



# CITY OF SACRAMENTO

DEPARTMENT OF UTILITIES

ENGINEERING SERVICES DIVISION

## CONTRACT SPECIFICATIONS FOR

### **SUMP 37 PUMP STATION ELECTRICAL IMPROVEMENTS**

PreBid Site Visit: Tuesday, December 19, 2006 at 9:00 AM

PreBid Location: 4800 Power Inn Rd between 14<sup>th</sup> Ave. & Fruitridge Rd at  
Railroad tracks

PN: 8796

Engineer's Estimate: \$289,000

Non-Refundable Fee

\$20.00

425-500-8796-4820

For Pre-Bid Information Call:

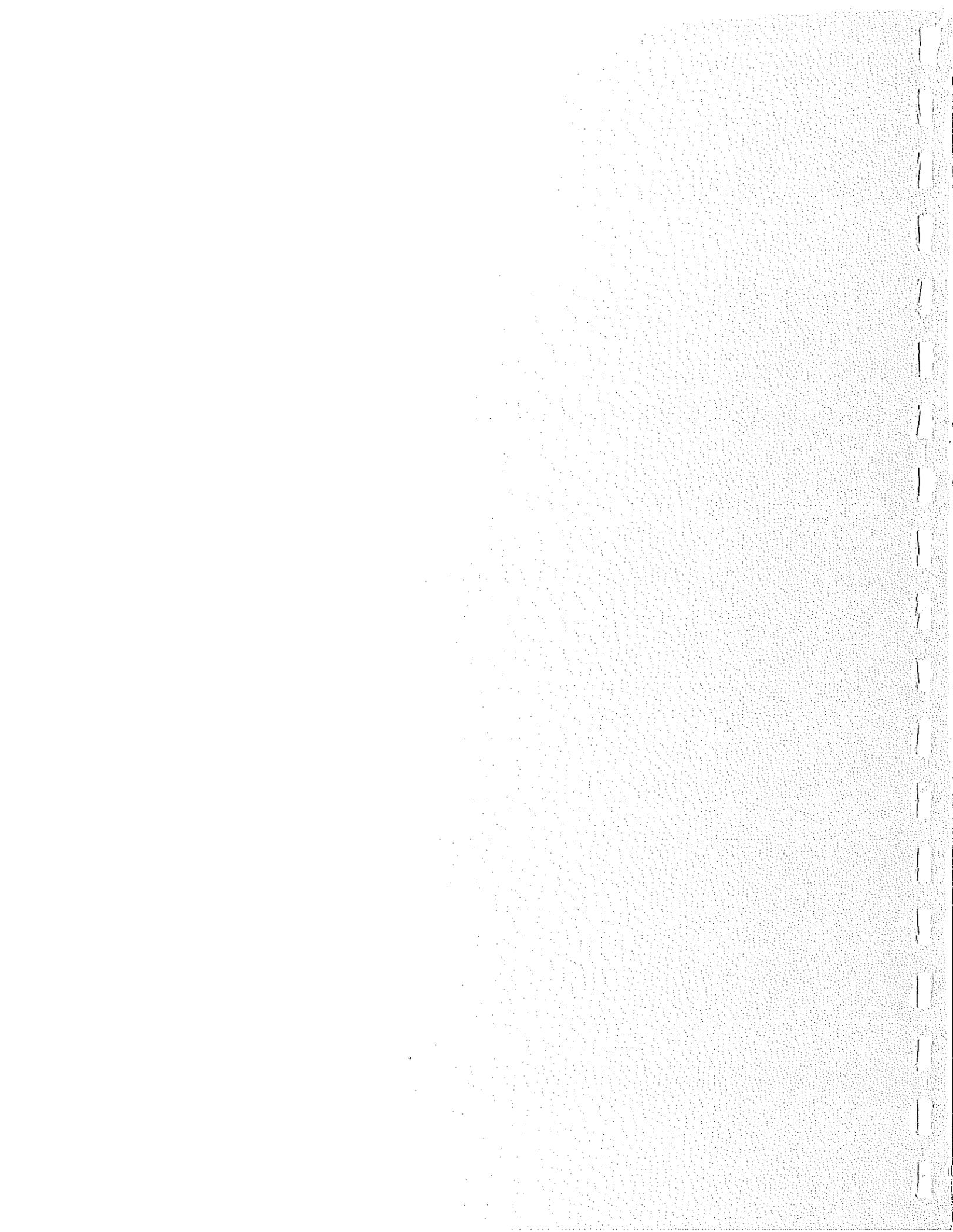
Jian Zhuang P.E.  
Senior Electrical Engineer  
(916) 808-1428

No Separate Plans

Bids to be received before 2:00 p.m.  
Wednesday, January 3, 2007 at  
Historic City Hall, City Clerk's Office  
915 I Street, 1st Floor  
Sacramento, CA 95814

RECOMMENDED ES&D PROGRAM MEETING:

1st Tuesdays  
10:00 AM  
915 I Street, 2nd Floor  
Sacramento, CA 95814



**ESBD PRE-BID CONFERENCE  
(Attendance Recommended)**

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 2004, the meetings are scheduled as follows:**

**1st Tuesdays at 10:00 AM  
at Office of Small Business Development  
915 I Street, 2nd Floor  
Sacramento, CA 95814  
(916) 808-6764**



## 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 January 3, 2007 and opened at 2:00 p.m., or as soon thereafter as business allows, in the Hearing Room, Historic City Hall, 2nd Floor, for construction of:

SUMP 37 PUMP STATION ELECTRICAL IMPROVEMENTS  
(PN: 8796)

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  
SUMP 37 PUMP STATION ELECTRICAL IMPROVEMENTS  
(PN: 8796)

Copies of the contract documents are available at:

Century Graphics  
3479 Orange Grove Ave.  
North Highlands, CA, 95660  
(916) 972-0606

A non-refundable fee of \$20.00 will be charged.

In the case of Public Project as defined by Sacramento City Code Section 3.60.010, Contractors, and Subcontractors shall comply with rated of wages currently established by the Director of Industrial Relations under provisions of Sections 1773 of the labor Code of the Sate of California, a copy of which is on file in the office of the City Clerk. In accordance with 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 project of \$25,000, or less. The City of Sacramento has an approved Labor Compliance Program. All questions regarding the Labor Compliance Program should be directed to the Labor Compliance Section at (916) 808-8300.

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.

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



Contractor's Name: Westcon Construction Corp.  
(Please print)

**Westcon Construction**

**FILED**

CITY OF SACRAMENTO

**JAN 03 2007**

**SEALED PROPOSAL**

By The  
Office of The City Clerk

(MUST BE SIGNED BY BIDDER)

The Sealed Proposal will be received not later than Wednesday, January 3, 2007, at the Office of the City Clerk, Historic City Hall, 915 I Street, 1st Floor, Sacramento, California and opened at 2:00 PM, or as soon thereafter as business allows, on January 3, 2007 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

**SUMP 37 PUMP STATION ELECTRICAL IMPROVEMENTS  
(8796)**

in the City and County of Sacramento, California

TOTAL BID: Two Hundred Ninety Eight Thousand (\$ 298,136)  
One Hundred Thirty Six

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	SUMP 37 PUMP STATION ELECTRICAL IMPROVEMENTS	1	LS	\$ <u>298,136</u> <sup>00</sup>

TOTAL BID: \$ 298,136

WESTCON CONSTRUCTION CORP.  
275 TAYLOR RD.  
NEWCASTLE, CA 95658-9601  
(916) 663-2425



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 forty (140) 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 fifty dollars (\$250.00) 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.

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(916) 663-2425



BID DEPOSIT ENCLOSED IN THE FOLLOWING FORM:

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

     CERTIFIED CHECK

     MONEY ORDER

     CASHIERS'S CHECK

  X   BID BOND

CONTRACTOR

Addendum No. 1      n/a

Westcon Construction Corp.

Addendum No. 2      n/a

By: 

(Signature) Eric Campbell

Addendum No. 3      n/a

Title: President

Addendum No. 4      n/a

Address: 275 Taylor Road, Newcastle CA 95658

Telephone No. 916-663-2425

(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

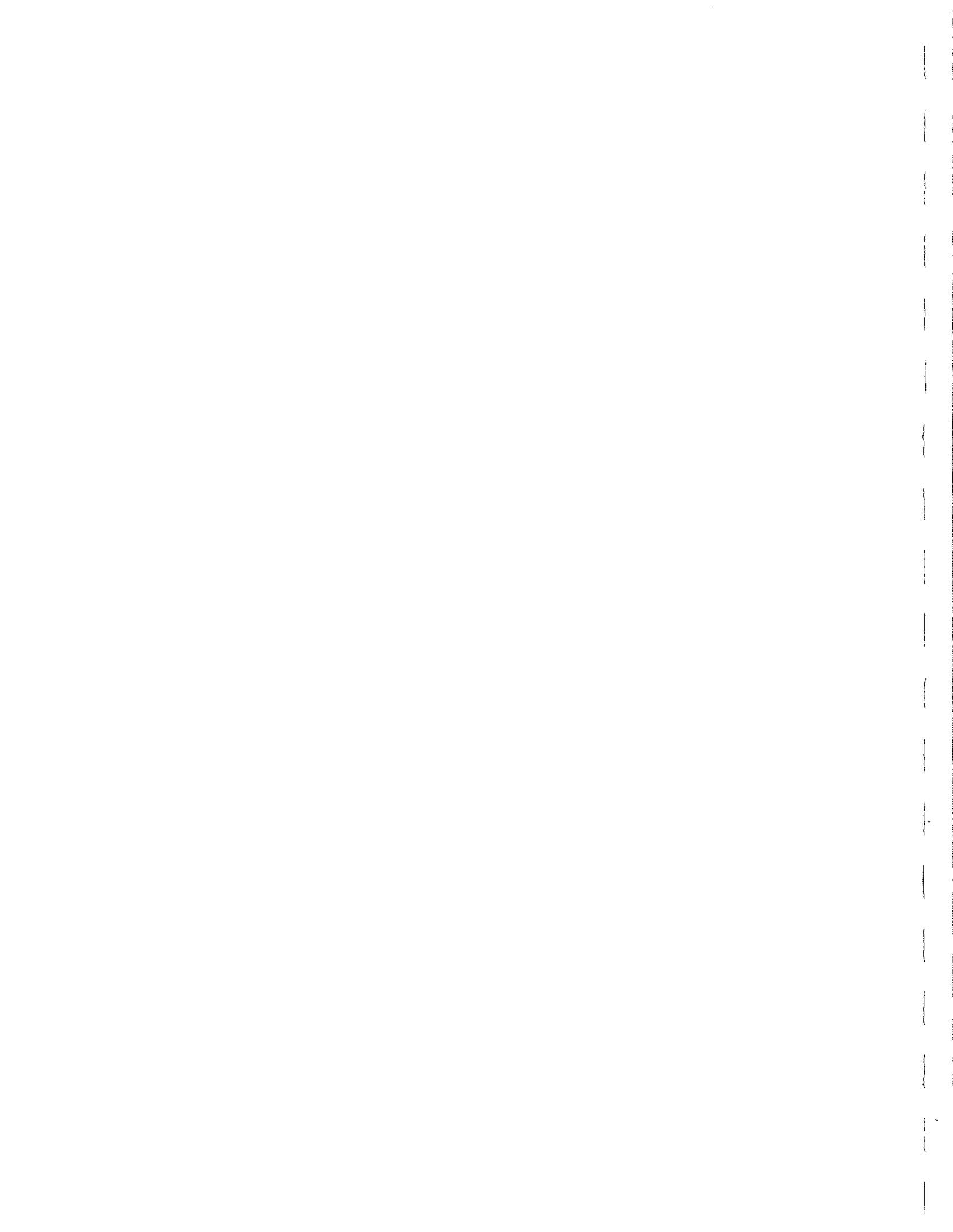
68-0350563

Valid Contractor's License No. 703557, Classification A,B,C-8 is held by the bidder.

Expiration date 3/31/07. Representations made herein are true and correct under penalty of perjury.

PN: 8796

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275 TAYLOR RD.  
NEWCASTLE, CA 95658-9601  
(916) 663-2425

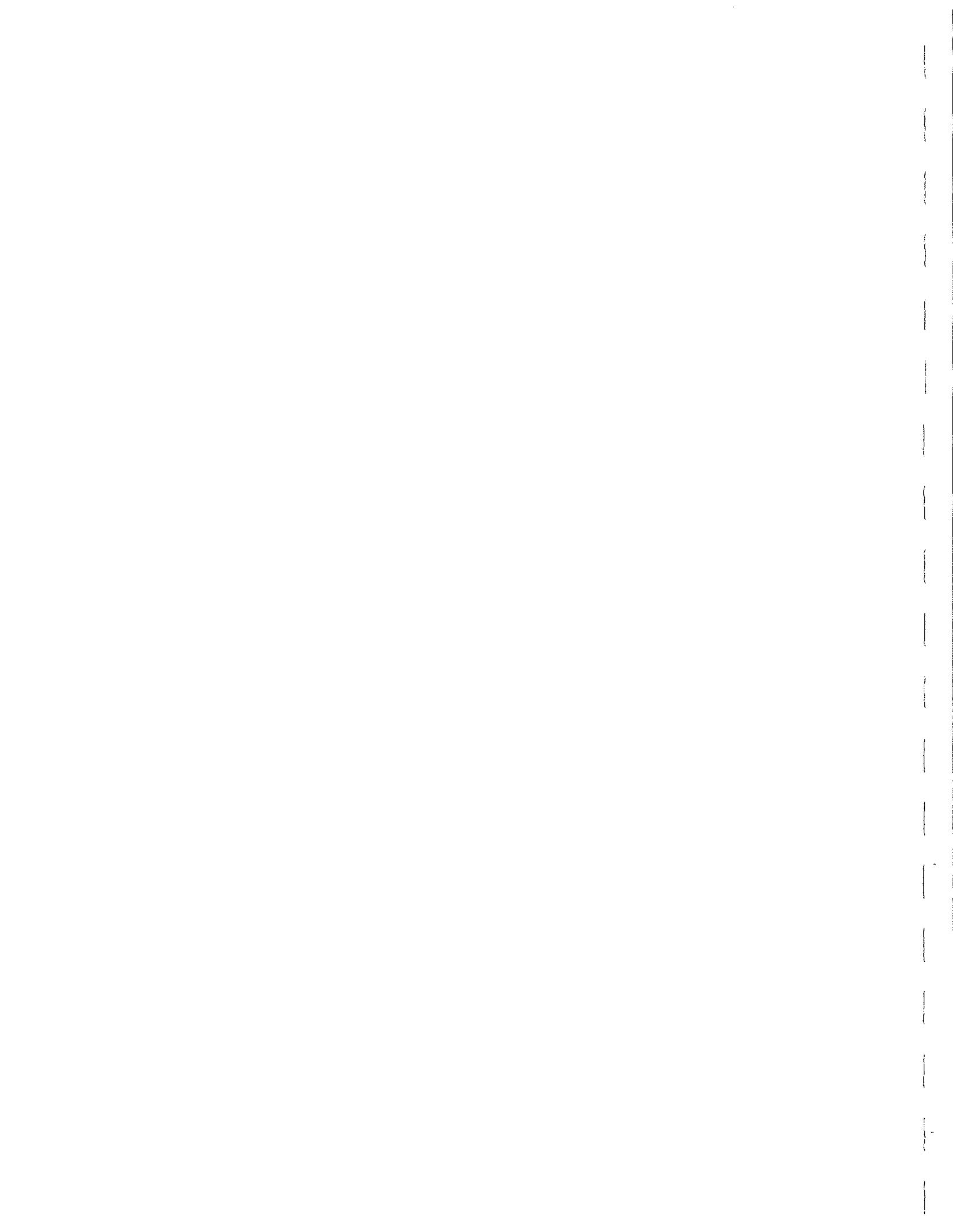


CITY OF SACRAMENTO SUBCONTRACTOR AND SBE PARTICIPATION VERIFICATION

To be eligible for award of this contract, the bidder shall list any business entity used to attain the ESBID goal. Additionally, all other subcontractors who perform work, labor or render service in an amount in excess of one-half (0.5) of one percent of the total bid amount shall be listed. In the case of bids for the construction of streets and highways, including bridges, subcontractors whose subcontracted value exceeds one-half (0.5) percent of one percent of the total bid or ten thousand dollars (\$10,000), whichever is greater, shall be listed. Estimated dollar values shall be provided for all work/services listed. The inclusion of false information will render the bid non-responsive. READ THE ABOVE REQUIREMENT CAREFULLY.

Name of Prime Contractor: Westcon Construction		Total Estimated Bid Amount: \$	DATE: 1/3/07
Business Entity or Subcontractor Name and Location	Indicate EBE or SBE ** (subject to verification)	Items of work and/or Description of Work or Service Subcontracted or Materials to be provided to complete contract	Estimated Dollar Value of Work/Service Provided
Westcon Construction Corp.	See Attached EBE & SBE		
Newcastle			
WEC505000P			
Prior Fence Citrus Heights		Chainlink Fence & Gates	\$ 7,150
Floyd Road Lincoln		Masonry	\$ 12,460
CEB West		Sheet metal Roof Gutters   Downspouts	\$ 13,500
Ranch Cordova		Painting	\$ 4,879
Hanson Printing			
Sacramento		Truck Box Screen Hoist	\$ 11,950
Carsonville		Electrical	\$ 162,160
San Leandro			
Gray Electric			
Grass Valley			

\*\*CERTIFICATION STATEMENTS ARE DUE BY THE CLOSE OF BUSINESS TWO DAYS AFTER BID OPENING  
 WESTCON CONSTRUCTION CO.  
 Page 275 TAYLOR RD.







RECEIVED

APR 07 2006

WESTCON CONSTRUCTION



DEPARTMENT OF FINANCE  
PROCUREMENT SERVICES DIVISION

CITY OF SACRAMENTO  
CALIFORNIA

915 - I STREET  
2nd FLOOR  
SACRAMENTO, CA 95814

CENTRAL SERVICES  
CONTRACT SERVICES  
OFFICE OF SMALL BUSINESS DEVELOPMENT  
PURCHASING

PHONE: 916-808-6240  
FAX: 916-808-5747

April 4, 2006

WESTCON CONSTRUCTION CORP.  
275 TAYLOR RD.  
NEWCASTLE CA 95658

**Subject: Emerging and Small Business Enterprise Certification --Provisional**

Congratulations! Based on your certification as a Small Business Enterprise (SBE) with the State of California, Department of General Services (DGS), the City of Sacramento, Office of Small Business Development (OSBD) has granted your firm a provisional certification under our Emerging and Small Business Development (ESBD) Program. A provisionally certified firm is entitled to all benefits accorded a City certified firm in our ESBD Program.

Your certification is valid through **February 28, 2009.**

Your firm has been assigned **Certification Number WEC5050000P** which can be used when working with any City of Sacramento procurement or contracting project. Keep this letter as proof of certification.

It is your responsibility to notify this office within thirty (30) days of any change of ownership, business name, or address. If you have any questions about your certification, please call our new number **(916) 808-6747.**

Sincerely,

Louane Roina  
Program Specialist



## MINIMUM QUALIFICATIONS QUESTIONNAIRE

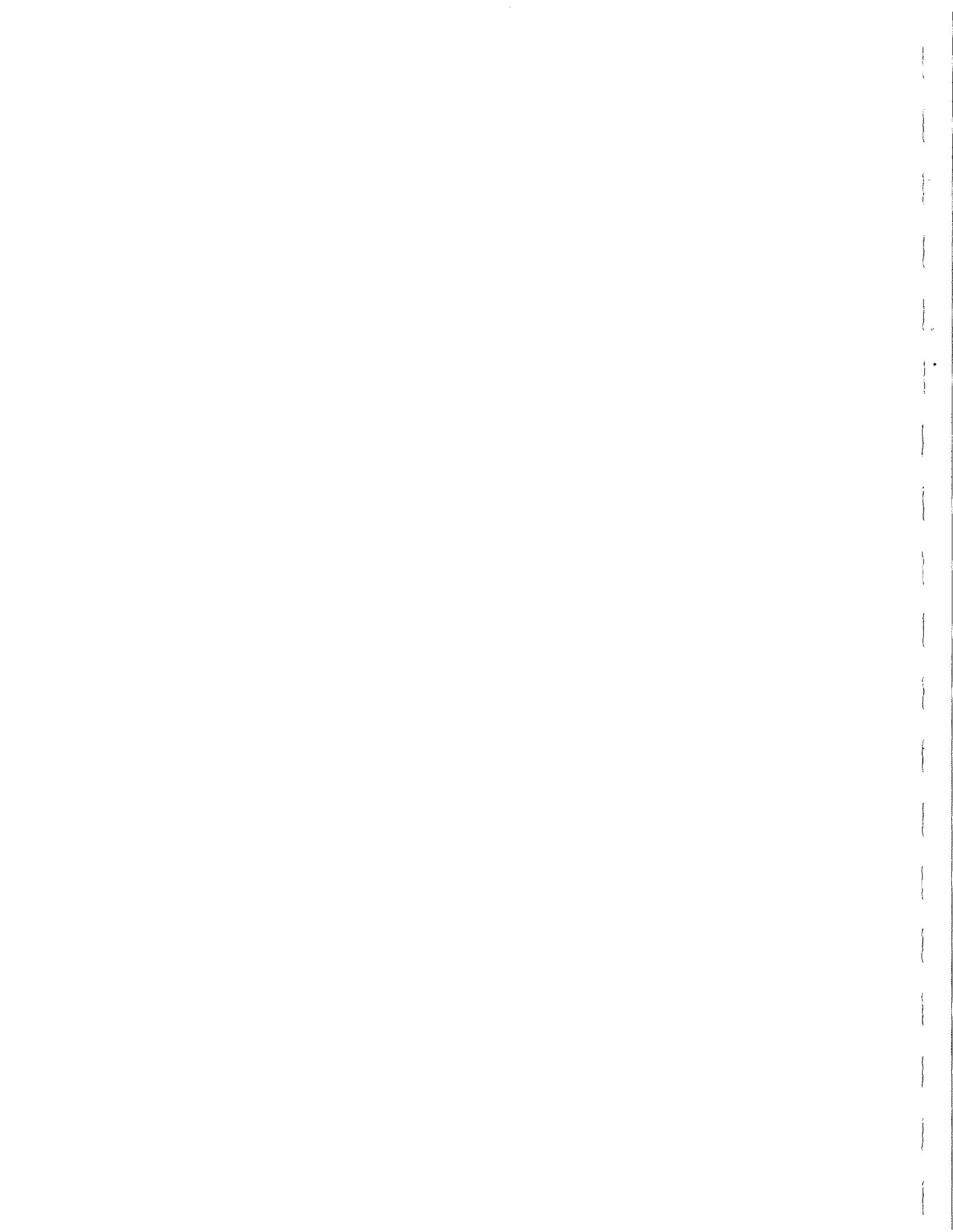
Sacramento City Code section 3.60.020 authorizes the Sacramento City Council to adopt standard minimum qualifications for bidders on competitively bid public works construction projects, and requires, among other provisions, that a bidder meet such minimum qualifications at the time of bid opening to be considered responsible. On June 8, 2004, the City Council adopted Resolution No. **CC2004-433**, 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.

All bidders must demonstrate compliance with the minimum qualifications established by Resolution No. **C2004-433** by completing all of the questions contained in this questionnaire. 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 responsible 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 responsible 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.

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NEWCASTLE, CA 95658-9601  
(916) 663-2425



QUESTIONNAIRE

NOTICE: 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.

Classification & Expiration Date(s) of California Contractor's License Number(s) held by firm:

A,B, C-8 License #703557 expires 3/31/07

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

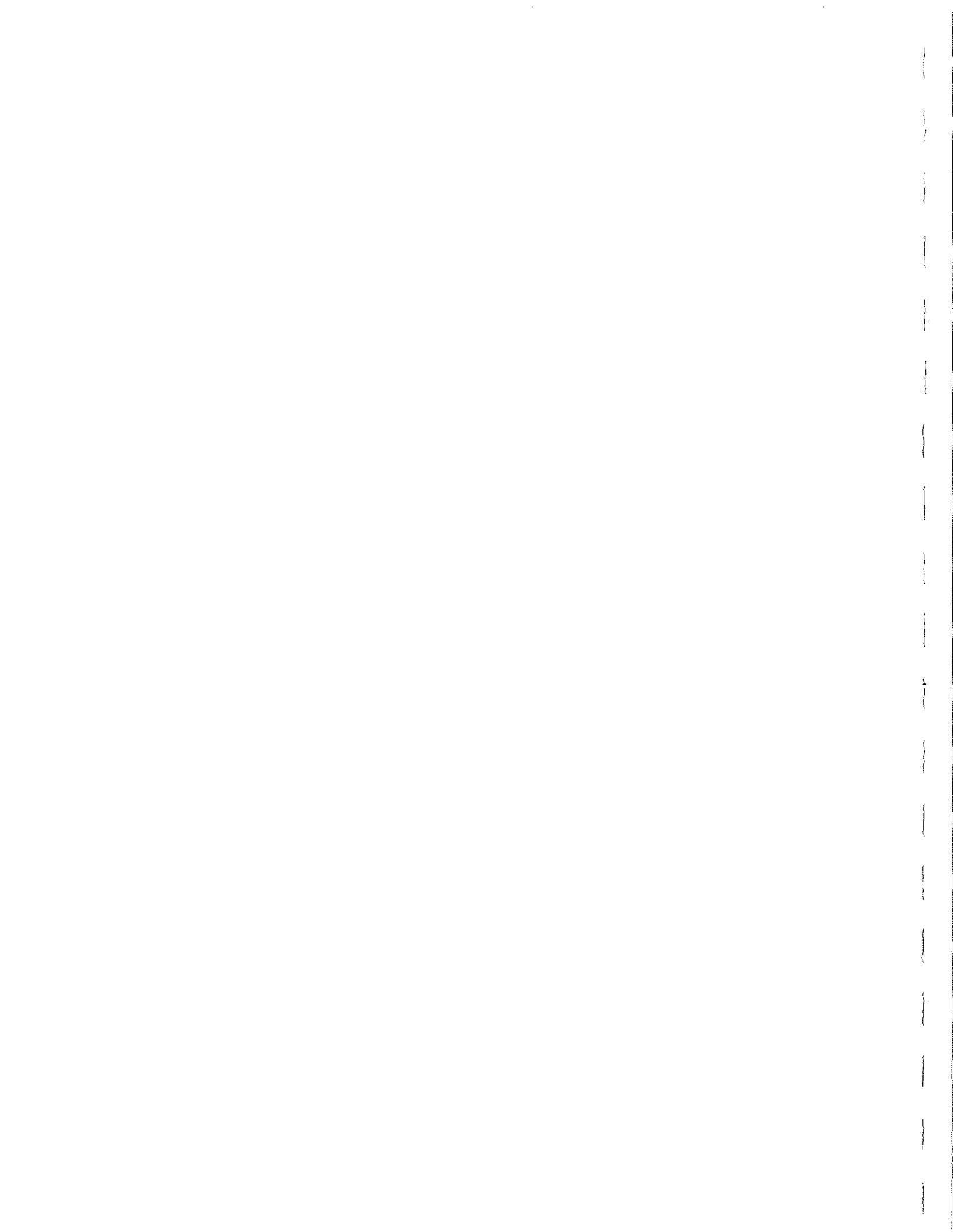
Answer either subsection A or B, as applicable:

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

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**

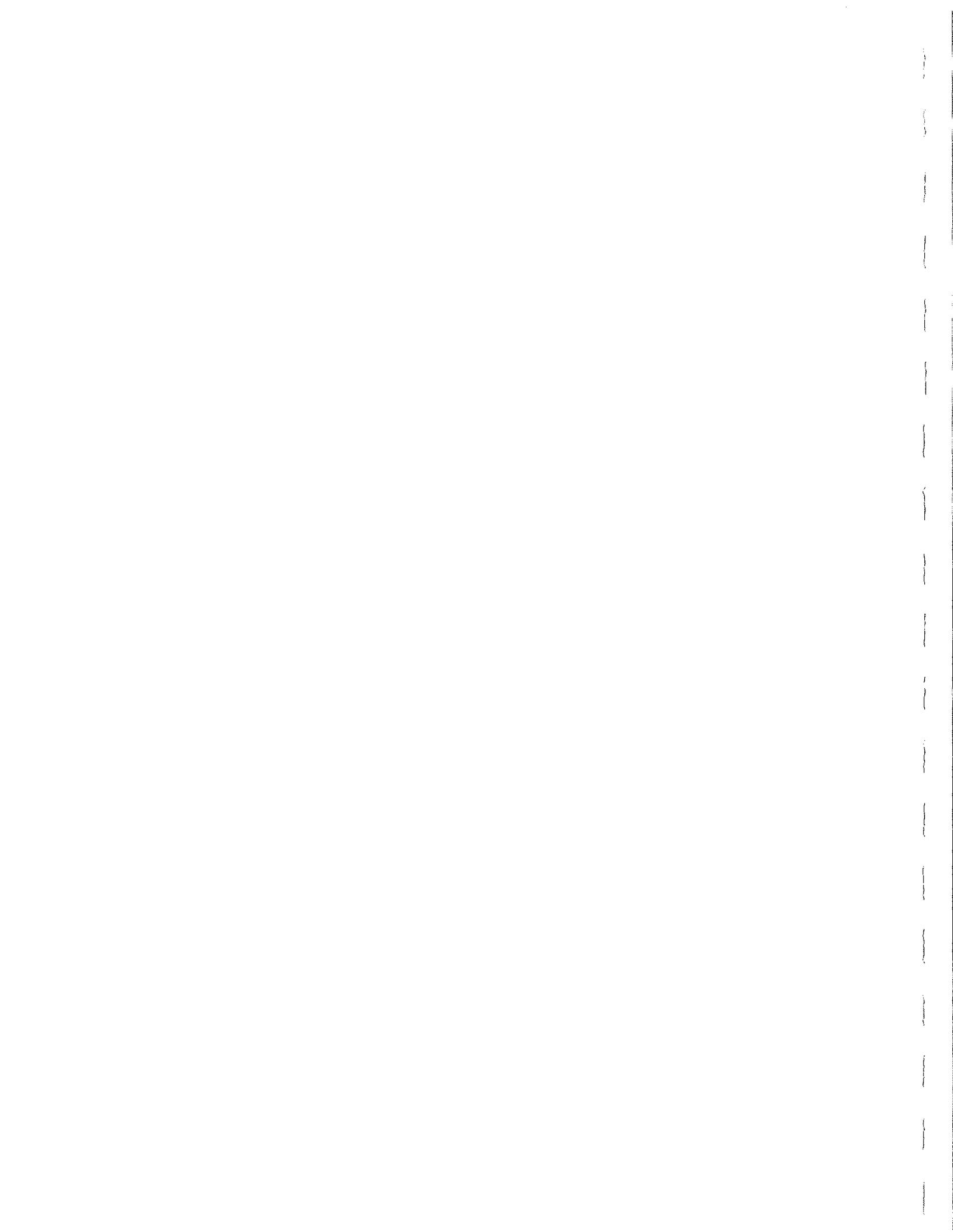
B. In the last three years has your firm had a three year average incident rate for total lost workday cases exceeding 10?

