delay claimed by the Contractor to be an Excusable Delay, the Contractor shall be allowed an extension of time to complete the Work that is proportional to the period of Excusable Delay determined by the Engineer, subject to the approval by City of a change order granting such time extension. During a duly authorized extension for an Excusable Delay, City shall not charge liquidated damages against the Contractor for such delay.

If the City extends the time to complete the Work as provided herein, such extension shall in no way release any warranty or guarantee given by Contractor pursuant to the provisions of the Contract Documents, nor shall such extension of time relieve or release the sureties of the Bonds provided pursuant to the Contract Documents. By executing such Bonds, the Sureties shall be deemed to have expressly agreed to any such extension of time. The granting of any extension of time as provided herein shall in no way operate as a waiver on the part of City of its rights under this Contract, excepting only extension of the Completion Date for such period of Excusable Delay as may be determined by the Engineer and approved by a duly authorized change order.

24. NO PAYMENT FOR DELAYS

No damages or compensation of any kind shall be paid to Contractor or any subcontractor because of delays in the progress of the Work whether or not such delays qualify for extension of time under this Agreement; except that this provision shall not preclude the recovery of damages for a delay caused by the City that is unreasonable under the circumstances and that is not within the contemplation of the parties, provided that the Contractor timely submits all such written notice(s) and fully complies with such other procedures as may be specified in the Contract Documents or any Laws or Regulations for Contractor to claim damages for such delay.

25. CHANGES IN THE WORK

Changes in the Work authorized or directed in accordance with the Contract Documents and extensions of time of completion made necessary by reason thereof shall not in any way release any warranty or guarantee given by Contractor pursuant to the provisions of the Contract Documents, nor shall such changes in the Work relieve or release the Sureties on Bonds provided pursuant to the Contract Documents. By executing such Bonds, the Sureties shall be deemed to have expressly agreed to any such change in Work and to any extension of time made by reason thereof.

26. TERMINATION AFTER COMPLETION DATE

In addition to any other rights City may have, if any services or work required under the Contract (including but not limited to punch list items) are not completed as of the Completion Date (as adjusted by any extensions of time for Excusable Delays granted pursuant to the Contract Documents), City may terminate the Contract at any time after the Completion Date (as adjusted by any extensions of time for Excusable Delays granted pursuant to the Contract Documents), by providing a written notice to Contractor specifying the date of termination. Such notice also may specify conditions or requirements that Contractor must meet to avoid termination of the Contract on such

date. If Contractor fails to fulfill all such conditions and requirements by such termination date, or, if no such conditions or requirements are specified, Contractor shall cease rendering services and performing work on such termination date, and shall not be entitled to receive any compensation for services rendered or work performed after such termination date. In the event of such termination, Contractor shall remain liable to City for liquidated damages incurred for any period of time prior to the termination date.

In addition to any other charges, withholdings or deductions authorized under the Contract or any Laws or Regulations, if City terminates the Contract pursuant to this section, City may withhold and deduct from any payment and/or retention funds otherwise due Contractor any sum necessary to pay the City's cost of completing or correcting, or contracting for the completion or correction of, any services or work under the Contract that are not completed to the satisfaction of the City or that otherwise are deficient or require correction as of such termination date, including but not limited to incomplete punch list items. Such costs shall include all of the City's direct and indirect costs incurred to complete or correct such services or work, including the City's administrative and overhead costs. If the amount of payment(s) and/or retention funds otherwise due the Contractor are insufficient to pay such costs, City shall have the right to recover the balance of such costs from the Contractor and/or its Surety(ies).

27. TERMINATION FOR CONVENIENCE

Upon written notice to the Contractor, the City may at any time, without cause and without prejudice to any other right or remedy of the City, elect to terminate the Contract for the convenience of City. In such case, the Contractor shall be paid (without duplication of any items, and after deduction and/or withholding of any amounts authorized to be deducted or withheld by the Contract Documents or any Laws or Regulations):

- (A) For Work executed in accordance with the Contract Documents prior to the effective date of termination and determined to be acceptable by the Engineer, including fair and reasonable sums for overhead and profit on such Work;
- (B) For reasonable claims, costs, losses, and damages incurred in settlement of terminated contracts with subcontractors, suppliers, and others; and
- (C) For reasonable expenses directly attributable to termination.

Contractor shall not be paid for any loss of anticipated profits or revenue for any Work not performed prior to termination, nor for any economic loss arising out of or resulting from such termination, except for the payments listed in this section. Contractor's warranty under Section 14 of this Agreement shall apply, and Contractor shall remain responsible for all obligations related to such warranty, with respect to all portions of the Work performed prior to the effective date of the termination for convenience pursuant to this section. The City shall be entitled to have any or all remaining Work performed by other contractors or by any other means at any time after the effective date of a termination for convenience pursuant to this section.

28. TERMINATION FOR BREACH OF CONTRACT

If Contractor abandons the Work under this Contract, or if the Contract or any portion of the Contract is sublet or assigned without the consent of the City, or if the Engineer determines in the Engineer's sole discretion that the conditions of the Contract in respect

to the rate of progress of the Work are not being fulfilled or any part thereof is unnecessarily delayed, or if Contractor violates or breaches, or fails to execute in good faith, any of the terms or conditions of the Contract, or if Contractor refuses or fails to supply enough properly skilled labor or materials or refuses or fails to make prompt payment to subcontractors for material or labor, or if Contractor disregards any Laws or Regulations or proper instruction or orders of the Engineer, then, notwithstanding any provision to the contrary herein, the City may give Contractor and its Sureties written notification to immediately correct the situation or the Contract shall be terminated.

In the event that such notice is given, and, in the event such situation is not corrected, or arrangements for correction satisfactory to the City are not made, within ten (10) calendar days from the date of such notice or within such other period of time as may be specified by the City in the notice, the Contract shall upon the expiration of said period cease and terminate. In the event of any such termination, City may take over the Work and prosecute the Work to completion, or otherwise, and the Contractor and its Sureties shall be liable to City for any cost occasioned City thereby, as hereinafter set forth.

In the event City completes the Work, or causes the Work to be completed, no payment of any kind shall be made to Contractor until the Work is complete. The cost of completing the Work, including but not limited to, extra costs of project administration and management incurred by City, both direct or indirect, shall be deducted from any sum then due, or that becomes due, to Contractor from City. If sums due to Contractor from City are less than the cost of completing the Work, Contractor and its Sureties shall pay City a sum equal to this difference on demand. In the event City completes the Work, and there is a sum remaining due to Contractor after City deducts the costs of completing the Work, then City shall pay such sum to Contractor. The Contractor and Contractor's Sureties shall be jointly and severally liable for all obligations imposed on Contractor hereunder.

No act by City before the Work is finally accepted, including, but not limited to, exercise of other rights under the Contract, actions at law or in equity, extensions of time, payments, assessments of liquidated damages, occupation or acceptance of any part of the Work, waiver of any prior breach of the Contract or failure to take action pursuant to this section upon the happening of any prior default or breach of Contractor, shall be construed to be a waiver or estoppel of the City's right to act pursuant to this Section upon any subsequent event, occurrence or failure by Contractor to fulfill the terms and conditions of the Contract. The rights of City to terminate the Contract pursuant to this Section and pursuant to Sections 26 and 27 are cumulative and are in addition to all other rights of City pursuant to the Contract and at law or in equity.

29. CONTRACTOR BANKRUPT

If Contractor should commence any bankruptcy proceeding, or if Contractor is adjudged a bankrupt, or if Contractor makes any assignment for the benefit of creditors, or if a receiver is appointed on account of Contractor's insolvency, then the City may, without prejudice to any other right or remedy, terminate the Contract and complete the work by giving notice as provided in Section 28 above.

30. SURETIES' OBLIGATIONS UPON TERMINATION

If the City terminates the Contract pursuant to Section 28 or Section 29 above:

(A) The Surety under Contractor's performance bond shall be fully responsible for all of the Contractor's remaining obligations of performance under the Contract as if the Surety were a party to the Contract, including without limitation Contractor's obligations, as provided in the Contract Documents, to complete and provide a one-year warranty of the entire Work, pay liquidated damages and indemnify, defend and hold harmless City, up to the full amount of the performance bond.

(B) The Surety under Contractor's payment bond shall be fully responsible for the performance of all of the Contractor's remaining payment obligations for work, services, equipment or materials performed or provided in connection with the Work or any portion thereof, up to the full amount of the payment bond.

31. ACCOUNTING RECORDS OF CONTRACTOR

During performance of the Contract and for a period of three (3) years after completing the entire Work, Contractor shall maintain all accounting and financial records related to the Contract and performance of the Work in accordance with generally accepted accounting practices, and shall keep and make such records available for inspection and audit by representatives of the City upon reasonable written notice.

32. USE TAX REQUIREMENTS

(A) Use Tax Direct Payment Permit For all leases and purchases of materials, equipment, supplies, or other tangible personal property used to perform the Contract and shipped from outside California, the Contractor and any subcontractors leasing or purchasing such materials, equipment, supplies or other tangible personal property shall obtain a Use Tax Direct Payment Permit from the California State Board of Equalization ("SBE") in accordance with the applicable SBE criteria and requirements.

(B) Sellers Permit For any construction contract and any construction subcontract in the amount of \$5,000,000 or more, Contractor and the subcontractor(s) shall obtain sellers permits from the SBE and shall register the jobsite as the place of business for the purpose of allocating local sales and use tax to the City. Contractor and its subcontractors shall remit the self-accrued use tax to the SBE, and shall provide a copy of each remittance to the City.

(C) The above provisions shall apply in all instances unless prohibited by the funding source for the Contract.

IN WITNESS WHEREOF, the parties hereto have signed this Agreement on the date set for opposite their names.

CONTRACTOR

Under penalty of perjury, I certify that the taxpayer identification number and all other information provided here are correct.

DATE _____

BY _____

Print Name

Title

BY _____

Print Name

Title

Federal ID#

State ID#

City of Sacramento Business Operation Tax Certificate No. (City will not award contract until Certificate Number is obtained)

Type of Business Entity (*check one*):

_____ Individual/Sole Proprietor

_____ Partnership

_____ Corporation

_____ Limited Liability Company

_____ Other

(*please*

specify: _____)

CITY OF SACRAMENTO

a municipal corporation

DATE _____

BY _____

For: John F. Shirey, City Manager

Original Approved As To Form:

Attest:

City Attorney

CITY OF SACRAMENTO
PERFORMANCE BOND
Department of Utilities

Bond #: _____
Premium: _____
Page 1 of 1

WHEREAS, the City of Sacramento, in the State of California, hereinafter called City has conditionally awarded to *(here insert full name and address of Contractor)*:

as principal, hereinafter called Contractor, an agreement for construction of:

CWTP MCC "N" REPLACEMENT
(PN: X14010048) (B123331014)

in accordance with the plans, specifications, drawings, conditions, and project manual prepared therefore, which agreement is by reference made a part hereof, and is hereinafter referred to as the Contract; and

WHEREAS, under the terms of the Contract, Contractor is required to furnish a bond for the faithful performance of the Contract.

NOW, THEREFORE, we the Contractor and *(here insert full name and address of Surety)*:

_____, a corporation duly authorized and admitted to transact business and issue surety bonds in the State of California, hereinafter called Surety, are held and firmly bound unto the City, as obligee, in the sum of _____ DOLLARS \$ _____), for the payment of which sum well and truly to be made, we the Contractor and Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally. The condition of this obligation is such that, if the Contractor, Contractor's heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and fully perform all covenants, conditions and agreements required to be kept and performed by Contractor in the Contract and any changes, additions or alterations made thereto, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meanings, and shall indemnify and save harmless the City, its officers, employees and agents, as therein provided, then this obligation shall be null and void; otherwise shall be and remain in full force and effect. This obligation shall remain in full force and effect until (1) the date that the Contractor no longer has any remaining obligation of performance under the Contract, or (2) the date that is one year after the date that the work to be performed under the Contract is accepted as complete by the City, whichever occurs later.

As part of the obligation secured hereby and in addition to the sum specified above, there shall be included all costs, expenses and fees, including attorney's fees, reasonably incurred by City in successfully enforcing such obligation, all to be taxed as costs and included in any judgement rendered.

The 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 to 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, alteration or addition.

IN WITNESS WHEREOF, this instrument has been duly executed by authorized representatives of the Contractor and Surety.
SIGNED AND SEALED on _____, 2012.

(Contractor) (Seal)

By _____

Title _____

ORIGINAL APPROVED AS TO FORM:

City Attorney

(Surety) (Seal)

By _____

Title _____

Agent Name and Address _____

Agent Phone # _____

Surety Phone # _____

California License # _____

Surety Email: _____

WHEREAS, the City of Sacramento, in the State of California, hereinafter called City, has conditionally awarded to:

hereinafter called Contractor, an agreement for construction of:

CWTP MCC "N" REPLACEMENT
(PN: X14010048) (B123331014)

in accordance with the plans, specifications, drawings, conditions, and project manual prepared therefor, which agreement is by reference made a part hereof, and is hereinafter referred to as the Contract; and

WHEREAS, under the terms of the Contract, Contractor is required to furnish a good and sufficient payment bond to secure the claims to which reference is made in Title 15(commencing with Section 3082) of Part 4 of Division 3 of the California Civil Code.

NOW, THEREFORE, we the Contractor and (*here insert full name and address of Surety*):

_____, a corporation duly authorized and admitted to transact business and issue surety bonds in the State of California, hereinafter called Surety, are held and firmly bound unto the City, and unto all subcontractors, laborers, materialmen and other persons employed in the performance of the Contract and referred to in the aforesaid Civil Code in the sum of _____ DOLLARS (\$_____), on the condition that if Contractor shall fail to pay for any materials or equipment furnished or used in performance of the Contract, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, or for any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the Contractor and all subcontractors with respect to such work or labor, then the Surety shall pay the same in an amount not exceeding the sum specified above. If suit is brought upon this bond, Surety shall pay, in addition to the above sum, all costs, expenses and fees, including attorney's fees, reasonably incurred by any party in successfully enforcing the obligation secured hereby, all to be taxed as costs and included in any judgment rendered. Should the condition of this bond be fully performed, then this obligation shall become null and void, otherwise it shall be and remain in full force and effect, and shall bind Contractor, Surety, their heirs, executors, administrators, successors and assigns, jointly and severally.

It is hereby stipulated and agreed that this bond shall inure to the benefit of all persons, companies, corporations, political subdivisions and State agencies entitled to file claim under Title 15 (commencing with Section 3082) of Part 4 of Division 3 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond. The 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 to 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, alteration or addition.

IN WITNESS WHEREOF, this instrument has been duly executed by authorized representatives of the Contractor and Surety. SIGNED AND SEALED on _____, 2012.

(Contractor) (Seal)
By _____
Title _____

(Surety) (Seal)
By _____
Title _____
Agent Name and Address _____

ORIGINAL APPROVED AS TO FORM:

City Attorney

Agent Phone # _____
Surety Phone # _____
California License # _____
Surety Email: _____

**EXCERPTS FROM THE CALIFORNIA LABOR CODE RELATING TO
APPRENTICES ON PUBLIC WORKS
Chapter 1 of Division 2
APPRENTICES ON PUBLIC WORKS**

1773.3. An awarding agency whose public works contract falls within the jurisdiction of Section 1777.5 shall, within five days of the award, send a copy of the award to the Division of Apprenticeship Standards. When specifically requested by a local joint apprenticeship committee, the division shall notify the local joint apprenticeship committee regarding all such awards applicable to the joint apprenticeship committee making the request. Within five days of a finding of any discrepancy regarding the ratio of apprentices to journeymen, pursuant to the certificated fixed number of apprentices to journeymen, the awarding agency shall notify the Division of Apprenticeship Standards.

1776. (a) Each contractor and subcontractor shall keep accurate payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the public work. Each payroll record shall contain or be verified by a written declaration that it is made under penalty of perjury, stating both of the following: (1) The information contained in the payroll record is true and correct. (2) The employer has complied with the requirements of Sections 1771, 1811, and 1815 for any work performed by his or her employees on the public works project.

(b) The payroll records enumerated under subdivision (a) shall be certified and shall be available for inspection at all reasonable hours at the principal office of the contractor on the following basis: (1) A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request. (2) A certified copy of all payroll records enumerated in subdivision (a) shall be made available for inspection or furnished upon request to a representative of the body awarding the contract, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations. (3) A certified copy of all payroll records enumerated in subdivision (a) shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through either the body awarding the contract, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided pursuant to paragraph (2), the requesting party shall, prior to being provided the records, reimburse the costs of preparation by the contractor, subcontractors, and the entity through which the request was made. The public shall not be given access to the records at the principal office of the contractor.

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

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

(e) Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement shall be marked or obliterated to prevent disclosure of an individual's name, address, and social security number. The name and address of the contractor awarded the contract or the subcontractor performing the contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a joint labor management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (Section 175a of Title 29 of the United States Code) shall be marked or obliterated only to prevent disclosure of an individual's name and social security number. A joint labor management committee may maintain an action in a court of competent jurisdiction against an employer who fails to comply with Section 1774. The court may award restitution to an employee for unpaid wages and may award the joint labor management committee reasonable attorney's fee and costs incurred in maintaining the action. An action under this subdivision may not be based on the employer's misclassification of the craft of a worker on its certified payroll records. Nothing in this subdivision limits any other available remedies for a violation of this chapter.

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

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

(h) The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section.

(i) The director shall adopt rules consistent with the California Public Records Act, (Chapter 3.5 (commencing with Section 6250), Division 7, Title 1, Government Code) and the Information Practices Act of 1977, (Title 1.8 (commencing with Section 1798), Part 4, Division 3, Civil Code) governing the release of these records, including the establishment of reasonable fees to be charged for reproducing copies of records required by this section.

(j) This section shall remain in effect only until January 1, 2003, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2003, deletes or extends that date.

1776. (a) Each contractor and subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, and straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the public work.

(b) The payroll records enumerated under subdivision (a) shall be certified and shall be available for inspection at all reasonable hours at the principal office of the contractor on the following basis: (1) A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request. (2) A certified copy of all payroll records enumerated in subdivision (a) shall be made available for inspection or furnished upon request to a representative of the body awarding the contract, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations. (3) A certified copy of all payroll records enumerated in subdivision (a) shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through either the body awarding the contract, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. If the requested

payroll records have not been provided pursuant to paragraph (2), the requesting party shall, prior to being provided the records, reimburse the costs of preparation by the contractor, subcontractors, and the entity through which the request was made. The public shall not be given access to the records at the principal office of the contractor.

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

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

(e) Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement shall be marked or obliterated to prevent disclosure of an individual's name, address, and social security number. The name and address of the contractor awarded the contract or performing the contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a joint labor-management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (Section 175a of Title 29 of the United States Code) shall be marked or obliterated only to prevent disclosure of an individual's social security number.

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

(g) The contractor shall have 10 days in which to comply subsequent to receipt of written notice specifying in what respects the contractor must comply with this section. In the event that the contractor fails to comply within the 10-day period, he or she shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit twenty-five dollars (\$25) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.

(h) The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section. These stipulations shall fix the responsibility for compliance with this section on the prime contractor.