**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)



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 an 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?

**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

- 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 an 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?

**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?

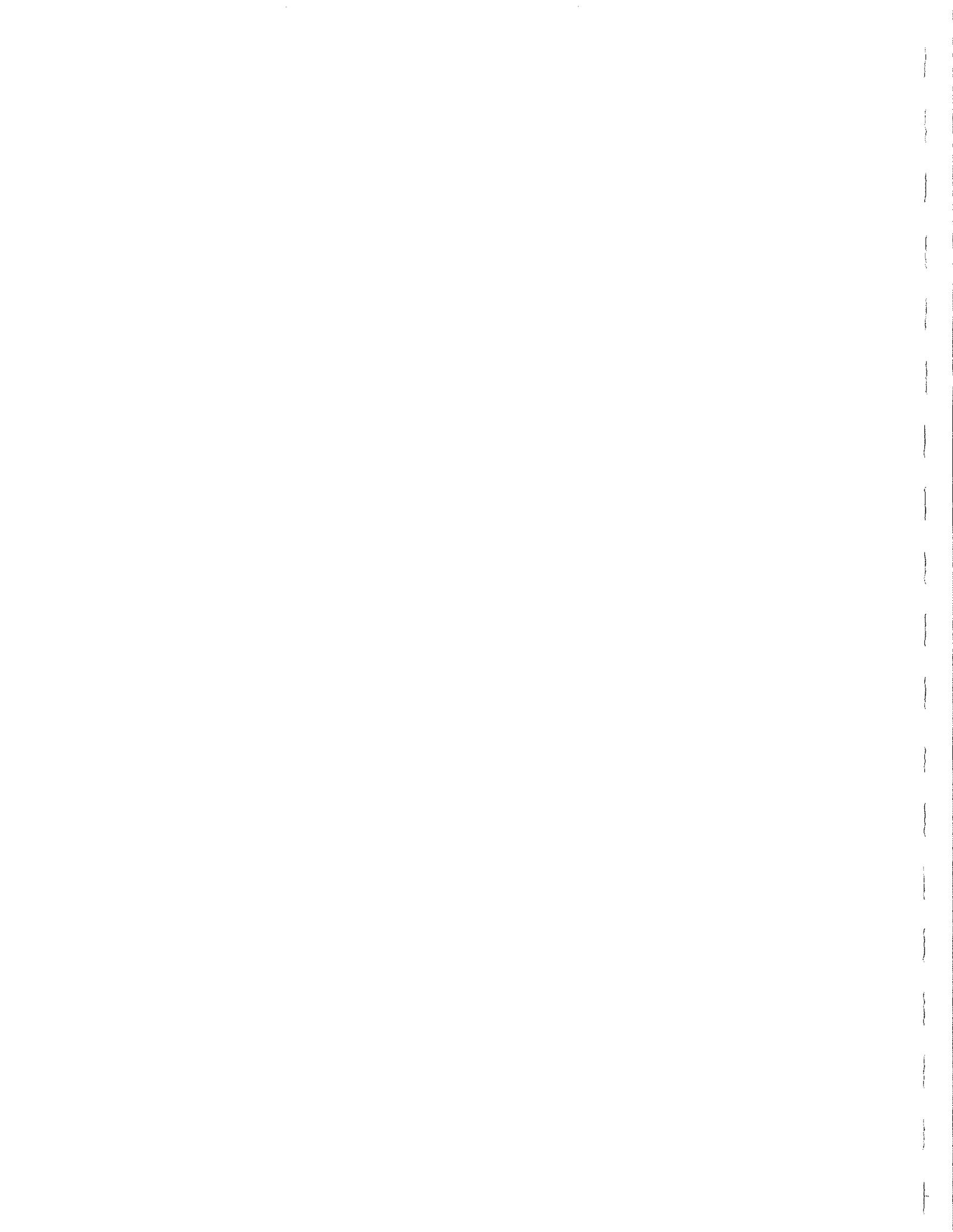
**NOTE:** If there is a pending administrative or court action appealing a withholding or penalty assessment, you need not include that withholding or penalty assessment in responding to this question.

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.

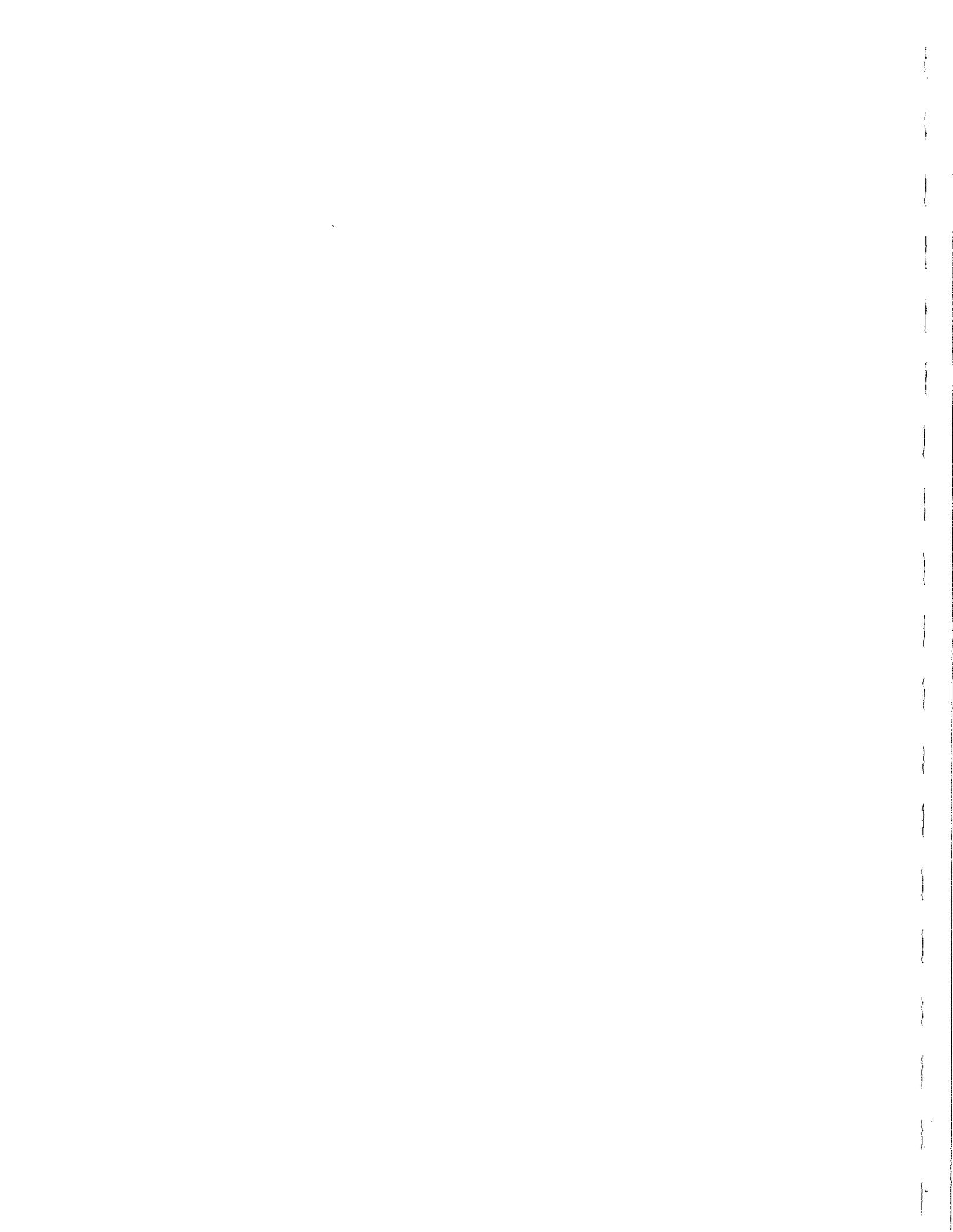
Signed at, on 275 Taylor Road, Newcastle on 1/3/07  
(Location) (Date)

Signature: 

Print Name: Eric Campbell

Title: President

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.



# NON-DISCRIMINATION IN EMPLOYEE BENEFITS BY CITY CONTRACTORS ORDINANCE

## INTRODUCTION

The Sacramento Non-Discrimination In Employee Benefits By City Contractors Ordinance (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 provisions apply only to those employee(s) actually working on the City contract and only for the actual amount of time the employee(s) spend working on such contract.

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 contracts 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.

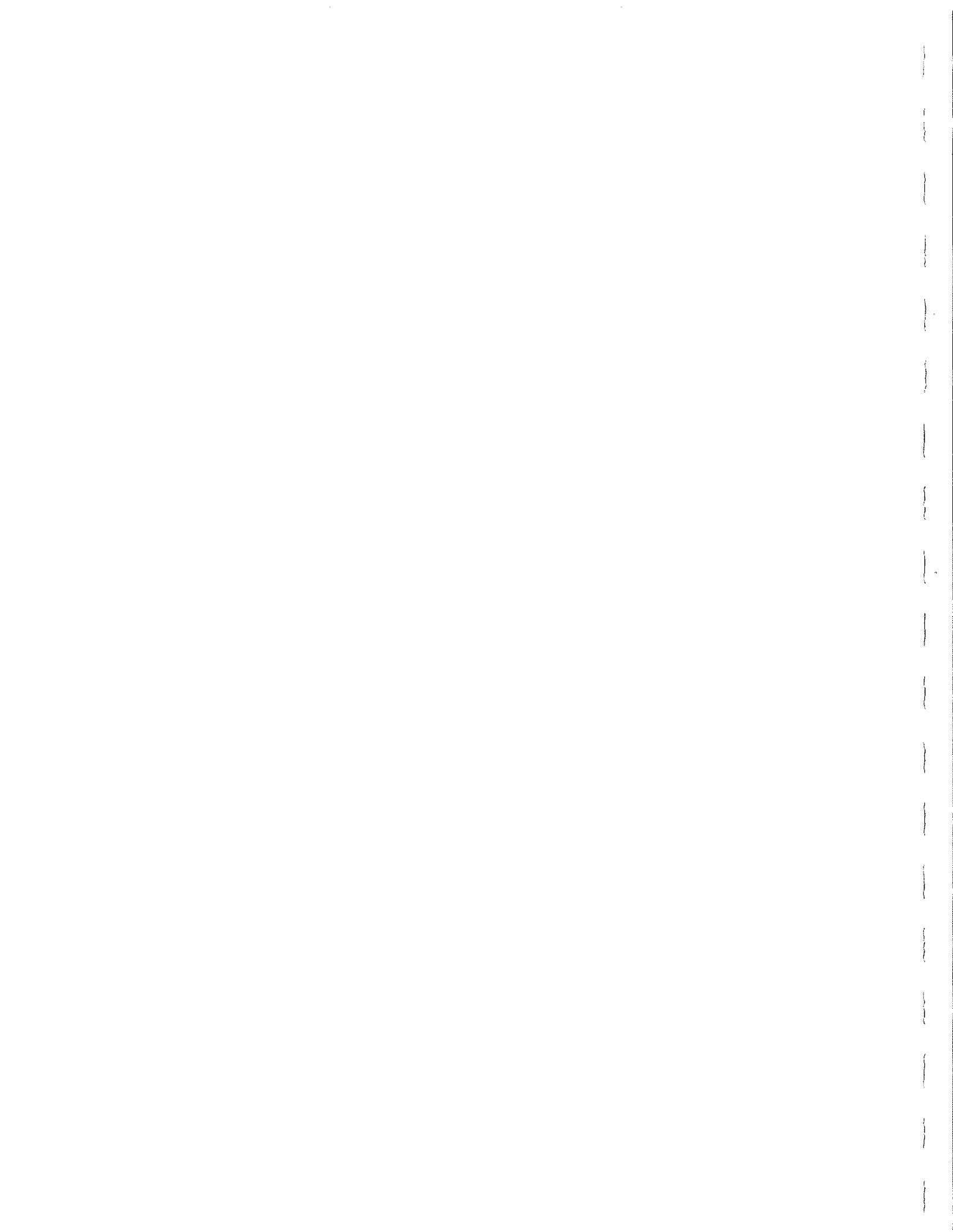
## DEFINITIONS

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 of 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

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275 TAYLOR RD.  
NEWCASTLE, CA 95658-9601  
(916) 663-2425



## **NON-DISCRIMINATION IN EMPLOYEE BENEFITS BY CITY CONTRACTORS ORDINANCE**

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."

WESTCON CONSTRUCTION CORP.  
275 TAYLOR RD.  
NEWCASTLE, CA 95658-9601  
(916) 663-2425



**NON-DISCRIMINATION IN EMPLOYEE BENEFITS BY CITY CONTRACTORS  
ORDINANCE**

**DECLARATION OF COMPLIANCE  
Equal Benefits Ordinance**

Westcon Construction Corp.

---

Name of Contractor

275 Taylor Road, Newcastle CA 95658

---

Address

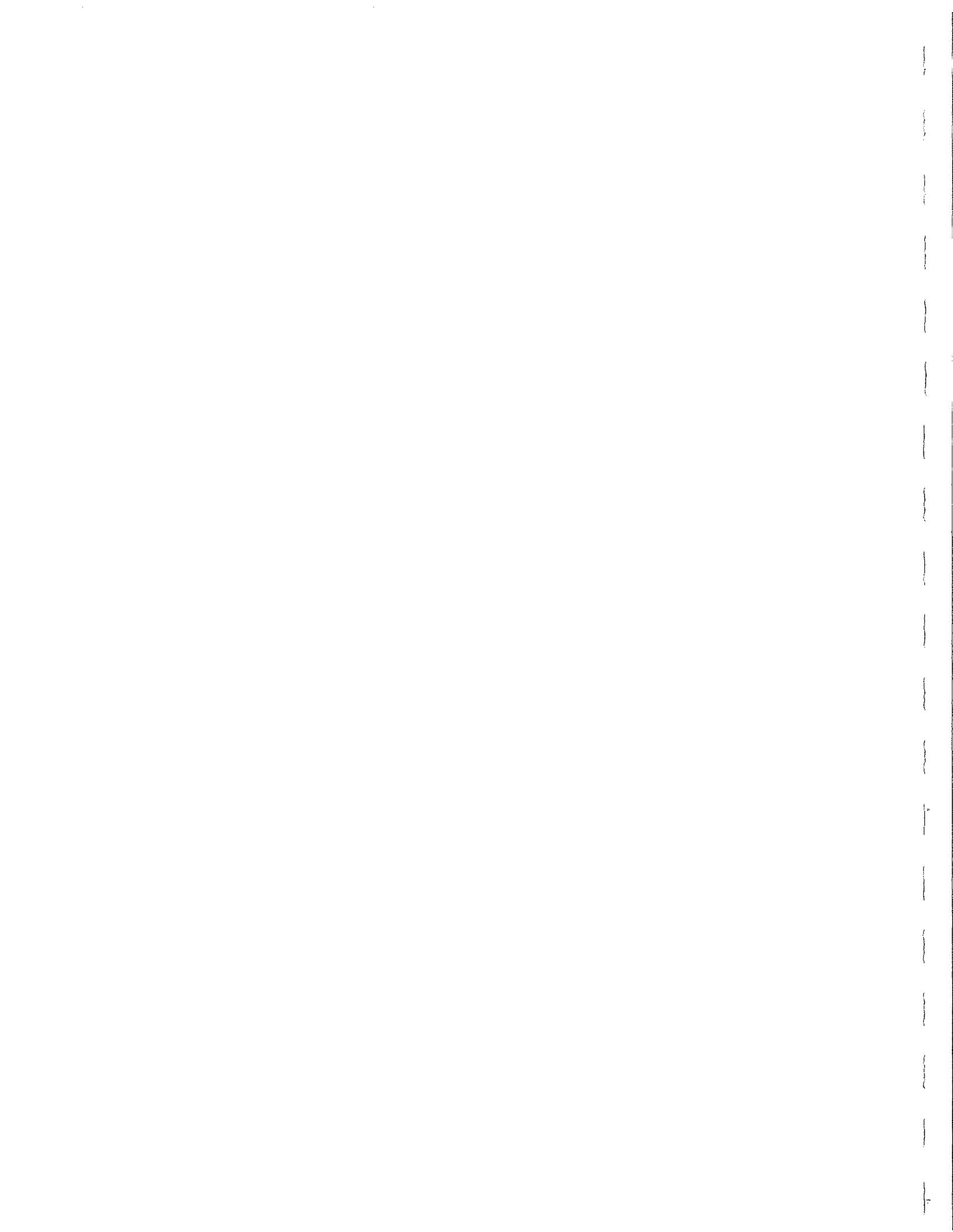
The above named contractor ("Contractor") hereby declares and agrees as follows:

1. I have read and understand the Non-Discrimination In Employee Benefits By City Contractors Ordinance ("Ordinance") 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 of the Ordinance, codified as Chapter 3. 54 of the Sacramento City Code.
3. If the face amount of this City Contract is less than \$25,000, as a condition of receiving this Contract, I agree to notify the City in writing if the aggregate value of the City Contract referenced herein, after changes, modifications, or similar actions, equals or exceeds \$25,000 in total value.
4. 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.

5. 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:

WESTCON CONSTRUCTION CORP.  
275 TAYLOR RD.  
NEWCASTLE, CA 95658-9601  
(916) 663-2425



## NON-DISCRIMINATION IN EMPLOYEE BENEFITS BY CITY CONTRACTORS ORDINANCE

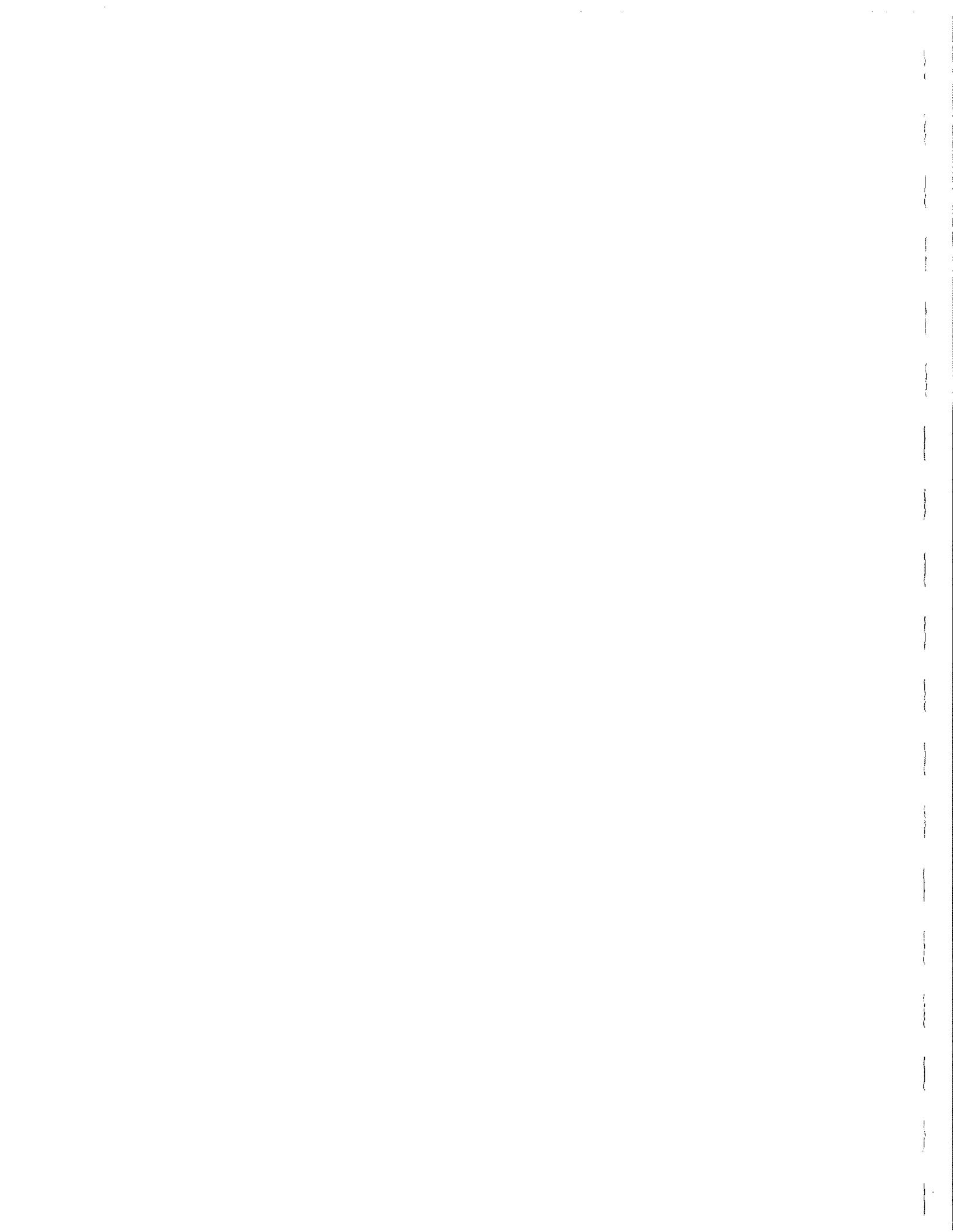
- a. In the event that the actual cost of providing a benefit to a domestic partner or spouse, exceeds the cost of providing the same benefit to a spouse or domestic partner of an employee, I will not be required to provide the benefit, nor shall it be deemed discriminatory, if I require the employee 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).



## NON-DISCRIMINATION IN EMPLOYEE BENEFITS BY CITY CONTRACTORS ORDINANCE

- 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.

6. I understand that failure to comply with the provisions of Section 5. (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.
7. 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.
8. 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 EBO 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.

9. 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 City's Equal Benefits Requirements or of the Ordinance by me.



**NON-DISCRIMINATION IN EMPLOYEE BENEFITS BY CITY CONTRACTORS  
ORDINANCE**

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

1/3/07

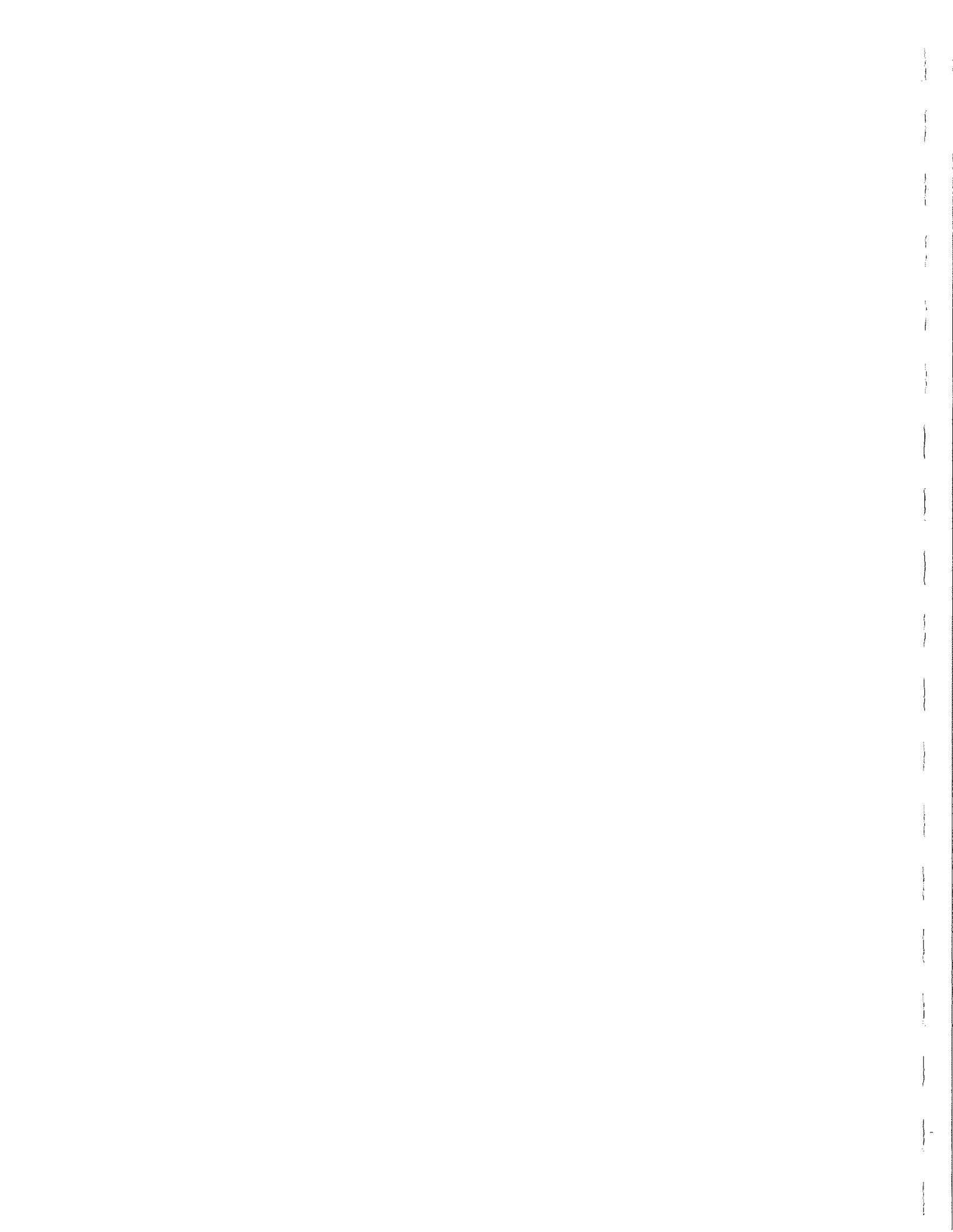
\_\_\_\_\_  
Date

Eric Campbell

\_\_\_\_\_  
Print Name

President

\_\_\_\_\_  
Title



**NON-DISCRIMINATION IN EMPLOYEE BENEFITS BY CITY CONTRACTORS  
ORDINANCE**



**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.

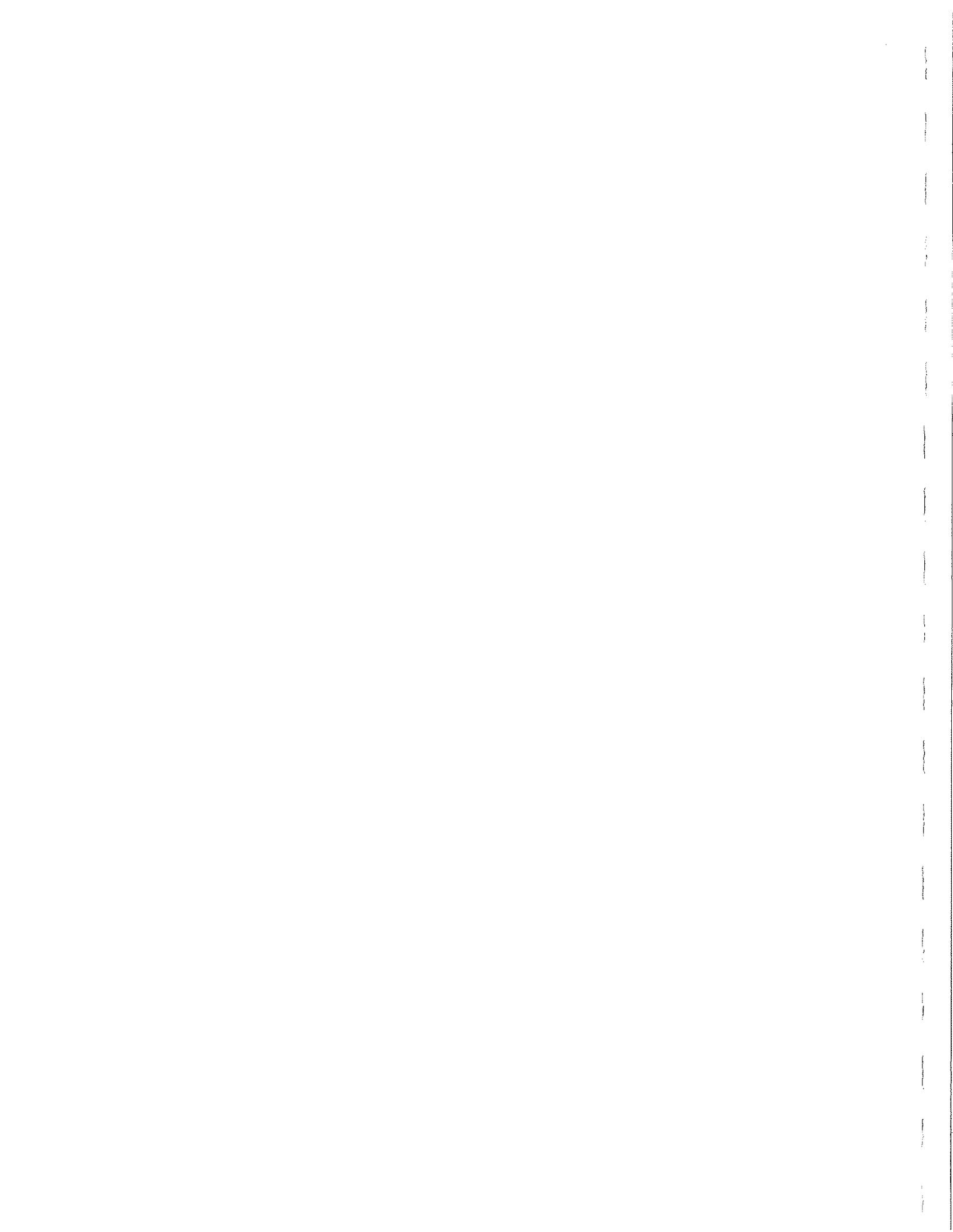
The Ordinance covers any employee working on the specific contract referenced above, but only for the period of time while those employees are actually working on this specific contract.

The included employee benefits are:

- Bereavement leave
- 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

(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,



# NON-DISCRIMINATION IN EMPLOYEE BENEFITS BY CITY CONTRACTORS ORDINANCE

You May . . .

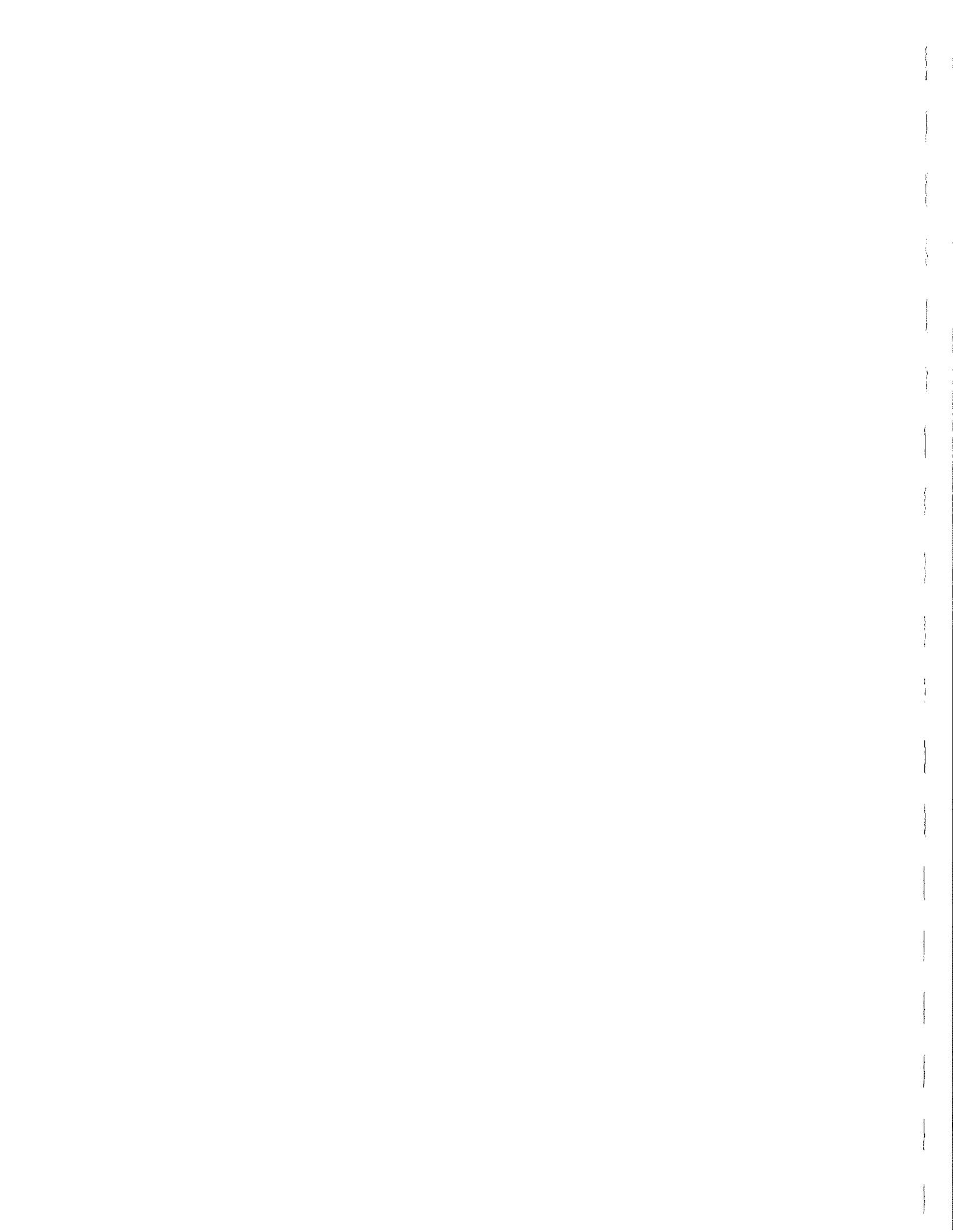
- o Submit a written complaint to the City of Sacramento, Contract Services Unit, containing the details of the alleged violation. The address is:

City of Sacramento  
Contract Services Unit  
921 10th St., Room 402  
Sacramento, CA 95814-2714

- o 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

DATE BID OPENED <u>1-3-07</u>
EMPLOYEE INITIALS <u>V.M.</u>
MARK ONE BOX FOR THE FOLLOWING
<b>BID SECURITY</b>
<input type="checkbox"/> NONE REQUIRED
<input checked="" type="checkbox"/> PROPERLY SIGNED
<b>BID DEPOSIT TYPE</b>
<input checked="" type="checkbox"/> BID BOND
<input type="checkbox"/> CALIF. BANK CASHIER'S CHECK
<input type="checkbox"/> CERTIFIED CHECK
<input type="checkbox"/> CASH
<input type="checkbox"/> CALIF. BANK MONEY ORDER
<b>AFTER AWARD OFFERED</b>
<input type="checkbox"/> SECURITY RETURNED
<input type="checkbox"/> SECURITY ACCEPTED
EMPLOYEE INITIALS _____
DATE _____

WESTCON CONSTRUCTION CORP.  
275 TAYLOR RD.  
NEWCASTLE, CA 95658-9601  
(916) 663-2425





## 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 . . .

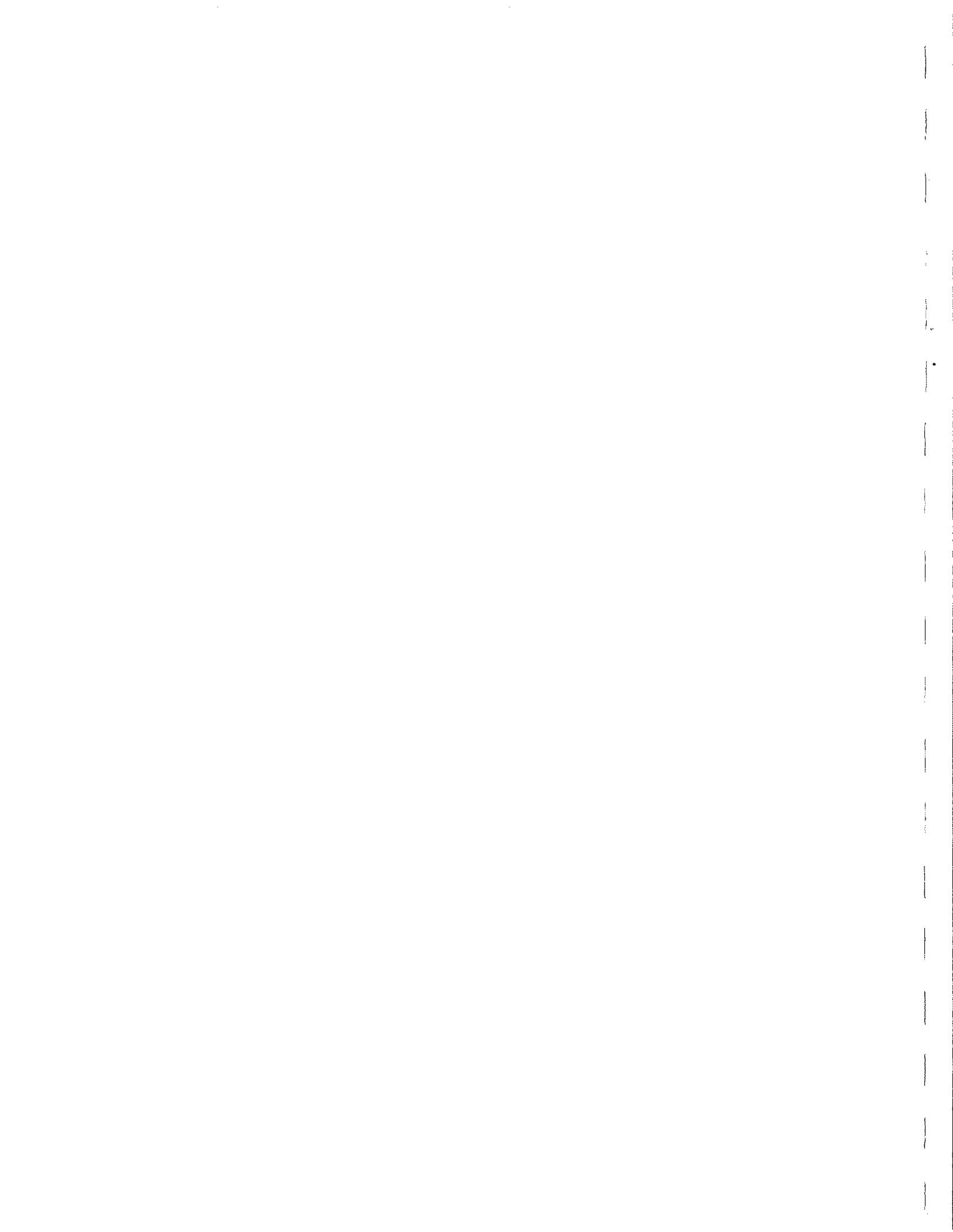
**You May . . .**

- o 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  
921 10th St., Room 402  
Sacramento, CA 95814-2714
- o 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.



## ESBE REQUIREMENTS

(City Contracts no Federal Funds Used)

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 amount of the work to be performed by a certified ESBEs designated in the bid, relative to the total dollar amount of the bid, except as provided other wise below.
- B. To receive credit for participation, a 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. Suppliers: Credit for a ESBE vendor of materials or supplies is counted as one hundred (100) percent of the amount paid to the vendor for the material.



- D. Truckers: Credit for trucking by ESBEs will be (100) percent.

IV. ESBE REQUIREMENTS OF SUCCESSFUL BID/PROPOSAL

- 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 done 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 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 in writing, by the City.



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 a 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)

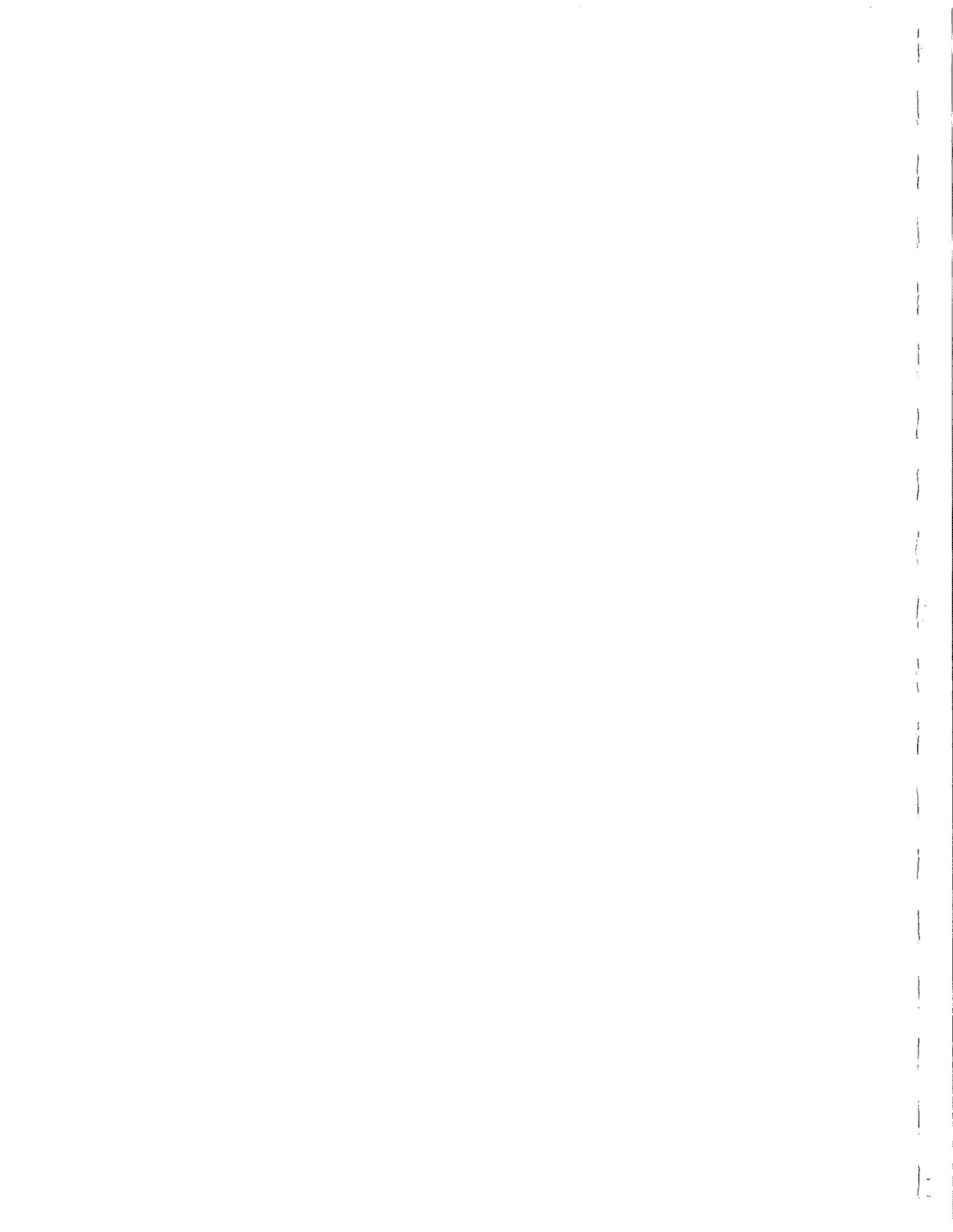
The City shall certify SBEs utilizing the small business certification criteria and standards of the State of California, General Services Department, Office of Small Business Certification and Resources. The City will also accept State certified SBEs.

C. CONTRACTOR

The individual, partnership, corporation, joint venture or other legal entity entering into a contract with the City of Sacramento.

D. SUBCONTRACTOR

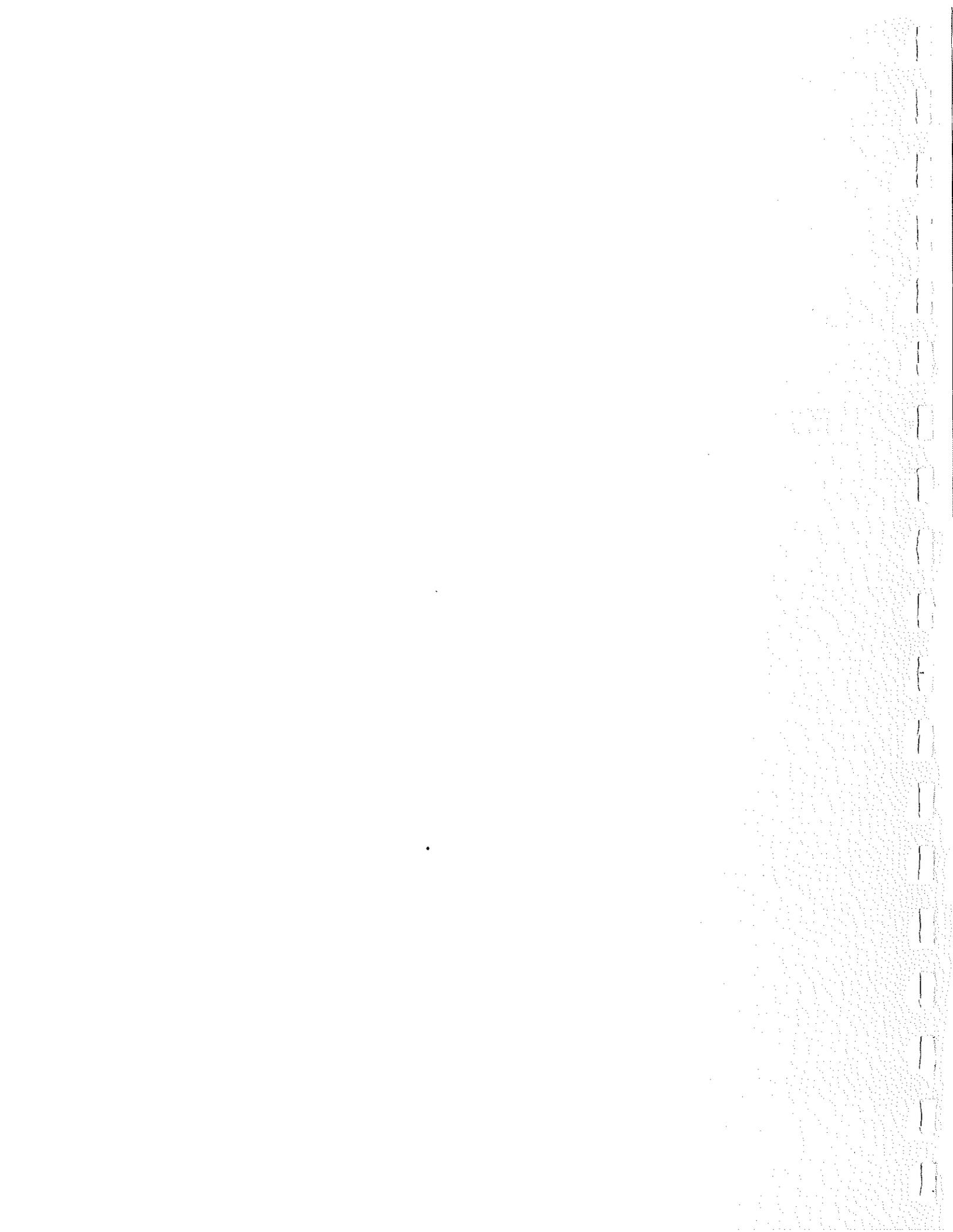
The individual, partnership, corporation, or other legal entity entering into a contract with the prime contractor to perform a portion of the work.



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.

**Westcon Construction Corporation**

Bidder  
BY: 

Title: President

Address: 275 Taylor Road

**Newcastle, CA 95658**

Date: 1/18/07

---

**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).

1000

# GUARANTEE

We hereby guarantee the

SUMP 37 PUMP STATION ELECTRICAL IMPROVEMENTS  
(PN: 8796)

which we propose to install in the City of Sacramento for one (1) year in accordance with the guarantee required in the specifications. We agree to repair or replace any or all such work, together with all or any other work which may be displaced in so doing, that may be proven defective in workmanship or material within the period from the date of acceptance without expense whatsoever to the City, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with the above mentioned conditions within five (5) days time after being notified in writing, we collectively or separately, do hereby authorize the City to proceed to have the defects repaired and made good at our expense and will pay the costs and damages therefor immediately upon demand.

Signed:



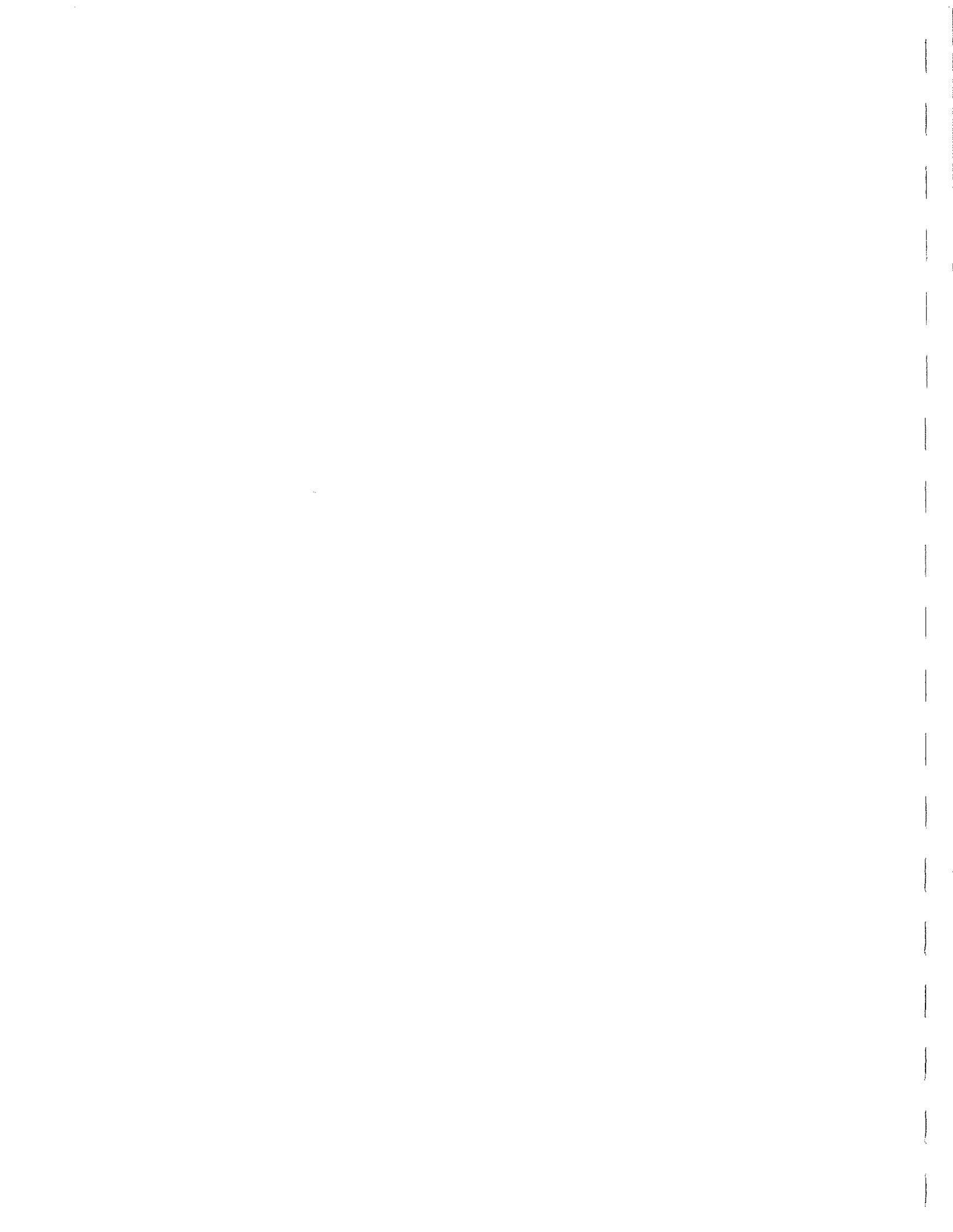
Westcon Construction Corporation

275 Taylor Road

Newcastle, CA 95658-9601

Dated:

1/18/07



## AGREEMENT

THIS AGREEMENT, dated for identification February 13, 2007, between the CITY OF SACRAMENTO, a municipal corporation, (hereinafter called "City"), and

**Westcon Construction Corporation  
275 Taylor Road  
Newcastle, CA 95658-9601**

(hereinafter called the "Contractor").

The parties hereto mutually agree to the terms and conditions set forth herein.

### 1 CONTRACT DOCUMENTS

Each of the items hereinafter referred to is incorporated herein by reference as if set forth in full in this contract.

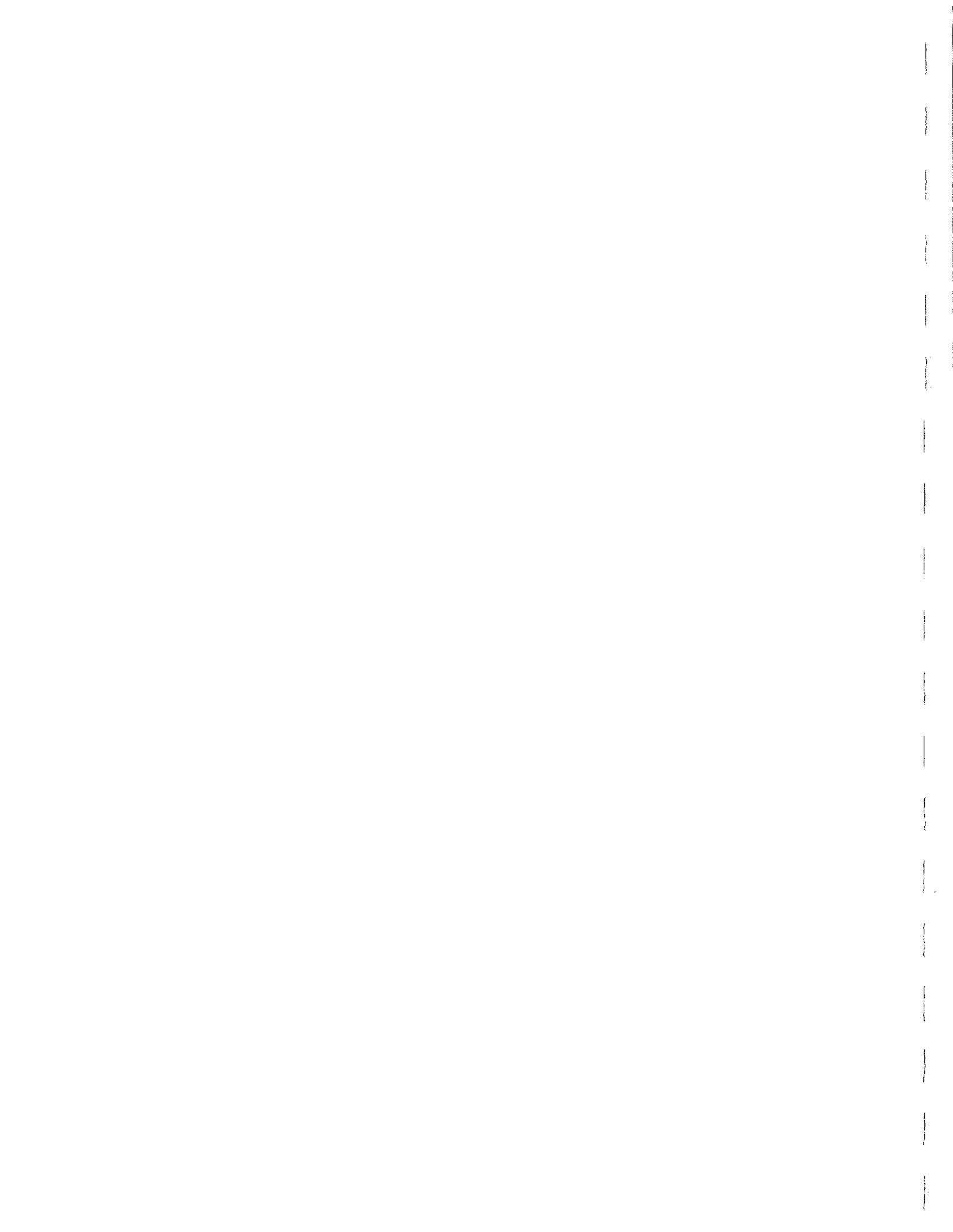
Work called for in any one Contract Document and not mentioned in another is to be performed and executed as if mentioned in all Contract Documents. The table of contents, titles and headings contained herein and in said documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect or limit the interpretations of the provisions to which they refer.