(i) The director shall adopt rules consistent with the California Public Records Act, (Chapter 3.5 (commencing with Section 6250), Division 7, Title 1, Government Code) and the Information Practices Act of 1977, (Title 1.8 (commencing with Section 1798), Part 4, Division 3, Civil Code) governing the release of these records, including the establishment of reasonable fees to be charged for reproducing copies of records required by this section.

(j) This section shall become operative January 1, 2003.

1777.5. (a) Nothing in this chapter shall prevent the employment of properly registered apprentices upon public works.

(b) Every apprentice employed upon public works shall be paid the prevailing rate of per diem wages for apprentices in the trade to which he or she is registered and shall be employed only at the work of the craft or trade to which he or she is registered.

(c) Only apprentices, as defined in Section 3077, who are in training under apprenticeship standards that have been approved by the Chief of the Division of Apprenticeship Standards and who are parties to written apprentice agreements under Chapter 4 (commencing with Section 3070) of Division 3 are eligible to be employed at the apprentice wage rate on public works. The employment and training of each apprentice shall be in accordance with either (1) the apprenticeship standards and apprentice agreements under which he or she is training or (2) the rules and regulations of the California Apprenticeship Council.

(d) When the contractor to whom the contract is awarded by the state or any political subdivision, in performing any of the work under the contract, employs workers in any apprenticeable craft or trade, the contractor shall employ apprentices in at least the ratio set forth in this section and may apply to any apprenticeship program in the craft or trade that can provide apprentices to the site of the public work for a certificate approving the contractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected. However, the decision of the apprenticeship program to approve or deny a certificate shall be subject to review by the Administrator of Apprenticeship. The apprenticeship program or programs, upon approving the contractor, shall arrange for the dispatch of apprentices to the contractor. A contractor covered by an apprenticeship program's standards shall not be required to submit any additional application in order to include additional public works contracts under that program. "Apprenticeable craft or trade," as used in this section, means a craft or trade determined as an apprenticeable occupation in accordance with rules and regulations prescribed by the California Apprenticeship Council. As used in this section, "contractor" includes any subcontractor under a contractor who performs any public works not excluded by subdivision (o).

(e) Prior to commencing work on a contract for public works, every contractor shall submit contract award information to an applicable apprenticeship program that can supply apprentices to the site of the public work. The information submitted shall include an estimate of journeyman hours to be performed under the contract, the number of apprentices proposed to be employed, and the approximate dates the apprentices would be employed. A copy of this information shall also be submitted to the awarding body if requested by the awarding body. Within 60 days after concluding work on the contract, each contractor and subcontractor shall submit to the awarding body, if requested, and to the apprenticeship program a verified statement of the journeyman and apprentice hours performed on the contract. The information under this subdivision shall be public. The apprenticeship programs shall retain this information for 12 months.

(f) The apprenticeship program that can supply apprentices to the area of the site of the public work shall ensure equal employment and affirmative action in apprenticeship for women and minorities.

(g) The ratio of work performed by apprentices to journeymen employed in a particular craft or trade on the public work may be no higher than the ratio stipulated in the apprenticeship standards under which the apprenticeship program operates where the contractor agrees to be bound by those standards, but, except as otherwise provided in this section, in no case shall the ratio be less than one hour of apprentice work for every five hours of journeyman work.

(h) This ratio of apprentice work to journeyman work shall apply during any day or portion of a day when any journeyman is employed at the jobsite and shall be computed on the basis of the hours worked during the day by journeymen so employed. Any work performed by a journeyman in excess of eight hours per day or 40 hours per week shall not be used to calculate the ratio. The contractor shall employ apprentices for the number of hours computed as above before the end of the contract or, in the case of a subcontractor, before the end of the subcontract. However, the contractor shall endeavor, to the greatest extent possible, to employ apprentices during the same time period that the journeymen in the same craft or trade are employed at the jobsite. Where an hourly apprenticeship ratio is not feasible for a particular craft or trade, the Chief of the Division of Apprenticeship Standards, upon application of an apprenticeship program, may order a minimum ratio of not less than one apprentice for each five journeymen in a craft or trade classification.

(i) A contractor covered by this section that has agreed to be covered by an apprenticeship program's standards upon the issuance of the approval certificate, or that has been previously approved for an apprenticeship program in the craft or trade, shall

employ the number of apprentices or the ratio of apprentices to journeymen stipulated in the applicable apprenticeship standards, but in no event less than the 1-to-5 ratio required by subdivision (g).

(j) Upon proper showing by a contractor that he or she employs apprentices in a particular craft or trade in the state on all of his or her contracts on an annual average of not less than one hour of apprentice work for every five hours of labor performed by journeymen, the Chief of the Division of Apprenticeship Standards may grant a certificate exempting the contractor from the 1-to-5 hourly ratio, as set forth in this section for that craft or trade.

(k) An apprenticeship program has the discretion to grant to a participating contractor or contractor association a certificate, which shall be subject to the approval of the Administrator of Apprenticeship, exempting the contractor from the 1-to-5 ratio set forth in this section when it finds that any one of the following conditions is met: (1)

Unemployment for the previous three-month period in the area exceeds an average of 15 percent. (2) The number of apprentices in training in the area exceeds a ratio of 1 to 5. (3) There is a showing that the apprenticeable craft or trade is replacing at least one-thirtieth of its journeymen annually through apprenticeship training, either on a statewide basis or on a local basis. (4) Assignment of an apprentice to any work performed under a public works contract would create a condition that would jeopardize his or her life or the life, safety, or property of fellow employees or the public at large, or the specific task to which the apprentice is to be assigned is of a nature that training cannot be provided by a journeyman.

(l) When an exemption is granted pursuant to subdivision (k) to an organization that represents contractors in a specific trade from the 1-to-5 ratio on a local or statewide basis, the member contractors will not be required to submit individual applications for approval to local apprenticeship committees, if they are already covered by the local apprenticeship standards.

(m) (1) A contractor to whom a contract is awarded, who, in performing any of the work under the contract, employs journeymen or apprentices in any apprenticeable craft or trade shall contribute to the California Apprenticeship Council the same amount that the director determines is the prevailing amount of apprenticeship training contributions in the area of the public works site. A contractor may take as a credit for payments to the council any amounts paid by the contractor to an approved apprenticeship program that can supply apprentices to the site of the public works project. The contractor may add the amount of the contributions in computing his or her bid for the contract.

(2) At the conclusion of each fiscal year, the California Apprenticeship Council shall distribute training contributions received by the council under this subdivision, less the expenses of the Division of Apprenticeship Standards for administering this subdivision, by making grants to approved apprenticeship programs for the purpose of training apprentices. The funds shall be distributed as follows: (A) If there is an approved multiemployer apprenticeship program serving the same craft or trade and geographic area for which the training contributions were made to the council, a grant to that program shall be made. (B) If there are two or more approved multiemployer apprenticeship programs serving the same craft or trade and geographic area for which the training contributions were made to the council, the grant shall be divided among those programs based on the number of apprentices registered in each program. (C) All training contributions not distributed under subparagraphs (A) and (B) shall be used to defray the future expenses of administering this subdivision. (3) All training contributions received pursuant to this subdivision shall be deposited in the Apprenticeship Training Contribution Fund, which fund is hereby created in the State Treasury. Notwithstanding Section 13340 of the Government Code, all money in the Apprenticeship Training Contribution Fund is hereby continuously appropriated for the purpose of carrying out this subdivision and to pay the expenses of the division in administering this subdivision.

(n) The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section. The stipulations shall fix the responsibility of compliance with this section for all apprenticeable occupations with the prime contractor.

(o) This section does not apply to contracts of general contractors or to contracts of specialty contractors not bidding for work through a general or prime contractor when the contracts of general contractors or those specialty contractors involve less than thirty thousand dollars (\$30,000).

(p) All decisions of an apprenticeship program under this section are subject to Section 3081.

1777.6. It shall be unlawful for an employer or a labor union to refuse to accept otherwise qualified employees as registered apprentices on any public works, on the ground of the race, religious creed, color, national origin, ancestry, sex, or age, except as provided in Section 3077, of such employee.

1777.7. (a) (1) A contractor or subcontractor that is determined by the Chief of the Division of Apprenticeship Standards to have knowingly violated Section 1777.5 shall forfeit as a civil penalty an amount not exceeding one hundred dollars (\$100) for each full calendar day of noncompliance. The amount of this penalty may be reduced by the Chief if the amount of the penalty would be disproportionate to the severity of the violation. A contractor or subcontractor that knowingly commits a second or subsequent violation of Section 1777.5 within a three-year period, where the noncompliance results in apprenticeship training not being provided as required by this chapter, shall forfeit as a civil penalty the sum of not more than three hundred dollars (\$300) for each full calendar day of noncompliance. Notwithstanding Section 1727, upon receipt of a determination that a civil penalty has been imposed by the Chief, the awarding body shall withhold the amount of the civil penalty from contract progress payments then due or to become due. (2) In lieu of the penalty provided for in this subdivision, the Chief may, for a first-time violation and with the concurrence of an apprenticeship program described in subdivision (d), order the contractor or subcontractor to provide apprentice employment equivalent to the work hours that would have been provided for apprentices during the period of noncompliance.

(b) In the event a contractor or subcontractor is determined by the Chief to have knowingly committed a serious violation of any provision of Section 1777.5, the Chief may also deny to the contractor or subcontractor, and to its responsible officers, the right to bid on or be awarded or perform work as a subcontractor on any public works Contract for a period of up to one year for the first violation and for a period of up to three years for a second or subsequent violation. Each period of debarment shall run from the date the determination of noncompliance by the Chief becomes a final order of the Administrator of Apprenticeship.

(c) (1) An affected contractor, subcontractor, or responsible officer may obtain a review of the determination of the Chief imposing the debarment or civil penalty by transmitting a written request to the office of the Administrator within 30 days after service of the determination of debarment or civil penalty. A copy of this report shall also be served on the Chief. If the Administrator does not receive a timely request for review of the determination of debarment or civil penalty made by the Chief, the order shall become the final order of the Administrator. (2) Within 20 days of the timely receipt of a request for review, the Chief shall provide the contractor, subcontractor, or responsible officer the opportunity to review any evidence the Chief may offer at the hearing. The Chief shall also promptly disclose any nonprivileged documents obtained after the 20-day time limit at a time set forth for exchange of evidence by the Administrator. (3) Within 90 days of the timely receipt of a request for review, a hearing shall be commenced before the

Administrator or an impartial hearing officer designated by the Administrator and possessing the qualifications of an administrative law judge pursuant to subdivision (b) of Section 11502 of the Government Code. The affected contractor, subcontractor, or responsible officer shall have the burden of providing evidence of compliance with Section 1777.5. (4) Within 45 days of the conclusion of the hearing, the Administrator shall issue a written decision affirming, modifying, or dismissing the determination of debarment or civil penalty. The decision shall contain a statement of the factual and legal basis for the decision and an order. This decision shall be served on all parties and the awarding body pursuant to Section 1013 of the Code of Civil Procedure by first-class mail at the last known address of the party that the party has filed with the Administrator. Within 15 days of issuance of the decision, the Administrator may reconsider or modify the decision to correct an error, except that a clerical error may be corrected at any time. (5) An affected contractor, subcontractor, or responsible officer who has timely requested review and obtained a decision under paragraph (4) may obtain review of the decision of the Administrator by filing a petition for a writ of mandate to the appropriate superior court pursuant to Section 1094.5 of the Code of Civil Procedure within 45 days after service of the final decision. If no timely petition for a writ of mandate is filed, the decision shall become the final order of the Administrator. The decision of the Administrator shall be affirmed unless the petitioner shows that the Administrator abused his or her discretion. If the petitioner claims that the findings are not supported by the evidence, abuse of discretion is established if the court determines that the findings are not supported by substantial evidence in light of the entire record. (6) The Chief may certify a copy of the final order of the Administrator and file it with the clerk of the superior court in any county in which the affected contractor or subcontractor has property or has or had a place of business. The clerk, immediately upon the filing, shall enter judgment for the state against the person assessed in the amount shown on the certified order. A judgment entered pursuant to this section shall bear the same rate of interest and shall have the same effect as other judgments and be given the same preference allowed by the law on other judgments rendered for claims for taxes. The clerk shall not charge for the service performed by him or her pursuant to this section. An awarding body that has withheld funds in response to a determination by the Chief imposing a penalty under this section shall, upon receipt of a certified copy of a final order of the Administrator, promptly transmit the withheld funds, up to the amount of the certified order, to the Administrator.

(d) If a subcontractor is found to have violated Section 1777.5, the prime contractor of the project is not liable for any penalties under subdivision (a), unless the prime contractor had knowledge of the subcontractor's failure to comply with the provisions of Section 1777.5 or unless the prime contractor fails to comply with any of the following requirements: (1) The contract executed between the contractor and the subcontractor or the performance of work on the public works project shall include a copy of the provisions of Sections 1771, 1775, 1776, 1777.5, 1813, and 1815.

(2) The contractor shall continually monitor a subcontractor's use of apprentices required to be employed on the public works project pursuant to subdivision (d) of Section 1777.5, including, but not limited to, periodic review of the certified payroll of the subcontractor.

(3) Upon becoming aware of a failure of the subcontractor to employ the required number of apprentices, the contractor shall take corrective action, including, but not limited to, retaining funds due the subcontractor for work performed on the public works project until the failure is corrected. (4) Prior to making the final payment to the subcontractor for work performed on the public works project, the contractor shall obtain a declaration signed under penalty of perjury from the subcontractor that the subcontractor has employed the required number of apprentices on the public works project.

(e) Any funds withheld by the awarding body pursuant to this section shall be deposited in the General Fund if the awarding body is a state entity, or in the equivalent fund of an awarding body if the awarding body is an entity other than the state.

(f) The Chief shall consider, in setting the amount of a monetary penalty, in determining whether a violation is serious, and in determining whether and for how long a party should be debarred for violating this section, all of the following circumstances: (1) Whether the violation was intentional. (2) Whether the party has committed other violations of Section 1777.5. (3) Whether, upon notice of the violation, the party took steps to voluntarily remedy the violation. (4) Whether, and to what extent, the violation resulted in lost training opportunities for apprentices. (5) Whether, and to what extent, the violation otherwise harmed apprentices or apprenticeship programs. If a party seeks review of a decision by the Chief to impose a monetary penalty or period of debarment, the Administrator shall decide de novo the appropriate penalty, by considering the same factors set forth above.

(g) The interpretation of Section 1777.5 and this section shall be in accordance with the regulations of the California Apprenticeship Council. The Administrator may adopt regulations to establish guidelines for the imposition of monetary penalties and periods of debarment and may designate precedential decisions under Section 11425.60 of the Government Code.

NOTE: THE ABOVE CALIFORNIA LABOR CODE SECTIONS ARE AVAILABLE FROM THE INTERNET @ www.dir.ca.gov/.

DAS 10 (Rev. 04-02)

SPECIAL PROVISIONS

**Request for Taxpayer
Identification Number and Certification**

Give form to the
requester. Do not
send to the IRS.

Print or type
See Specific Instructions on page 2.

Name (as shown on your income tax return)

Business name, if different from above

Check appropriate box: Individual/Sole proprietor Corporation Partnership
 Limited liability company. Enter the tax classification (D=disregarded entity, C=corporation, P=partnership) ▶ Exempt payee
 Other (see instructions) ▶

Address (number, street, and apt. or suite no.) Requester's name and address (optional)

City, state, and ZIP code

List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on Line 1 to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Social security number
OR
Employer identification number

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
- I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the Certification, but you must provide your correct TIN. See the instructions on page 4.

Sign Here Signature of U.S. person ▶ Date ▶

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

- Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
- Certify that you are not subject to backup withholding, or
- Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

The person who gives Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States is in the following cases:

- The U.S. owner of a disregarded entity and not the entity,

YEAR

Withholding Exemption Certificate

CALIFORNIA FORM

2011

(This form can only be used to certify exemption from nonresident withholding under California Revenue and Taxation Code (R&TC) Section 18662. Do not use this form for exemption from wage withholding.)

590File this form with your withholding agent. (Please type or print)
Withholding agent's name _____

Payee's name _____

Payee's
 SOS file no. SSN or ITIN
 CA corp. no. FEIN

Address (number and street, PO Box, or PME no.) _____

Apt. no./ Ste. no. _____

City _____

State _____ ZIP Code _____

Read the following carefully and check the box that applies to the payee.

I certify that for the reasons checked below, the payee named on this form is exempt from the California income tax withholding requirement on payment(s) made to the entity or individual.

 Individuals — Certification of Residency:

I am a resident of California and I reside at the address shown above. If I become a nonresident at any time, I will promptly notify the withholding agent. See instructions for General Information D, Who is a Resident, for the definition of a resident.

 Corporations:

The above-named corporation has a permanent place of business in California at the address shown above or is qualified through the California Secretary of State (SOS) to do business in California. The corporation will file a California tax return and withhold on payments of California source income to nonresidents when required. If this corporation ceases to have a permanent place of business in California or ceases to do any of the above, I will promptly notify the withholding agent. See instructions for General Information F, What is a Permanent Place of Business, for the definition of permanent place of business.

 Partnerships or limited liability companies (LLC):

The above-named partnership or LLC has a permanent place of business in California at the address shown above or is registered with the California SOS, and is subject to the laws of California. The partnership or LLC will file a California tax return and will withhold on foreign and domestic nonresident partners or members when required. If the partnership or LLC ceases to do any of the above, I will promptly inform the withholding agent. For withholding purposes, a limited liability partnership (LLP) is treated like any other partnership.

 Tax-Exempt Entities:

The above-named entity is exempt from tax under California Revenue and Taxation Code (R&TC) Section 23701 _____ (insert letter) or Internal Revenue Code Section 501(c) _____ (insert number). The tax-exempt entity will withhold on payments of California source income to nonresidents when required. If this entity ceases to be exempt from tax, I will promptly notify the withholding agent. Individuals cannot be tax-exempt entities.

 Insurance Companies, Individual Retirement Arrangements (IRAs), or Qualified Pension/Profit Sharing Plans:

The above-named entity is an insurance company, IRA, or a federally qualified pension or profit-sharing plan.

 California Trusts:

At least one trustee and one noncontingent beneficiary of the above-named trust is a California resident. The trust will file a California fiduciary tax return and will withhold on foreign and domestic nonresident beneficiaries when required. If the trustee becomes a nonresident at any time, I will promptly notify the withholding agent.

 Estates — Certification of Residency of Deceased Person:

I am the executor of the above-named person's estate. The decedent was a California resident at the time of death. The estate will file a California fiduciary tax return and will withhold on foreign and domestic nonresident beneficiaries when required.

 Nonmilitary Spouse of a Military Servicemember:

I am a nonmilitary spouse of a military servicemember and I meet the Military Spouse Residency Relief Act (MSRRA) requirements. See instructions for General Information E, MSRRA.

CERTIFICATE: Please complete and sign below.

Under penalties of perjury, I hereby certify that the information provided in this document is, to the best of my knowledge, true and correct. If conditions change, I will promptly notify the withholding agent.

Payee's name and title (type or print) _____ Daytime telephone no. _____

Payee's signature ► _____ Date _____

**COMBINED WASTEWATER TREATMENT PLANT
MOTOR CONTROL CENTER "N" REPLACEMENT PROJECT**

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SECTION 01105

GENERAL INFORMATION AND REQUIREMENTS

PART 1 - GENERAL

1.01 GOVERNING DOCUMENTS

- A. All work performed under this Contract shall be in accordance with the following General Conditions:
1. Sealed Proposal
 2. Agreement
 3. City of Sacramento Standard Specifications, **June 2007**(hereinafter CSSS) Sections 1 through 8 and as noted otherwise.
- B. All work performed under this Contract, unless noted otherwise, shall be in accordance with the following:
1. Technical Specifications
 2. Contract Drawings
 3. CSSS - Sections 10 through 38
 4. Payment Bond
 5. Performance Bond
 6. California Labor Code, Chapter 4 of Division 3.
- C. In the event of a conflict in the Contract Documents, priorities, as appropriate, set forth below shall govern:
1. General Conditions
 2. Technical Specifications
 3. Drawings
 4. CSSS
 5. Conflicts
 - a. In case of conflict between drawings and Special Provisions, the drawings shall govern in matters of quantity and the Special Provisions shall govern in matters of quality.
 - b. In case of conflict within the drawings involving quantities, furnish the greater quantity.

- c. In case of conflict within the Special Provisions involving quality of material or procedure, furnish the higher quality material and procedure.
- d. Where provisions of codes, safety orders, Contract Documents, referenced manufacturer's specifications or industry standards are in conflict, the more restrictive and higher quality shall govern.

1.02 DEFINITIONS

- A. For definitions not found herein, refer to CSSS, Section 1.
- B. "City" shall mean the City of Sacramento.
- C. "Engineer" shall mean the director of Utilities or his designated representative.
- D. "Calendar Day" shall mean every day shown on the calendar, Sundays and holidays included.
- E. "Working Day" see CSSS, Section 1, definition 1-38, page 1-6.
- F. "Contract Documents" shall mean the General Conditions identified in Paragraph 1.01.A and the Special Provisions identified in Paragraph 1.01.B of this Section.
- G. "Drawings" shall mean the Contract Drawings.
- H. "Provide" shall mean furnish and install, in accordance with the drawings.
- I. "Addenda" shall mean a written or graphic instrument issued prior to the execution of the Contract, which modify or interpret the Contract Documents, Drawings, and Specifications, by additions, deletions, clarifications, or corrections.
- J. "Proposed Change Order" shall mean a written request for the Contractor's Cost and Time Estimate covering an addition, deletion, or revision in the work, within the General Scope of the Contract.
- K. "Change Order" shall mean a written order to the Contractor authorizing an addition, deletion, or revision in the work, within the General Scope of the Contract Documents, or authorizing an adjustment in the Contract Price or Contract Time.
- L. "Field Order" shall mean a written order from the Engineer to the Contractor, directing an addition or revision in the work.

1.03 CSSS CHANGES

- A. Any changes made to the CSSS subsequent to its approval in June, 2007 may be purchased at 915 I Street, new City Hall, 3rd floor, Development Services.

1.04 SPECIFICATIONS

- A. The specifications are those bound and enumerated in the Table of Contents. The bidding Requirements, "Items of the Proposal", General Conditions, and Division 1 of the specifications apply to all work of this contract.

1.05 HOURS OF WORK

- A. Contractor shall perform the work of this contract on normal work days and within normal work hours, except after hours work, and work on Saturdays, Sundays, and holidays may be permitted if prior approval is obtained from the City. Overtime pay required to perform the work shall be included in the Contractor's bid prices, and no additional compensation to the Contractor will be made for overtime work.

1.06 CONTRACTOR'S SET OF PLANS AND SPECIFICATIONS

- A. City Furnished Plans and Specifications:

Upon award of contract, the City will provide plans and specifications as follows:

1. Plans: **3** sets
2. Specifications: **3** sets

- B. The Contractor is responsible for providing copies of the plans and specifications to all subcontractors as required for construction. Additional Sets of the plans and specifications may be obtained from the City. The cost charged the Contractor for additional copies obtained from the City shall cover all associated City procurement costs. City will not be responsible for incomplete information in the event partial sets are ordered.

1.07 INTERPRETATION OF DRAWINGS

- A. The Contract Drawings consist of all of the plan sheets.
- B. The data given herein, and on the drawings, are as exact as could be secured, but their absolute accuracy is not guaranteed. The Technical Specifications and drawings are for the assistance and guidance of the Contractor; exact locations, distance, elevation, etc., will be governed by the various structures, and Contractor shall use same with this understanding.
- C. The drawings are diagrammatic, but shall be followed as closely as existing conditions will permit. Prior to submitting their sealed Proposal, the Contractor shall inspect the site and verify all measurements and conditions and shall be

responsible for the correctness of same. No extra compensation will be allowed because of differences between work shown on the drawings and measurements at the site.

- D. Catalog numbers on the drawings and in the Technical Specifications are from the best available information and are for guidance and assistance. The Contractor shall verify all catalog numbers and install only suitable materials.

1.08 REFERENCED PUBLICATIONS

- A. The publications referred to hereinafter form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. The latest edition of referenced publications in effect at the time of the bid shall govern.

1.09 QUESTIONS PRIOR TO BID OPENING

- A. Prior to the opening of the sealed proposals, all questions concerning the Contract Documents shall be directed to Jian Zhuang, P.E. at (916) 808-1428, or facsimile (916) 808-1497.

1.10 START OF WORK

- A. The Contractor shall commence work on the day the NOTICE TO PROCEED is issued.
- B. Any work performed by the Contractor in advance of receipt of the NOTICE TO PROCEED shall be considered as having been done by him at his own risk and as a volunteer unless NOTICE TO PROCEED is issued by the Owner.

PART 2 - PRODUCTS

2.01 CONSTRUCTION SCHEDULE

- A. Contractor shall submit a Construction Schedule for the entire project. Construction Schedule shall be in the Critical Path Method (CPM) format. The proposed dates of commencement and completion of each of the various subdivisions of work required under these Specifications. Include submittals, procurement, disposal, delivery, installation, testing, and final inspection. CPM shall be arranged in work weeks and shall show manpower. No Progress Payments will be made until the CPM schedule has been received and approved by the Engineer.
- B. **The Contractor shall not start field work until 4/15/2012.**
- C. **The Contractor shall notify the Plant operator 48 hours prior to start any field work.**

PART 3 - EXECUTION

3.01 PRE-JOB CONFERENCE

A. Pre-Job Conference

The Contractor, after delivery of the Contract and at least three (3) days before beginning work, shall notify Renee Graves at (916) 808-1465 and arrange a pre-job conference. At this conference, the Contractor shall deliver appropriate submittals and a Construction Schedule as detailed below. The Contractor is responsible to provide plans and special provisions to subcontractors.

3.02 CONTRACTOR COMMUNICATIONS

A. All official communications between the Contractor and the City of Sacramento shall be made through the Engineer or his representative.

3.03 SUPERINTENDENT

A. Contractor shall assign a Superintendent to supervise all work and to represent the Contractor on site. Superintendent shall cooperate with the Owner and shall provide assistance at all times for inspection of the work including: removing covers, operating machinery, or performing any reasonable work which, in the opinion of the Engineer, is necessary to determine the quality or adequacy of the work. Superintendent shall also furnish material shipping labels and packing slips to the Engineer to verify that the material conforms with approved submittals and Specifications.

B. Contractor shall lay out all work in advance of fabrication and shall be responsible for coordination of all related work.

C. Contractor shall be responsible for scheduling sump and equipment shutdowns necessary to complete the work. Two (2) days prior to the proposed shutdown, the Superintendent shall obtain approval for the shutdown from the Engineer. The Engineer shall be given the following information:

1. Date and time of shutdown
2. Work to be accomplished during shutdown
3. Number of persons working during shutdown
4. Time of re-energization

D. Contractor shall monitor and assure that:

1. Shall remove spillage resulting from hauling operations along, or across, any public traveled way, at least daily, at Contractor's expense.
2. Conduct construction operations in such a manner as to cause as little inconvenience as possible to abutting property owners.

3. Water or dust palliative shall be applied, if ordered by the Engineer, for the alleviation or prevention of dust nuisance and shall be done at Contractor's expense.
4. Contractor shall contact the Engineer for a visual inspection 48 hours prior to covering any underground conduit.
5. Full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved maintenance of traffic and public safety shall be considered as included in the prices paid for various Contract items of work, and no additional compensation will be allowed, therefore.

3.04 EXISTING UTILITIES

- A. Locations of both underground and overhead utilities are shown on the drawings to the extent known. The actual location and elevation of the utilities may vary from the locations shown. Unless the drawings or specifications identify that the Contractor is responsible for relocating utilities, utilities requiring relocation will be by the governing agency or their representatives. The Contractor shall coordinate relocations requested for the Contractor's convenience with the Engineer and the owner of the utility. The Contractor will cooperate with the relocation and/or protection of existing utilities.
- B. The Contractor shall contact Pete Millino of the City of Sacramento at 808-5173 two (2) working days prior to performing excavation work within existing City facilities. The City will mark locations of existing City utilities.

3.05 MAINTAINING

- A. Contractor shall be responsible for maintaining existing facility until the new improvements are complete and functioning.
- B. Contractor shall allow City O&M access to the facility 24 hours a day, 7 days a week.

3.06 PROJECT SIGN(S)

- A. Prior to beginning any onsite work, the contractor shall install a total of 1 project sign. The sign shall be supplied by the City and is approximately thirty (30) inches by fifty-four (54) inches. The Contractor shall be required to install the sign on the gate at proper height. The sign installed by the Contractor shall be removed at the end of the project and the sign returned to the City.

3.07 COMPLETION AND FINAL INSPECTION

- A. The work shall be so performed, that upon Contract completion, the project shall be ready for use. Included in the work shall be the furnishing of all labor, materials, tools, equipment, and incidentals necessary for completing the work, in accordance with the Contract Documents.
- B. Contractor shall notify the Engineer when the project is completed. Following notification, City representatives will perform a walk through and, if required, develop and list of deficient work items.
- C. Contractor shall then correct all noted deficiencies to the satisfaction of the Engineer, after which a final walk through will be scheduled with City Operation and Maintenance personnel. During the walk through, the City will develop a final punch list of deficient work items and present it to Contractor after the walk through.
- D. Following correction of all deficiencies to the satisfaction of the Engineer, a completion report will be prepared by the Engineer.

3.08 WARRANTY

- A. The term of the Contractor's warranty shall begin upon the date the job is accepted by the City.

END OF SECTION

SECTION 01110

SUMMARY OF WORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Combined Wastewater Treatment Plant (CWTP) MCC "N" Replacement Project Consists of replacing the existing electrical equipment, and all the appurtenances as shown on the plans and in these special provisions. The work shall be in conformance with the plans and specifications hereinafter identified; including furnishing all material, labor, plant, tools, equipment, and services necessary to complete this project.
- B. CWTP is a treatment facility owned and operated by the City of Sacramento, Department of Utilities.
- C. Portions of the work will involve the following, for which no separate payment will be made, except as provided for in the items of the bid:
1. Mobilization: Supply and transport of construction equipment, materials, supplies, appurtenances, etc., to perform the work.
 2. Demobilization: Demobilization of construction plant and equipment, removal thereof and final cleanup and restoration of the site.
 3. Demolition: Remove and dispose of indicated materials at an approved off-site recycling or disposal facility.
 4. Electrical and Plant Controls: Installation of lighting, electrical conduit and wiring, controls.
 5. Storage of Materials and Equipment: Provide necessary equipment to unload, and temporarily store materials and equipment, in accordance with the manufacturer's requirements.
 6. Miscellaneous: Cleaning of all debris and sediments.
 7. Construct conduits and wiring necessary to implement the electrical equipment per plans and specifications.
 8. Test and make site ready for operation.
 9. Provide project supervision and management in order to meet the project schedule.

1.02 BID ITEMS

- A. See "Items of the Proposal" in the Bid Proposal Package of these Contract Documents.

1.03 CONTRACTOR'S BID STRUCTURE AND SCOPE OF THE WORK

- A. Payment for this work will be made on a lump sum basis ~~and/or unit-price basis~~, as indicated in the proposal.
- B. The Scope of Work is defined in the Technical Specifications, the drawings, and the referenced publications that are made a part hereto.

1.04 MEASUREMENT AND PAYMENT

- A. Full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in each item of the proposal as described in these Specifications, as shown on the drawings and/or as required for a complete and operational facility, shall be considered as included in the bid price and no additional compensation will be made therefore.
- B. Quantities shown on the City's estimate are approximate. The City does not expressly or by implication agree that actual quantity of work will correspond therewith, but reserves the right to increase or decrease quantities of any item or to omit portions of the work as may be deemed necessary or advisable by the City; also to make such alternatives or deviations, additions to, or omissions from the Plans and Specifications as may be determined during progress of work to be necessary and advisable for proper completion.
- C. The total bid amounts shall include, without limitation, all the work shown on the drawings and as described elsewhere in these Specifications. If a specific activity of work is not called out in the Cities estimate, the Contractor shall include the cost for such work in the bid item that is deemed appropriate to the Contractor as indicated in Section 8 of the CSSS.
- D. Progress Payments for the work shall be made as provided in Section 8 of the CSSS.

1.05 WORK NOT INCLUDED

- A. The following work is NOT included in this contract.
 - 1. Work shown, but marked "NIC" (Not In Contract) or shown as Existing (E).
 - 2. Any work otherwise designated to be done by others.

1.06 CONTRACTOR FURNISHED EQUIPMENT AND MATERIALS

- A. All equipment and materials furnished by the Contractor that are to remain a part of the constructed facility shall be new and unused and shall conform to the requirements of these specifications. Where manufactured materials and equipment are specified, the same brand manufacturer for each class of material or equipment shall be used wherever possible.
- B. The manufacturer's warranty shall pass to the City and shall extend for a period of one year after project acceptance by the City.

1.07 POWER DISRUPTIONS

- A. No long term electrical disruptions shall be permitted by the City during Contractor's performance of the work without prior written approval of the City. The Contractor shall furnish, install, and operate all resources required for temporary power. All short term outages necessary for change over to temporary power, to make connection, or other activity shall be scheduled with the City at least three weeks in advance and will be subject to cancellation at any time by the City.

1.08 PROSECUTION AND PROGRESS OF THE WORK:

- A. The Contractor shall be responsible for planning, scheduling, and reporting the progress of the work so as to ensure timely completion of the work called for in the contract. The Contractor shall prepare and submit a detailed plan as specified.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Materials are specified in these Technical Specifications, and in Sections 10 through 38 of the CSSS.
- B. Submit and obtain approval for all Submittals before commencing fabrications or moving construction materials onto the job site.
- C. All equipment shall be complete, ready for installation, and tested to the satisfaction of the Engineer at the time of acceptance of the work.
- D. Unless specifically excluded in the Contractor's Proposal, all incidental parts which are not shown on the Plans, or specified herein, and which are necessary in order to have complete and operable facilities shall be furnished by the Contractor.
- E. Manufactured articles, material, and equipment shall be applied, installed, connected, erected, adjusted, tested, used, cleaned, and conditioned as recommended by the manufacturer unless specified to the contrary. Copies of the manufacturer's installation instructions and procedures shall be submitted prior to

the installation of manufacturer's articles, material, and equipment.

- F. Materials and equipment shall be stored so as to insure the preservation of their quality and fitness for the work. Stores of equipment and materials shall be located to facilitate inspection. The Contractor shall be responsible for all damages that occur in connection with the care and protection of all materials and equipment until the completion of work and final acceptance by the City.
- G. If any material does not conform with these specifications the Contractor shall, within three days after being notified by the Engineer, remove the materials from the project site or storage area.

2.02 MATERIAL PROVIDED BY THE CITY

- A. Equipment that is not specifically identified as being provided by the City will be provided and installed by the Contractor.

2.03 CONTRACTOR ESTIMATES

- A. Contractor shall provide a written estimate for all proposed changes to the work. The estimate shall be on tabular pre-printed estimating sheets. The estimate shall list all items of deletion and addition to the Contract. Each item shall have material, equipment, and labor units extended and summed. Contractor shall apply the allowable overhead and profit (CSSS 8-16) for a total estimated cost of the proposed change order.

PART 3 - EXECUTION

3.01 CONTRACTOR'S PLANT AND EQUIPMENT

- A. **Security:** The Contractor shall, at all times, be responsible for the security of their plant and equipment. The City will not take any responsibility for missing or damaged equipment, tools, or personal belongings. The Contractor shall provide temporary security fencing and otherwise provide for the security of the existing facilities. These sites are particularly subject to vandalism. Materials left on-site are at the Contractor's risk and, if lost, at the Contractor's expense. The Contractor shall be responsible for the salvaged materials and equipment owned by the City and removed, or relocated, until the City has taken possession of such materials and equipment.
- B. **Workshop and Storage Facilities:** The Contractor shall provide storage facilities for the protection from weather of materials and supplies, and shall keep the facilities clean and in proper order at all times. The project site has limited space for a storage yard. Additional property may need to be leased, at the Contractors expense, for storage facilities. Materials and equipment shall be stored so as to insure the preservation of their quality and fitness for the work and located so as to facilitate inspection. The Contractor shall be responsible for all damages that occur

in connection with the care and protection of all materials and equipment, including existing equipment, until completion and final acceptance of the work by the City.

- C. **Parking Facilities:** Parking areas at the project location are limited for the automobiles used by the Contractor's construction employees and Contractors own vehicles. A parking area shall be designated by the Contractor and approved by the Engineer.

3.02 CONTRACTOR'S UTILITIES

A. Electrical Power

1. **General:** The Contractor shall provide and make arrangements for temporary electric service for all required power and lighting required for the work under this Contract and shall maintain such service until the completion of the work.
2. The Contractor shall attain approval from Tim Giffin of the City of Sacramento, (916) 808-7997, two (2) working days before removing and installing the new switchboard and motor control centers.
3. Power outage requests shall be made 48 hours in advance and shall be approved by the project Engineer before proceeding.

- B. **Sanitary Facilities:** The Contractor shall make arrangements for the maintenance of adequate toilet facilities at, or near, the work site and shall pay the costs thereof.

- C. **Temporary Heating:** The Contractor shall provide temporary heating, covering, and enclosures, as necessary, to protect all work and material against damage by dampness and cold and to facilitate completion of the work. The Contractor shall supply all the fuel, power, equipment, and materials required for temporary heating.

3.03 LANDS PROVIDED BY CITY

- A. Any additional land required for the construction of the work under this Contract, except that already owned by the City, shall be the Contractors responsibility to obtain.

3.04 FIELD ENGINEERING

- A. The Contractor shall provide and pay for the following field engineering services required for this job:
 1. Laying out the work.
 2. Civil, structural, electrical, surveying, or other professional services specified, or required, to execute the work.