The Contract Documents, sometimes also referred to as "the Contract" consist of the Notice to Contracts, the completed proposal Form submitted by Contractor to whom the Contract is awarded, the Instructions to Bidders insofar as they relate to events which will occur or actions to be taken after the submission of the Proposal, Invitation to Bid, Workers Compensation Certificate, ESBD Program Statement, Certificate(s) of Insurance, Sacramento City Code Chapter 3, Subcontractor and ESBE Participation Verification, Non-Discrimination in Employee Benefits by City Contractors Documents and Declaration of Compliance. this Agreement, the Standard Specifications, the Special Provisions, Plans and Technical Specifications, the drawings and other data and all developments thereof prepared by City pursuant to the Contract, and any modifications of any of the foregoing in the form of Addenda or otherwise effected in accordance with the terms of the Contract.

The Standard Specifications shall mean and refer to the current Standard Specifications of the City of Sacramento which are incorporated herein by this reference as if set forth in full at this price.

### 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 the terms and conditions as 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.

4. SCOPE OF CONTRACT

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

SUMP 37 PUMP STATION ELECTRICAL IMPROVEMENTS (PN: 8796)

including the following alternative bid items described in the Proposal Form:

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5. CONTRACT AMOUNT AND PAYMENTS

City agrees to pay and Contractor agrees to accept, in full payment for the above work, the sum computed in accordance with the actual amount of each item of work performed or material furnished and incorporated in the work, at the unit price which Contractor bid for each such item in his Proposal Form, said unit price to be determined as provided in the Standard Specifications or these Special Provisions.

6. PROGRESS AND FINAL 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 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; the Contractor and Engineer shall inspect the statement and, if both approve the statement, the City shall issue a certificate for ninety (90) percent of the amount it shall find to be due.
- (B) No inaccuracy or error in said monthly estimates shall operate to release Contractor or Surety 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) City shall pay the remaining ten (10) percent of the value of the work done under this contract, if unencumbered, thirty-five (35) days after final completion and acceptance of work by City. Acceptance by Contractor of said final payment shall constitute a waiver of all claims against the City arising under the Contract Document.
- (E) Progress payment due the Contractor shall be made within thirty (30) days following receipt of statement jointly approved by the Contractor and the Engineer.

7. RETENTION OF SUMS CHARGED AGAINST CONTRACTOR

When, under the provisions of this contract, City shall charge any sum of money against Contractor, City shall deduct and retain the amount of such charge from the amount of the next succeeding progress estimate, or from any other moneys due or that may become due Contractor from City. If, on completion termination of the Contract, sums due Contractor are insufficient to pay City's charges against him, City shall have the right to recover the balance from Contractor of his sureties.

8. COMMENCEMENT AND PROSECUTION OF WORK

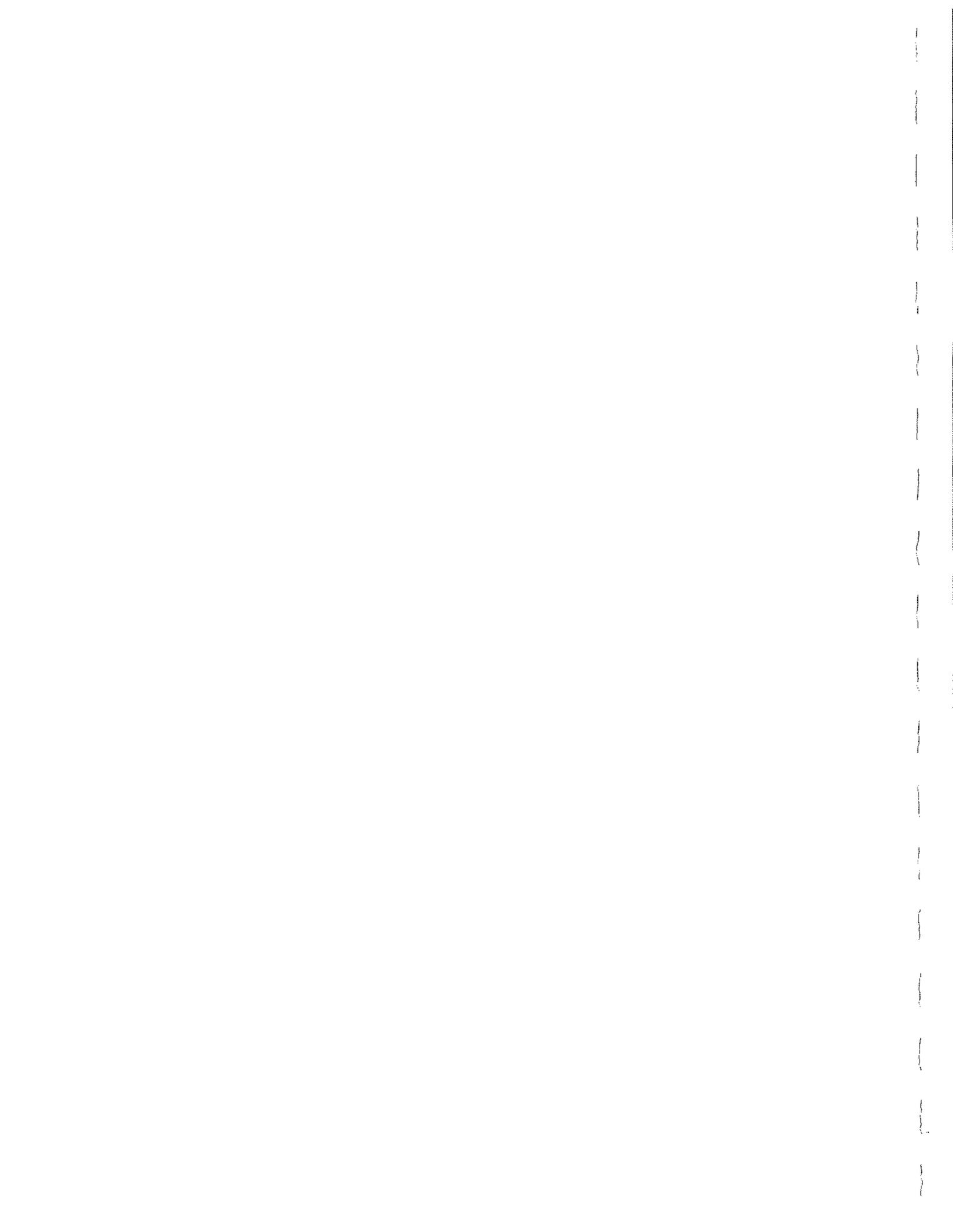
Contractor shall commence the work on or before fifteen (15) working days from and after receipt of written Notice to Proceed from City to contractor and will diligently prosecute the work to final completion. The phrase "commence the work" means to engage in a continuous program on-site including, but not limited to, site clearance, grading, dredging, land filling and the fabrications, erection, or installation of the work. Said 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. 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 forty (140) working days (hereinafter called the "Completion Date") from the date of the Notice to Proceed unless extensions of time are granted in accordance with the Contract Documents.

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

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, though the unsatisfactory character of such work or material may not have been apparent or detected at the time such payment was made.

11. ACCEPTANCE NOT RELEASE

Contractor shall correct immediately any defective or imperfect work which may be discovered before final acceptance of the entire work. Any unsatisfactory materials shall be rejected, notwithstanding that they may have been overlooked by the inspector. The inspection of the work, or any part thereof, shall not relieve Contractor of any of his obligations to perform satisfactory work as herein prescribed.

Failure or neglect on the part of City or any of its authorized agents to condemn or reject bad or inferior work or materials shall not be construed to imply an acceptance of such work or materials if such becomes evident at any time prior to final acceptance of the entire work or all materials, not shall such failure be construed as barring City at any subsequent time from recovering damages or of such a sum of money as may be required to build anew all portions of the work in which fraud was practiced or improper materials used whenever City may discover the same.

12. RELEASE

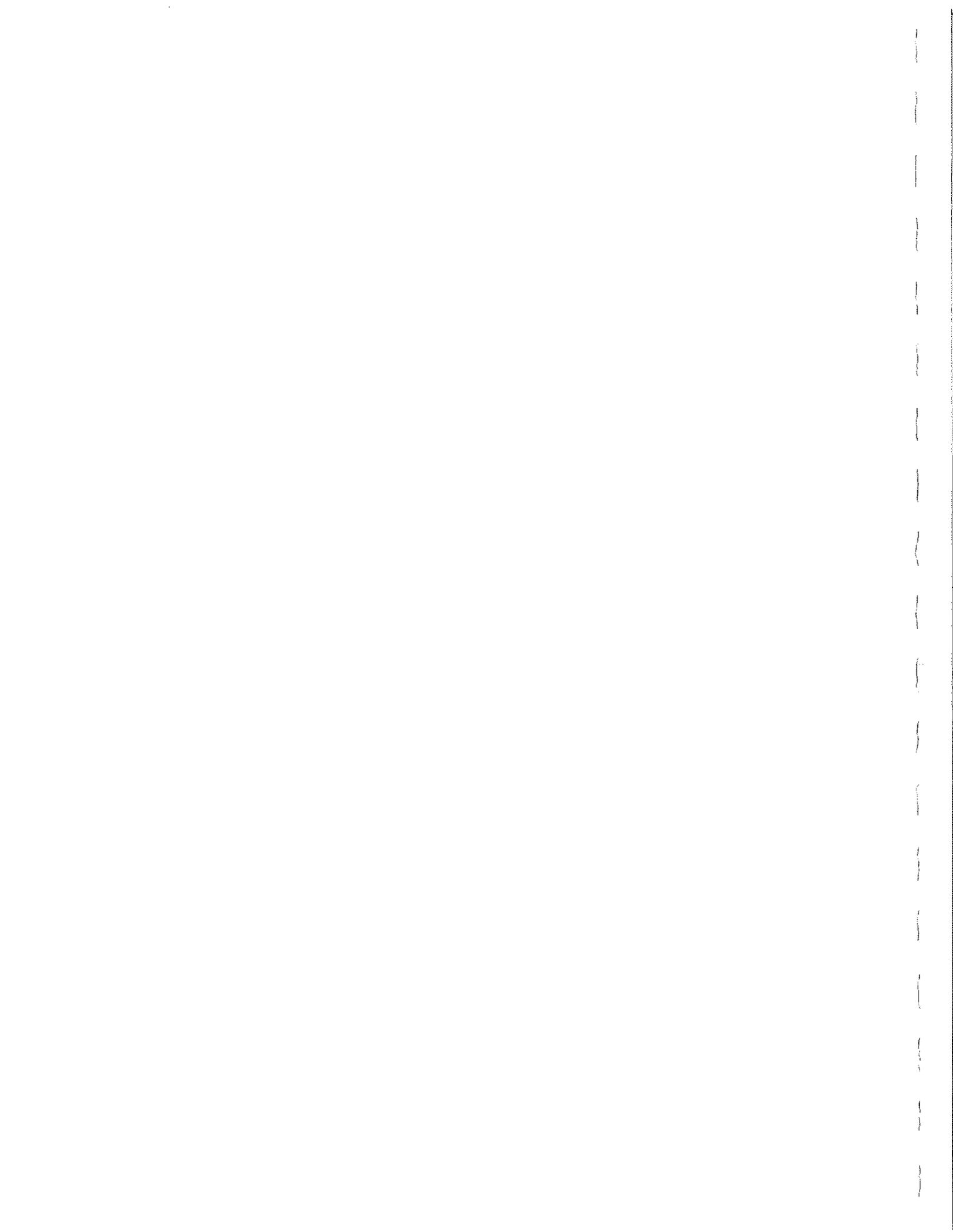
If requested to do so by City, at the time of final payment, as a condition precedent to final payment, Contractor and each assignee under any assignment in effect at the time of final payment shall execute and deliver a release in form and substance satisfactory to and containing such exemptions as may be found appropriate by City which shall discharge City, its officers, agents and employees of and from all liability, obligations and claims arising under this contract.

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

The City of Sacramento 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.

14. NO WAIVER OF REMEDIES

Neither the inspection by City or its agents, nor any order or certificate 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 or its agents shall operate as a waiver of any provision of this Agreement or 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 this Agreement shall be taken and construed as cumulative; that is, in addition to each and every other remedy herein provided, and City shall have any and all equitable and legal remedies which it would in any case have.

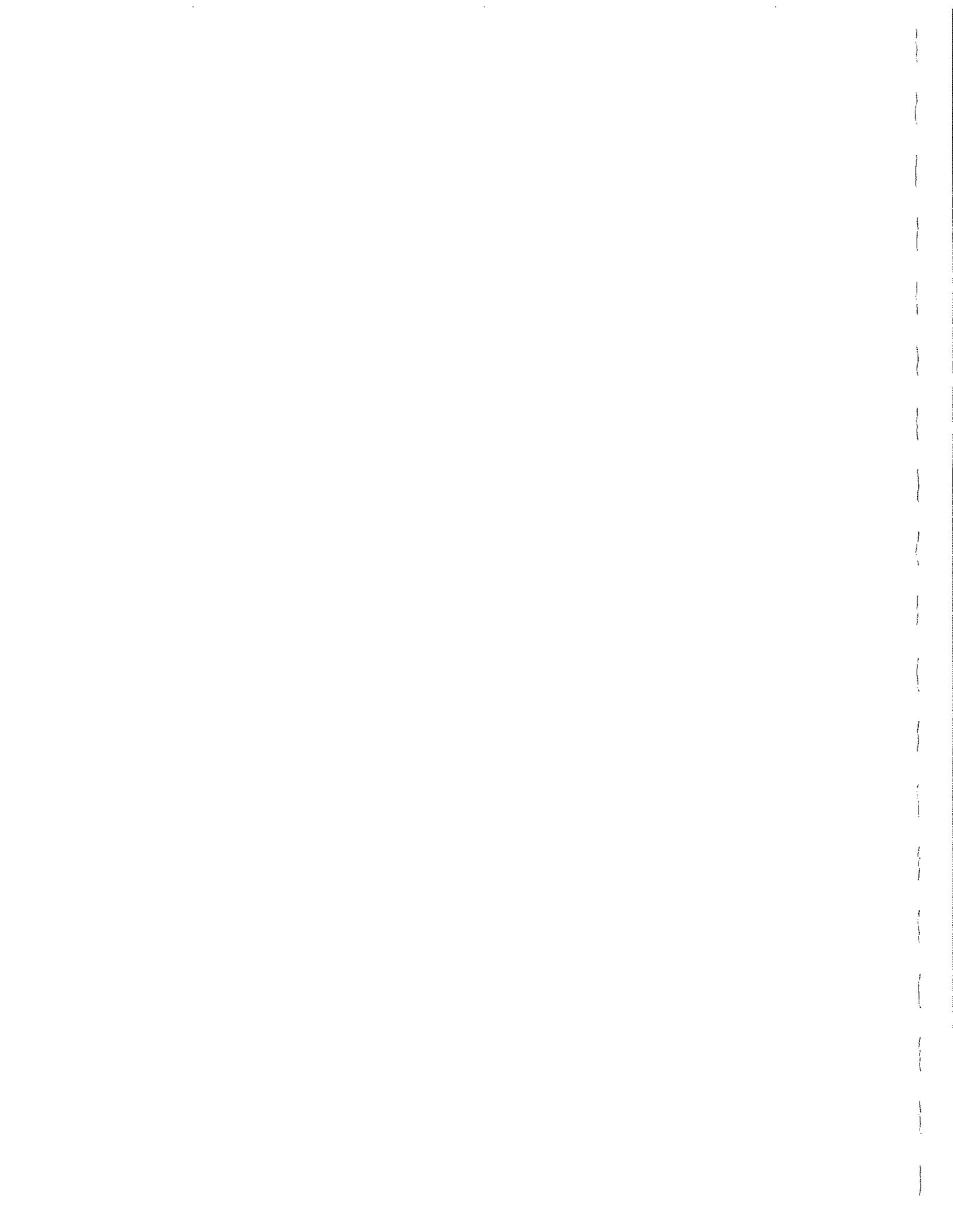
#### 15. GUARANTEE

Except as otherwise expressly provided in the Specifications, and excepting only items of routine maintenance, ordinary wear and tear and unusual abuse or neglect, Contractor guarantees all work executed by him and all supplies, materials and devices of whatsoever nature incorporated in, or attached to the work, or otherwise delivered to City 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 of Sacramento. Contractor shall repair or replace any or all such work or material, together with all of any other work or material which may be displaced or damaged in so doing, that may prove defective in workmanship or material within said one year guarantee period without expense or charge of any nature whatsoever to City. Contractor shall provide City with a Maintenance Bond or Letter of Credit in the amount of five percent (5%) of the Contract covering the warranty period. Said security shall be filed with the City prior to Contract acceptance by the City Council.

In the event that Contractor shall fail to comply with the conditions of foregoing guarantee within ten (10) days time 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 guarantee results in a condition which constitutes an immediate hazard to the 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 either temporary or permanent repairs which may be required as determined in the sole discretion and judgement of City.

#### 16. DETERMINATION OF DAMAGES

The actual fact of the occurrence of damages and the actual amount of the damages which City would suffer if the work were not completed within the specified times set forth are dependent upon many circumstances and conditions which could prevail in various combinations, and, from the nature of the case, it is impracticable and extremely difficult to fix the actual damages. Damages which City would suffer in the event of delay include loss of the use of the project, and, in addition, expenses of prolonged employment of an architectural and engineering staff; costs of administration inspection, and supervision; and the loss suffered by the public within the City of Sacramento by reasons of the delay in the completion of the project to serve the public at the earliest possible time. Accordingly, the parties hereto agree, and by execution of this



Agreement, Contractor acknowledges that he understands, has ascertained and agrees, that the amounts set forth herein as liquidated damages shall be presumed to be the amount of damages sustained by the failure of Contractor to complete the entire work within the times specified.

17. LIQUIDATED DAMAGES

The amount of the liquidated damages to be paid by Contractor to City for failure to complete the entire work by the Completion Date (as extended, if applicable) will be two hundred fifty dollars (\$250.00) 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 City resulting from Contractor's default.

18. PAYMENT OF DAMAGES

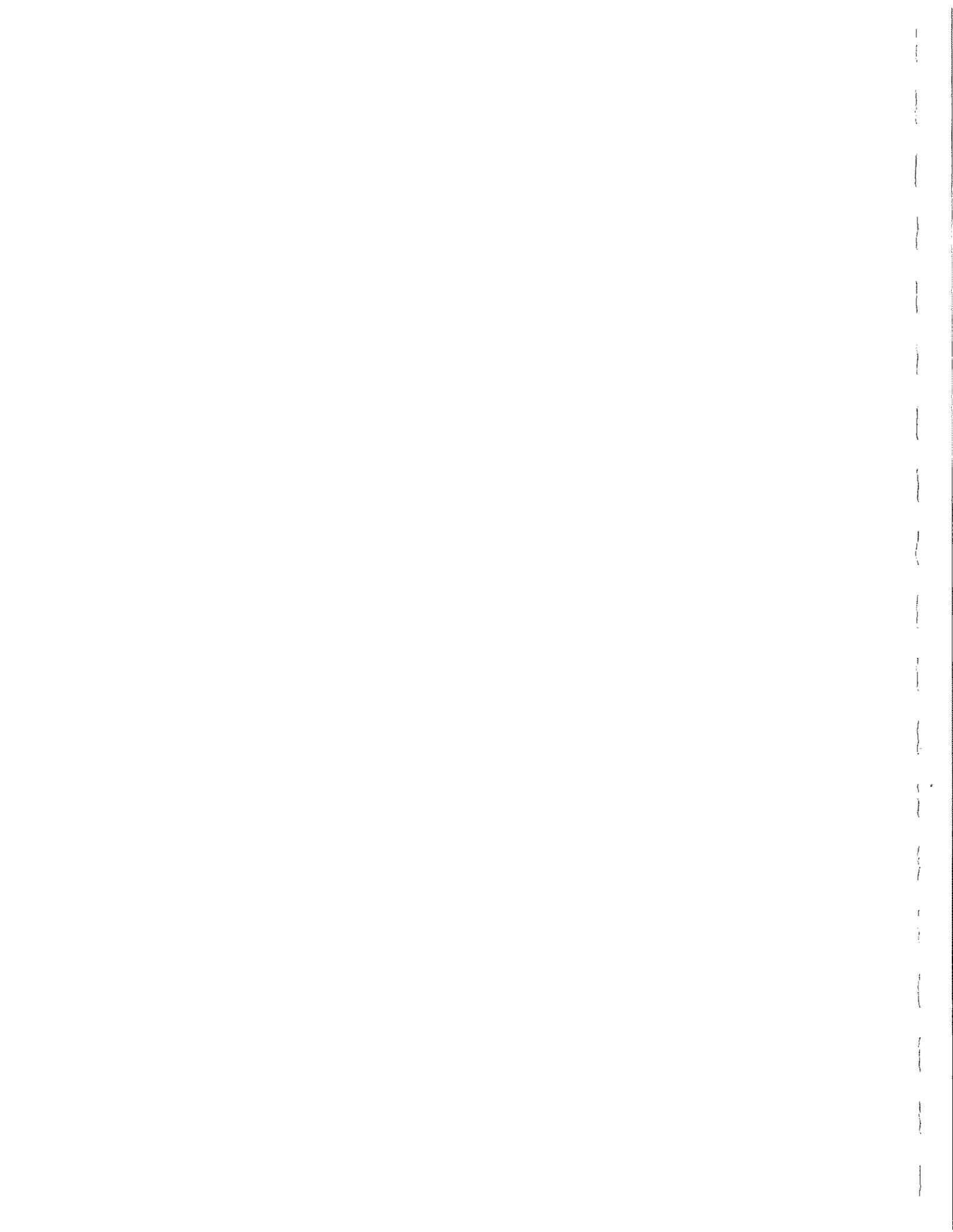
In the event Contractor shall become liable for liquidated damages, City, in addition to all other remedies provided by law, shall have the right to withhold any and all payments which would otherwise be or become due Contractor until the liability of Contractor under this section is finally determined. City shall have the right to use and apply such payments, in whole or in part, to reimburse City for all liquidated damages due 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. If the sum so retained by City is not sufficient to discharge all such liabilities of Contractor, Contractor and his sureties shall continue to remain liable to City until all such liabilities are satisfied in full. No failure by City to withhold any payment as hereinbefore specified shall in any manner be construed to constitute a waiver of any right to liquidated damages or any right to any such sum.

19. INDEMNITY AND HOLD HARMLESS

Contractor shall assume the defense of, and indemnify and save harmless, the City, its officers, employees, and agents, and each and every one of them, from and against all actions, damages, claims, losses or expenses of every type and description to which they may be subjected or put, by reason of, or resulting from, the performance of the work, provided that such action, damage, claim, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of property, whether upon or off the work, including the loss of use thereof, and is caused in whole or in part by any negligent act or omission of the Contractor, and subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, whether or not it is caused in part by a party indemnified hereunder.

20. 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. Contractor 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, except as otherwise stipulated.

## 21. GENERAL LIABILITY OF CONTRACTOR

Except as otherwise herein expressly stipulated, Contractor shall perform all the work and furnish all the labor, materials, tools, power and light, and appliances, necessary or proper for performing and completing the work herein required in the manner within the time herein specified. The mention of any specific duty or liability of Contractor shall not be construed as 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 for the purpose of explanation.

## 22. INSURANCE

During the term of this Agreement and until final completion and acceptance of the work required by the Contract documents, Contractor shall maintain in full force and effect at his own and expense the following insurance coverage:

### (A) Worker's Compensation

Full Worker's Compensation Insurance and Employer's Liability policy or provide evidence of ability to undertake self-insurance. Limits of coverage shall be at least \$1,000,000 for any one person. In the event Contractor is self-insured, he shall furnish a Certificate of Permission to Self-Insure by the Department of Industrial Relations Administration of Self-Insurance, Sacramento.

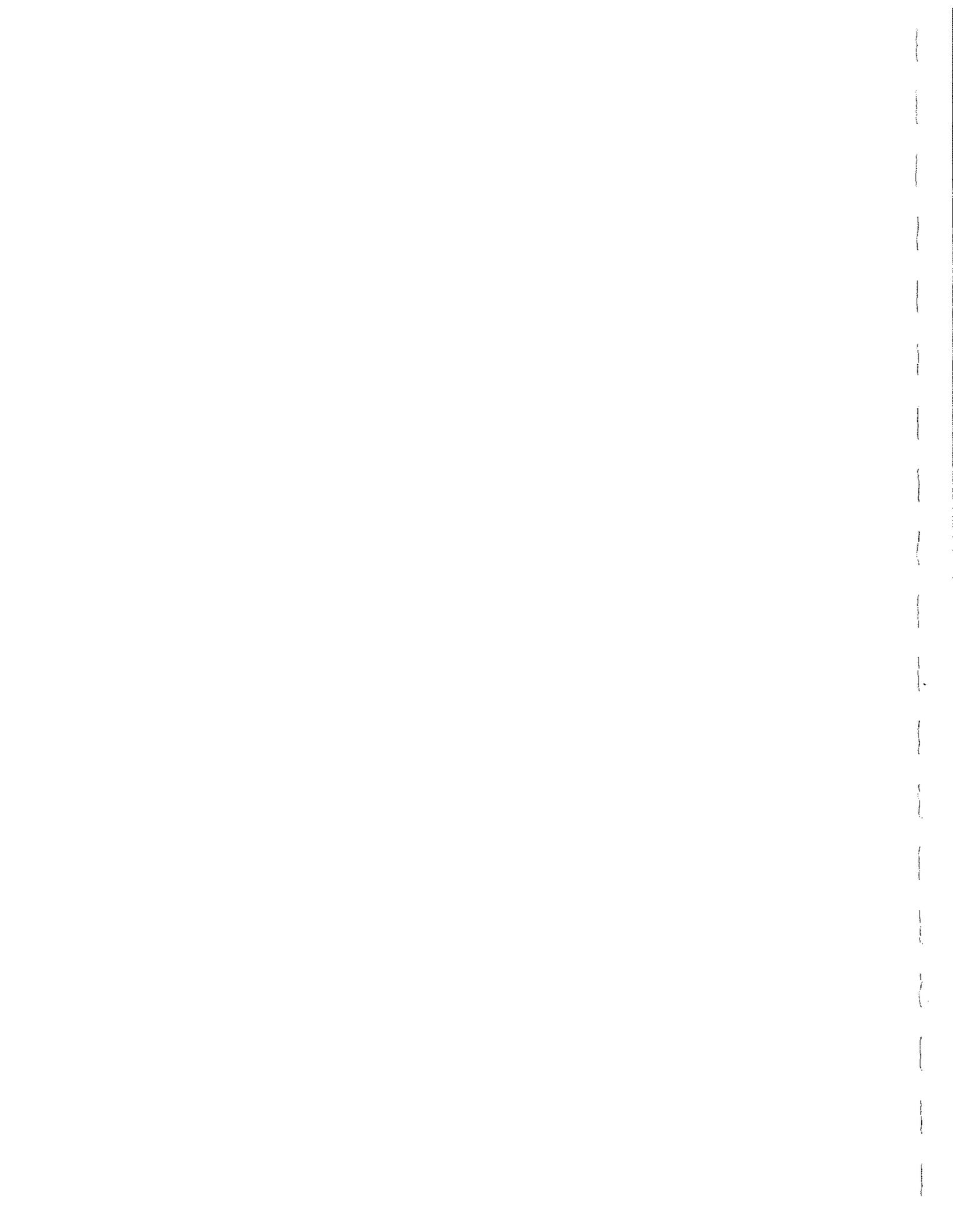
### (B) Comprehensive Auto and General Liability Insurance

Contractor must provide sufficient broad coverage to include:

- Comprehensive Auto and General Liability Insurance
- Products and Completed Operation Liability
- Broad Form Property Damage Liability
- Contractual Liability
- Personal Injury Liability

The amount of the policy shall be no less than \$1,000,000 Single Limit per occurrence, issued by an admitted insurer or insurers as defined by the California Insurance Code, providing that the City of Sacramento, its officers, employees and agents are to be Named Insured under the policy, and the policy shall stipulate that this insurance will operate as Primary insurance and that no other insurance effected by city or other Named insured will be called on to contribute to a loss covered thereunder.