- B. The Contractor is responsible for determining the exact location of all existing utilities and for the protection of and repair of damage to them. Contact Underground Service Alert at 1-800-227-2600, 48 hours before work is to begin. Contractor shall also contact the City Department of Utilities Plant Services Division, Pete Millino, at (916) 808-5173 to identify City underground facilities on site.
- C. The Contractor shall be responsible for the protection of all existing survey monuments or markers during construction.
- D. The Contractor shall be responsible for maintaining As-Built drawings for all underground work throughout the course of construction. Such drawing shall record the location and grade (City Datum) of all underground improvements constructed and shall be delivered to the construction inspector prior to, and, in consideration of the City's acceptance of work.

3.05 SHIPPING AND PROTECTION OF EQUIPMENT

- A. Definition: For the purpose of this paragraph, "equipment" means: all mechanical devices, all electrical devices, all items supplied by the City, all items removed by Contractor for later reinstallation, and all items with one or more moving parts.
- B. Packing and Markings: All equipment shall be adequately and effectively protected against damage from moisture, dust, handling or other cause during transport from manufacturer's or supplier's premises to job site. Each item or package shall be clearly marked with a fitting or distinguishing mark, which shall be shown on the packing list. Stiffeners shall be used, where necessary, to maintain shapes and to give rigidity. Parts of equipment shall be delivered in assembled or sub-assembled units, where possible.
- C. Identification of Equipment: Each item of equipment shall have firmly affixed to it a nameplate, label, or tag with its equipment number or other discrete identifying mark.
- D. Storage of Equipment: Contractor shall provide storage for equipment for the entire interval between receiving and installation, and for the entire interval between being removed and reinstalled. Equipment shall be stored in a enclosed space affording protection from weather, dust, and mechanical damage and providing favorable temperature, humidity and ventilation conditions, as required, to ensure against equipment deterioration. For equipment that is not intended and prepared for outdoor installation, the storage container shall be heated above dew point temperature.
- E. Protection of Equipment After Installation: After installation, all equipment shall be protected, as required. During construction, and until final acceptance by the City, all equipment that may be affected must be completely covered. All equipment shall be cleaned and vacuumed inside and outside prior to acceptance.

- F. Delivery of Equipment: City personnel will not accept materials or equipment deliveries for the Contractor.
- G. Security: Security of equipment stored by the Contractor is the Contractor's responsibility. All losses or damage shall be replaced or repaired at the Contractor's expense.

3.06 TESTING

- A. The City will field test earth work and cast-in-place concrete materials.
- B. Notification: As an exception to requirements that may be stated elsewhere in the Contract, the Engineer shall be given two (2) working days notice prior to each test. The Contractor shall perform all other testing, and submit written copies of all test results to the Engineer.
- C. Failure to Meet Test: Any system material or workmanship which is found defective, on the basis of acceptable tests, shall be reported to the Engineer. Contractor shall replace the defective material or equipment and have test repeated until test proves satisfactory to the Engineer, without additional cost to the City.
- D. Operational Testing: Operational testing consists of electrical testing specified in Section 16950.
- E. Demonstration Testing: After all operational tests specified in Section 16950 are satisfactorily completed, the Contractor shall perform a demonstration test.

3.07 SAFETY

- A. Contractor shall execute and maintain all work so as to avoid injury or damage to any person or property. All work shall be done in conformance with the State of California, Division of Industrial Safety and OSHA Standards. Safety precautions, as applicable, shall include, but not be limited to, confined space procedures, adequate fume protection; adequate illumination for underground and night operation; instruction in accident prevention for all employees; such machinery guards, walkways, scaffolds, ladders, bridges, and other safety devices, equipment and wearing apparel as are necessary or lawfully required to prevent accidents or injuries; and the proper inspection and maintenance of all safety measures. Contractor shall have emergency phone numbers and addresses posted on the job site.

3.08 PROTECTION OF EXISTING IMPROVEMENTS

- A. The provisions of this Section shall supplement the provisions of CSSS Section 13.
- B. Existing facilities, utilities, and property shall be protected from damage resulting

from the Contractor's operations. All trees, shrubbery, fences, walls, asphalt, and other improvements, including existing pavements, sidewalks, street improvements, and underground utilities, and other improvements not shown on the drawings shall be protected from damage by the Contractor throughout the construction period. Existing roadways and other improved surfaces shall be protected from damage by vehicles with tracks or lugs.

- C. Any damage resulting from the Contractor's operations shall be repaired by the Contractor to the condition which existed prior to the damage, and to the satisfaction of the Engineer, at no additional cost to the City.
- D. The Engineer may deduct from payments otherwise due the Contractor, the estimated cost of repairing any damage created by the Contractor's operation, until such time that repairs are made by the Contractor to the Engineer's satisfaction.
- E. The Contractor shall be responsible for unlocking and locking the gates at the project site each work day in order to enter and exit the work area. During the construction period, the Contractor shall be responsible, 24 hours per day, for the security and integrity of existing project facilities, including replacing stolen materials.

3.09 MATERIAL NONCONFORMANCE

- A. If any material does not conform with these Specifications, the Contractor shall, within three (3) days after being notified by the Engineer, remove the materials from the project site or storage area.

3.10 RESTORATION OF STRUCTURES AND SURFACES

- A. Structures, Equipment and Pipework: The Contractor shall remove such existing structures, equipment, and pipework as may be necessary for the performance of the work, and shall rebuild, or replace, the items thus removed in as good a condition as found. Contractor shall repair any existing structures which may be damaged as a result of the work.
- B. Curbs, Gutters, Driveways and Sidewalks: All curbs, gutters, driveways, sidewalks, and similar structures that are broken or damaged by the installation of the work shall be reconstructed by the Contractor. Reconstruction shall be of the same kind of materials with the same finish and in not less than the same dimensions as the original work. Repairs shall be made by removing and replacing the entire portions between joints or scores, and not merely refinishing any damaged part. All work shall match the appearance of the existing improvements, as nearly as possible.
- C. Roads and Streets: All roads and streets in which the surface is removed, broken, or damaged, or in which the ground has caved, or settled, due to work under this Contract, shall be completely resurfaced and brought to the original grade and crown section, unless otherwise indicated. Before resurfacing material is placed,

edges of pavements shall be trimmed back far enough to provide clean, solid, vertical faces, and shall be free of any loose material. Roadways used by the Contractor for hauling materials, equipment, supplies, etc., shall be cleaned and repaired if the condition of the roadway is damaged, or otherwise affected, due to the Contractor's operations.

- D. **Cultivated Areas and Other Surface Improvements:** All cultivated and natural areas, either agricultural or lawns, and other surface improvements which are damaged by actions of the Contractor shall be restored, including roadside drainage ditches, as nearly as possible, to their original condition.

E. **Housekeeping Practices**

Contractor shall, during the construction of this project, implement, at a minimum, the following housekeeping practices: solid waste management, material storage and delivery area, concrete waste management, and spill prevention and control.

Solid Waste Management: Contractor shall maintain a clean construction site. Contractor shall provide designated areas for waste collection. The waste collection areas shall be leak-proof containers with lids or covers. Site trash shall be collected daily and placed in the disposal containers. The Contractor shall make arrangements for regular waste collection. The Contractor shall also regularly inspect the waste disposal areas to determine if potential pollutant discharges exist.

Material Storage and Delivery Area: Contractor shall provide one central material storage and delivery area for the duration of the project. This area shall be fenced and protected such that runoff will not be allowed to leave the material storage area. The Contractor shall regularly inspect the site to ensure that any hazardous or non-hazardous materials have not spilled.

Concrete Waste Management: The Contractor shall arrange for concrete wastes to be disposed of off-site or in one designated area. Concrete wastes, including left-over concrete and material from washing out the concrete truck, shall not be disposed to the storm drain system. If a designated area is provided, the site shall be bermed to allow the concrete to dry. The dried concrete waste shall be removed and disposed of properly at the Contractor's expense.

Spill Prevention and Control: The Contractor shall be responsible for instructing employees and sub-contractors about preventing spills of hazardous materials and controlling spills if they occur. Proper spill control and cleanup materials shall be kept on site near the storage area and updated as materials change on site.

More information about Housekeeping Practices can be obtained by referring to the City of Sacramento's Administrative and Technical Procedures Manual for Grading, Erosion and Sediment Control dated January 1994, available at 1395 35th Avenue, Sacramento, CA 95822. (Revised 5\30\96)

F. **Dewatering**

Groundwater levels in the project area fluctuate with the water level of the adjacent creeks and downstream rivers. The Contractor shall be responsible for the control, removal, and disposal of any groundwater that may be encountered in the course of excavating, trenching, placing pipe, or constructing any other improvements associated with the project. Any water containing chlorine or sediments shall not be discharged to the City storm drain system unless the water is free from such constituents. No separate payment will be made to the Contractor for dewatering.

G. Dust Control

Contractor shall be responsible for the control of dust within the limits of the project at all times including weekends and holidays in addition to normal working days. The Contractor shall take whatever steps are necessary or required by the Engineer to eliminate the nuisance of blowing dust.

Contractor shall keep all streets as well as all grounds adjacent to the project site clean and free of dust, mud, and debris resulting from the Contractor's operations. Daily clean up throughout the project shall be required as the Contractor progresses with the work. Extra precautions and clean up efforts shall be made prior to weekends and holidays.

Spillage of earth, gravel, concrete, asphalt, or other materials resulting from hauling operations along or across any public traveled way shall be removed immediately by the Contractor at his expense.

No separate payment will be made to the Contractor for dust control. The cost of such work shall be included in whatever bid item the Contractor deems appropriate.

3.12 CONSTRUCTION INSPECTIONS

- A. Unless otherwise directed, Contractor shall contact the Utility Department Construction Section at (916) 808-1411 two (2) working days in advance to schedule construction inspections.

END OF SECTION

SECTION 01330

SUBMITTALS

PART 1 - GENERAL

1.01 STANDARD COMPLIANCE

- A. When materials or equipment must conform to the standards of organizations such as, but not limited to, the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL) documents showing, or proving, conformance shall be submitted.
- B. If an organization uses a label or listing to indicate compliance with a particular standard, the label or listing will be acceptable evidence, unless otherwise specified in the individual Sections. In lieu of the label or listing, the Contractor shall submit a certificate from an independent testing organization, which is competent to perform acceptable tests, and is approved by the City. The certificate shall state that the item has been tested in accordance with the specified organization's standard. For materials and equipment whose compliance with organizational standards or specifications is not regulated by an organization using its own listing or label as proof of compliance, a certificate of compliance from the manufacturer shall be submitted for approval. The certificate shall identify the manufacturer, the product, and the referenced standard and shall state that the manufacturer certifies that the product conforms to all requirements of the project Specification and of the referenced standards listed.

1.02 REVIEW OF CONTRACTOR'S INFORMATION

- A. When review and checking for acceptance is required of any drawing, or information regarding materials and equipment, the Contractor shall prepare or secure, and submit for review, ~~five~~ (5) copies. The Engineer, after taking appropriate action, will return ~~two~~ (2) marked copies to the Contractor.

Within a reasonable time after receipt of said submittal copies, the Engineer will return the marked copies indicating one of the following four (4) actions:

1. If review and checking indicates no exceptions, copies will be returned marked "NO EXCEPTIONS TAKEN" and work may begin immediately on incorporating the material and equipment covered by the submittal into the work.

2. If review and checking indicates limited corrections are required, copies will be returned marked "MAKE CORRECTIONS NOTED". Work may begin immediately on incorporating into the work the material and equipment covered by the corrected submittal.
 3. If review and checking indicates insufficient, or incorrect data, has been submitted, copies will be returned marked "REVISE AND RESUBMIT". No work may begin on incorporating the material and equipment covered by this submittal into the work until the submittal is revised, resubmitted, and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED".
 4. If review and checking indicates the material and equipment submittal is unacceptable, copies will be returned marked "REJECTED". No work may begin on incorporating the material and equipment covered by this submittal into the work until a new submittal is made and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED".
- B. Approval of the submittal by the Engineer shall not relieve the Contractor from responsibility for any errors or omissions in such submittals nor from responsibility for complying with the requirements of this Contract.
- C. If Shop Drawings show variations from Contract requirements, Contractor shall describe such variations in writing, separate from the drawings, at time of submission. All such variations must be approved by the Engineer.

PART 2 - PRODUCTS

2.01 MANUFACTURER'S DATA

- A. Submittals for each manufactured item shall be comprised of manufacturer's descriptive literature, drawings, diagrams, performance and characteristic curves, and catalog cuts. Manufacturer's name, trade name, model or catalog number, nameplate data, size, layout dimensions, capacity, project specification references, and any other additional information necessary to establish contract compliance shall be clearly indicated for each item submitted. Contractor shall identify items submitted for approval using an arrow or yellow highlighter. All submittals that fail to properly identify items will be returned to the Contractor.

2.02 SHOP DRAWINGS

- A. Shop Drawings shall show types, sizes, accessories, elevations, floor plans, sectional views, installation details, elementary control diagrams, and wiring diagrams. Wiring diagrams shall identify circuit terminals and shall indicate the internal wiring for each item of equipment. Drawings shall also indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices. If any equipment is disapproved, the drawings shall be revised to show

acceptable equipment and be resubmitted. **Contractor shall provide a hard copy of all shop drawings.**

2.03 OPERATION AND MAINTENANCE MANUAL

- A. Submit an operation and maintenance manual covering the stipulated systems and equipment. Three (3) approved copies of the manual, bound in Avery D - Ring binder model number AVY79-799 or approved equal, shall be furnished to the City. **One (1) of the three copies of the operation and maintenance manual shall contain original documentation/manuals and not photocopies.** Each binder shall be no more than 75% full. Prior to system and equipment tests, one (1) complete, bound copy of the manual shall be submitted for approval. Three (3) approved copies of the manual each for this project, with all applicable test forms completed, shall be furnished to the City before completion of the Contract. The following identification shall be inscribed on the cover and spine of the binders:

Operation and Maintenance Manual — Electrical
Project: CWTP MCC "N" REPLACEMENT PROJECT 2012
Contractor: _____
Contract No.: _____
Date: _____

The contractor shall also provide the City with an electronic copy of each O&M manual. The electronic copies shall be in Adobe format (Portable Document Format) and shall be provided on a CD. Contractor shall use the latest version of Adobe.

- B. Provide a table of contents and tab sheets to identify discrete subjects. Instruction sheets shall be legible and easily understood with large sheets and drawings folded in. Use manufacturer's original pre-printed instructions when available, do not copy these pre-printed instructions. Cross out all material which does not apply to the equipment furnished on this job.
- C. The operating and maintenance instruction shall include, as a minimum, the following data for each item of mechanical and electrical equipment:
1. Name and location of the manufacturer, the manufacturer's local representative, the nearest supplier and spare parts warehouse.
 2. Approved submittals applicable to operation and maintenance.
 3. Recommended installation, adjustment, start-up, calibration, and troubleshooting procedures.
 4. A control sequence describing start-up, operation, and shutdown.

5. Detailed description of the function of each principal component of the systems.
 6. Recommended lubrication and an estimate of yearly quantity needed.
 7. Recommended step-by-step procedures for all modes of operation.
 8. Complete internal and connection wiring diagrams.
 9. Complete printed circuit board schematic and assembly drawings.
 10. Recommended preventive maintenance procedures and schedule.
 11. Complete parts lists, by generic title and identification number, with exploded views of each assembly.
 12. Recommended spare parts.
 13. Disassembly, overhaul, and reassembly instructions.
 14. All completed test forms.
 15. Provide ISA (International Society for Measurement and Control) S-20 forms for all instrumentation devices.
 16. As-built single line drawings of the entire electrical system including motor control drawings of each motor. AutoCAD files of both single line and motor control drawings on a CD.
- D. Contractor is not required to provide manuals for equipment supplied by the City. However, any manuals provided to the Contractor by the City shall be returned in a condition acceptable to the Engineer, or replaced at no cost to the City.

2.04 PROJECT RECORD DRAWINGS

- A. The Contractor shall maintain a neatly and accurately marked set of record drawings showing the elementary control diagrams, wiring diagrams, and final locations and layout of all mechanical, electrical, and instrumentation equipment; piping and conduit; structures; and other facilities. Drawings shall be kept current weekly, with all work instructions and change orders; mechanical, electrical, and instrumentation equipment accommodations; and construction adjustment. Drawings shall be subject to the inspection of the Engineer at all times, and progress payments, or portions thereof, may be withheld if drawings are not accurate and current. Prior to acceptance of the work, the Contractor shall deliver to the Engineer two (2) sets of neatly marked record drawings, accurately showing all the information required above.

2.05 SHORT CIRCUIT & PROTECTIVE DEVICE STUDY & COORNIDATION AND FLASH ANALYSIS

- A. The short circuit & protective device study & coordination and flash analysis shall be performed as specified in Section 16013. One copy each of the completed study shall be submitted to the City both in hard copy and in program files and shall be subject to City approval. Arc flash sticker shall be provided for MCC N.

PART 3 - EXECUTION

3.01 SUBMITTAL PROCEDURE

- A. At least thirty (30) days prior to the Contractors need for approval, Contractor shall forward to the Engineer all submittals required by the individual Sections of the Specifications. The Engineer may require that the Contractor submit a legible reproducible mylar for the City's use in lieu of multiple prints of a single drawing.
- B. Identify all submittals by submittal number on letter of transmittal. Specification number shall be identified on the letter of transmittal. Submittals shall be numbered consecutively and resubmittals shall have a letter suffix. For example:
1. 1st submittal: 2
 2. 1st resubmittal: 2A
 3. 2nd resubmittal: 2B, etc.

3.02 INFORMATION TO BE SUBMITTED FOR REVIEW

- A. Information on items to be submitted for review are specified in the individual Sections of these Specifications. Submittals for each Section shall be bound together in one book. Book shall have numbered tab dividers for each item. Submittals that are related to, or affect, each other shall be forwarded simultaneously as a package to facilitate coordinated review. Uncoordinated submittals will be rejected. Do not combine unrelated materials in the same submittal. Submittals shall be arranged in same order as they appear in the Specification Section. Items shall be highlighted and clearly marked with the same identification number as indicated on the drawings. The Contractor shall include submittal time appropriate within each item of work on the Construction Schedule. The City will receive submittals at the preconstruction meeting as specified in Section 01105, General Information and Requirements.

END OF SECTION

SECTION 16010
ELECTRICAL WORK

PART 1 - GENERAL

1.01 SCOPE

- A. This Specification Section covers all electrical work, which consists of furnishing all necessary labor, equipment and materials required for the complete electrical system as specified and as shown on the Plans.
- B. Work Included:
 - 2. Equipment and materials to be furnished and installed by the Contractor under Division 16 shall include the following:
 - a. Short Circuit, Relay, and Flash Analysis (16013)
 - b. Raceway Systems (16110)
 - c. Wire and Cable (16120)
 - d. Low Voltage Motor Control Center (16480)
 - e. RTU System (16921)
 - f. Miscellaneous Equipment (16922)
 - g. Operational Testing (16950)

1.02 SUBMITTALS

- A. Descriptive literature for all materials furnished under this section shall be submitted in accordance with Section 01330 **SUBMITTALS** of these specifications.

1.03 CONSTRUCTION POWER

- A. The Contractor shall provide his own temporary construction lighting and electrical power as required in areas where work is being performed.
- B. For maintaining power and controls to the facility see sections Summary of Work; section 01110, part 3.02.

1.04 DRAWINGS

- A. The Contractor shall verify all conditions at site, review all measurements to insure adequate space for installation of equipment.
- B. The locations of conduit and equipment, as indicated on the drawings, are in the desired locations. However, locations may be adjusted to meet the electrical and structural conditions as required.

- C. The drawings are essentially diagrammatic to the extent that offsets, bends, pull boxes, conduits, special fittings and the exact locations may not be completely indicated. Carefully study the drawings and premises in order to determine the best methods, exact locations, routes, noting the building obstructions, etc., and furnish and install all conduit and equipment in available locations and as required by conditions found at the site.

1.05 ELECTRICAL WORK CLOSEOUT

- A. Prepare the following items and submit to the Engineer before final acceptance:
 - 1. Copies of all test results as required under this Section 16950.
 - 2. Copies of as-built record drawings and O&M manuals as required under section 01330.
 - 3. Notify the Engineer in writing when installation is complete and that a final inspection of this work can be performed. In the event defects or deficiencies are found during this final inspection they shall be corrected to the satisfaction of the Engineer before final acceptance can be issued.
- B. Electrical and control equipment shall be cleaned both inside and outside.

1.06 COORDINATION WITH SUB-CONTRACTORS

- A. General contractor shall be responsible to provide all sub-contractors with all specifications and drawings that pertain to their work on this project.

1.07 INTERRUPTION OF SERVICES

- A. All electrical services in all occupied facilities of the contract work are to remain operational during the entire contract period. Any interruption of electrical power for the performance of this work shall be made only after consultation with the City and the Superintendent of Plant Operations, and shall be only at such a time and of such a duration as directed.
- B. The contractor shall be responsible for coordination with SMUD for all power requirements.

PART 2 - PRODUCTS

2.01 REFERENCES STANDARDS

- A. Work installed or material used shall comply with latest version of NEC, UL, and other applicable rules and standards of the industry.

- B. **Equipment Anchors:** Securely anchor electrical equipment. Anchoring shall have the capability of withstanding seismic forces per the 1994 California Code of Regulations, Title 24, Part 2, Section 2312, Seismic Zone 3, with $C_p = 1.0$ and $I = 1.5$. C_p maybe be two-thirds of the value specified for components mounted on foundations at grade or on floor slabs on earth grade.

2.02 MISCELLANEOUS EQUIPMENT/MATERIALS

- A. The Contractor shall include in his work furnishing and installing of the following:
1. **Warning Signs:** Unless otherwise shown on the plans, use signs of standard manufacture, #18 gauge minimum steel, baked enamel finish, red letters on white background. Provide warning signs per Title 24, CAC.
 2. **Fuses:** Furnish and install fuses of proper type and rating suitable for equipment protected. Upon acceptance of installation, all fusible disconnect switches shall be equipped with correct fuses.
 3. Provide one carton (3 fuses minimum) of each fuse rating for each pump control.

2.03 SWITCHBOARDS, MOTOR CONTROL CENTERS, AND PLC CABINET INTERNAL WIRING

- A. Interior wiring shall conform to the following:
1. Rubber grommets shall be used where wiring passes through holes in sheet metal unless indicated on the drawing.
 2. Wiring shall not be tapped or spliced except at device terminals or on terminal blocks.
 3. No more than two terminations shall be made at any one terminal.
 4. Each terminal connection shall have a pre-insulated ring-tongue, crimp-type connector, and applied to the wire end with a ratchet type or pneumatic operated power tool.
 5. B8, Class B minimum stranding and the wire shall have copper conductors and shall be minimum #16 for control and minimum #12 for power circuits. Hinge wiring shall be Class D minimum stranding. Solid wire not allowed on this project.

6. All MCC and PLC cabinet wiring shall be TEW or MTW, unless otherwise specified. All switchboard wiring shall be SIS, unless otherwise specified.

Switchboard wire color shall be gray.

MCC wiring colors shall be as follows:

Neutral	White
Fused Control Power	Red
24 Volt Circuits	Blue
External 120 Volt Circuits	Yellow
Power Circuits before CPT	Black

7. All wiring shall be marked using tags with like numbers on both ends with wire numbers shown on the drawings. Tags using adhesives, tapes, or markers are not acceptable.
8. Tags shall be white heat-shrinkable with thermal transfer printing, three to one shrink ratio, 2 inches long and shall meet UL 224. Raychem Tyco shrink mark heat shrinkable sleeves or equal.

2.04 NAMEPLATES

- A. Indoor: Laminated phenolic plastic, black front and back, white core, engraved to show white lettering. Use 3/16" high lettering at push button stations, thermal overload switches, receptacles, wall switches, and similar devices, where nameplate is attached to device plate. Use 1/4" high lettering at all other locations, unless otherwise specified or detailed. Engraved lettering shall be uniform block style all upper case.

Nameplates 1 1/2 inches high and smaller shall be 1/16" thick. Nameplates larger than 1 1/2" high shall be 1/8" thick. Edges of nameplates shall be beveled. Nameplates shall be fastened using nickel plated brass, cadmium plated steel or stainless steel screws. Attachment of nameplates with adhesive is not acceptable.

- B. Outdoor: Engraved or embossed stainless steel.
- C. Inscription: If detailed on plans, use inscription exactly as shown; otherwise, describe adequately the function or use of equipment involved.

2.05 PAINTING AND FINISHES

- A. Boxes factory finished as follows:

- A. Surface Mounted Boxes: One prime coat over galvanizing, one coat of light gray synthetic enamel or lacquer.

B. Flush Mounted Boxes: Galvanized only.

B. A three coat finish consisting of primer, undercoat, and alkyd enamel finish of light gray, ANSI No. 61, shall be applied to all electrical enclosures unless otherwise specified.

2.06 HOUSE KEEPING PAD

A. ~~Free standing equipment and panels shall be placed on a house-keeping pad or on a 1 ½" height channel steel base as directed by the Engineer.~~

B. ~~The pad shall contain a formed raceway for conduits.~~

2.07 INDICATING LIGHTS, PUSH BUTTONS, AND TERMINAL STRIPS

A. Indicating lights shall be industrial, weatherproof NEMA 4/4X, transformer type, with LED type lamps, and push to test. Push buttons and terminal strips shall be NEMA style.

2.08 SPARE PARTS

A. Fuses: 1 carton (3 fuses, minimum) of each fuse used on this project.

2.09 RELAYS, TIMERS, AND SWITCHES

A. Contacts for all relays, timers, and switches shall be rated for 10 A minimum.

PART 3 - EXECUTION

3.01 INSTALLATION

A. All equipment installed by the Contractor shall operate to the Engineer's satisfaction. The Contractor shall be responsible for, and shall correct by repair or replacement, at his own expense, equipment which, in the opinion of the Engineer has been caused by faulty mechanical or electrical assembly by the Contractor.

B. The Engineer reserves the right to require changes in equipment location without incurring additional costs.

C. Outdoor steel items on this job shall be manufactured from cold rolled low carbon steel. Outdoor steel mounting holes and cutting shall all be finished and then the item shall be hot dipped galvanized conforming with ASTM A123 and A153. Outdoor hardware on this job shall be #316 stainless steel.

END OF SECTION

SECTION 16013

SHORT CIRCUIT & PROTECTIVE DEVICE STUDY AND COORDINATION AND FLASH ANALYSIS

PART 1 - GENERAL

1.01 SUMMARY OF WORK

A. The Contractor shall provide the following electrical power system studies for the project:

1. Provide a Short Circuit Study for CWTP MCC-N.
2. Provide a Protective Device Coordination Study for CWTP MCC-N.
3. Provide an Arc Flash Hazard Analysis for CWTP MCC-N.

The content of each study is specified in Part 3 of this specification.

B. The Contractor shall be responsible for ensuring that all parties involved in the studies have the necessary information and data to carry out the studies. The Contractor shall obtain and distribute the information and data from the Utility, the City and the manufacturers of the equipment and materials.

C. The Contractor shall be responsible for supplying the information and data in a timely manner to allow the short-circuit analysis to be completed prior to final installation. The Contractor shall be responsible for supplying any cable lengths and protective device settings in order to complete these studies. The Contractor is also responsible for acquiring any data from SMUD that is necessary to complete these studies.

D. If during the study, the Contractor finds any inadequacies in the equipment or protective devices, he shall make recommendations for improvements as soon as they are identified.

1.02 SUBMITTALS

A. Submit a draft of the final report for review by the Engineer. The report shall include the following as further described in Part 3:

1. Summary of the results of the short circuit and the protective device evaluation and coordination studies.
2. Description, purpose, basis and scope of the study.

3. Single line diagram generated by the software with node identification.
4. Tabulations of electrical capacities and characteristics of the equipment and protective devices.
5. Table comparing the calculated short circuit and the equipment ratings.
6. Coordination curves showing the proposed settings with the characteristics of the equipment and protective devices shown graphically on industry standard graph paper.
7. Arc Flash Hazard Analysis to include computed incident energy levels and flash protection boundary distances.
8. **The Contractor shall provide the City with an electronic copy of the short circuit study, coordination study, and arc flash hazard analysis on a CD or DVD.** The file should be the SKM power tool software file which can be opened and modified by the City if needed not the PDF file.

B. Submit the final report after receiving comments by the Engineer.

PART 2 - PRODUCTS

2.01 STANDARDS

- A. Institute of Electrical and Electronic Engineers
1. Standard 242, Protection and Coordination
 2. Standard 141, Electric Power Distribution
 3. Standard 299, Power System Analysis
 4. Standard 1584, Guide for Performing Arc Flash Hazard Calculations

PART 3 - EXECUTION

3.01 ELECTRICAL POWER SYSTEM STUDIES

- A. Short-Circuit Analysis
1. Calculation of the maximum rms symmetrical three-phase short-circuit current at each significant location in the electrical system shall be made using the latest version of the SKM power tools software.
 2. Appropriate motor short-circuit contribution shall be included at the appropriate locations in the system so that the computer calculated values represent the highest short-circuit current the equipment will be subjected to under fault conditions.

3. A tabular computer printout shall be included which lists the calculated short-circuit currents, X/R ratios, equipment short-circuit interrupting or withstand current ratings, and notes regarding the adequacy or inadequacy of the equipment.
4. The study shall include a computer printout of input circuit data including conductor lengths, number of conductors per phase, conductor impedance values, insulation types, transformer impedances and X/R ratios, motor contributions, and other circuit information as related to the short-circuit calculations.
5. The system one-line diagram shall be computer generated and will clearly identify individual equipment buses, bus numbers used in the short-circuit analysis, cable and bus connections between the equipment, calculated maximum short-circuit current at each bus location and other information pertinent to the computer analysis.
6. The computer printout shall identify the maximum available short-circuit current in rms symmetrical amperes and the X/R ratio of the fault current for each bus/branch calculation.
7. A comprehensive discussion section evaluating the adequacy or inadequacy of the equipment must be provided and include recommendations as appropriate for improvements to the system.

B. Protective Device Time-Current Coordination Analysis

1. The time-current coordination analysis shall be performed using the latest version of the SKM Power Tools software. It shall include the determination of settings, ratings, or types for the protective devices supplied. It shall also include any proposed adjustments to existing protective devices to which the supplied devices must coordinate. The Contractor shall make all changes to any existing protective devices after approval from the City.
2. Where necessary, an appropriate compromise shall be made between system protection and service continuity with system protection and service continuity considered to be of equal importance.
3. A sufficient number of computer generated log-log plots shall be provided to indicate the degree of system protection and coordination by displaying the time-current characteristics of series connected overcurrent devices and other pertinent system parameters.
4. Computer printouts shall accompany the log-log plots and will contain descriptions for each of the devices shown, settings of the adjustable devices, the short-circuit current availability at the device location when known, and device identification numbers to aid in locating the devices on

the log-log plots and the system one-line diagram.

5. The study shall include a separate, tabular computer printout containing the suggested device settings of all adjustable overcurrent protective devices, motor relays, the equipment where the device is located, and the device number corresponding to the device on the system one-line diagram. The Contractor shall take into account the motor nameplate data and pumping characteristics when performing the analysis.
6. A computer generated system one-line diagram shall be provided which clearly identifies individual equipment buses, bus numbers, device identification numbers and the maximum available short-circuit current at each bus when known.
7. A discussion section which evaluates the degree of system protection and service continuity with overcurrent devices, along with recommendations as required for increasing system protection and device coordination.
8. Significant deficiencies in protection and/or coordination shall be called to the attention of the engineer and recommendations made for improvements as soon as they are identified. Report shall also include suggestions to:
 - a. Improve coordination between upstream and downstream devices.
 - b. Reduce fault current clearing times of upstream devices.
 - c. Identify equipment protection boundary and inrush current conflicts.

C. Arc Flash Hazard Analysis

1. Per NEC 110.16, perform an arc-flash analysis according to IEEE Standard 1584, "IEEE Guide for Performing Arc Flash Hazard Calculations," based upon results from the short circuit current analysis and optimized overcurrent protective device settings provided in the overcurrent protective device coordination study. The arc flash hazard analysis shall be made using the latest version of the SKM power tools software.
2. A detailed arc-flash hazard analysis report with computed incident energy levels (Calories per square inches) and flash protection boundary distances at equipment indicated above to insure adequate protection and safety of personnel working in the vicinity of electrical equipment.
3. Arc Flash Hazard warning stickers, sized 3.75" x 4.75" with computed incident energy levels and flash protection boundary distances shall be located so as to be clearly visible to qualified persons on the electrical equipment.

END OF SECTION

SECTION 16110
RACEWAY SYSTEMS

PART 1 - GENERAL

1.01 SCOPE

- A. This Specification Section covers the furnishing, installing and testing of all wireway, conduit, fittings, boxes, and supports as specified herein, as shown on the Drawings, and as required for a complete electrical installation.
- B. The provisions of Section 16010 of these Specifications shall apply, unless otherwise specified in this Section.
- C. The raceway system shall consist of the types and sizes as required and shall include all rigid steel conduit, flexible conduit, non-metallic conduit, wireway and accessories as required for the embedded and exposed raceway systems.
- D. Conduit accessories shall include Condulet type fittings, expansion and deflection couplings, chase nipples, locknuts, bushings, flexible conduit fittings, supports, materials for sealing openings, and all other devices and materials required to complete the electrical raceway system.

1.02 SUBMITTALS

- A. Descriptive literature for all materials furnished under this section shall be submitted in accordance with Section 01330 **SUBMITTALS** of these specifications.
- B. Submittals for the material and equipment for the Raceway Systems shall include, but shall not be limited to, the following:
 - 1. Catalog cuts showing manufacturer, catalog numbers, dimensions, weights and material for all raceway and accessories, specific items shall be identified on all catalog cuts.
 - 2. Dimensioned shop drawings.
 - 3. Certified test reports prepared by manufacturer.

PART 2 - PRODUCTS

2.01 REFERENCE STANDARDS

- A. Raceway systems supplied under this contract shall be designed, manufactured, and tested in accordance with the latest version of the following standards:

American National Standards Institute (ANSI) Publications:	
C33.92	Flexible Liquid-tight Metal Conduit
C80.1	Rigid Steel Conduit
C80.4	Rigid Steel Conduit Fittings
National Electrical Manufacturers Association (NEMA)	
FB 1	Fittings and Supports for Conduit Cable Assemblies
TC-2 & TC-3	Non-metallic Conduit and Fittings
RN 1	Rigid Steel Conduit PVC jacketed
Underwriters Laboratories Inc.	
UL 514A	Metallic Outlet Boxes, Electrical
UL-870	Wireways, Auxiliary Gutters and Associated Fittings
UL-6	Rigid Metal Electrical Conduit
UL 651	Schedule 40 and 80 Rigid PVC Conduit

2.02 CONDUIT AND CONDUIT FITTINGS

A. Material for the conduit system shall conform to the following:

1. **Steel Conduit:** Steel conduit, couplings, bends and nipples shall be in accordance with ANSI C80.1 and UL-6, hotdip galvanized inside and outside after fabrication and then coated with a bichromate finish. Conduit sizes shall be not less than 3/4 inch IPS. All fittings shall be listed per UL 514.
2. **Flexible Liquid-tight Metal Conduit:** Flexible liquid-tight metal conduit shall be in accordance with ANSI C33.92 and shall be galvanized steel core with a copper bonding conductor between the spiral segments and an extruded synthetic jacket overall to insure a liquid-tight conduit. The conduit shall be 3/4 inch American Brass sealtight Flexible conduit, or equal. Flexible conduit fittings shall be the grounding type and a design approved by the manufacturer for this type of flexible conduit.
3. **Rigid Galvanized Steel Conduit PVC Bonded (RGS/PVC):** Conduit shall conform to the requirements of NEMA RN1, type A40. Plastic coated conduit shall be rigid galvanized steel conduit to which an epoxy acrylic primer and a 40 mil thick polyvinyl chloride coating has been bonded. Bond strength shall exceed the tensile strength of the plastic coat. All elbows shall be factory made and PVC coated. All fittings used with plastic coated conduit shall be similarly coated with not less than 40 mils of polyvinyl chloride and shall be

provided with type #316 stainless steel hardware. Furnish Occidental Coating Company -type OCAL 40, Robroy Industries - type PLASTIBOND, or approved equal. For factory coated conduit, use overlapping PVC sleeves. Sleeves shall extend beyond end of fitting minimum distance equal to nominal diameter of conduit, and shall fit tightly over conduit coating to form a watertight joint. Joints and fittings shall be made tight with strap wrenches. All damage to PVC jacket shall be repaired with four separate applications of PVC paint. Finished patch shall be 0.040 inch minimum thickness. Conduit sizes shall be not less than 3/4 inch IPS.

4. Rigid Polyvinyl Chloride (PVC) conduit: PVC conduit shall be manufactured in accordance with UL 651. PVC conduit shall be Schedule 40 or Schedule 80 high impact polyvinyl chloride, UL listed for direct burial. Minimum size shall be 3/4 inch. Fittings used with PVC conduit shall be PVC solvent weld type.
5. Fittings: Fittings for rigid steel conduit shall be threaded type and shall conform to the requirements of ANSI C80.4. Locknuts shall be extra heavy galvanized steel. Bushings shall be galvanized malleable iron with insulating collars. Grounding bushings shall be locking type and shall be provided with feed-through compression lugs.
6. Locknuts shall be extra heavy electrogalvanized steel for sizes through 2 inches. Locknuts larger than 2 inches shall be electrogalvanized malleable iron. Furnish allied tube and conduit type GRC, Triangle PWC, Inc., type GRS or approved equal.

2.03 SUPPORTS

A. General Requirements:

1. Inserts, hangers, brackets and miscellaneous supports for electrical equipment and conduits must be designed with minimum safety factor of 4, based on ultimate strength of material used. For empty conduits, include weight of 4 Type XHHW copper wires of maximum permissible size.
2. Secure hangers, brackets, conduit straps, supports and electrical equipment by means of toggle bolts on hollow masonry; expansion shields and machine screws or standard preset inserts on concrete or solid masonry; machine screws or bolts on metal surfaces; wood screws on wood construction. Wood or fiber plugs or concrete nails, are not acceptable.
3. All channels, fittings, clamps and accessories shall be hot dipped galvanized after fabrication for outdoor installations, and electro-galvanized for dry indoor installations. In wet or corrosive areas, such as wet wells and sumps, all channels, fittings, clamps and accessories shall be 316 stainless steel.