### (C) Certificate of Insurance



Contractor shall have City's standard Certificate of Insurance completed and filed with the Division of Risk Management within fifteen (15) days of the execution of this Agreement. Said policies shall provide that no cancellation, major change in coverage, or expiration may be effected by the insurance company of the insured during the term of this Agreement, without first giving to City thirty (30) calendar days written notice prior to the effective date of such cancellation or change in coverage.

(D) Worker's Compensation Certificate

Contractor shall sign and file with the Division of Risk Management of the City of Sacramento the following certification prior to commencing performance of the work of the Contract:

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

23. FAILURE TO MAINTAIN INSURANCE

If, at any time during the performance of this Contract, Contractor fails to maintain any item of the required insurance in full force and effect, Contractor shall immediately discontinue all work under the Contract and City will withhold all Contract payments due or that become due until notice is received by City that such insurance has 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.

Any failure to maintain any item of the required insurance will be sufficient cause for termination of the Contract.

24. EXTENSIONS OF TIME

In the event City deems it necessary, in its sole discretion, to extend the time of completion of the work to be done under this Contract beyond the required Completion Date herein specified, such extensions shall in no way release any 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 executed pursuant to said provisions. By executing such Bonds, the sureties shall be deemed to have expressly agreed to any such extension of time. The amount of time allowed in any extension of time shall be limited to the period of excusable delay as defined herein giving rise to the same as determined by City Council of City.

25. EXCUSABLE DELAYS

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For the purpose of these Contract Documents, the term "Excusable Delays" shall mean, and is limited to, delays caused directly by acts of God; acts of the public enemy; fires; inclement weather as determined by the Engineer; riots; insurrections; epidemics; quarantine restrictions; strikes; lockouts; sitdowns; acts of 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 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 which could have been avoid by the exercise of care, prudence, foresight and diligence on the part of Contractor; (ii) any delay in the prosecution of parts of the work, which may in itself be unavoidable but which does not necessarily prevent or delay the prosecution of other part of the work, nor the completion of the whole work within the time specified; (iii) any reasonable delay resulting from time required by City for review of Plans and submittals required of Contractor and for the making of surveys, measurements and inspection; (iv) any delay arising from an interruption in the prosecution of the work on account of the reasonable interference from other Contractors employed by City which does not necessarily prevent the completion of the 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) but shall not under any circumstances increase the sum City is to pay Contractor as provided in these Contract Documents.

## 26. CONTRACTOR TO SERVICE NOTICE OF DELAYS

Whenever Contractor foresees any delay in the prosecution of the work, and in any event upon the occurrence of any delay which Contractor regards as an Excusable Delay, he shall notify the Engineer in writing immediately within ten (10) calendar days of the probability of such delay and its cause, in order that the Engineer may take immediate steps to prevent if possible the occurrence or continuance of the delay or 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 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 orf whole of the work, the Engineer, in estimating the amount due Contractor, will assume that any and all delays which may have occurred in its prosecution and completion have been avoidable delays, except such delays as shall

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have been called to the attention of the Engineer at the time of their occurrence and found by him to have been excusable. Contractor shall make no claim that any delay not called to the attention of the Engineer at the time of its occurrence has been an Excusable Delay.

27. EXTENSION OF TIME

Should any delays occur which the Engineer may consider excusable, as herein defined, Contractor shall, pursuant to his application, be allowed an extension of time beyond the time herein set forth proportional to said delay or delays in which to complete this Contract; and, during an extension which may have been granted because of an excusable delay or delays, City shall not charge liquidated damages against Contractor for such delay. Only the Engineer may grant an extension of time on the Contract.

28. EXTENSION OF TIME DOES NOT WAIVE CITY'S RIGHT

The granting of any extension of time on account of delays which in the judgement of the Engineer are excusable delays 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.

29. 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 such delays qualify for extension of time under this Agreement or not, providing the elements precluding recovery of damages by Contractor in Section 7102 of the Public Contracts Code are met.

30. CHANGES IN THE WORK

Changes in the work made pursuant to changes issued in accordance with the Standard Specifications and extensions of time of completion made necessary by reason thereof (beyond the Completion Date) shall not in any way release any guarantee given by Contractor pursuant to the provisions of the Contract Documents, or the Contract let hereunder, nor shall such changes in the work relieve or release the sureties on Bonds executed pursuant to the said provisions. 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.

31. 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 punchlist items) are not completed as of the Completion Date (as adjusted by any extensions of time for excusable delays that may

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have been granted), City may terminate the Contract at any time after the Completion Date (as extended, if applicable), 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 for the period of time after the Completion Date (as extended, if applicable) until all work is completed. In addition to any other charges, withholdings or deductions authorized under the Contract or applicable law, 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 contracting for the completion of any services or work under the Contract that are not completed to the satisfaction of the City as of such termination date, including but not limited to, uncompleted punch list items. 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. Termination procedures specified elsewhere in the Contract shall not apply to City's termination of the Contract pursuant to this section, notwithstanding any other provision of the Contract to the contrary.

32. CONTRACTOR BANKRUPT

If Contractor should commence any proceeding under the Bankruptcy Act, or if Contractor be adjudged a bankrupt, or if Contractor should make any assignment for the benefit of creditors, or if a receiver should be appointed on account of Contractor's insolvency, then the City Council may, without prejudice to any other right or remedy, terminate the Contract and complete the work by giving notice to Contractor and his surety according to the provisions of Section 33. Contractor's Surety shall have the right to complete the work by commencing within thirty (30) calendar days as specified in Section 33; and, in the event Contractor's Surety fails to commence work within thirty (30) calendar days as specified in Section 33, City shall have the right to complete, or cause completion of the work, all as specified in Section 33.

33. TERMINATION FOR BREACH OF CONTRACT

If Contractor should abandon the work under this Contract, or if the Contract or any portion of the contract should be sublet or assigned without the consent of the City Council, or if the Engineer should be of the opinion 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 should willfully violate or breach, or fail to execute in good faith, any of the terms or conditions of the Contract, or if Contractor should persistently refuse or fail to supply enough properly skilled labor or materials, or fail to make prompt payment to subcontractors for material or labor or persistently



disregard laws, ordinances or proper instruction or orders of the Engineer, then, notwithstanding any provision to the contrary herein, the City Council may give Contractor and his Surety 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 satisfactory arrangement for correction is not made, within ten (10) calendar days from the date of such notice, the Contract shall upon the expiration of said ten (10) calendar days cease and terminate. In the event of any such termination, City shall immediately serve notice thereof upon the Surety and Contractor; and the Surety shall have the right to take over and perform the Contract, provided; however, that if the Surety does not commence performance thereof within thirty (30) calendar days from the date of the mailing to such Surety of notice of termination, City may take over the work and prosecute the same to completion of Contract, or otherwise, for the account and at the expense of Contractor, and his Surety shall be liable to City for any excess cost occasioned City thereby, as hereinafter set forth.

In the event City completes the work, or causes the work to be completed, as aforesaid, no payment of any such shall be made to Contractor until the work is complete. The cost of completing the work, including but not limited to, extra costs of administration and management incurred by City, either direct or indirect, shall be deducted from any sum then due, or which becomes due, to Contractor from City. If no sum sufficient to pay the difference between sums due to Contractor from City and the cost of completing the work, Contractor and the Surety shall pay City a sum equal to said difference on demand. In the event City completes the work, and there is a sum remaining due to Contractor after City deducts the aforementioned costs of completing the work, then City shall thereupon pay such sum to Contractor and his Surety.

No act by City before the work is finally accepted, including, but not limited to, exercise of other rights under the contract, action at law or in equity, extensions of time, payments, claims 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 by, or to stop, City from acting pursuant to this paragraph upon any subsequent event, occurrence or failure by contractor to fulfill the terms and conditions of the Contract. The rights of City pursuant to this paragraph are cumulative and in addition to all other rights of City pursuant to this Agreement and at law or in equity.



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 1/18/07

BY Eric Campbell 

President  
Title

68-0350563  
Federal ID# or Social Security #

State ID#  
111831

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

CITY OF SACRAMENTO  
a municipal corporation

BY Marty Hanneman  
Marty Hanneman, Assistant City Manager  
For: Ray Kerridge, City Manager

ORIGINAL APPROVED AS TO FORM

ATTEST:

  
\_\_\_\_\_  
City Attorney

\_\_\_\_\_  
City Clerk

DATE \_\_\_\_\_

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# ACORD CERTIFICATE OF LIABILITY INSURANCE

OP ID HB  
WESTC-1

DATE (MM/DD/YYYY)  
01/15/07

PRODUCER  
Warren G. Bender Co.  
4350 Auburn Blvd. #100  
P.O. Box 417458  
Sacramento CA 95841-7458  
Phone: 916-978-8558

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED  
  
Westcon Construction Corp.  
275 Taylor Road  
Newcastle CA 95658-9601

INSURERS AFFORDING COVERAGE

NAIC #

INSURER A: Redwood Fire & Casualty

INSURER B:

INSURER C:

INSURER D:

INSURER E:

## COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS

INSR ADD'L LTR INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
	<b>GENERAL LIABILITY</b> <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC				EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$
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	<b>GARAGE LIABILITY</b> <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN EA ACC \$ AUTO ONLY: AGG \$
	<b>EXCESS/UMBRELLA LIABILITY</b> <input type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE  <input type="checkbox"/> DEDUCTIBLE <input type="checkbox"/> RETENTION \$				EACH OCCURRENCE \$ AGGREGATE \$ \$ \$
A	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below OTHER	W7135644	01/01/07	01/01/08	<input checked="" type="checkbox"/> WC STATU-TORY LIMITS <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1000000 E.L. DISEASE - EA EMPLOYEE \$ 1000000 E.L. DISEASE - POLICY LIMIT \$ 1000000

### DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

10 Day Cancellation Notice applies for non payment of premium and/or non reporting of payroll / "Additional Employers Liability Limit \$1,000,000 (accident-Policy Limit)" / Re: Job #0701; Sump 37 Pump Station Electrical Improvements located @ 4800 Power Inn Rd between 14th Ave & Fruitridge Road, Sacramento

### CERTIFICATE HOLDER

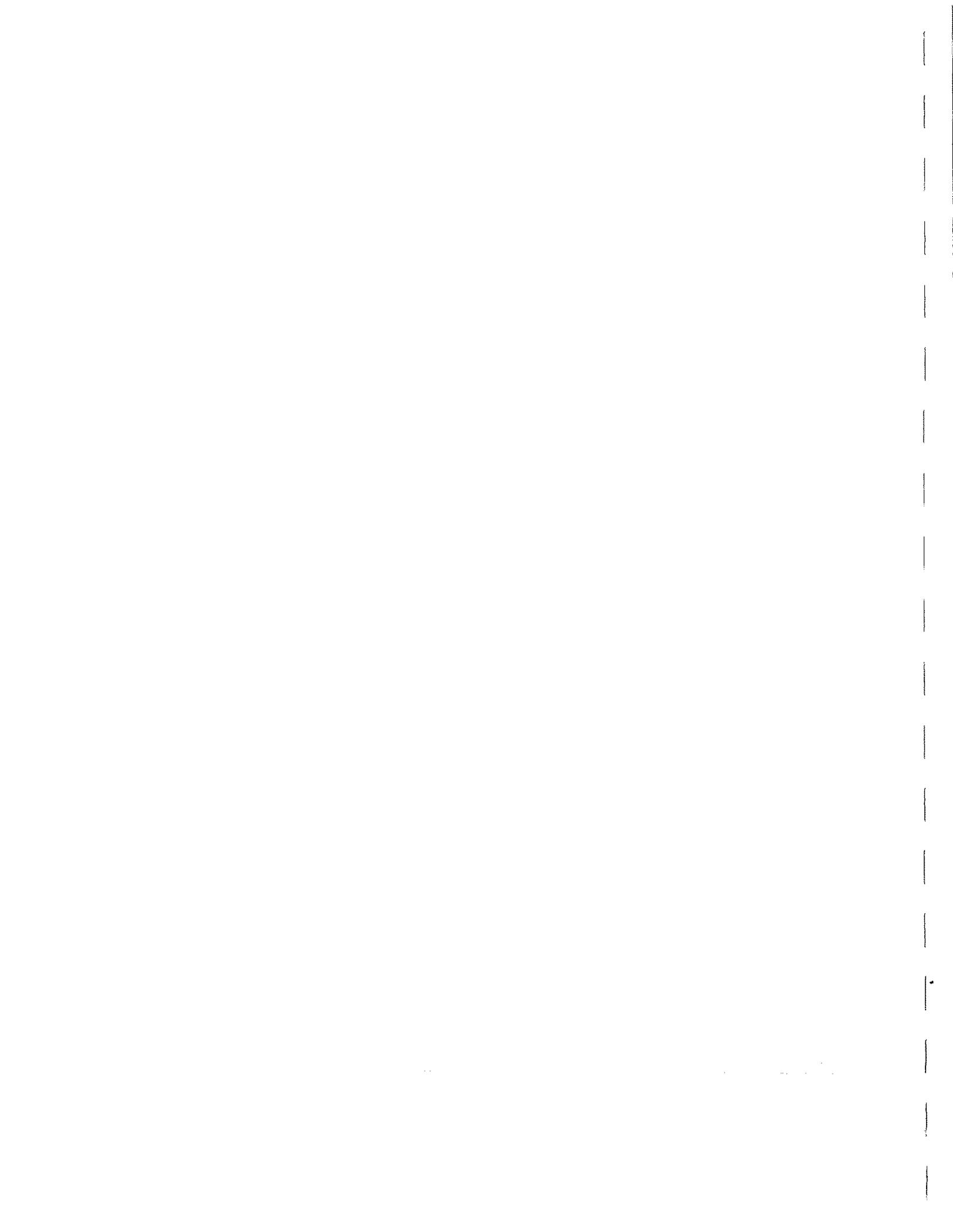
CITYSAC  
City of Sacramento Dept of  
Utilities, Engineering Service  
Attn: Renne Graves  
1395 - 35th Avenue  
Sacramento CA 95822

### CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

*Stephen A. Bender Pres.*



# ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
1/15/2007

PRODUCER  
MACKIE INSURANCE BROKERAGE 916-933-9213  
P O BOX 5454  
EL DORADO HILLS, CALIF 95762-5454  
License # 0C52381

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED  
WESTCON CONSTRUCTION CORP  
275 TAYLOR ROAD  
NEWCASTLE CA 95658-9601

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: LANDMARK AMERICAN INS CO	33138
INSURER B: LINCOLN GENERAL INS CO	33855
INSURER C:	
INSURER D:	
INSURER E:	

## COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	X	<b>GENERAL LIABILITY</b> <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PROJECT <input type="checkbox"/> LOC	LHA129505	3/18/2006	3/18/2007	EACH OCCURRENCE	\$ 1,000,000
						DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 50,000
						MED EXP (Any one person)	\$
						PERSONAL & ADV INJURY	\$ 1,000,000
						GENERAL AGGREGATE	\$ 2,000,000
						PRODUCTS - COMP/OP AGG	\$ 2,000,000
B		<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input checked="" type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS	6310002573 -01	3/18/2006	3/18/2007	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000
						BODILY INJURY (Per person)	\$
						BODILY INJURY (Per accident)	\$
						PROPERTY DAMAGE (Per accident)	\$
		<b>GARAGE LIABILITY</b> <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT	\$
						OTHER THAN EA ACC AGG	\$
		<b>EXCESS/UMBRELLA LIABILITY</b> <input type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE  DEDUCTIBLE RETENTION \$				EACH OCCURRENCE	\$
						AGGREGATE	\$
							\$
							\$
		<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below				WC STATUTORY LIMITS OTH-ER	
						E.L. EACH ACCIDENT	\$
						E.L. DISEASE - EA EMPLOYEE	\$
						E.L. DISEASE - POLICY LIMIT	\$
		OTHER					

### DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

City of Sacramento, it's Officers, Employees and Agents are named additional insured with respects to work performed by the named insured.

Project: Sump 37 Pump Station Electrical Improvements. Location: 4800 Power Inn Rd. Sacramento, Ca.

10 days non-pay, 30 days all other.

### CERTIFICATE HOLDER

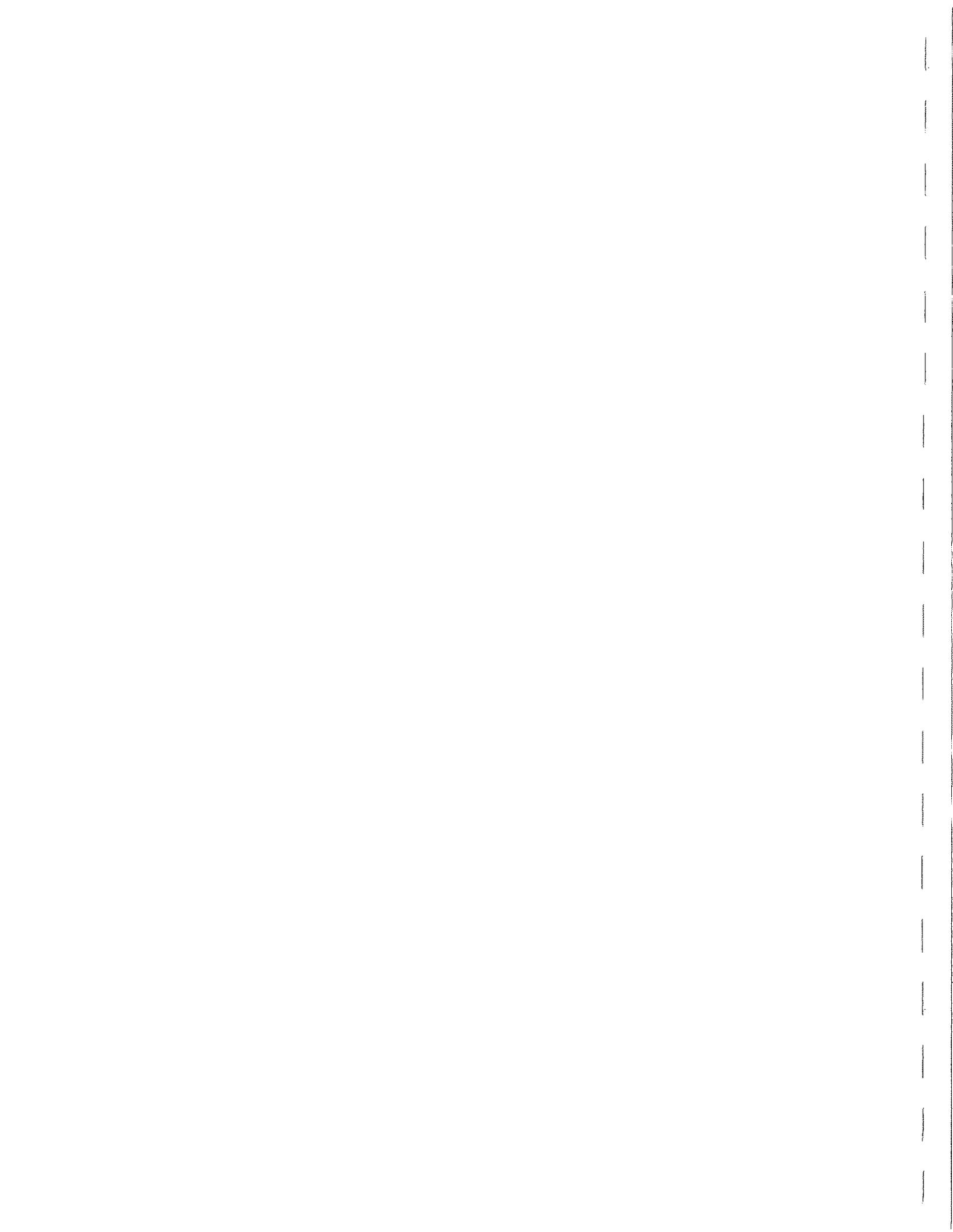
CITY OF SACRAMENTO  
1395 35TH AVENUE  
SACRAMENTO, CA 95822  
DEPT OF UTILITIES, ENGINEERING SERVICES DIVISION  
ATTN: RENEE GRAVES

### CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

*Julie Colgan, Broker*



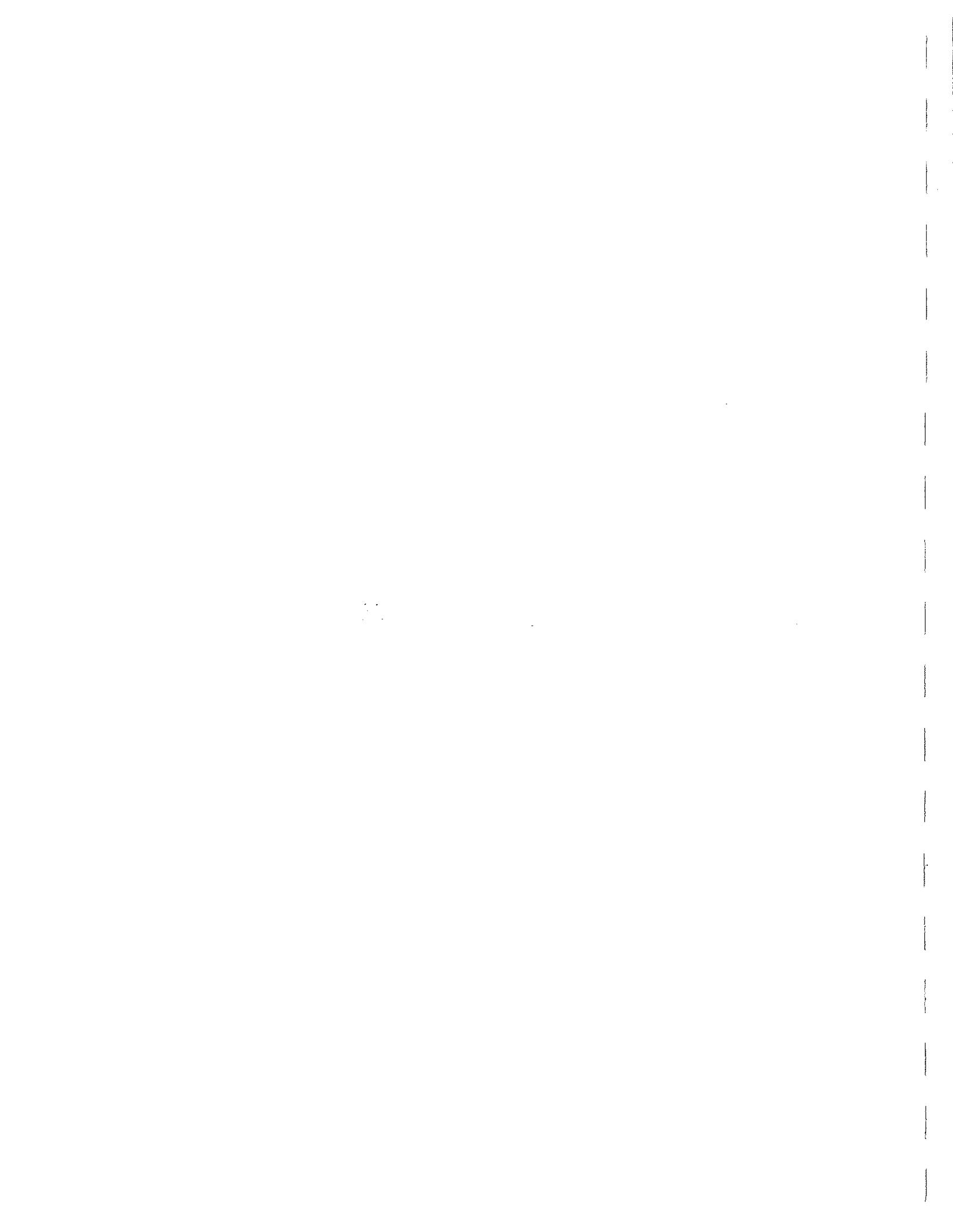
## **IMPORTANT**

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

## **DISCLAIMER**

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.



*This Endorsement Changes The Policy. Please Read It Carefully.*

## **ADDITIONAL INSURED BLANKET - PRIMARY**

---

This endorsement modifies insurance provided under the following:

### **COMMERCIAL GENERAL LIABILITY COVERAGE FORM**

#### **SCHEDULE**

#### **Name of Person or Organization:**

**Any person or organization to whom or to which you are obligated by virtue of a written contract or by the issuance or existence of a permit, provided insurance such as is afforded by this policy.**

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

**SECTION II – WHO IS AN INSURED** is amended to include as an insured the person or organization shown in the SCHEDULE, but only with respect to liability arising out of “your work” for that insured by or for you.

If you are required by a written contract to provide primary insurance, this policy shall be primary as respects your negligence and **SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS, 4. Other Insurance** does not apply, but only with respects to coverage provided by this policy.