- B. Support channels steel shall conform to the requirements of ASTM A570. These shall be nominal 1 5/8" x 1 5/8" roll formed low carbon 12 gauge steel. One side of the channel shall have a continuous slot with inturned lips. Double strut shall be two of these welded back to back. Support channels shall be filled with styrofoam to inhibit concrete seepage.
- C. Conduit Supports:
1. Single Conduit Hangers: Steel City #C-149, Elcen Figure 13, Unistrut #JI205 through J1260, or equal, with 3/8" minimum diameter steel rod.
 2. Trapeze Hangers: Steel City #B-900, Elcen Figure 600, Unistrut #P-1000, or equal, channel with 3/8" minimum diameter steel rods and with conduit clamps, as specified below.
 3. Trapeze Conduit Clamps: Steel City #C-105, Elcen Figure 650, Unistrut #P-J111 through P-1124, or equal, for rigid conduit.
 4. Riser Supports: Steel City #C-210, Elcen Figure 39, Unistrut #U991-7 through U991-60, or equal.
 5. Finish
 - a. Hangers, channels, clamps, supports and rods, galvanized, cadmium plated or standard factory paint finish.
 - b. Conduit straps and single hole clamps, galvanized or cadmium plated.
 - c. Steel bolts, screws, nuts and washers, galvanized or cadmium plated.
 6. All conduit supports and hardware mounted inside the wet well shall be 316 stainless steel.

2.04 DUCT AND CONDUIT CAULKING COMPOUND

- A. Compounds for sealing ducts and conduit shall have a putty like consistency workable with the hands at temperatures as low as 35 degrees F. and shall not slump at a temperature of 300 degrees F or harden materially when exposed to the air. Compounds shall readily calk or adhere to lean surfaces of asbestos cement, fiber, or plastic duct; metallic conduits or conduit coatings; concrete masonry, or lead; any cable sheaths, jackets, covers, or insulation materials; and the common metals. Compounds shall form a seal without dissolving, noticeable changing characteristics, or removing any of the ingredients. Compounds shall have no injurious effect upon the hands of workmen or upon materials. Contractor shall apply duct seal to all conduits entering the wet well or as directed by the Engineer.

2.05 BOXES AND CONDULET

- A. Boxes and Condulet shall be cast ferrous steel Form 7 with gasketed weatherproof covers and #316 stainless steel hardware for all indoor and outdoor applications. NEMA 4X boxes shall be cast nonmetallic screw hub type with gasketed watertight covers and #316 stainless steel hardware. Each box shall be large enough to accommodate the required number and sizes of conduits, conductors, splices and devices per the NEC. Flush boxes shall have the front edge of box or ring flush with wall or ceiling finish.

2.06 WIREWAY

- G. Surface metal raceway shall be constructed in accordance with Underwriters' Laboratories Standards UL 870 for Wireways, Auxiliary Gutters and Associated Fittings. Every component including lengths, connectors and fittings shall be UL listed.
- B. Surface metal raceway shall be suitable for "lay-in" of conductors.
- C. All sheet metal parts shall be provided with a rust inhibiting phosphatizing coating and gray baked enamel finish. All hardware shall be plated to prevent corrosion. All screws installed toward the inside shall be protected by spring nuts or otherwise guarded to prevent wire insulation damage.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. General Requirements:
 - 1. Install an accessible raceway system for connection of all boxes, panelboards, cabinets, and equipment.
 - 2. All raceway shall be the type as shown on the Plans.
 - 3. Make bends for exposed conduit stub-ups completely below the surface. Make stubs vertical and arrange neatly.
 - 4. Where conduits turn up in accessible floor areas or under removable partitions, install coupling flush with finish floor surface (exclusive of floor covering). Provide flush threaded plug in this coupling where conduit is not to be extended.
 - 5. Spare Conduits: For flush mounted panels, run empty conduits from panel to accessible spaces above and below, unless otherwise shown. Install minimum of two 3/4" conduits (one up and one down) for every 3 single pole spare circuit breakers or spaces, or fraction thereof.
 - 6. Running Threads: Running threads shall not be acceptable.

7. All bends and offsets, where required, shall either be made with factory made bends or shall be field bends made with a conduit bender designed specifically for use with the type of conduit to be bent.
8. Minimum size of conduit shall be 3/4 inch. In no case shall the conduit size be smaller than that shown on the drawings.
9. The entire electrical raceway system shall be bonded and form a continuous metallic electrical conductor from service point to every box and shall be terminated with ground bushings connected to the panelboard ground bus per NEC.
10. All conduits which are installed shall be capped during construction to prevent the entrance of foreign material.
11. All conduit installed by the Contractor shall be of the type listed in the "Conduit Installation Table", at end of this section.
12. The maximum number of conduit bends shall be as follows: 90 degrees of conduit bends for up to 300 feet of conduit, 180 degrees of conduit bends for up to 200 feet of conduit, 270 degrees of conduit bends for up to 100 feet of conduit, 360 degrees of conduit bends for 50 feet of conduit or less.
13. Conduit terminating at floors or in cabinets, cubicles, and walls shall be identified by metal tags bearing the conduit number. The tags shall be securely attached to the conduit directly under the terminating bushing on both ends of the conduit.

B. Exposed Conduit:

1. All exposed conduits shall be run in straight lines parallel to column lines, walls or beams. Where conduits are grouped, the bends and fittings shall be installed so as to present an orderly appearance. Unnecessary bending or offsets shall not be acceptable. Conduits shall be kept at least 12 inches away from heating devices or similar equipment.
2. Supports for exposed conduit shall be in accordance with Title 24, CAC.
3. Supports and all hardware inside sump area shall be stainless steel.
4. Support conduits as close to 8 feet intervals as possible and within 1 foot of boxes or changes in direction. Use riser supports with clamps for vertical conduit risers.
5. For single conduit runs, use conduit straps with backplates or suspend from ceiling with single conduit hangers. Single hole malleable iron clamps may be used for horizontal runs on vertical surfaces. Perforated strap (plumber's

tape), not acceptable.

6. For multiple conduit runs, group conduits together and support from ceiling by means of trapeze hangers. Wall brackets may be used for conduit runs on vertical surfaces. Clamp each conduit to trapeze or bracket, using conduit clamp.
7. Fasten hanger rods to structural steel members with beam clamps or to concrete inserts set flush with surface. Install reinforcing rod through opening in concrete insert.
8. Exposed conduit shall be tightened securely and shall be supported rigidly in place, and all connections to outdoor boxes shall be watertight. All exposed conduit shall include, where required, the drilling of holes in the bottom and top of enclosures or plates and in the sides of enclosures of switchgear and other electrical equipment. The Contractor shall drill all holes in concrete for installation of expansion anchors for exposed conduit runs.

C. Conduits in Concrete Slabs:

1. Vertical Penetration of Grade:
 - a. All risers penetrating ground shall extend 6 inches above grade.
 - b. Conduit entrances in the bottom of switchgear, power distribution panels, switchboards, etc., shall project into the enclosure a minimum of three inches to prevent water from entering conduits.

2. Conduits Crossing Expansion and/or Contraction Joints:

Expansion couplings used in conduit runs crossing expansion or contraction joints in concrete shall be zinc coated and watertight.

E. Workmanship and Installation Requirements:

1. Where field changes are required, every precaution shall be taken to insure that the change is coordinated with other conduit, structural, and plumbing and piping work. Information shall be obtained regarding the completed raceway runs to insure that there will be no interference when the raceway run is extended or revised. A complete record of such changes shall be made on the Drawings.
2. Conduits shall be cut square, threaded and reamed to remove sharp or rough edges and burrs. No running threads will be allowed. Conduit joints and connections shall be made waterproof and rustproof by application of a non-insulating thread compound, such as white lead or graphite, and zinc sealing material. Each threaded joint shall be thoroughly cleaned to remove

cutting oil before the compound is applied.

3. Metallic conduits shall be bent cold to prevent damage to the protective coating. All bending shall be gradual and be done smoothly to permit the pulling on insulated electrical wires and cables without incurring damage to the insulation or sheath. Radius of curvature shall be not less than that permitted by NEC. The number of bends shall not exceed four 90 degree bends between pull points.
4. Conduit shall be rigidly secured to panels and other electrical equipment terminal boxes with locknuts and grounding bushings in such a manner that each system shall be electrically continuous throughout unless otherwise shown on the Drawings.
5. The raceway system shall be installed complete before conductors are installed. Concrete shall be removed from the inside of pull boxes after the forms are removed, and the threads for attaching devices and covers shall be cleaned. As soon as practicable after conduits are installed, conduits shall be swabbed with clean dry rags to show they are clean and dry.
6. To reduce damage to the zinc coating, only strap type wrenches shall be used. All places where the zinc coating is damaged shall be repaired with zinc-rich galvanizing repair compound.
7. Pull boxes, sized in accordance with NEC, shall be installed wherever necessary to avoid overly long straight runs or an excessive number of bends.
8. Raceway shall be installed with necessary fittings and supports.
9. Pull-tape shall be a made out of woven aramid yarns and contain a silicon lubricate. The pull-tape shall have sequential footage markings and have a minimum tensile strength of 2500 lbs. Furnish and install pull-tape in all empty raceways, unless otherwise noted. Pull-tape shall be Dandy-Line or approved equal.
10. All underground conduits shall be inspected by the Engineer before backfilling the trench.

3.02 OUTLET, DEVICE, PULL AND JUNCTION BOXES

A. Boxes shall be installed as follows:

1. NEMA 3R Indoor and outdoor areas
2. NEMA 4X Where specifically shown on the plans and corrosive areas

B. Set boxes in a rigid manner and support independently of conduit by bar hangers in metal studs, or to solid blocking in frame construction, or fasten directly with wood

screws on solid wood framing, bolts and expansion shields on concrete or brick, toggle bolts on hollow masonry units, and machine screws or welded threaded studs on steel work. Do not use powder actuated fasteners on this job. All junction boxes shall be installed with covers accessible after installation.

- C. Pull boxes shall be located every 400 feet for straight pulls, 300 feet with every 90 degrees of conduit bends, 200 feet with 180 degrees of conduit bends, 100 feet with 270 degrees of conduit bends and every 50 feet with 360 degrees of conduit bends.

CONDUIT INSTALLATION TABLE

<u>CONDUIT INSTALLATION</u>	<u>CONDUIT TYPE</u>
Exposed Conduit (indoor & outdoor):	Rigid galvanized steel conduit.
Conduit in Concrete Slab:	Rigid galvanized steel conduit.
Underground Conduit:	Rigid galvanized steel PVC coated conduit where the conduit is directly in contact with the earth or scheduled 40 PVC conduit with concrete encasement minimum of 4" all around for horizontal runs only.
Conduit in Duct Bank:	Schedule 40 PVC conduit with concrete encasement minimum of 4" all around for horizontal runs only.
Vertical or horizontal sweeps, risers, or stubs into underground boxes:	Rigid galvanized steel PVC coated conduit for entire sweep, underground runs 5' prior to riser or stub, and 6" above finished grade. Conduit 6" above finished grade shall be installed as exposed conduit.
Bottom Entrance of Switchgear, Distribution Panel, MCC, & etc:	Rigid galvanized steel PVC coated conduit.
Side or Top Entrance of Switchgear, Distribution Panel, MCC, & etc:	Rigid galvanized steel conduit.
Conduit Exposed to Corrosive Environment (sewer wet well)	Type 316 stainless steel conduit .
Primary & Secondary of the SMUD Transformer:	Per SMUD standard specifications.
Bottom Entrance From SMUD Transformer to City Main Switchgear:	PVC conduit with concrete encasement minimum of 4" all around.
Motor Conduit Box to Rigid Wireway System:	Flexible liquid tight metal conduit.
Door Switch Sensor to Rigid Wireway System:	Flexible liquid tight metal conduit.

CONDUIT INSTALLATION

CONDUIT TYPE

Conduit From Junction Box
to Outside Building Lights:

Rigid galvanized steel conduit.

Conduit From Junction Box
to Trash Rack Lights:

Flexible liquid tight metal conduit.

Risers or Conduit Stubs Rising
Up From Concrete Duct Bank:

Rigid galvanized steel PVC coated conduit.

Equipment Subject to Vibration

Flexible liquid tight metal conduit.

Notes

1. All acceptable conduit materials are specified in specification 16110 section 2.02 A.
2. Any conduit not covered in the above categories shall be Rigid Galvanized Steel PVC coated.
3. All underground PVC conduits shall be encased in red concrete.
4. Contractor shall place a 6" wide electrical caution warning tape in all trenches 12" above concrete or as directed by the Engineer.

END OF SECTION

SECTION 16120

LOW VOLTAGE WIRE AND CABLE

PART 1 - GENERAL

1.01 SCOPE

- A. This Specification Section covers the furnishing, installing and testing of all wire and Cable required to complete the installation of equipment as specified herein and as shown.
- B. The provisions of Section 16010 of these specifications shall apply, unless otherwise specified in this Section.

1.02 SUBMITTALS

- A. Descriptive literature for all materials furnished under this section shall be submitted in accordance with Section 01330 **SUBMITTALS** of these specifications.
- B. Submittals for the wire and Cable shall include, but shall not be limited to, the following:
 - 1. Submittals will include product data sheets for all cables, of each type and voltage rating, on which work is to be performed under this contract.
 - 2. Certified test reports prepared by manufacturer.

1.03 QUALITY ASSURANCE

- A. Wire and cable of the type and voltage rating shown on the contract drawings shall be of a design which has been in satisfactory use for not less than three years in a minimum of 20 installations. For purposes similar to those intended herein.
- B. Manufacturer shall provide certification that the manufacturer has been fabricating and assembling specified equipment (as described in A above) in his current facility for a minimum of five (5) years.
- C. All materials selected for the manufacture of the hardware shall be the best available for the purpose for which they are used, considering strength, ductility, durability and the best engineering practice.
- D. All cable have been manufactured within one year of installation.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Wire and cable shall be delivered complete, in manufacturer's original, unopened protective packaging. Packing materials shall be such as to prevent damage to the materials during transportation and handling.
- B. Wire and cable shall be handled in a manner to prevent damage to the coverings and conductor.
- C. Maintain protective coverings until ready for installation.

PART 2 - PRODUCTS

2.01 REFERENCE STANDARDS

- A. Wire and cable supplied under this contract shall be designed, manufactured, and tested in accordance with the latest version of the following standards:

American Society Testing Materials (ASTM)	
B-8	Concentric-Lay-Stranded Copper Conductors

Insulated Cable Engineers Association (ICEA)	
S-68-516	Ethylene Propylene Rubber Insulation

Underwriters Laboratory (UL)	
UL 20	General Use Snap Switches
UL 486A	Wire Connectors and Soldering Lugs
UL 83	Thermoplastic Insulated Wires
UL 510	Insulating Tape
UL 1072	Medium Voltage Cable

National Electrical Manufacturers Association (NEMA)	
WD-1	General Purpose Wiring Devices

National Electrical Code (NEC)

Institute of Electrical and Electronic Engineers (IEEE)

California Administrative Code (CAC) Title 24

2.02 LOW VOLTAGE WIRING

- A. Low voltage wiring shall be of the size and number shown and shall have the following characteristics. Sizes are indicated by American Wire Gauge (AWG) and minimum size shall be No. 12 AWG for power wiring and No. 14 AWG for control wiring, unless otherwise indicated.
- B. Voltage: 600 V.
- C. Conductors: Annealed copper 98% conductivity. Aluminum conductors are not acceptable.
- D. Conductor Stranding: All Conductors shall be stranded. Solid wire is not acceptable.
- E. Insulation: Thermoplastic insulated wires and cables shall be listed in UL 83. They shall be delivered to the job site in the manufacturer's unopened boxes or reels. Insulation for conductors and cables shall be rated 600 volts and shall be as follows:

Item	Sizes	Insulation
Branch	No. 12 to No. 10	THHN/THWN-2
Grounding	All	TW or bare
Feeders	No. 6 and above	THHN/THWN-2
Cords	No. 12	SO
Wet Locations	All	THWN
Corrosive Locations	All	THHN/THWN-2
VFD Feed to Motor	All	VFD-rated, blended composite-semiconductive, tray cable-rated, UL type TC 90°C, 100% shielding with foil tape & tinned copper braid

- F. Insulation Colors: Insulation shall be continuously colored for the entire conductor length; except that feeders can be phased taped and all insulated grounding conductors must be green.
- G. Instrumentation/Telemetry Cable: Instrumentation and Telemetry Cable shall be multiple-pair, #16 AWG, twisted, overall shielded with PVC jacket. Shield shall be

100% and include #20AWG stranded, tinned copper drain wire. The conductors shall be polyethylene insulated. Manufacturer shall be Belden or equal.

- H. Telephone Cable: Telephone cable shall be 6 twisted pair with standard color code, #22 AWG, solid copper, polyethylene or polypropylene insulation, twisted pairs shall have varying lays, 100% shielded with .008" corrugated aluminum tape with ethylene copolymer coating on both sides, polyethylene jacket, filled with petrolatum-polyethylene gel filling compound, Clifford type BJFA, or equal.
- I. RS-485 Application: tinned copper, polyethylene insulated, twisted pair. Overall aluminum-polyester shield. 24 AWG stranded tinned copper drain wire. Overall tinned copper braid shield. Chrome PVC jacket. The cable shall be Belden 9842, or equal.
- J. Ethernet Application: Approved shielded CAT-6 cable. Segment of Ethernet shall not exceed 90 meters under any circumstances.
- K. ~~VFD rated cable: UL 44, XHHW-2, 600 V conductors, the cable shall have three symmetrically placed grounds to reduce problems associated with Pulse Width Modulated AC drives. Continuous corrugated aluminum sheath 99.5% shall be applied over the assembly. The continuous sheath will be impervious to moisture, liquids, and gases. The cable shall have black PVC jacket, sunlight and oil resistant, per UL 1569. The VFD cable shall be Belden 295XX.~~

2.03 COLOR CODE

- A. Color code for three phase circuits shall be ph-A, ph-B, ph-C front to back, left to right and top to bottom. Color code for three phase circuits are listed in phase order. Color code shall be as follows:

120/240 volt power wiring	
Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	White
Ground	Green

480/277 volt power wiring	
Phase A	Brown
Phase B	Orange

Phase C	Yellow
Neutral	White
Ground	Green

Miscellaneous	
Control wiring	Purple
DC Power Wiring	Blue

Signal wiring	
Positive (+)	Red
Negative(-)	Black

2.04 GROUND CONDUCTOR

- A. Grounding electrode conductors shall be sized per NEC 2002 edition, table 250.66, unless otherwise noted on the Plans.
- B. Raceway and equipment grounding conductors shall be sized per NEC 2002 edition, table 250.122, unless otherwise noted on the Plans.