This endorsement effective 03/18/2006  
forms part of Policy Number LHA129505  
issued to WESTCON CONSTRUCTION CORP.  
by LANDMARK AMERICAN INSURANCE COMPANY

Endorsement No:

---

RSG 15001 1005  
(CG 2010 1185)

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with its permission

THE UNIVERSITY OF CHICAGO  
DEPARTMENT OF CHEMISTRY  
5780 SOUTH CAMPUS DRIVE  
CHICAGO, ILLINOIS 60637

RECEIVED  
JAN 15 1964  
FROM  
DR. J. H. GOLDSTEIN  
SUBJECT  
POLYMERIZATION OF VINYL MONOMERS  
IN AQUEOUS SOLUTION

RESEARCH REPORT NO. 1000

1964

THE UNIVERSITY OF CHICAGO  
DEPARTMENT OF CHEMISTRY  
5780 SOUTH CAMPUS DRIVE  
CHICAGO, ILLINOIS 60637

RESEARCH REPORT NO. 1000  
POLYMERIZATION OF VINYL MONOMERS  
IN AQUEOUS SOLUTION

THE UNIVERSITY OF CHICAGO  
DEPARTMENT OF CHEMISTRY  
5780 SOUTH CAMPUS DRIVE  
CHICAGO, ILLINOIS 60637

**THIS ENDORSEMENT CHANGES THE POLICY, PLEASE READ IT CAREFULLY**

POLICY NUMBER: # 6310002573 -01

COMMERCIAL AUTO

**ADDITIONAL INSURED - DESIGNATED PERSON OR ORGANIZATION**

This endorsement modifies insurance provided under the following:

**BUSINESS AUTO COVERAGE FORM  
GARAGE COVERAGE FORM  
MOTOR CARRIER COVERAGE FORM  
TRUCKERS COVERAGE FORM**

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below:

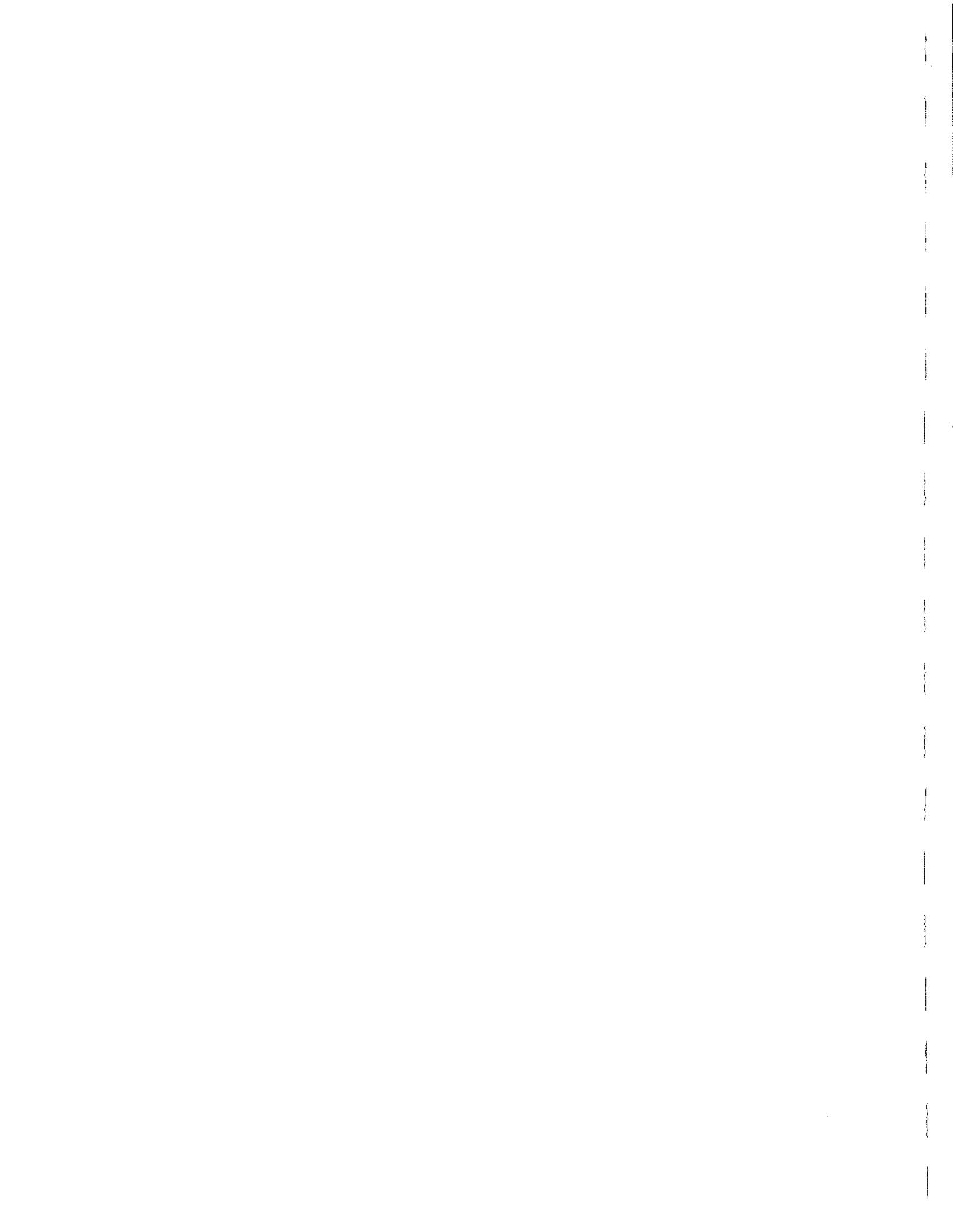
**Named Insured: WESTCON CONSTRUCTION CORPORATION**

**SCHEDULE**

Name of Person or Organization (Additional Insured)	Location of covered Operations:
<b>CITY OF SACRAMENTO</b> Dept of Utilities, Engineering Services Division Its Agents, Officers & Employees. 1395 35 <sup>th</sup> Avenue Sacramento, CA 95822	<b>CALIFORNIA</b>

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

WHO IS AN INSURED (Section II) is amended to include as an insured the person or organization shown in the schedule as an insured but only with respect to liability arising out of your ongoing operations performed for the Additional Insured(s) at the location designated above.



RECEIVED

Bond No. 929416802

Premium: \$4,293.00

\*ISSUED IN DUPLICATE\*

JAN 16 2007

CITY OF SACRAMENTO

WESTCON CONSTRUCTION

PERFORMANCE BOND

Department of Utilities

Page 1 of 1

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

Westcon Construction Corporation  
275 Taylor Road  
Newcastle, CA 95658

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

SUMP 37 PUMP STATION ELECTRICAL IMPROVEMENTS (PN: 8796)

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 bond for the faithful performance of the Contract

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

Western Surety Company, 101 S. Phillips Avenue, Sioux Falls, SD 57117-5077, 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 two hundred ninety-eight thousand, one hundred thirty-six dollars and no cents (\$298,136.00), 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 it 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 February 13, 2007.

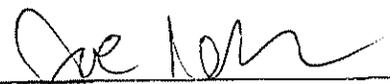
Westcon Construction Corp.  
(Contractor)  (Seal)  
By \_\_\_\_\_

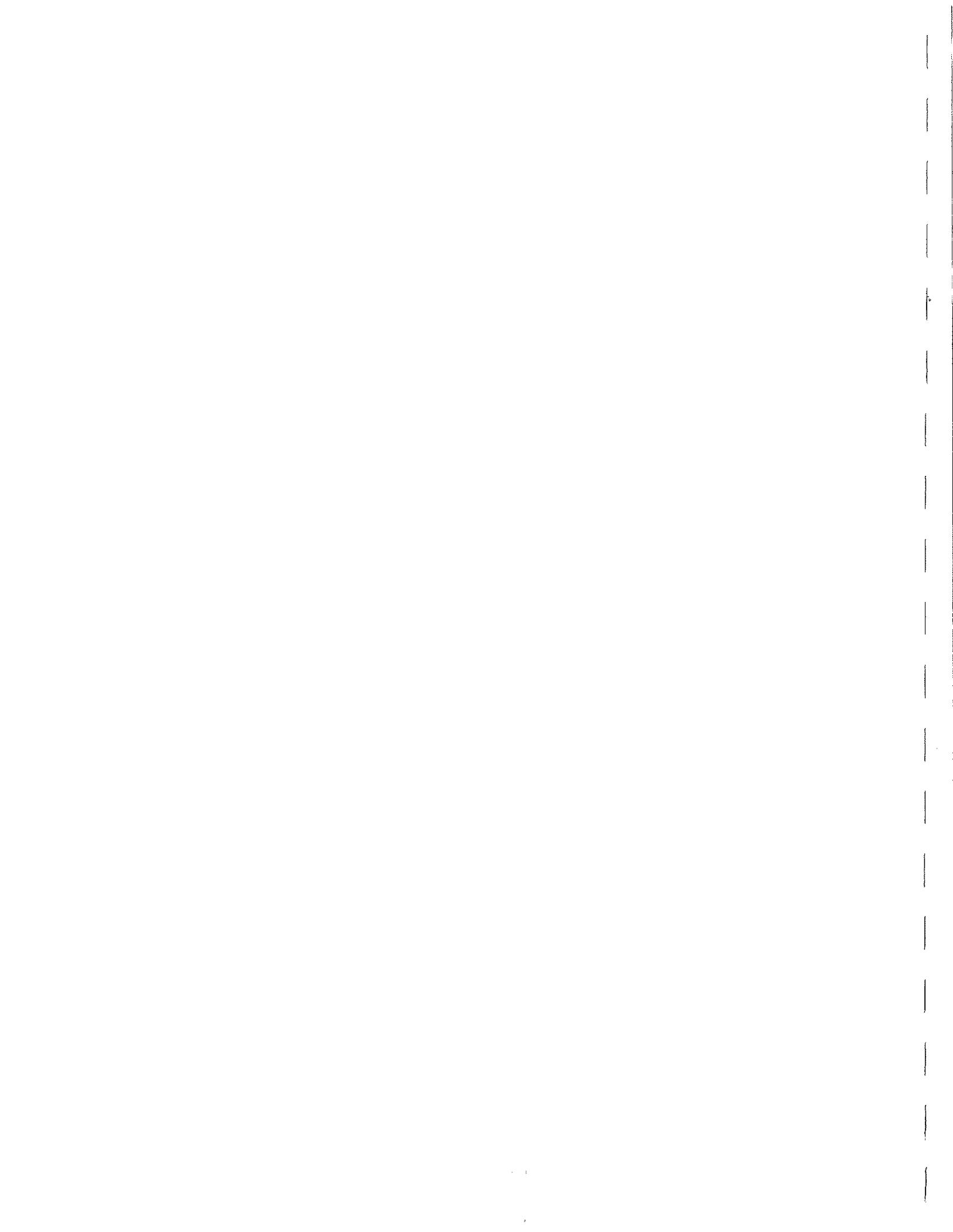
Title Eric Campbell, President

Western Surety Company  
(Surety)  (Seal)  
By Monica A. Hutchison

Title Monica A. Hutchison, Attorney-in-Fact

ORIGINAL APPROVED AS TO FORM:

  
\_\_\_\_\_  
City Attorney



STATE OF California }  
COUNTY OF Sacramento } SS.

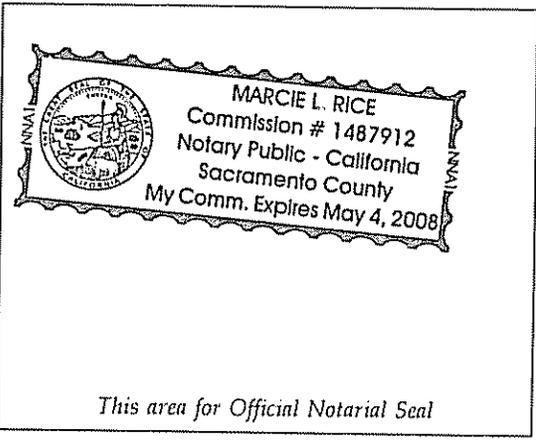
On February 13, 2007, before me, Marcie L. Rice

PERSONALLY APPEARED Monica A. Hutchison

personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature Marcie L. Rice



**OPTIONAL**

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

**CAPACITY CLAIMED BY SIGNER**

- INDIVIDUAL
- CORPORATE OFFICER  
\_\_\_\_\_  
TITLE(S)
- PARTNER(S)       LIMITED  
                                  GENERAL
- ATTORNEY-IN-FACT
- TRUSTEE(S)
- GUARDIAN/CONSERVATOR
- OTHER: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**DESCRIPTION OF ATTACHED DOCUMENT**

\_\_\_\_\_  
TITLE OF TYPE OF DOCUMENT

\_\_\_\_\_  
NUMBER OF PAGES

\_\_\_\_\_  
DATE OF DOCUMENT

\_\_\_\_\_  
SIGNER(S) OTHER THAN NAMED ABOVE

**SIGNER IS REPRESENTING:**

NAME OF PERSON(S) OR ENTITY(IES)  
Western Surety Company  
\_\_\_\_\_



\*ISSUED IN DUPLICATE\*

CITY OF SACRAMENTO  
Department of Utilities

PAYMENT BOND  
Page 1 of 1

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

Westcon Construction Corporation  
275 Taylor Road  
Newcastle, CA 95658

hereinafter called Contractor, an agreement for construction of:

SUMP 37 PUMP STATION ELECTRICAL IMPROVEMENTS (PN: 8796)

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

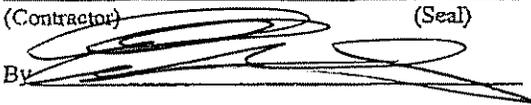
WHEREAS, under the terms of the Contract, Contractor is required to furnish a good and sufficient payment bond to secure the claims to which reference is made in Title 15(commencing with Section 3082) of Part 4 of Division 3 of the California Civil Code.

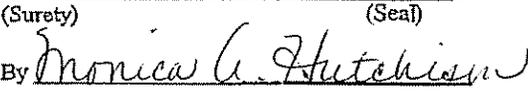
NOW, THEREFORE, we the Contractor and (here insert full name and address of Surety):

Western Surety Company, 101 S. Phillips Avenue, Sioux Falls, SD 57117-5077, 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 **two hundred ninety-eight thousand, one hundred thirty-six dollars and no cents (\$298,136.00)**, 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 judgement 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.

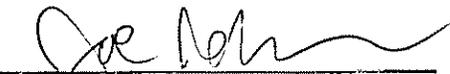
IN WITNESS WHEREOF, this instrument has been duly executed by authorized representatives of the Contractor and Surety. SIGNED AND SEALED on February 13, 2007.

Westcon Construction Corp.  
(Contractor) \_\_\_\_\_ (Seal)  
By: 

Western Surety Company  
(Surety) \_\_\_\_\_ (Seal)  
By: 

Title: Eric Campbell, President

Title: Monica A. Hutchison, Attorney-in-Fact

ORIGINAL APPROVED AS TO FORM:  
  
City Attorney



STATE OF California }  
COUNTY OF Sacramento } SS.

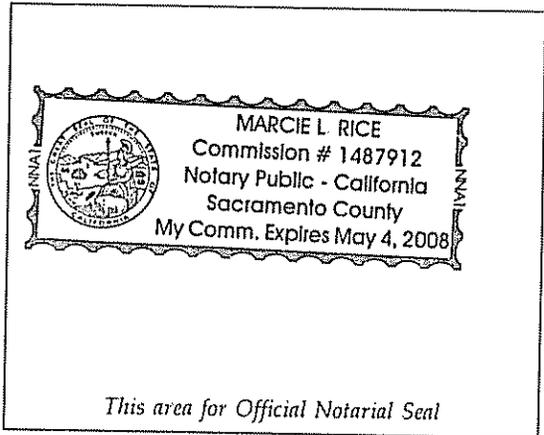
On February 13, 2007, before me, Marcie L. Rice

PERSONALLY APPEARED Monica A. Hutchison

personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature Marcie L. Rice



**OPTIONAL**

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

**CAPACITY CLAIMED BY SIGNER**

- INDIVIDUAL
- CORPORATE OFFICER  
\_\_\_\_\_  
TITLE(S)
- PARTNER(S)       LIMITED
- GENERAL
- ATTORNEY-IN-FACT
- TRUSTEE(S)
- GUARDIAN/CONSERVATOR
- OTHER: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**DESCRIPTION OF ATTACHED DOCUMENT**

\_\_\_\_\_  
TITLE OF TYPE OF DOCUMENT

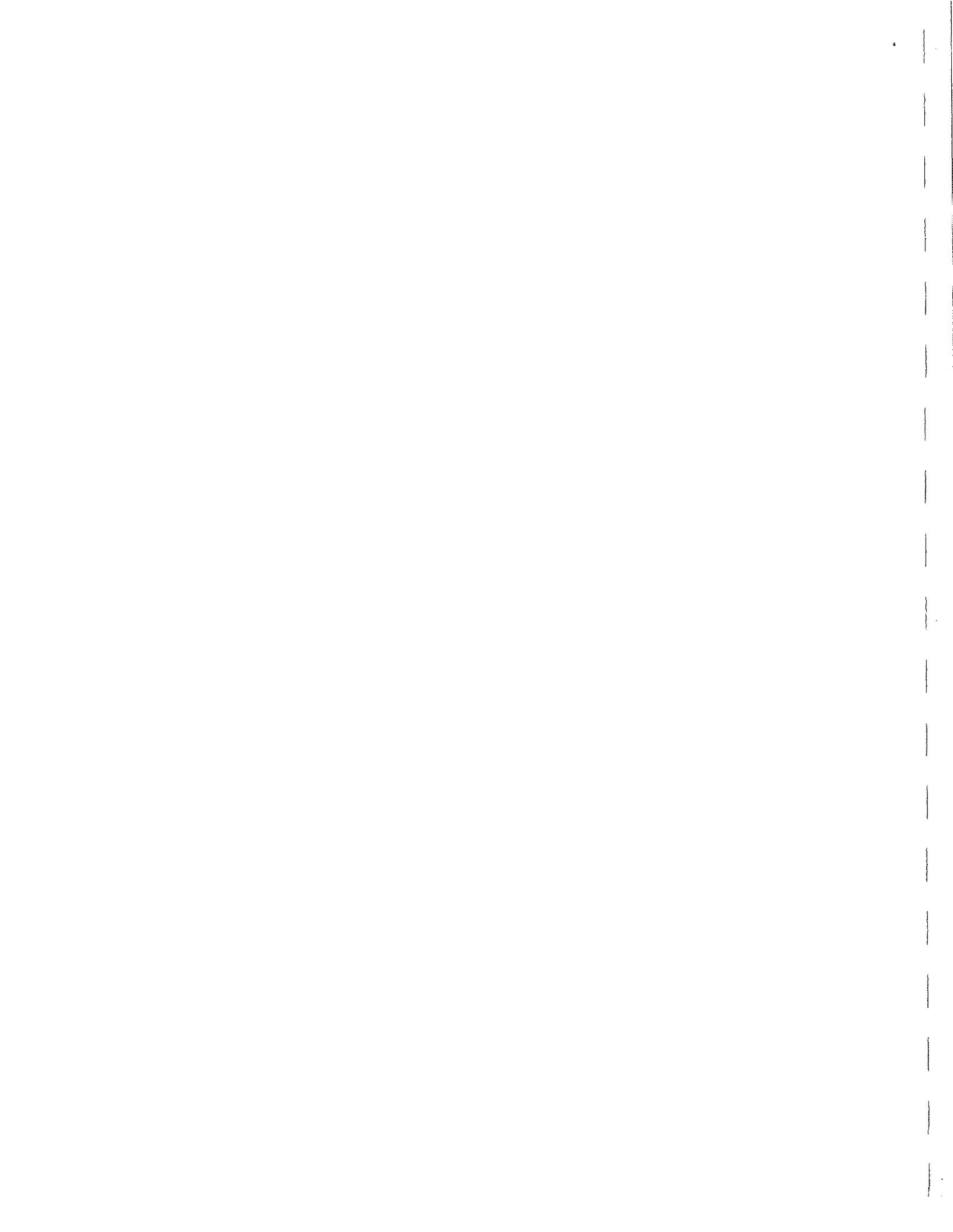
\_\_\_\_\_  
NUMBER OF PAGES

\_\_\_\_\_  
DATE OF DOCUMENT

\_\_\_\_\_  
SIGNER(S) OTHER THAN NAMED ABOVE

**SIGNER IS REPRESENTING:**

NAME OF PERSON(S) OR ENTITY(IES)  
Western Surety Company  
\_\_\_\_\_  
\_\_\_\_\_



# Western Surety Company

## POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That WESTERN SURETY COMPANY, a South Dakota corporation, is a duly organized and existing corporation having its principal office in the City of Sioux Falls, and State of South Dakota. and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

**Stephen D Bender, David K Johnson, Monica A Hutchison, Edward Johnson, Individually**

of Sacramento, CA, its true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on its behalf bonds, undertakings and other obligatory instruments of similar nature

**- In Unlimited Amounts -**

and to bind it thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of the corporation and all the acts of said Attorney, pursuant to the authority hereby given, are hereby ratified and confirmed

This Power of Attorney is made and executed pursuant to and by authority of the By-Law printed on the reverse hereof, duly adopted, as indicated, by the shareholders of the corporation

In Witness Whereof, WESTERN SURETY COMPANY has caused these presents to be signed by its Senior Vice President and its corporate seal to be hereto affixed on this 3rd day of November, 2006



WESTERN SURETY COMPANY

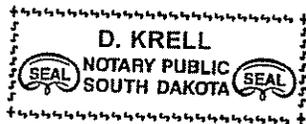
Paul T. Bruflat, Senior Vice President

State of South Dakota }  
County of Minnehaha } ss

On this 3rd day of November, 2006, before me personally came Paul T Bruflat, to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is the Senior Vice President of WESTERN SURETY COMPANY described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said corporation and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporation

My commission expires

November 30, 2012



D. Krell, Notary Public

CERTIFICATE

I, L. Nelson, Assistant Secretary of WESTERN SURETY COMPANY do hereby certify that the Power of Attorney hereinabove set forth is still in force, and further certify that the By-Law of the corporation printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said corporation this 13th day of February 2007



WESTERN SURETY COMPANY

L. Nelson, Assistant Secretary

**Authorizing By-Law**

**ADOPTED BY THE SHAREHOLDERS OF WESTERN SURETY COMPANY**

This Power of Attorney is made and executed pursuant to and by authority of the following By-Law duly adopted by the shareholders of the Company.

Section 7. All bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, and Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile.

# 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.

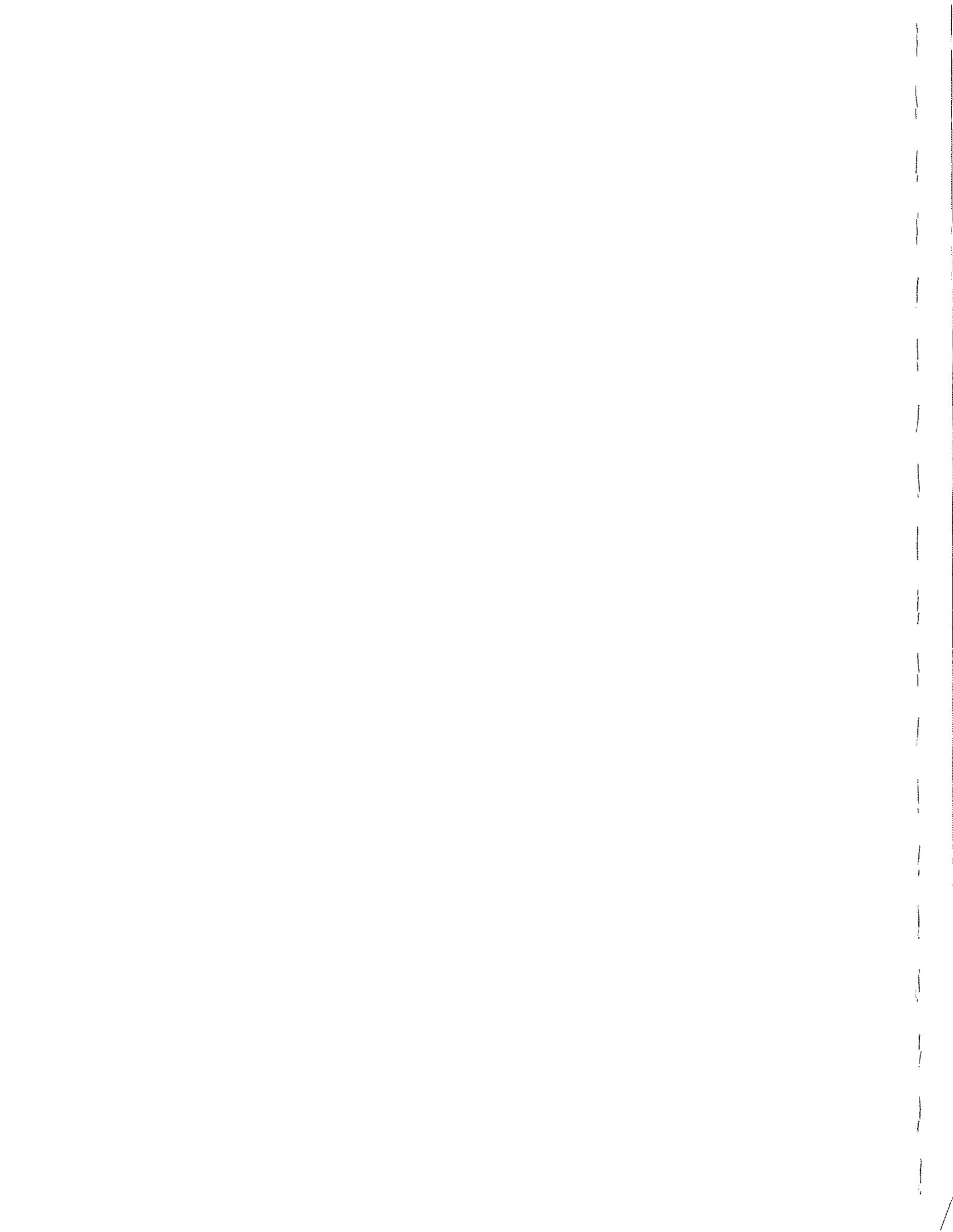
(e) Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement shall be marked or obliterated to prevent disclosure of an individual's 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 joint 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).

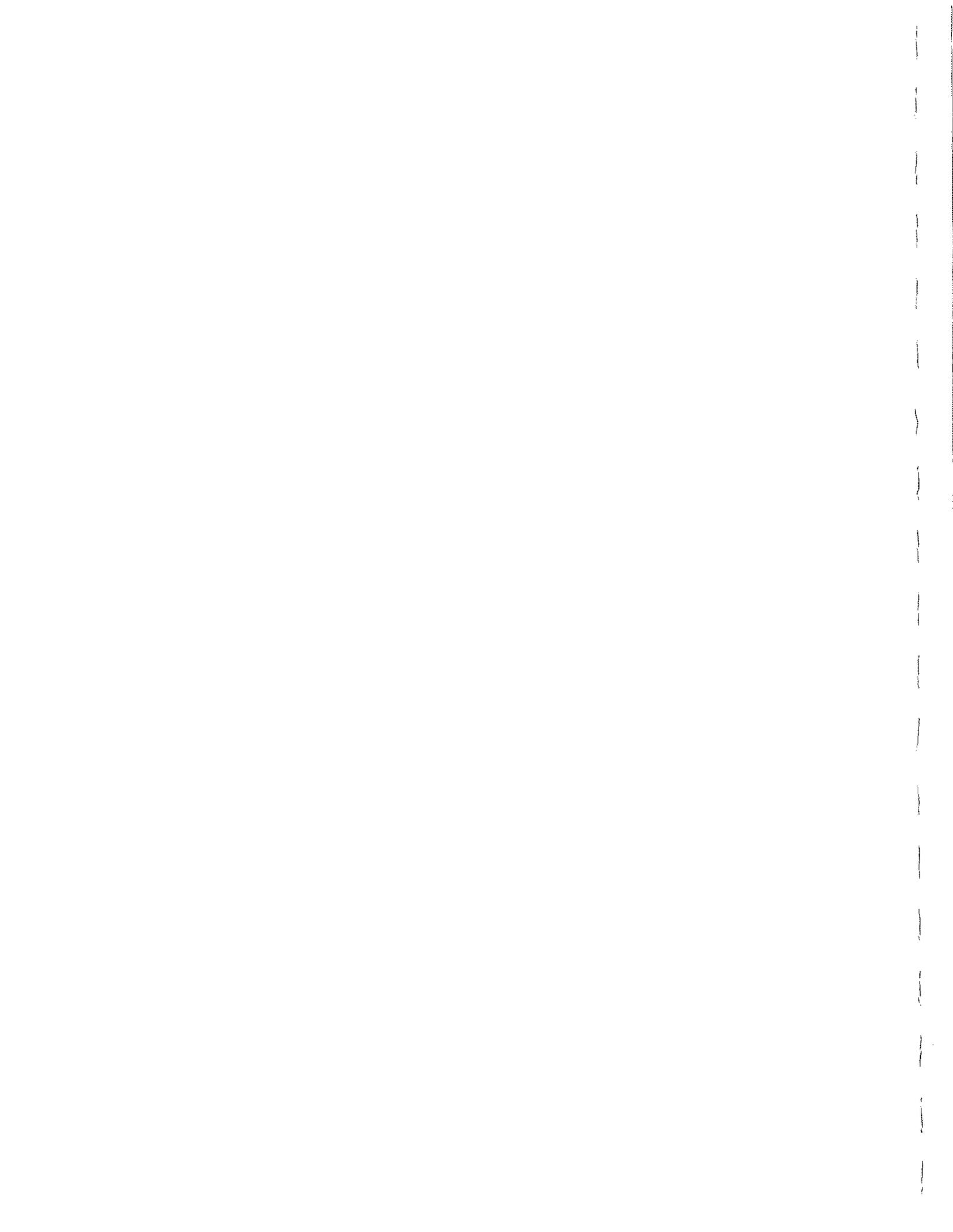
(p) All decisions of an apprenticeship program under this section are subject to Section 3081.

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 request 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.

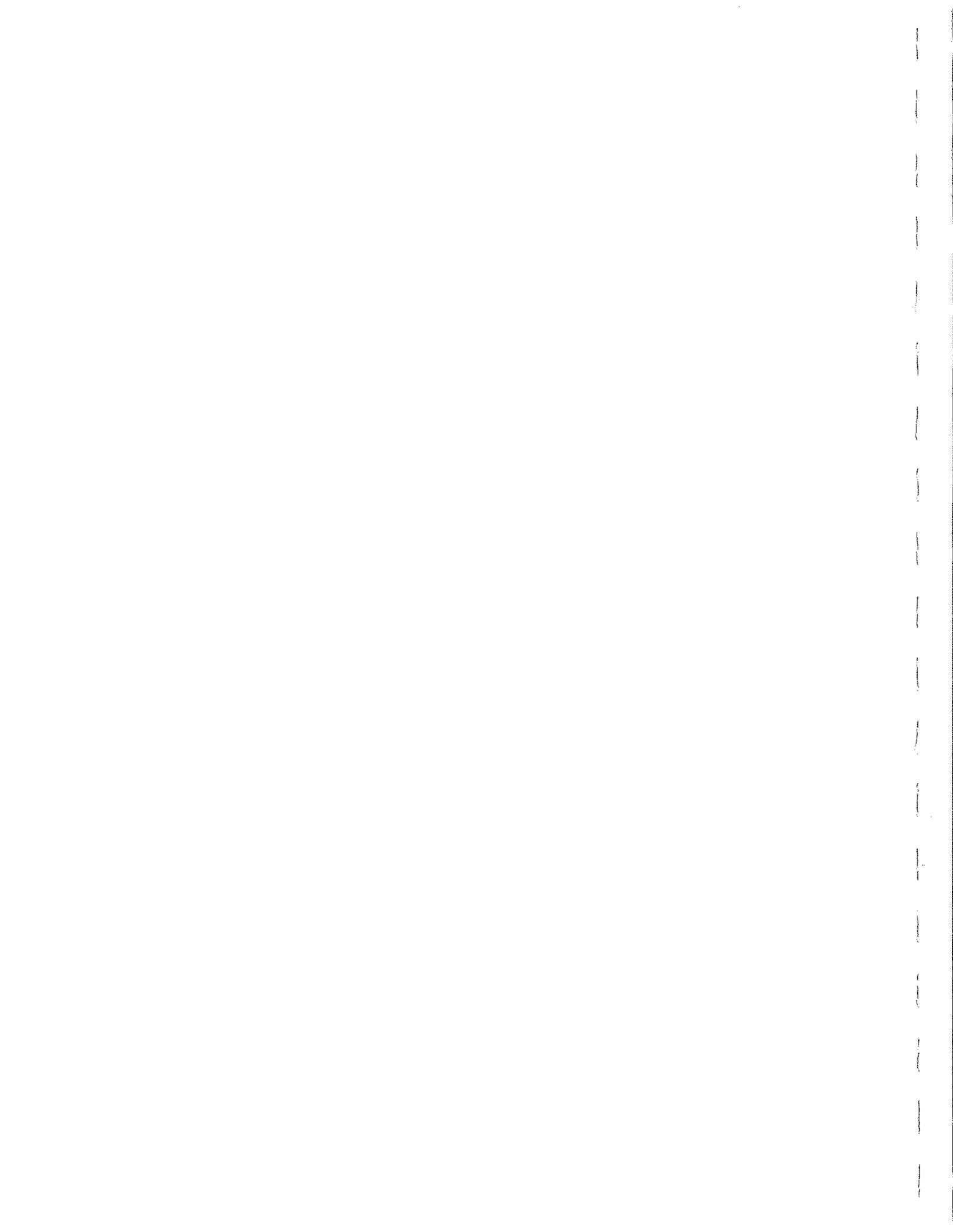
(e) Any funds withheld by the awarding body pursuant to this section shall be deposited in the General Fund if the awarding body is a state entity, or in the equivalent fund of an awarding body if the awarding body is an entity other than the state.

(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/](http://www.dir.ca.gov/).**

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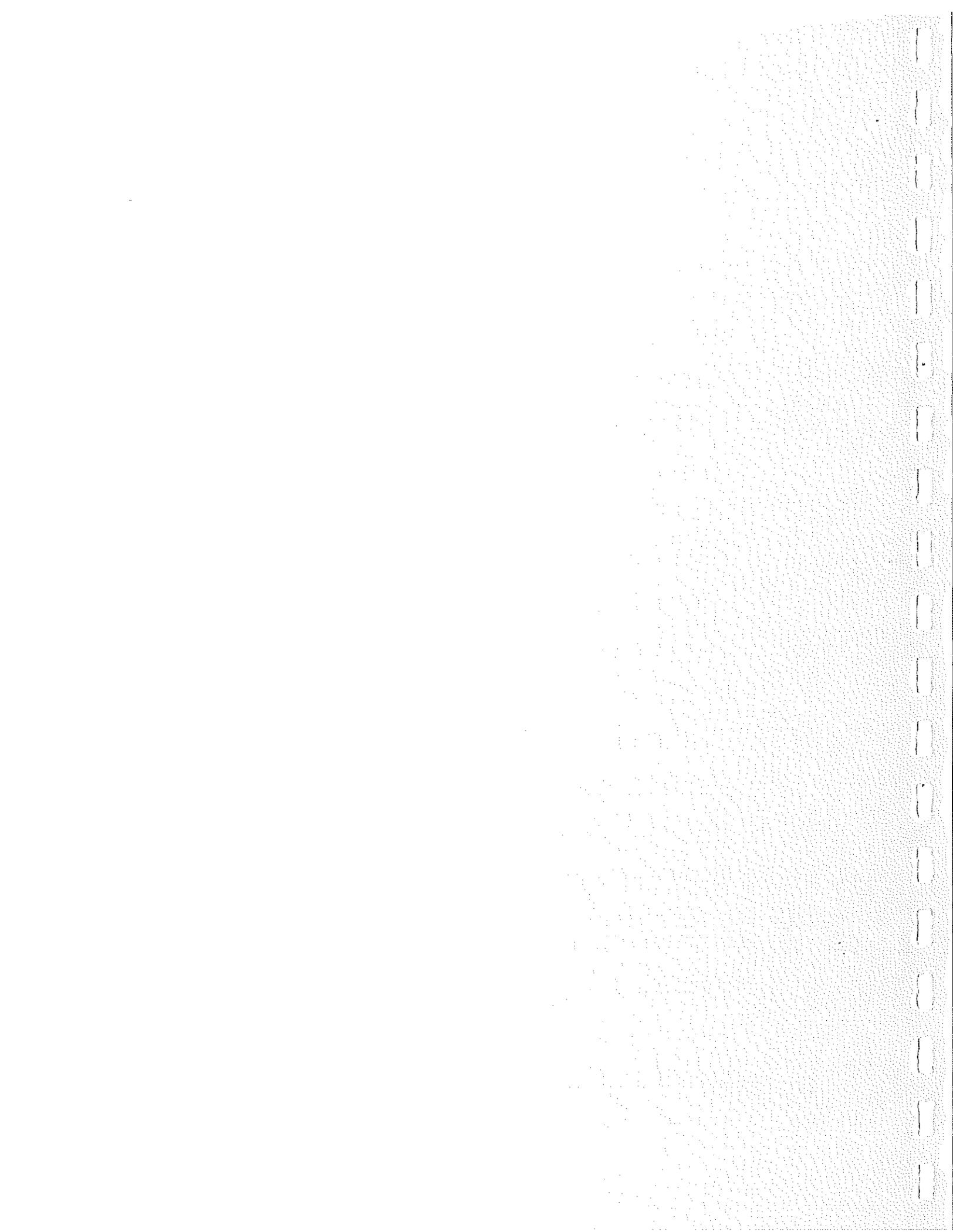
SPECIAL PROVISIONS



**SUMP 37 PUMP STATION  
ELECTRICAL IMPROVEMENTS**

**TABLE OF CONTENTS**

<b>SECTION</b>	<b>TITLE</b>	<b>PAGES</b>
<b><u>DIVISION 1 - GENERAL REQUIREMENTS</u></b>		
01105	GENERAL INFORMATION AND REQUIREMENTS .....	01105-1
01110	SUMMARY OF WORK .....	01110-1
01330	SUBMITTALS .....	01330-1
<b><u>DIVISION 2 - SITE CONSTRUCTION</u></b>		
02220	DEMOLITION AND SALVAGE OF MATERIALS .....	02220-1
02315	EARTH WORK .....	02315-1
02820	CHAIN LINK FENCE AND GATES .....	02820-1
<b><u>DIVISION 3 - CONCRETE</u></b>		
03300	CAST-IN-PLACE CONCRETE .....	03300-1
<b><u>DIVISION 4 - MASONRY</u></b>		
04220	CONCRETE MASONRY UNITS .....	04220-1
<b><u>DIVISION 7 - THERMAL AND MOISTURE PROTECTION</u></b>		
07610	SHEET METAL ROOFING .....	07610-1
<b><u>DIVISION 8 - DOOR AND WINDOWS</u></b>		
08100	STEEL DOORS AND FRAMES .....	08100-1
08710	DOOR AND FINISH HARDWARE .....	08710-1
<b><u>DIVISION 9 - FINISHES</u></b>		
09900	PAINTING .....	09900-1
<b><u>DIVISION 11 - EQUIPMENT</u></b>		
11333	TRASH BAR SCREEN HOIST .....	11333-1



**DIVISION 13 - SPECIAL CONSTRUCTION**

13500 ELECTRICAL CONTROL BUILDING ..... 13500-1

**DIVISION 16 - ELECTRICAL**

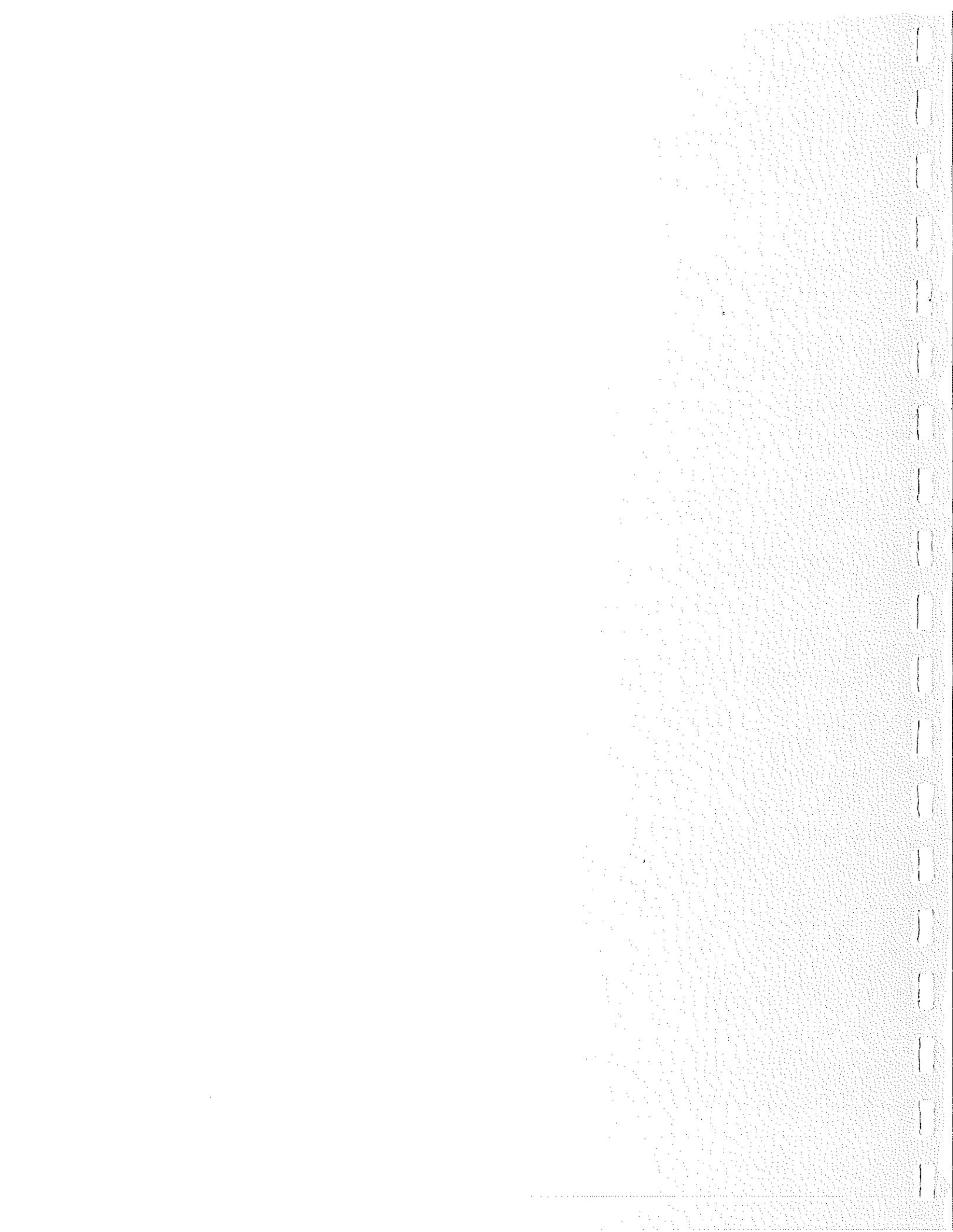
16010 ELECTRICAL WORK ..... 16010-1  
16013 SHORT CIRCUIT & PROTECTIVE DEVICE STUDY AND COORDINATION  
..... 16013-1  
16110 RACEWAY SYSTEMS ..... 16110-1  
16120 LOW VOLTAGE WIRE AND CABLE ..... 16120-1  
16430 LOW VOLTAGE SWITCHBOARD ..... 16430-1  
16480 LOW VOLTAGE MOTOR CONTROL CENTER ..... 16480-1  
16482 SOFT STARTER ..... 16482-1  
16530 LIGHTING ..... 16530-1  
16921 RTU SYSTEM ..... 16921-1  
16922 MISCELLANEOUS EQUIPMENT ..... 16922-1  
16950 OPERATIONAL TESTING ..... 16950-1

**APPENDIX A**

ENVIRONMENTAL NOTICE OF EXEMPTION

**APPENDIX B**

SMUD ELECTRICAL SERVICE COMMITMENT



## 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 1989 (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 1-34, page 1(4).
- 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. All references in Section 8 of the Standard Specifications to actions by the "City Council" shall be amended to read action by the "City".
- B. Wherever reference is made to City Manager, Director of Utilities, Engineer, Finance Director, Inspector, or other specifically identified individuals, it shall include their designated representative.

- C. In Section 2-9 SUBCONTRACTORS, delete the statement reading "Contractor shall perform with his own organization and with the assistance of workers under his immediate superintendence, work of a value not less than fifty percent (50%) of the value of all work in the contract."

#### 1.04 EXCAVATIONS AND TRENCHING

- A. Excavations or trenches crossing roadways, walks, or traffic ways shall be provided with suitable traffic bearing steel plate or wood planking temporary covers. Contractor shall verify location of all underground facilities prior to excavating and shall perform the work to avoid damage to existing underground facilities. Contractor shall repair at no additional cost to the City and to prior condition, any existing utility damaged due to work of this contract.
- B. If unusual amounts of bone, stone or artifacts are uncovered, work within 50 meters of the area shall cease immediately and a qualified archaeologist shall be consulted to develop, if necessary, mitigation measure to reduce any archaeologist impact to a less than significant effect before construction resumes in the area.

#### 1.05 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.

#### 1.06 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.

#### 1.07 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: **4 sets**
2. Specifications: **4 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.

#### **1.08 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.

#### **1.09 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.

#### **1.10 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.

#### **1.11 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.

## **PART 3 - EXECUTION**

### **3.01 PRE-JOB CONFERENCE**

#### **A. Pre-Job Conference**

1. 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.**

### **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 PERMITS**

- A. ~~The City has obtained a permit for this project from the neighbor for entering and construction. A copy is included in the appendix, hereto. The Contractor shall become familiar with this permit and shall conform with all the requirements thereof.~~
- B. Contractor may want to use private property beyond that already owned by the City for storage and/or access. Contractor shall be responsible to the individual owner(s) to obtain and pay for any private property easements and/or right of entry permit, and for repair of any associated damage.

### **3.05 TRENCH SAFETY**

- A. Contractor's work shall conform to the provisions of Section 6705 of the Labor Code of the State of California.
- B. Excavation for any trench five (5) feet, or more, in depth shall not begin until the City has received the Contractor's detailed plan for worker protection from the hazards of caving ground in and around trenches. Such plan shall be submitted at least five (5) days before the Contractor intends to begin trench excavation. Show details of the design of shoring, bracing, sloping, or other provisions to be made for worker protection. No such plan shall allow the use of shoring, sloping, or a protective system less effective than that required by the Construction Safety Orders of the Division of Industrial Safety. If such plan varies from the shoring system standards established by the Construction Safety Orders, the plan shall be prepared and signed by an engineer who is registered as a Civil or Structural Engineer in the State of California.
- C. In addition, the Contractor shall obtain, pay for, and comply with all provisions of the permit required by Section 6500 of the California Occupational Safety and Health Act of 1973.

### 3.06 PUBLIC SAFETY AND CONVENIENCE AND MAINTENANCE OF TRAFFIC

- A. Contractor's attention is directed to Sections 6-6, 6-7, 6-8, and 6-9 of the CSSS.
- B. Contractor shall be responsible for traffic control and public safety at all times. Vehicle and pedestrian traffic must be allowed to traverse all streets and alleys.
- C. Contractor shall furnish, install, and maintain temporary construction warning signs, flaggers, barricades, and other devices necessary to safeguard the general public and the work, and to provide for the safe and proper routing of all vehicular and pedestrian traffic within, and through, the limits of the project during the performance of the work.
- D. Maintenance of traffic shall apply continuously, and shall not be limited to normal working hours. The use of flaggers, barricades, and construction warning signs shall comply with the current edition of "*Work Area and Traffic Control Handbook*" (*WATCH*), available for review at the City of Sacramento, Public Works Agency, Traffic Engineering Division, located at 927 10<sup>th</sup> Street in Sacramento.
- E. All lanes of traffic on adjacent street(s) shall remain open at all times during the course of construction unless otherwise approved in writing by the Engineer.
- F. Contractor shall be required to establish traffic scheduling and control measures acceptable to the Engineer prior to starting any work. The Contractor shall submit to the Engineer for review and approval a plan showing proposed traffic control measures and/or detours for vehicles and pedestrians affected by the construction work. This plan shall be submitted a minimum of ten (10) working days prior to the scheduled commencement of any work by the Contractor. **Contractor will not be allowed to begin work until an approved plan is on file with the Engineer.** All advance warning and traffic delineation shall conform to the latest edition of "Work Area and Traffic Control Handbook", (*WATCH*). The approved traffic control plan shall be made available to the Engineer on site at all times.
- G. Construction operations shall be conducted in such a manner as to cause as little inconvenience as possible to abutting property owners.

### 3.07 PRE-CONSTRUCTION PHOTOGRAPHS

- A. Pre-construction photographs shall be provided and shall conform to Section 11 of the Standard Specifications.

### 3.08 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.

### **3.09 MAINTAINING EXISTING FACILITY**

- A. Contractor shall be responsible for maintaining the existing facility until new improvements are complete and functioning. No additional compensation will be paid to the Contractor for said maintenance. Include the cost of this maintenance in the items of the bid as deemed appropriate.
- B. Contractor shall call City Utilities Operation Center at (916)808-5461 to report any pumping capacity change of pumping mode change during construction.
- C. Contractor shall allow City O&M access to the facility 24 hours a day, 7 days a week.
- D. The City will provide one (1) set of combination padlocks with an agreed upon combination. Contractor shall be responsible for all subsequent replacements.

### **3.10 PROJECT SIGN**

- A. Prior to beginning any onsite work, the contractor shall install a total of 1 project signs. The sign shall be supplied by the City and is approximately thirty (30) inches by fifty-four (54) inches. Location and height of sign installation shall be as directed by the Engineer. In general, the sign shall be installed a minimum of seven (7) feet and maximum of ten (10) feet above surrounding grade. If acceptable to the Engineer an existing sign post may be used, otherwise, the Contractor shall be required to install a new post for each sign. Sign shall be maintained in a good condition throughout construction, shall not be bent and shall remain legible to traffic. Any damage shall be repaired by the Contractor. The sign and post installed by the contractor shall be removed at the end of the project and the sign returned to the City.

### **3.11 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.

### **3.12 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. Sump 37 Pump Station Electrical Improvements project consists of demolishing the existing electrical control building, construct a new electrical control building, upgrade the electrical and control 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. The Sump is a drainage pumping station 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. Facility Construction: Construction of a CMU electrical control building, and other site work.
  5. Electrical and Plant Controls: Installation of lighting, electrical conduit and wiring, controls.
  6. Storage of Materials and Equipment: Provide necessary equipment to unload, and temporarily store materials and equipment, in accordance with the manufacturers requirements.
  7. Miscellaneous: Cleaning of all debris and sediments.
  8. Maintain Drainage: Maintaining, and furnishing if necessary, pumping facilities necessary to pump water from the site, the excavation, trenches or elsewhere.

9. Dewatering: Install, maintain, and operate groundwater wells for dewatering operations, when required.
10. Construct conduits and wiring necessary to implement the electrical equipment per plans and specifications.
11. Supply temporary facilities as necessary.
12. Furnish, install, maintain, and remove when no longer required appropriate best available technologies for preventing storm water pollution.
13. Test and make site ready for operation.
14. Coordinate work activities with appropriate jurisdictional agencies.
15. 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.
- C. The Contractor shall be reimbursed for all work in the Contract Documents, in accordance with the bid Proposal prepared by the Contractor. The Contractor may be required to perform OVEREXCAVATION of the foundations in accordance with Section 02315 - EXCAVATION AND BACKFILL. The volume of required OVEREXCAVATION will be determined during construction. The Contractor will be reimbursed for the overexcavation on a unit price basis, based on the price in the Bid Proposal.

#### **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 therefor.

- 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 Contractor's 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 Contractor's 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 installing the new switchboard and motor control centers.
3. The Contractor shall maintain electrical power, full control and telemetry capabilities to the facility throughout construction to pre-construction level including capable of running all the existing pumps and trash racks.

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 Contractors 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 Contractors operation, until such time that repairs are made by the Contractor to the Engineers 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.

### 3.11 EROSION, SEDIMENT, AND POLLUTION CONTROL

#### A. General

Contractor shall be responsible for controlling erosion and sedimentation within the limits of the project at all times during the course of construction including evenings, weekends and holidays in addition to normal working days. The Contractor shall prevent sediment and construction debris from entering the City of Sacramento storm drain system.

At a minimum, the Contractor shall provide protection around any drain inlets located within the project area and any cross streets which receive runoff from the limits of the construction zone. The Contractor shall also exercise care during trench excavation so that excessive sediments are not tracked into the gutters and ultimately, the storm drain. Upon completion of the project, all areas within the limits of the project shall be cleaned and free of sediments.

The Contractor will not be allowed to clean the sediments from the street by means of using a water truck to spray the streets down into the storm drain via curb and gutter. The streets will be allowed to be sprayed by a water truck only when sediment barriers have been placed at drainage inlets to catch all sediments from the streets. Refer to the City of Sacramento's Administrative and Technical Procedures Manual for Grading, Erosion and Sediment Control dated January 1994, for information relating to sediment control measures and prevention. This Manual is available from the City of Sacramento, Department of Utilities, 1395 35<sup>th</sup> Avenue, Sacramento, CA 95822.

The Contractor shall prepare and submit to the Engineer for review and approval a drawing showing the placement of sediment control barriers, drop inlet protection, housekeeping practices, CIPP water catchments, and any other measures proposed to be used to prevent sediment and other sources of pollution from entering the City storm drainage system. The erosion, sediment and pollution control plan shall be submitted a minimum of ten (10) calendar days prior to start of the work. The Contractor will not be allowed to begin work until an approved erosion, sediment and pollution control plan is on file with the Engineer. (Revised 5\30\96)

#### B. 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 35<sup>th</sup> Avenue, Sacramento, CA 95822. (Revised 5\30\96)

C. **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.

D. **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, **Four (4) 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 and electronic copy of all shop drawings. The electronic copies shall be in Adobe format (Portable Document Format) and shall be provided on a CD. Contractor shall use latest version of Adobe. AutoCAD files of the shop drawings shall also be provided.**

## 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 Controls  
Project: Sump 37 Electrical Improvements  
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 xerox 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.

## **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**

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## SECTION 02220

### DEMOLITION AND SALVAGE OF MATERIALS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: The work includes demolition, removal, and salvage where specified of all items indicated on the drawings, or specified herein.
- B. All materials resulting from demolition work, except as otherwise indicated on the drawings or specified herein for re-use by the Contractor or re-use by the City shall become the property of the Contractor.

##### 1.02 AVAILABILITY OF WORK AREAS

- A. Subject to all related Contract stipulations, the contract area will be released to the Contractor, at one time, under the Notice-to-Proceed. Unless otherwise directed, the Contractor shall maintain access to and shall not begin demolition of the existing sump electrical facilities until authorized in writing by the Engineer.

##### 1.03 SUBMITTALS

- A. The procedures proposed for the accomplishment of demolition and storage of salvaged materials shall be submitted for approval. The procedures shall provide for safe performance of work, careful removal and disposition of materials specified to be stored, protection of property which is to remain undisturbed, and coordination with other work in progress. The procedures shall include a detailed description of the methods and equipment to be reused for each operation, and the sequence of operations.
- B. Submit schedule for demolition activities.

##### 1.04 SAFETY PROCEDURES AND WORKER PROTECTION

- A. Take all precautions and measures required to protect employees, related trade employees, City employees, residents, and the general public from exposure to energized parts.
  - 1. All personnel authorized for entry into work areas shall be instructed in the proper procedures for high voltage work. In instances where off-line equipment may require removal from high voltage installations, personnel will be instructed and properly supervised for working in the vicinity of high-voltage equipment.

2. All electrical equipment upon which activities are to be performed shall be de-energized and permanently disconnected from any power source prior to commencing any work.
- B. Erect barriers, fences, guard rails, enclosures, chutes, and shoring to protect personnel, structures, and utilities remaining intact. Protect trees and plants from damage.

## **PART 2 - PRODUCTS**

(NOT USED)

## **PART 3 - EXECUTION**

### **3.01 INSPECTION**

- A. Verify that areas to be demolished are unoccupied and no longer are in use.
- B. Do not commence work until conditions are acceptable to the City.

### **3.02 PREPARATION**

- A. Contractor shall hold a field meeting at the existing sump site prior to beginning demolition work. Meeting shall cover the Contractors procedures for removal and transportation of salvaged items. Attendees shall include as a minimum: Tim Giffin (916) 808-7997, Bob Lobdill (916) 808-5616, and Clark Munkers (916) 808-5653 of the Department of Utilities, Plant Services Division. Contractor shall give attendees forty-eight (48) hours notice in advance of said field meeting.

**B. Remove items scheduled to be salvaged for City, and place in designated storage area.**

### **3.03 DEMOLITION**

- A. Dismantle and put the existing steel building on a pallet and deliver the building, the switchboard, motor control centers and all other electrical and control components to 1391 35<sup>th</sup> Avenue, Sacramento, CA
- B. Salvage electrical service panel.
- C. Make neat saw cuts a minimum of one inch (1") in depth, around perimeter of Portland cement concrete or asphaltic concrete to be removed, where remaining concrete surface is to be incorporated into new work. Where new asphalt paving is to match existing asphalt paving, sawcut existing pavement to a neat straight line and apply a tack coat of asphaltic emulsion to the surface of the existing pavement prior to placing new asphalt paving.

- D. Remove existing exposed conduit and electrical wiring and conduit to be abandoned to structural surface, cut flush, and finish to match existing surfaces.

#### 3.04 SALVAGE

- A. The Contractor shall deliver any item to be salvaged to the City's Combined Sewage Treatment Plant, located at 1391 35th Avenue. The Contractor shall contact Tim Giffin or Clark Munkers at (916) 808-7997 to coordinate delivery of these items. All removed conduit and conductors shall become property of the Contractor, unless otherwise directed by the Engineer.

#### 3.05 CLEAN-UP

- A. Debris and Rubbish: Debris and rubbish shall be removed from the limits of work daily to a location approved in advance by the Engineer. Do not allow to accumulate on-site.
- B. Debris Control: Debris shall be removed and transported in a manner as to prevent spillage on streets or adjacent areas. Local regulations regarding hauling and disposal apply.

**END OF SECTION**



## SECTION 02315

### EARTHWORK

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: Contractor shall furnish all labor, materials, equipment and incidentals necessary to perform all excavation, backfill, grading, and compaction, regardless of type or class, that is required to complete the work shown on the drawings and specified herein. The work shall include, but not necessarily be limited to: clearing; excavation for structures, footings, fence posts, hand holes, pull boxes, duct, conduit, pipe, and paving; backfilling; filling; embankment construction; grading; disposal of surplus and unsuitable materials; and all related work such as dust control, sheeting, shoring, bracing, and control of water.

##### 1.02 DEFINITIONS

- A. Relative compaction: The measured field dry density divided by the maximum dry density determined in accordance with ASTM D1557, expressed as a percentage.
- B. Prepared Subgrade: Any excavated or graded surface formed as the result of work by the Contractor upon which any fill, aggregate base, sand, gravel, structure, or other material is to be placed.

##### 1.03 REFERENCE 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. Unless otherwise indicated, the latest edition of referenced publications in effect at the time of the bid shall govern.