2.05 GROUND RODS

- A. Provide copper-encased steel ground rods at least 3/4 inch in diameter and 10 feet long unless otherwise indicated. Die-stamp each near the top with the name or trademark of the manufacturer and the length of the rod in feet. The rods shall have a hard, clean, smooth, continuous surface throughout the length of the rod. Ground rods shall be provided with precast ground wells.

2.06 WIRING MATERIALS

- A. Compression Connectors: Connectors shall be for use with copper conductors and shall conform to the requirements of UL 486A. Control and signal connectors shall be copper compression type nylon self insulated grip locking spade lugs. Power and grounding lugs and connectors for conductors No. 6 and larger shall be compression types of one piece tubular construction. These power compression connectors shall be copper long barrel terminals with corrosion resistant tin plating. Connectors shall be marked externally with wire size and type. Power connectors shall have NEMA configuration bolt holes on the pad. Connectors shall also have the proper mating compression die index and color code marked on the barrel. Furnish ILSCO #CRA/B-L series or approved equal.

- B. Splice Waterproofing Kits: Splice waterproofing shall be in kit form. Kit shall contain low viscosity polyurethane sealing and insulating material. The component materials of the insulation shall be in exact mixing ratio packages. Kit shall employ a gravity poured method of a pressure injected method. Molds shall be flexible plastic with porous webbing. Molds shall be capable of accommodating odd shape splices. Kit shall be rated 600 V and water submersible. Furnish 3M Scotch cast 2104 and 85 series, or approved equal.
- C. Electrical Tapes: Tapes shall conform to the requirements of UL 510 and be rated: 105 degrees C, 600 V, flame retardant, hot and cold weather resistant. Vinyl plastic electrical tape shall be 7 mil black. Phase tape shall be 7 mil vinyl plastic, color code as specified. Electrical insulation putty shall be rubber based, elastic putty in tape form. Varnished cambric shall be 9 mil cotton tape impregnated with yellow insulating varnish and adhesive backed.
- D. Wire and Cable Markers: Every control and signal conductor shall be tagged with a permanently machine imprinted plastic nylon clip sleeve heat shrinkable or adhesive backed strip type labels protected with a clear plastic heat shrinkable tubing.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Wire and cable shall not be installed in conduit until the raceway system has been completed and cleaned. The equipment and methods for the installation of wire and cable shall insure that no cuts or abrasions in the insulation or protective covering or kinks in the conductors occur. Cables shall be pulled down grade with the feed in point at point of the highest elevation.
- B. The Contractor shall pull wire and cable into the conduit with sufficient length remaining at the ends to conveniently make connections to all equipment or devices.
- C. Where practicable, the minimum radius to which an insulated conductor shall be bent, whether permanently or temporarily during installation, shall be ten times the diameter over the outer covering for rubber and thermoplastic insulated cable.
- D. Where a lubricant is needed as an aid in pulling wire or cable, a nonconducting lubricant or cable-pulling compound approved by the wire and cable manufacturer and that is not injurious to the sheath or insulation shall be used. 600 V cable lubricants shall be soapstone, graphite or talc which shall be UL listed for thermoplastic insulation. Oil or grease shall not be used for lubrication. Excessive pulling stresses will not be permitted.
- E. Wire and cable shall be continuous, with no splices permitted except in enclosed steel boxes provided for the purpose, or in manholes. Shipping length of power

cable shall be equal to a circuit length or summation of various circuit lengths to minimize cable waste.

3.02 INSTALLATION - LOW VOLTAGE WIRING

A. General Requirements:

1. Do not use blocks, tackle, or other mechanical means to pull in wires #8 AWG, or smaller. Cable pulling tensions shall not exceed the maximum pulling tension for stranded copper.
2. See section 16110 for pull rope/tape requirements.
3. Unless otherwise specified or shown, leave at least 9" of free conductor length at each unconnected outlet. The free ends of conductors shall be coiled neatly in outlet box.

B. Splicing and Termination of Conductors:

1. Conductors #10 AWG and smaller:
 - a. Twist conductors together to be electrically and mechanically secure.
 - b. Insulate splices, joints and free ends of conductors with insulation equivalent to that of conductors by taping with varnish-cambridge rubber tapes, or with high dielectric strength plastic tape.
2. Conductors #8 AWG and larger:
 - a. Splice and terminate conductors by use of connectors and terminal lug.
 - b. Do not use split bolt type connectors.
 - c. After initial set has been taken, re-tighten all pressure type connectors and lugs.
 - d. Insulate all splices, joints, and free ends of conductors as specified above.
 - e. Where aluminum lug is bolted with steel or copper bolt, use Belleville spring washer and flat washer. Belleville washer, either hardened and tempered steel, tin plated, or stainless steel. Flat washer, mild steel, tin plated, and slightly larger than Belleville washer.
3. Low Voltage Control Wiring: Splice by twisting conductors together so as to be electrically and mechanically secure. Other methods may be used if

specifically approved by Engineer.

4. Underground Splices: Conductor and cable splices installed underground in manholes, pullholes and similar locations, shall be made watertight. Install waterproofing after insulating with tape on all splices in junction boxes or handholes. Follow manufacturer's written instructions. As a minimum molds shall be fitted uniformly webbed around the spliced conductors. Insulating and waterproofing material shall then be poured or injected into the mold. Do not allow cables to move until after material has cured one hour at 70 degrees F or eight hours below 70 degrees F.

C. Marking:

1. In addition to color coding, identify circuits as follows:
 - a. The Contractor shall assign to each wire or cable a unique identification number unless a number has been pre-assigned on the Plans.
 - b. Where an identification number has been pre-assigned on the Plans the Contractor shall use that number.
 - c. The same identification number shall be used for conductors having common terminals.
 - d. Identification numbers shall be shown on all As-Built drawings.
 - e. Identification numbers shall be located within 3" of wire terminations and shall not be located such that they are concealed in any raceway.
2. Each multiconductor cable shall be assigned a unique identification number. It is required that this cable number shall form part of the individual wire identification number for each conductor in the cable. Cable markers shall be attached to each cable at stub-up locations and at all intermediate pull box locations.

3.03 GROUNDING

- A. Permanently and effectively ground noncurrent metal parts of conduit systems, supports, cabinets, switchboards, equipment cases, motor frames, etc., and system neutral conductors per NEC. Install metal raceway couplings, fittings and terminations secure and tight to insure good ground continuity. Provide grounding bushing and bonding jumper where conduits enter any panel or device, panels with open bottom or where shown on the drawings. Install a ground conductor in each raceway system. Contractor to install Ufer ground per NEC section 250.
- B. Grounding details shown on plans are minimum. If additional equipment, such as

ground rods, clamps, conductors, etc., is required, furnish and install same without additional cost to City.

- C. Use ground clamps specifically designed for grounding purposes. Where ground conductor is in conduit, use ground clamp which grounds both conductor and conduit.
- D. Shielded instrumentation cable shall be grounded at one end of circuit only unless explicitly required by manufacturer of instrument or device to be grounded at multiple locations. Single ground point in each circuit shall be at the "receiving" end of the signal carried by the cable.

3.04 PREPARATION FOR OPERATION

- A. The wire and cable shall be properly installed, connected and tested by the Contractor before such equipment will be taken over for operational service.
- B. Identification markers and nameplates shall be properly and accurately installed.
- C. Torquing: Every worker assigned to tightening bolted connections on this job shall be required to have either a torque screwdriver or a torque wrench on site in their tool box. Each crew shall have one of each. All electrical, mechanical and structural threaded connections shall be torqued. Torque connections to the value recommended by the equipment manufacturer. If they are not available, see Section 16950 for torque requirements.

3.05 TESTS AND INSPECTIONS

- A. Insulated wire and Cable Dielectric Tests: After the wiring is installed and all taps and splices are completed, but before making connections to equipment terminals, the cable shall be given insulation tests in accordance with Section 16950 and NEMA and ICEA Standards.
- B. Continuity Tests:
 - 1. After wiring connections to equipment and devices have been made, the circuits shall be tested for continuity. The Contractor shall be responsible for notifying the City Resident Inspector when the wire or cable is ready to be tested, and the Contractor shall conduct the tests as instructed by the Engineer.
 - 2. If a failure is detected, the Contractor shall locate and determine the trouble, make necessary corrections to the installation and retest without additional cost to the City.
 - 3. Connection of the wiring to equipment or device terminal blocks or other connection points and furnishing and installing conductor identification tags

at terminals or other connections shall be included as part of the equipment's installation.

- C. All tests required to insure the satisfactory installation, adjustment, operation and performance of all equipment and materials erected and installed under this specification, shall be the responsibility of the Contractor.
- D. The Contractor shall also responsible for furnishing all electrical test equipment, meters, instruments and miscellaneous equipment and perform all work required for the tests.
- A. Test Reports: The Contractor shall furnish the Engineer three copies of certified test reports showing the results of all tests specified herein.

3.06 DEMONSTRATION OF COMPLETE ELECTRICAL SYSTEMS

- A. Demonstration of the operation of segments of systems shall not be construed as acceptability of the complete system. Acceptance will only be made on satisfactory demonstration of the complete operation of the system as a whole.
- B. If, in the opinion of the Engineer, test results show improper adjustment, operation, or performance of any equipment, and these deficiencies are due to negligence or unsatisfactory installation by the Contractor, the Contractor shall remedy the situation at no additional cost to the city.

END OF SECTION

SECTION 16341

MEDIUM VOLTAGE INTERRUPTER FUSIBLE SWITCHGEAR

PART 1 - GENERAL

1.01 SCOPE

- A. This Specification Section covers the metal enclosed 5 kV air interrupter fusible switchgear as shown on the drawings. The interrupter fusible switchgear enclosure shall be NEMA 12 standards, dust tight and is stand alone as shown in the Plans.
- B. The provisions of Section 16010 of these Specifications shall apply, unless otherwise specified in this Section.

1.02 QUALITY ASSURANCE/CODES

- A. All materials selected for the manufacture of the components shall be the best available for the purpose for which they are used.
- B. All parts shall be readily accessible and like parts shall be interchangeable.
- C. Manufacturer shall have five years manufacturing interrupter fusible switchgear.
- D. The air interrupter switch shall be designed, tested, and manufactured in accordance with the latest applicable standards of NEMA, ANSI, IEEE, and NEC. In addition the air interrupter switch shall meet or exceed the following ANSI standards for high voltage air switch and switchgear assemblies:
 - ANSI C37.20.3
 - ANSI C37.20.4
 - ANSI C37.57
 - ANSI C37.58

1.03 SUBMITTALS

- A. Descriptive literature for all materials furnished under this section shall be submitted in accordance with Section 01330 **SUBMITTALS** of these specifications.
- B. Submittals for the switchgear shall include, but shall not be limited to, the following:
 - 1. Catalog cuts showing manufacturer, catalog numbers, dimensions, weights, nameplate data, and material of all components.
 - 2. Assembly drawings with front, side, section views and uprights. Drawings to show location of all accessories.

3. Catalog cuts of specified components.
4. Operating and Maintenance Manuals.
5. Dimensioned as-built drawings.
6. Certified test reports prepared by manufacturer.
7. Specifications for the preparation for and the painting of metal parts.
8. Submittals shall be forwarded for review in accordance with Section 01330.

1.04 OPERATION AND MAINTENANCE MANUALS

- A. Provide operation and maintenance manuals as specified in Section 01330.

1.05 DELIVERY, STORAGE AND HANDLING

- A. The switchgear shall be delivered complete, in manufacturer's original, unopened protective packaging. All accessories shall be installed and wired. Packing materials shall be such as to prevent damage to the materials during transportation and handling.
- B. The components shall be handled in a manner to prevent damage to finished surfaces and assemblies.
- C. Maintain protective packaging until ready for installation.

PART 2 - PRODUCTS

2.01 RATING

- A. Ratings: The switchgear shall be rated as follows:

Nominal Voltage:	4.16 kV
Maximum Design Voltage:	5 kV
Basic Impulse Level:	60 kV
Continuous Current:	400 amps
System Grounding:	Solid
Momentary Current:	40 kA Sym

2.02 CONSTRUCTION

- A. The equipment shall be constructed of sheet steel and shall be bolted frame construction. The section shall be adequately braced and shall have adequate venting to prevent distortion of the cubicle doors and windows under operating

conditions. Operating conditions shall include normal operation under load, short circuits, and fuse operation and interruption of short circuits up to the specified rating of the equipment.

- B. The switch section shall be front connected and front accessible. Key interlock provisions shall be provided.
- C. The switch section shall be constructed of 11-gage sheet steel. This shall include doors, back panels, and side panels.
- D. The switch section shall have a front steel door with safety protected observation windows that shall allow sufficient viewing of the switch contact position. All steel doors shall have concealed hinges and bolting hardware to secure the door in the closed position. A mechanical switch and door interlock shall be provided to prevent opening the door when the switch is in the "on" position.
- E. Individual doors shall be provided for each switch compartment and for each fuse compartment.
- F. Split rear and side covers shall be provided for easy access.
- G. Louvered ventilation openings shall be provided as required.
- H. All housing shall be chemically cleaned inside and out and then treated with a phosphoric acid, etched and cleaned. All surfaces shall be finished in ANSI 61 medium light gray. The paint finish shall be rated for 1000-hour salt spray, per ANSI C37, 20. 3.
- I. Lifting angles or other suitable means for lifting shall be provided.
- J. Provision for padlocking the switch in the open position.
- K. Permanent switch position indicators.

2.03 ~~SELECT SWITCH AND LOAD INTERRUPTER SWITCH~~

- A. ~~Provide a three pole, gang operated air selector switch. It shall consist of a 5kV two-position load interrupter switch with a spring charged mechanism in series with a two position (line 1—line 2) non-load break selector switch. The load interrupter switch shall be 400 amps, 400 amp load interrupting, 40kA asymmetrical momentary. The load interrupter switch shall meet or exceed applicable NEMA and ANSI standards. The two switches shall be mechanically interlocked so that the load interrupter switch must be open before the selector switch can be operated. Provide key interlock so that the load interrupter switch can be opened or the MCC "M" tie breaker can be closed only when the MCC "N" main breaker is in open position. 400 amp fuse shall be provided.~~
- B. Mechanical lug terminals shall be provided for the size and number of cables shown on the drawings.
- C. Connection between Transformer and the Switch shall be done with Copper Bus or properly sized cable.
- D. Load interrupter switch shall have the following features:

1. The speed of opening and closing the switch shall be independent of the operator, and it shall be impossible to tease the switch into any intermediate position under normal operation.
2. A maintenance provision for slow closing the switch to check switch blade engagement and slow opening the switch to check operation of the arc interrupting contacts.
3. The switch shall have main and arcing contacts and be designed to provide maximum endurance for load interrupting and fault closing. The arcing contacts shall be spring-loaded on-break and shall be last in and last-out. The arcing contacts shall operate in an arc chute designed to assist in interruption, and liberate no appreciable gases on interruption.
4. The main blades of each switch shall be made of electrolytically pure cold rolled copper. All contact points shall be heavily silver plated on the blades as well as the hinges and jaw castings. Each of these castings shall be one piece to provide maximum heat dissipation and continuous heat transfer.
5. Interphase barriers shall be provided for the switch. Horizontal barriers between the switch and cable terminals or fuse supports shall be provided.
6. Interlocking provision shall be included for locking the switch in the open or closed position. The door shall be mechanically interlocked with the air interrupter switch to prevent closing the switch with door open and to prevent opening the door with the switch closed.
7. Permanent non-corrosive nameplates and danger signs shall be provided and prominently displayed on the exterior and interior.
8. Switch operating handles shall be externally mounted non-removable (except for electric operators), self leveling, and padlockable with multiple padlocks in either the open or closed position. OPEN/CLOSE indicators shall be provided.
9. The switchgear shall have a permanent metal identification plate providing the following information: manufacturer, serial number, type, and electrical rating.

2.04 BUS

- A. All phase bus conductors shall be **silver plated copper** and be mounted on NEMA insulators. The main bus shall be rated **400 amperes**. The main bus shall be fully rated and arranged for future extension. Split style washer bolts shall be provided on all bus joints. The main bus shall be braced to withstand the effects of a short circuit within the ratings of the equipment. Supports for the main bus shall be glass polyester.

- B. Ground bus conductor shall be **silver plated copper** and directly fastened to a bare metal surface or each vertical section. The ground bus shall extend through the full length of the compartment.
- C. Joints shall be covered with molded boots.

2.05 FUSES

- A. Three power fuses shall be mounted in a separate compartment accessible only through a hinged door mechanically interlocked with the load interrupter switch. Fuses shall be self-contained current limiting type to provide fast clean interruption. They shall be coordinated to meet the overload and short circuit rating specified and shall have the continuous rating of 400 amps.

2.06 PRODUCT

- A. The load interrupter fusible switchgear shall be GE BreakMaster, Cutler-Hammer WLI, or Engineer approved Square D or Siemens equivalent.

2.07 FACTORY TESTING

- A. Factory Testing: The following tests shall be made prior to shipping:
 - 1. Continuity testing
 - 2. Hi-pot testing
 - 3. Resistance testing of connections

Test reports shall be submitted to the engineer with the submittal.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. The Contractor shall furnish all material and labor to completely install the switchgear. The Contractor shall follow all manufacturer's instructions for handling, receiving, installation, and pre-check requirements prior to energization.

3.02 TESTING AND PREPARATION FOR OPERATION

- A. Testing and preparation for operation shall be performed in accordance with Section 16950.

END OF SECTION

SECTION 16480

LOW VOLTAGE MOTOR CONTROL CENTER

PART 1 -- GENERAL

1.01 SCOPE

- A. This Specification Section covers the furnishing, installing and testing of the Motor Control Center as specified herein, as shown on the Drawings, and as required for a complete electrical installation.
- B. The provisions of Sections 16010 and 16120 of these specifications shall apply unless otherwise specified in this Section.

1.02 SUBMITTALS

- A. Submittals for the Motor Control Center shall include, but shall not be limited to, the following:
 - 1. Catalog cuts showing and identifying manufacturer, catalog numbers, dimensions, weights, nameplate data, and material of all components.
 - 2. Assembly drawings with front, side, section views and uprights. Drawings to show location of all accessories.
 - 3. Catalog cuts of specified components.
 - 4. Operating and Maintenance Manuals as specified in Section 01330.
 - 5. Dimensioned as-built drawings.
 - 6. Certified test reports prepared by the manufacturer.
 - 7. Control diagrams

1.03 QUALITY ASSURANCE

- A. The manufacturer has been fabricating and assembling similar equipment for a minimum of five (5) years.
- B. The MCC shall be built and labeled by a manufacturer with a UL file listing. The MCC shall meet UL 845.

PART 2 -- PRODUCTS

2.01 MATERIAL AND EQUIPMENT

- A. The Motor Control Center shall be a 3 phase, 3 wire, 480 volt, free standing, dead front enclosure with NEMA Class II Type C wiring. The enclosure shall be NEMA 12 rated. The center shall contain the proper clearances and space for safe operation of the equipment therein. Control voltage shall be 120 VAC.

Motor control centers shall be Allen-Bradley, Cutler Hammer, GE, Square D, Siemens or approved equal.

- A. Motor Circuit Protector (MCP) shall be molded case quick make quick break, adjustable instantaneous trip from 700 percent to 1300 percent of motor full load amperes. The motor circuit protector shall be rated 600 volts with adjustable trip settings. MCP shall be General Electric "map break", Cutler-Hammer "MCP", or approved equal. The operating handle shall close the MCP when placed in the upward position and open the MCP in the downward position. The handle shall accept multiple padlocks to lock the MCP in the open position. MCP shall be NEMA rated.
- C. Circuit Breakers: **Circuit Breaker shall be molded case and NEMA rated.** The circuit breakers shall conform to the requirements of NEMA ABI and UL 489 and shall be trip-free, thermal magnetic bolt-on type; connect breakers in uniform phase sequence starting at the top left phase bus; provide full busing and all necessary mounting hardware; use common trip devices not handle ties. Two or three pole breakers shall be common trip units. Each breaker pole shall provide inverse time delay and instantaneous circuit protection. Breakers shall have toggle, quick make, and quick break operating mechanisms. Trip position of the breakers shall be clearly indicated by movement of the operating handles to the center position. Circuit breakers rated to IEC standards shall not be acceptable.
- D. Panelboard: Panelboard shall conform to the requirements of NEMA PB-12 and UL-67. Bus shall be copper. Provide quantity and size of branch breakers and spare spaces as shown on the Drawings.
- E. Magnetic starters shall have auxiliary contacts as required by the Plans including N-O and N-C contacts as indicated on the Plans, plus one each spare N-O and N-C contact. The combination motor starters shall be drawout-type for size 5 and below. The fixed-type unit assembly shall be constructed so that it can be easily removed from its panel using pull apart terminal strips to the terminal block and withdrawing from the primary bus. Removal of a unit assembly shall be possible without rear access and without disturbing any other unit in the motor control center.
- F. Each starter unit shall have its own 480 V - 120 V AC control power transformer. It shall have a 120 volt grounded secondary. One secondary fuse and 2 primary

fuses shall be provided. Control power transformers shall be sized to accommodate the control devices indicated or as shown on the Plans.

- G. Full voltage motor starters shall be sized as indicated on the Plans. The starters shall have the same interrupting capacity as the circuit breakers and power busses.
- H. Motor starters shall be designed to NEMA ratings only. Starters designed to IEC ratings shall not be acceptable.
- I. Elapsed Time Meter: Elapsed time meter shall be large panel mounted, non-reset type, capable of reading 99,999.9 hours to the nearest 1/10 hour, rated 120 volts, 60 Hz. Elapsed time meter shall be mounted on the exterior of the section door between 40" and 60" from the bottom of the panel. Elapsed Time Meters shall be Eagle Signal Controls Model # HK410A6 or Engineer approved equal. Meters using push on retaining clips shall not be acceptable.
- J. Indicating Lights and Lenses: Indicating lights shall be industrial, waterproof NEMA 4/4X, transformer type, with LED type lamps, and push to test. Lights shall be by Cutler-Hammer, A-B or approved equal. Mount all indicating lights on front panel of motor control center.

Unless otherwise specified, indicating lights shall be equipped with colored lenses in accordance with the following schedule:

COLOR	FUNCTION	EXAMPLE
White or Clear	Normal Condition	Control power on, status OK
Red	Run, valve closed	Motor running, end of cycle
Green	Ready, valve open	Equipment ready, operating
Amber or Yellow	Abnormal condition	Failure of equipment or status abnormal, fault condition

- K. Control and Protective Equipment: Control relays, timers, switches (including contactor auxiliary switches), indicating lights, push buttons, overload relays, fuses, control transformers, terminal blocks and wiring shall be furnished and installed as shown on the drawings. Overload relays shall be sized to trip according to NEC as per data on the motor nameplate and shall be NEMA style. Push buttons shall be NEMA style. Contractor shall test each back spin relay and set per Engineer's requirements.
- L. Station Service Transformer: transformer shall be dry type and sized per Plans. All windings of the transformer shall be copper. The transformer shall have NEMA energy efficiency rating.

M. Phase Failure and Reverse Phase (PFR) Relay:

Plant Voltage Monitor: Relay shall have single pole-double throw (SPDT) contact which shall operate on power failure, phase loss, or reversal, providing a signal to the telemetry system. Reset shall be automatic. Nominal AC voltage shall be 480V, 3 phase. The phase failure and reverse phase relay for plant voltage monitoring shall be Timemark Model No. A258B (258B for 240V service) or Diversified Electronics SLA Series, Catalog No. SLA 440 ASA (SLA 230 ASA for 240V service). Contractor shall adjust relay to lowest setting before installation.

N. Provide 150 W electric resistance type strip heater in each vertical section. Voltage shall be 120 V, single phase. Furnish thermostats to control heaters with one thermostat per heater located in its respective section. Thermostats shall have a range of 40 to 80 degrees F and shall have contacts rated 120 volts, 10 amperes continuous, 60 Hz. Provide expanded metal shield for each heater.

O. ~~See Section 16922 for UPS specifications.~~

P. Busses:

1. Grounding Bus: Grounding bus shall be 1/4" by 1" copper, hard connected, running full width of MCC and located near bottom. Grounding bus shall be bolted to the frame of the MCC and include lugs for equipment grounding conductors.
2. The main horizontal bus shall be **silver plated copper** located within an isolated compartment. The bus shall be rated as shown on the Plans.
3. ~~The vertical bus in each section shall consist of a single **silver plated copper** conductor per phase with a current capacity of not less than 300 amperes. The vertical bus shall be completely isolated and insulated with a labyrinth bus barrier, and shall extend the full height of the section wherever possible. The bus shall be rated as shown on the Plans.~~

Q. Wireways: A separate vertical wireway shall be provided adjacent to each vertical unit, and shall be covered by a hinged door. Each individual unit compartment shall be provided with a side barrier to permit pulling wire in the vertical wireway without disturbing adjacent unit components.

R. Buckets: Buckets shall be removal from the MCC as a unit and have pull apart terminal blocks to allow removal of individual buckets without disconnecting control and instrumentation wiring.

S. ~~For motors rated 50 hp or larger, a properly sized power factor correction capacitor shall be provided at locations indicated on the Plans. Capacitors shall correct the power factor of each motor to a minimum of 95% at full load. The capacitors shall have fuses, lights, and discharge resistors for all three phases. Capacitors shall be~~

manufactured by US Motors, GE, Square D, Cutler-Hammer, or approved equal and meet NEC requirements.

PART 3 -- EXECUTION

3.01 FACTORY TESTING

- A. All motor control centers and their components shall be given manufacturer's standard electrical and mechanical production tests and inspections. The tests shall include electrical continuity check, dielectric tests for each circuit, and inspection for proper functioning of all components including controls, protective devices, metering, and alarm devices. The manufacturer shall submit five copies of the test reports to the Engineer for review.

3.02 INSTALLATION

- A. Contractor shall furnish all material and labor including, but not limited to, transportation, loading, lifting, jacking, wiring to completely install Motor Control Center as shown on the drawings and shall conform with the National Electrical Code (NEC).

END OF SECTION

SECTION 16530

LIGHTING

PART 1 - GENERAL

1.01 SCOPE

- A. This specification section covers the furnishing, and installing of lighting fixtures, wiring devices, poles, conduit, wiring and other material for the complete indoor and outdoor lighting as shown on the drawings. Lighting fixtures and hardware shall be installed as shown on the Plans.

1.02 SUBMITTALS

- A. Catalog cuts showing manufacturer, catalog numbers, dimensions, weights and material for fixtures and poles shall be submitted to the Engineer for review in accordance with Section 01330.

PART 2 - PRODUCTS

2.01 REFERENCE STANDARDS

- A. Materials and equipment supplied under this contract shall be designed, manufactured, and tested in accordance with the latest version of the following standard:
 - 1. National Electrical Manufacturers Association (NEMA).
 - 2. Underwriters Laboratories Inc.
 - 3. National Electrical Code.

2.02 LIGHTING FIXTURES, DEVICES, AND POLES

- A. Lighting Fixtures shall be complete with ballast, mounting brackets and hardware, lamps, lenses, fixtures wire, and all required accessories as specified and as required by NEC. The lighting fixtures and fixture accessories shall be as shown on the drawings, or approved equal.
- B. Ballasts for high pressure sodium lamps shall be capable of starting and operating the lamp from a nominal 120 volts AC, 60 Hz power source within the limits specified by the lamp manufacturer. The ballast, including the starting aid, shall protect itself against normal lamp failure modes. The ballast shall be capable for operating for six months with the lamp in an open or short circuit condition without significant loss of ballast life. The lamp ballast system power factor shall not drop

below 85 percent for plus or minus ten percent variation in line voltage.

- C. Light Poles shall be anchor base, round, tapered steel, hot dipped galvanized, height as indicated, complete with handhole and gasketed cover, anchor bolts with leveling and locking screws and cover, and grounding connection.
- D. Interior Lighting Fixtures: Fluorescent light fixtures shall be manufactured in accordance with UL standard 935. Ballasts for fluorescent fixtures shall be integral with fixture, high power factor, and electronic. The tube shall be T8.
- E. Light Switches: Switches shall be single pole, specification grade, 277 volt, 3 wire, 20 ampere A.C., ivory in color with stainless steel cover plates. Furnish Hubbell 1221, Leviton 1201-2, or approved equal. **Light switches shall be labeled with nameplates per section 16010.**
- F. GFCI Receptacles shall be ivory, 20 A, NEMA 5-20R furnished with stainless steel plates. Receptacles shall be Leviton #6899, G.E. #TGTR115, Square D #GFDR120, or approved equal.
- G. **LED bulb shall be high power LED with 1000 Lumin output minimum per bulb.**

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All lighting poles and fixtures shall be directly grounded to the site grounding system by means of a conductor of a size not less than that required by NEC. If insulated, the ground conductor insulation shall be colored green.
- B. The Contractor shall install all lighting fixtures in accordance with the manufacturer's instructions and recommendations.
- C. All exterior fixtures shall be aligned and directed as shown on the Plans and as directed by the Engineer in order to illuminate the desired area properly. Fixtures shall be directly and rigidly mounted on Contractor provided supporting structures.
- D. Unless otherwise noted on the plans: general use receptacles shall be mounted 18" above the finish floor to device centerline, light switches shall be mounted 48" above finish floor to device centerline.
- E. Prior to acceptance by the City the Contractor shall thoroughly clean the fixtures and lamps.

END OF SECTION

SECTION 16921

RTC SYSTEM

PART 1 - GENERAL

1.01 SCOPE

- A. This Section covers the existing Remote Telemetry Unit (RTU or RTC called in this project) system in an existing enclosure, and other appurtenances necessary for a complete and operating system.
- B. The existing RTC-7 enclosure will stay as is as shown on the Plans. The Contractor shall make all the re-connections and new connections per Plans. The City will verify Contractor made RTC-7 interconnection wiring, will perform software upgrade, display screen upgrade, communication re-establishment and testing.
- C. The Contractor shall cooperate with the City during testing and start up. The Contractor shall have electrical personnel present during City's RTC-7 point-to-point testing and start-up.

PART 2 - PRODUCTS

2.01 RTC System

- A. Existing.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. The Contractor shall be responsible for the wire connection to and from the RTC-7 system and shall pull all the cables and wires and make all the connections as shown on the Plans or as directed by the Engineer. The City will conduct tests to determine its acceptability.
- B. The City will perform the following work:
 - 1. Verify the correct installation of RTC system and operator interface panel.
 - 2. Verify the correct installation, type, and size of wiring terminated from field devices, operator interface panel, and to the RTC system.

3. Verify the correct connection of all power sources supplied to and from the RTC system.
4. Verify I/O terminations and proper device calibrations.

3.02 FIELD TESTING

- A. After finishing all the connections, The Contractor shall perform a point to point test of all the RTC functions that are transmitted back to control 12 at the CWTP. Verify that all data points are transmitted back to control 12. The Contractor shall coordinate these tests with the City.
- B. Point to point testing shall consist of the following tasks to be executed jointly between the City and the Contractor.
 1. Analog testing of all analog devices from the field to the PLC.
 2. Digital input testing of all digital devices from the field to the PLC.
 3. Digital output testing of outputs from the PLC to the field device controlled.
- C. Point to point test forms will be provided by the City and will require sign off at each point tested by the City and the Contractors assigned representative.

END OF SECTION

SECTION 16950

OPERATIONAL TESTING

PART 1 - GENERAL

1.01 SCOPE

A. General

1. Independent test company preoperational testing.
2. Contractor operational testing.

1.02 GENERAL REQUIREMENTS

- A. The Contractor shall engage and pay for the services of an approved independent testing company for the purpose of performing inspections and electrical preoperational tests as specified. The testing company shall provide all material, equipment, labor and technical supervision to perform such tests and inspections. The Contractor shall also perform all mechanical preoperational tests as herein specified.
- B. These tests shall assure that all equipment is operational within industry and manufacturer's tolerances and is installed in accordance with design plans and specifications. The tests and inspections shall determine the suitability for energization and the suitability for Owner acceptance of the Contractor's work.

1.03 FAILURE TO MEET TEST

- A. Contractor shall replace the defective material or equipment and have tests repeated until test proves satisfactory to the Engineer without additional cost to the Owner.

1.04 SUBMITTALS

- A. The Contractor shall submit the following tests to the Engineer:
1. Grounding system test.
 2. Phase rotation test.
 3. MCC device test including MCP and breaker test.
 4. 600 volt conductor test.
 5. Wiring test.

B. Three copies of each test mentioned above shall include the following data and be submitted with the Operation and Maintenance Manual:

1. Summary of project, construction contract numbers
2. Description of equipment tested
3. Description of test
4. Test personnel
5. List of test equipment used and calibration date
6. Test results, date and weather conditions
7. Conclusions and recommendations
8. Appendix, including all test forms

PART 2 - PRODUCTS

2.01 TESTING COMPANY

A. The testing company shall meet federal OSHA criteria for accreditation of testing laboratories, Title 29, Part 1907. Membership in the International Electrical Testing Association constitutes proof of meeting such criteria. The testing shall be performed by Electro Test, Apparatus Unlimited, Power Systems Testing, Hart Testing, or approved equal.

2.02 TESTING

A. California Electrical Safety Orders (ESO) and Occupational Safety and Health Act (OSHA): The Contractor is cautioned that testing and equipment shall comply with ESO and OSHA as to safety, clearances, padlocks and barriers around electrical equipment energized during testing.

PART 3 - EXECUTION

3.01 PREOPERATIONAL TESTING

A. All testing shall conform to International Electrical Testing Association (NETA) Maintenance and Acceptance specifications and shall utilize manufacturer's instruction manuals applicable to each particular apparatus.

B. Upon completion of the test and inspections noted in these specifications, a label shall be attached to all serviced devices. These labels will indicate date serviced and the service company responsible.

3.02 GROUND RESISTANCE PREOPERATIONAL TEST

- A. Test the entire ground system for ground resistance value. Perform fall of potential method with ground test instrument. Record weather and soil conditions at the time measurements are made. Make ground resistance measurements in normally dry weather, not less than 48 hours after rainfall. The current reference rod shall be driven at least 100 feet from the ground rock or grid under test, and the measurements shall be made at 10 foot intervals beginning 25 feet from the test electrode and ending 75 feet from it, all in direct line between the ground rod, or center of grid and the current reference electrode.
- B. Grounds and grounding systems shall have a resistance to solid earth ground not exceeding 5 ohms.

3.03 PHASE ROTATION PREOPERATIONAL TEST

- A. Check connections to all equipment for proper phase relationship. During this test, disconnect all devices which could be damaged by the application of voltage or reversed phase sequence. Three phase equipment shall be tested for the phase sequence "ABC" front to back, left to right and top to bottom.

3.04 MOTOR CIRCUIT PROTECTOR (MCP) AND CIRCUIT BREAKER PREOPERATIONAL TEST

- A. All MCPs and circuit breakers shall be checked for proper mounting, conductor size and feeder designation.
- B. All MCPs and only breakers 100 amp and above shall be tested. Time current characteristic tests shall be performed bypassing three hundred percent (300%) rated current through each pole separately. Trip time shall be determined. Instantaneous pickup current shall be determined by run up or pulse method. Clearing times should be within 4 cycles or less.
- C. Contact and Insulation Resistance: Contact resistance shall be measured and be compared to adjacent poles and similar breaker. Deviations of more than 50% shall be rejected. Insulation resistance shall be measured and shall not be less than 50 megohms. All trip times shall fall within NETA table values. Instantaneous pickup current levels should be within 20% of manufacturer's published values.

3.05 MCC PREOPERATIONAL TEST

- A. Visual and Mechanical Inspection:
 - 1. Inspect for physical damage, proper anchorage and grounding.
 - 2. Compare equipment nameplate data with design plans and starter schedule.

3. Compare overload heaters with motor full load current for proper size.
4. Check torque of bolted connections. Torque connections shall be per manufacturers recommendation or use the following table if the manufactures data is not available:

NOMINAL TORQUE REQUIREMENTS FOR BOLTED BONDS

BOLT SIZE	THREADS /INCH	TORQUE IN/LBS	TORQUE FT/LBS
#8	32	18	
	34	20	
#10	24	23	
	32	32	
1/4"	20	80	6
	28	100	8
5/16"	18	140	11
	20	150	12
3/8"	16	250	20
	24	275	22
7/16"	14	400	33
	20	425	35
1/2"	13	550	45
	20	575	47
5/8"	11	920	76
	10	1,400	116
7/8"	9	1,950	162
	8	2,580	215

B. Electrical Tests:

1. Measure insulation resistance of starter phase to phase and phase to ground with the starter contacts closed and the protective device open. Test voltage and minimum acceptable values shall conform to NETA Section 3 "Test Values." Measure insulation resistance of each control circuit with respect to ground.
2. Motor overload units shall be tested by injecting primary current through overload unit and monitoring trip time.

3. Perform control functional tests by initiating control devices to affect proper operation with motor feeder disconnected.

C. ~~Generator Breaker, Interlock and Generator Receptacle Tests:~~

~~The generator breaker, the interlock and the generator receptacles shall be tested to insure proper functionality. The City will provide a portable generator of the appropriate size and connection hardware from its fleet. The Contractor shall demonstrate to the City that the generator breaker, the interlock and the generator receptacles are working properly to run the station loads. The correct power source phase rotation shall be verified (the phase rotation of the City's portable generators are always A-B-C clockwise).~~

3.06 600 VOLT CONDUCTOR TEST

- A. Megger and record insulation resistances of all 600 volt insulated conductors using a 500 volt megger for thirty seconds. Make tests with circuits installed in conduit and isolated from source and load. Each conductor shall be meggered conductor to conductor and conductor to ground. These tests shall be made on cable after installation with all splices made up and terminators installed but not connected to the equipment.

3.07 WIRING TEST

- A. Verify all wire connections/terminations are per contact drawings or approved changes. Check for proper termination of all wires.

3.08 OPERATIONAL TESTING

- A. After preoperational tests are complete, the Contractor shall conduct overall operational testing of the plant which shall be witnessed by the Engineer and other City personnel. City O&M personnel will assist the Contractor during operational testing.

END OF SECTION