American Society of Testing Materials (ASTM)	
ASTM D1557	Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures using a 10-lb Rammer and 18-inch Drop
ASTM D2487	Test Method for Classification of Soils for Engineering Purposes
ASTM D2922	Density of Soil and Soil Aggregate in place by Nuclear Methods
ASTM D3017	Moisture Content of Soil and Soil Aggregate in Place by Nuclear Methods
ASTM D4318	Liquid Limit, Plastic Limit and Plasticity Index of Soils

<b>State of California - Department of Transportation</b>	
Caltrans	1992 Standard specifications
<b>City of Sacramento</b>	
CSSS	Standard Specifications, latest edition

**1.04 SUBMITTALS:**

- A. Submit the following for approval in accordance with Section 01330, SUBMITTALS:
1. Test Reports of measured fill/ backfill/ or embankment density, moisture, and relative compaction.
  2. Samples and index property test results indicating conformance with the specifications of each imported material and any embankment fill material proposed for use. Contractor shall notify the Engineer of the source of the material and shall furnish for approval to the inspector a representative sample weighing approximately 50 pounds, at least 10 calendar days prior to the date of anticipated use of such material.

**PART 2 - PRODUCTS**

**2.01 GENERAL**

- A. Materials shall be furnished as required from on site sources or hauled to the site from off site sources.

**2.02 ENGINEERED FILL**

- A. Engineered fill shall be used for general structural backfill, channel bottom, and trench backfill. Material shall consist of soil excavated on site or hauled in from off site sources. Material shall be substantially well graded from coarse to fine with no gap or uniform grading of any particular size particle, and shall be free of organic material, wood, trash, peat and other objectionable material which cannot be compacted properly. Engineered fill shall not contain stones, broken concrete, masonry, rubble or other similar material larger than 2-inches in any dimension. Material used must be acceptable to the Engineer.

**2.03 EMBANKMENT FILL**

- A. Embankment fill shall be used for side slope grading. Material shall consist of soil excavated on site or hauled in from off site sources. Material shall be classified as either an SM, SC, ML, CL, or mixtures thereof per ASTM D 2487. Material shall contain not less than 15 nor more than 45 percent by weight passing the No. 200 mesh sieve, and, per ASTM D 4318, a plasticity index of not less than 7 and a liquid limit of not more than 45. Embankment fill shall not contain stones, broken concrete, masonry, rubble or other similar material larger than 1-inch in any dimension. Submit sample and index test results for approval. Material used must be acceptable to the Engineer.

## 2.04 SAND

- A. Sand shall be used for handholes, pull boxes, duct and pipe bedding in conformance with applicable sections of the CSSS and the details on the drawings.
- B. Sand shall be unwashed river-type, clean and free of organic material, trash, peat, and other objectionable material conforming to the following gradation:

Sieve Size	% Passing
No. 4	100
No. 8	80 - 100
No. 100	0 - 35
No. 200	0 - 8

## 2.05 PEA GRAVEL

- A. Pea gravel may be used as an alternative to sand for bedding and cover, provided that it is clean, free-draining, and conforms to the following gradation:

Sieve Size	% Passing
1/2 inch	100
3/8 inch	80 - 100
No. 200	0 - 5

## 2.06 DRAIN ROCK

- A. Drain rock shall be 1-inch maximum, clean, free draining gravel or crushed rock conforming to the following gradation:

Sieve Size	%Passin g
3/4 inch	90 - 100
1/2 inch	30 - 60

3/8 inch	0 - 20
No. 4	0 - 5
No. 200	0 - 2

- B. Drain rock shall have a minimum sand equivalent of 50, and the material retained on the 3/8 inch sieve shall contain at least 50% of particles having three or more fractured faces.

## 2.07 CRUSHED ROCK

- A. Crushed rock shall meet the specifications for course crushed screenings as described in Caltrans Section 37-1.02, and the following gradation:

Sieve Size	% Passing
3/4 inch	100
1/2 inch	95 - 100
3/8 inch	50 - 80
No. 4	0 - 15
No. 8	0 - 5
No. 200	0 - 2

- B. Crushed rock shall have a minimum sand equivalent of 30.

## 2.08 AGGREGATE BASE

- A. Conform to the requirements for Class II aggregate base, 3/4" maximum aggregate size in accordance with CSSS Section 10-7.

## 2.09 CONCRETED ROCK SLOPE PROTECTION

- A. Concreted Rock Slope Protection shall conform to the material and placement requirements for Facing Class, Method B Placement, Concreted-Rock Slope Protection in Section 72-5 of the Caltrans Standard Specifications.
- B. Where geotextile fabric is indicated beneath Concreted Rock Slope Protection, conform to the requirements in Section 02620, GEOTEXTILES.

## PART 3 - EXECUTION

### 3.01 GENERAL EARTHWORK REQUIREMENTS

- A. Perform clearing, grubbing, and tree removal in accordance with CSSS Section 12.
- B. Construction, including excavation, backfill, compaction, dewatering, and bracing systems, shall conform to the plans and these specifications.
- C. Neither the elevation of the bottom of any completed excavation nor the top layer of any compacted graded surface material shall vary more than +0.08 or -0.08 feet respectively from the elevations indicated in these specifications or on the drawings.
- D. **Control water in accordance with Section 02240 of these specifications.**
- E. If, in the opinion of the Engineer, the surface of the prepared subgrade is not in suitable condition at any time, due to failure of the Contractor to properly care for, dewater, or otherwise conduct earthwork operations properly, then the Contractor shall remove the unsuitable material and replace it with material compacted to at least 90 percent relative compaction at his own expense. The condition of the prepared subgrade shall meet with approval of the Engineer before any work is placed thereon.
- F. During earthwork operations, surface grades shall be maintained in such condition that work areas, as much as practicable, will be well drained at all times. When directed, temporary drains and drainage ditches shall be installed to intercept or divert surface water which may affect the prosecution of the work.
- G. Where trenching or other excavation crosses established landscaped areas, remove all plant growth with approved equipment. Cut to the lines shown or as directed, and if practical, store and maintain removed plants for later replacement. If any relocated plant deteriorates within three months of being planted, replace in kind with new plant of same variety and equal or better quality and size.

### 3.02 EXCAVATION

- A. Excavate to the lines and grades shown or required to complete the construction. Make allowance for forms, supports, etc.
- B. If over-excavation occurs due to Contractor error, at any foundation, or where proposed structures will bear thereon, or at the bottom of any channel, over-excavated areas will be filled to finish subgrade with Controlled Density Fill, properly leveled to finish lines and grades.
- C. Side slopes of excavations shall be no steeper than the safe stable slope for the soils encountered. Refer to Section 02250, SHEETING, SHORING, AND BRACING.
- E. If, at the time of excavation, it is not possible to place material in its intended permanent location, then the material shall be stockpiled in approved areas for later use. No extra



## SECTION 03300

### CAST-IN-PLACE CONCRETE

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION:

###### A. Scope of Work:

1. Unless otherwise directed, provide concrete as specified herein.

###### B. Related Work:

1. Section 01330 - Submittals

##### 1.02 REFERENCE 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 publications in effect at the time of bid shall govern.

###### B. American Concrete Institute (ACI) Standard:

ACI SP-15	Field Reference Manual: Standard Specifications for Structural Concrete with Selected ACI and ASTM references.
ACI 211	Recommended Practice for Selecting Proportions for Concrete.
ACI 301	Structural Concrete for Buildings.
ACI 302	Guide for Concrete Floor and Slab Construction.
ACI 304	Recommended Practice for Measuring, Mixing and Placing Concrete.
ACI 305	Hot Weather Concreting.
ACI 306	Cold Weather Concreting.
ACI 309	Consolidation of Concrete.
ACI 318	Building Code Requirement for Reinforced Concrete, with Commentary.

###### C. American Society for Testing and Materials (ASTM) Standards:

ASTM C 31	Method of Making and Curing Concrete Test Specimens.
ASTM C 33	Concrete Aggregates.
ASTM C 39	Compressive Strength of Cylindrical Concrete Specimens.
ASTM C 94	Ready Mixed Concrete.
ASTM C 143	Slump of Portland Cement Concrete.
ASTM C 150	Portland Cement.
ASTM C 171	Sheet Materials for Curing Concrete.
ASTM C 172	Method of Sampling Freshly Mixed Concrete.
ASTM C 192	Making and Curing Concrete Test Specimens in the Laboratory.
ASTM C 227	Test for Potential Alkali Reactivity of Cement-Aggregate Combinations.
ASTM C 231	Air Content of Freshly Mixed Concrete by the Pressure Method.
ASTM C 260	Air Entraining Admixture for Concrete.
ASTM C 289	Test of Potential Reactivity of Aggregates.
ASTM C 295	Petrographic Examination of Aggregates.
ASTM C 309	Liquid Membrane Forming Compounds for Curing Concrete.
ASTM D 98	Calcium Chloride.
ASTM D 1785	Poly (Vinyl Chloride) PVC Plastic Pipe, Schedules 40, 80 and 120.

D. City of Sacramento Standard Specification (CSSS):

Section 10	Construction Materials.
Section 20	Concrete in Structures.

**1.03 CONDITIONS**

A. Notes: Notes pertaining to concrete on the Plan sheets are a part of these Specifications.

B. Testing: Comply with the General and Special Conditions.

#### **1.04 SUBMITTALS**

A. MANUFACTURER'S DATA

1. Proposed mix designs, including admixtures
2. Curing Material

B. Certificates:

1. Submit Certificate of Compliance that concrete meets the specified requirements.
2. Delivery tickets for all concrete delivered to the project site.

### **PART 2 - PRODUCTS**

#### **2.01 MATERIALS**

A. Portland cement: ASTM C150, Type II or Type III.

1. Concrete: Standard gray cement. Use same brand for surfaces not to be painted.

B. Water: Clean and free of substances injurious to concrete.

C. Aggregate:

1. Do not use aggregates that are alkali reactive when tested by ASTM C227, C289, or C295.
2. Unless otherwise noted, maximum coarse aggregate size shall be 1½-inches for walls and slabs greater than or equal to 12-inches thick, and 1-inch for walls and slabs less than 12 inches thick.
3. Provide hard, washed, fine and coarse aggregates conforming to ASTM C33, including requirements for sampling and testing, except that loss after 500 revolutions in Los Angeles machine shall not exceed 40%. Limit material finer than No. 200 sieve to a maximum of 3% of the fine aggregate.

D. Non-shrink grout: Master Builders premixed "Embeco", Burke's "Metallic Grouting Compound"; Sonneborn-Desoto "Ferrolith-G", or approved equal.

E. Curing materials:

1. Liquid curing compound: ASTM C309, Type 1 (Clear) containing a fugitive dye.
2. Sheet material: Double-layered, reinforced, stainproof, waterproofed Kraft paper, ASTM C171, regular type.

F. Admixtures:

1. General: Provide only as indicated below. Submit manufacturer's data for admixtures, and use only those approved by Engineer. Use shall be in accordance with the manufacturer's recommendations.
2. Water reducing: "Plastocrete", Sika Chemical Corporation; "WRDA with Hycol", W.R. Grace, or approved equal. Conform to ASTM C49A, Type A. Use in all mixes.
3. Retarding: "Plastiment", Sika Chemical Corporation, or approved equal. Use for hot weather concreting only.

G. Concrete overlay bonding materials: Burke Acrylic Bondcrete or equal.

## 2.02 DESIGN OF MIXES

- A. General: The Contractor shall be responsible to design concrete mixtures resulting in the required 28-day compressive strength and other required characteristics. An approved laboratory shall design all mixes. Comply with ACI 211 "Recommended Practice for Selecting Proportions for Concrete" and ACI 304 "Recommended Practice for Measuring, Mixing and Placing Concrete" to produce plastic, workable mixture suitable for concrete work indicated, which will develop required compressive strengths, as indicated. **Pozzolan may be substituted for up to 20% of Portland cement in any of the following mixes.** Such mixtures shall conform to the specifications for Type IP (MS) cement in ASTM Designation C595 and shall be comprised of an intimate mixture of "Type II Modified" cement and not more than 20 percent of pozzolanic material, in conformance with Section 90-2.01 of the Standard Specifications of the State of California, Department of Transportation.
- B. Mix for conduit encasement: Concrete mix shall be Class D and contain a minimum of 5 sacks (470 pounds) of Portland cement per cubic yard. The maximum water/cement ratio shall be 0.50. The Contractor shall add red oxide, in the amount of 5 lbs. per cubic yard, to all concrete used for conduit encasement.
- C. Mix for antenna foundations, generator pads, building foundations and housekeeping pads, retaining walls, and footings: Concrete mix shall be Class B and contain a minimum of 6 sacks (564 pounds) of Portland cement per cubic yard. The compressive strength at 28 days shall be 4,000 psi. The maximum water/cement ratio shall be 0.50.

- D. The maximum slump for concrete shall be 4 inches. A tolerance of one inch above the maximum slump will be allowed, provided that the average of all batches is less than the specified maximum slump. Batches of concrete with slumps in excess of those specified will be rejected if their frequency of occurrence is excessive or the Contractor fails to take corrective action to reduce their occurrence. No water shall be added to the approved mix after batching except as approved by the Engineer.
- E. Batching and mixing: Use transit-mixed concrete from approved batch plant. Batching, mixing, and transportation of concrete shall conform to ASTM C94.

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. Embedded items: Includes installation of work built into concrete such as waterstop sleeves, anchor bolts, wood nailers, reglets, frames and sleeves for piping, conduit and fittings specified under other divisions. Provide facilities and supervision required for installation of inserts specified under other Sections, and perform cutting and reinforcing of forms required to accommodate them. Do not place any concrete until all inserted items are installed in their proper locations, secured against displacement, cleaned, inspected and approved. Furnish ties and supports necessary to keep embedded items in place when concrete is placed.
- B. Clean Up: Remove excess water from forms before concrete is deposited. Remove hardened concrete, debris, and foreign materials from interior of forms and from surfaces of mixing and conveying equipment.
- C. Wetting: Prior to placing concrete, wet wood forms sufficiently to tighten up cracks. Wet all other materials sufficiently to reduce suction and maintain concrete workability.
- D. Earth or Gravel Subgrade: Lightly dampen subgrade no more than 24 hours in advance of concrete placement, but do not muddy. Reroll where necessary for smoothness and remove loose earth material.
- E. Screeds (Flatwork): Set screeds at walls and at maximum of 8-foot horizontal distance between adjacent screeds.
- F. Weather: Do not place concrete during rainy weather unless approved measures are taken to prevent damage to concrete. Cure concrete placed during periods of dry winds, low humidity, high temperatures and other conditions causing rapid drying, initially with a fine fog spray of water applied immediately after finishing and maintained until final curing operations are begun. Comply with the following:
  - 1. Hot weather: ACI 305
  - 2. Cold weather: ACI 306

3. Pumping concrete: Maintain close observation of ambient temperature both at pump location and at discharge end. Allow for wide variance of temperature change.

### **3.02 FLATNESS TOLERANCE FOR FLOOR SLABS**

#### **A. SLABS (FLATWORK) - INTERIOR AND EXTERIOR:**

1. Finish slabs monolithically. Uniformly slope floor slabs to provide positive draining of indicated areas. Special care shall be taken so that a smooth, even joint is obtained between successive pours.
2. Finished surfaces shall be true plane surfaces with no deviation in excess of 1/8 inch in 10 feet when tested with a straight edge.
3. Replace or repair any slab which fails to meet this standard. If slabs fail to drain as indicated, remove drains and faulty floor section and refinish topping so that it drains according to the Drawings. No deviations will be allowed.

### **3.03 PLACING**

- A. Formed concrete: Place concrete after subgrade, forms, and reinforcement has been approved. Limit free vertical drop in concrete walls or columns to three (3) feet. In other concrete, limit the drop to five (5) feet. Deposit concrete in horizontal layers not more than 18" deep and continue pouring until section is completed. Control rate of pouring and depth of layers so that each layer will be covered within one hour after it is poured. Pour columns to top and allow to settle two (2) hours before additional concrete is placed. Place concrete continuously between pour joints.
- B. Grouting: Grout mix shall be regular concrete mix with ½ the large aggregate omitted. Use to cover the following before additional concrete is placed:
1. Flat form surfaces next to congested steel.
  2. Construction joints.
  3. Top of column and wall footings.
  4. On surfaces where concrete has set.
- C. Vibration and tamping: As concrete is placed in forms, work concrete around reinforcing steel, built-in items and into corners and angles. Extra care shall be given to work architectural concrete around inserts, reveals, quirks, corners and plastic cones of ties to preclude rock pockets, air pockets, and other defects, and to produce sharp corners, edges and smooth surfaces. Provide mechanical vibrators operated by experienced employees for agitating concrete in forms. Vibrate thoroughly within

five (5) minutes after layer is placed. Carry vibration well into previous layer. Vibrators shall not be used to transport concrete inside forms. Internal vibrators shall maintain a speed of not less than 7,000 impulses per minute when submerged in concrete. Supplement vibration by suitable methods to eliminate voids along forms for full depth of layer as directed. Do not allow vibrators to strike overlaid plywood surfaces. Do not use vibrators to work concrete along forms. Keep at least one spare vibrator on job at all times while concrete is being placed. Comply with ACI Committee 309 consolidation of Concrete, Committee Report.

- D. Stoppage: Upon completion of a pour and after concrete has partially hardened, wash scum or laitance off surface with stiff brush and stream of water. When work is resumed, brush clean with wire brushes or sandblast, then place fresh concrete.
- E. Pumped concrete: Do not place concrete by pumping without prior written approval of the Engineer.
  - 1. General: Do not use aluminum or aluminum lined pipe. Prevent concrete from contacting aluminum fittings.
  - 2. Mix: Do not add more water to mix unless approved by the Engineer. Check that the mix design entered on delivery ticket complies with that ordered.
  - 3. Pumps: Use only piston type pumps. Insure they are reversible. Make a standby pump available of no less capacity than that in use for operation at the job within one hour's notice.

### **3.04 CONSTRUCTION JOINTS**

- A. The location and design of joints not shown or specified are subject to approval of the Engineer prior to placement of concrete.
- B. Horizontal Joints: Where joints occur in exposed concrete, set smooth painted wood strips in form to provide a straight and level joint in which upper pour laps lower pour. Place concrete level with, but not above top of pour joint strip as shown on Drawings. Allow 24 hours before concrete is placed over horizontal joints. Remove loose material and laitance. Clean by sandblasting, or wire brushing. Allow enough time between placing of adjacent pour sections to provide for initial shrinkage. Horizontal joints will not be allowed in beams, girders and slabs unless otherwise indicated.
- C. Vertical joints: Vertical joints not shown on the Drawings shall be so made and located as to least impair the strength of the structure and shall be approved by the Engineer prior to placement of concrete.

### **3.05 REPAIRS AND PATCHING**

- A. General: Patch defective areas immediately following form removal. Remove

honeycombed and other defective concrete to sound concrete, but not less than 1" deep. Make the walls of the cut area perpendicular to the surface. Do not feather out the edges. Dampen the patch area and the adjacent area six (6) inches around the patch area.

- B. Exposed concrete: For exposed concrete prepare a patching mortar of one part portland cement adjusted to match the color of the surrounding concrete and 2-1/2 parts sand with the least water required to produce a workable mass. Rework this mortar until it is the stiffest consistency that will permit placing. Brush the patch area with a bond of neat cement and water paste and apply patching mortar when the water sheen is off the bond. Strike off the mortar slightly higher than the surrounding surface, let set for one hour and finish flush with the surrounding surface. Tie holes shall be cleaned, dampened and filled solid with the above specified patching mortar.

### **3.06 FINISHING FORMED SURFACES**

- A. Finish formed surfaces by removing any and all fins. The tolerances of finished formed surfaces shall conform to ACI 301.

### **3.07 FLATWORK**

- A. General: Place floor slabs on grade in alternate strips. Place each unit against construction joint forms with formed control joints perpendicular to the poured strips. Pour slabs-on-grade against a moist subgrade. Wet the subgrade the day before placing concrete. Moisten subgrade just ahead of concrete as it is placed. Do not place concrete in standing water. Provide new, clean cut, sharp-edged wood headers at construction joints of suspended slabs. Deposit concrete evenly, consolidated with mechanical vibrators, particularly at side forms, and screed to indicated elevations and contours. Maintain full indicated thickness of slab over all parts of cambered support. Concrete shall be compacted with a grid tamper to eliminate voids and pockets and to produce a uniformly dense slab. Where ground slabs are left to receive deferred finishes, provide protection against contamination from time of placing concrete until time of placing finish. Remove contamination mechanically leaving a clean surface.
- B. Joints: Location and detail shall be as indicated. Tooling is required at control and pour joints.
  - 1. Control joints: After concrete surface is screeded, cut concrete with a cutting bar, or other approved tool, approximately 1/4" thick x 2" deep. Form straight clean lines. After slot is formed in stiff concrete, insert 1/8" thick x 1-1/2" strip of tempered hardboard or plastic joint form zip strip. Butt strips neatly to line and flush with concrete surface. Finish slab flush with top of hardboard strips without tooling.
  - 2. Construction joints: Form construction joints with 2" nominal dressed lumber, or approved steel forms. Provide enough stakes to prevent sagging and

misalignment under construction loads. Leave forms in place as long as possible and remove without chipping the edge of the slab. Protect the slab edge until the adjacent slab is placed.

3. Expansion joints: Provide sponge neoprene joint filler where shown on the Drawings. Place filler to provide space for sealant as indicated. Seal joints with specified sealant per manufacturer's printed instructions. Thickness of filler material is indicated.

#### C. SLAB FINISHING

1. Broom Finish: Contractor shall apply a medium broom finish just after final troweling to all flat slabs not specified to receive another finish.
2. Wood float: Where wood float finish is indicated, screed slabs to elevations indicated. Compact with motor driven disk type compactor float and bull float to smooth, even surface. Perform final finishing with wood hand floats to give finished surface uniform, slightly roughened texture.
3. Steel trowel: Where wood steel trowel finish is indicated, tamp fresh concrete with a grid tamper enough to raise a thin bed of mortar to surface. Before finishing, remove any excess water. Level and compact with motor drive disk type compactor float. Immediately after floating, the surface shall be further leveled and compacted with a motor driven rotary trowel with flat-pitched blades. Final troweling shall be done with steel hand trowel after surfaces have become hard enough to produce a hard, dense, smooth, burnished surface.

### 3.08 CURING AND PROTECTING

- A. General: Do not use any curing method which will be incompatible with the specified applied finishes.
- B. Initial curing: Begin initial curing with water immediately after the final finishing operation. Keep the concrete continuously wet at least overnight. Use one of the following curing methods:
- C. FINAL CURING:
  1. Water or paper curing, mandatory for bridge slabs: Where water curing is used, keep surfaces continuously wet for seven (7) days. Where paper curing is used, keep the paper in place without torn areas for at least ten (10) days. Seal all joints in paper with a suitable waterproof cement or tape.
  2. Mandatory hot/dry weather curing: Use water curing for the first 24 hours of the required curing period.

3. Optional curing: Surfaces not specified to receive a mandatory curing method may be cured by water, membrane, or paper curing. Use clear curing compound for all membrane curing and paper curing. Water and paper curing to be as specified above.
- D. Formed surfaces: Wood forms left in place during the final curing period shall be kept tight, wetting if necessary. If forms are removed during the curing period, one of the specified curing methods, as approved by Inspector, shall be applied immediately and continued for the remainder of the curing period.

### **3.09 MISCELLANEOUS**

#### **A. GROUTING AND DRYPACKING**

1. Grout: One (1) part cement, two (2) parts sand and sufficient water that the grout will just flow under its own weight. Water reducing and workable agent may be added at the Contractor's option.
  2. Drypack: One (1) part cement, 2 parts sand, with just enough water to bind the materials together.
  3. Installation: Dampen surfaces before grouting and slush with neat cement. Force grout into place and rod so as to fill all voids and provide uniform bearing under plates. Provide smooth finish on exposed surfaces and damp cure for at least three (3) days.
- B. Non-shrink grout: Mix and place under structural steel base plates in accordance with manufacturer's printed instructions.
- C. Concrete overlay bonding: The surface of the existing concrete is to be roughened by sandblasting to remove loose material, rust and oils. Sufficient cement matrix should be removed to expose surface aggregates and to form a roughened surface for bonding. Clean with a high pressure water jet and allow to surface dry. Immediately apply an acrylic bonding agent such as Burke Acrylic Bondcrete at the rate of 200 sq. ft. per gallon and follow with placement of the concrete overlay after a minimum of one hour and after the film is dry to the touch. Install bonding agent in strict accord with manufacturer's instructions.

### **3.10 QUALITY CONTROL**

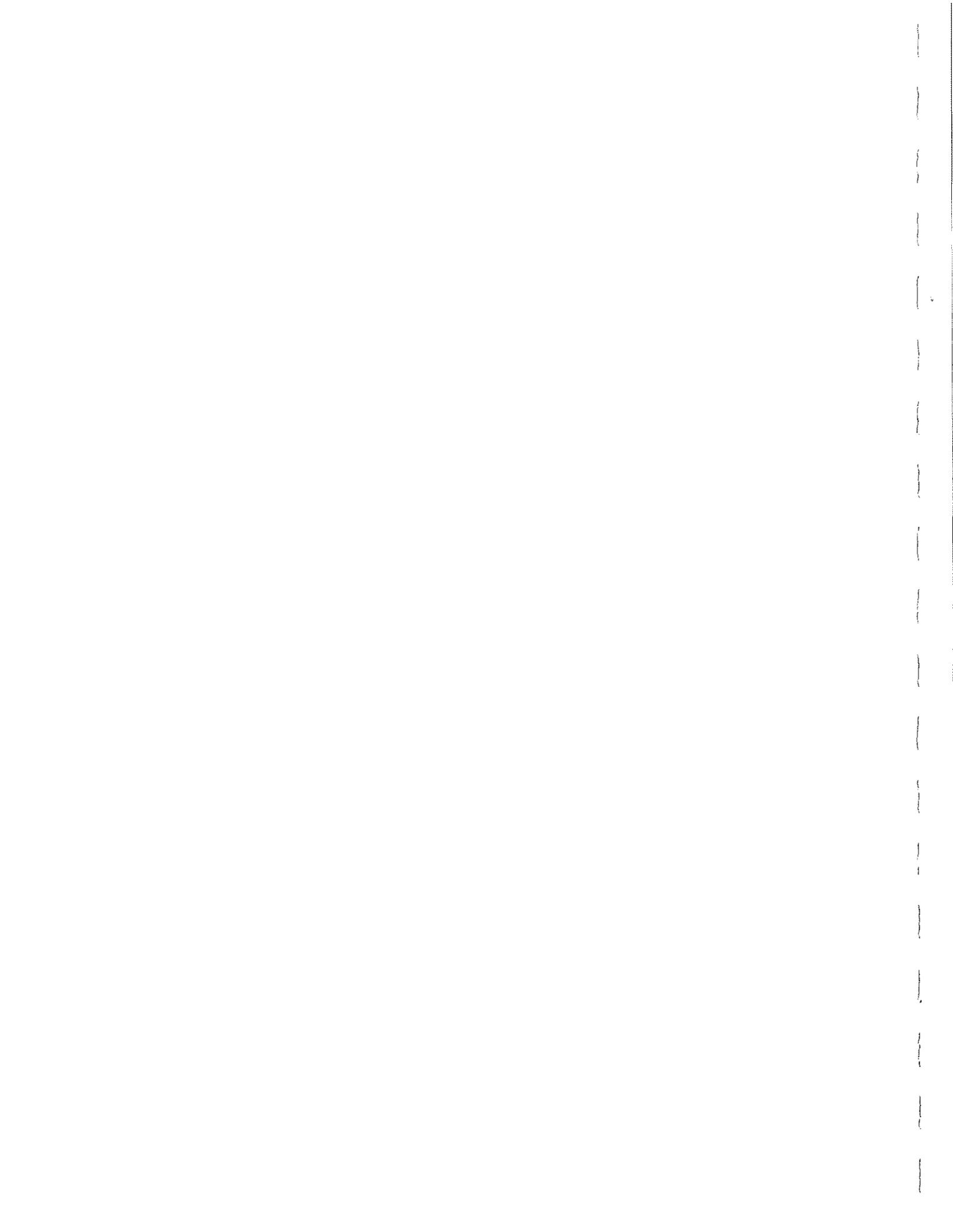
- A. The Engineer shall be responsible for the routine quality control testing of concrete mixes.
- B. Slump Test: Slump test shall be performed at the job site by the Engineer in accordance with ASTM Test Method C 143.

- C. Compressive Strength Tests: Each day concrete is poured, the Engineer shall mold four concrete test cylinders in accordance with ASTM C31. City shall pay for the service of an independent testing company to cure and test the concrete cylinders in accordance with ASTM C39 and C172 unless samples fail to meet requirements, in which case Contractor shall pay for retesting done to the same requirements. Cylinders shall be tested at 7 days, 14 days, 21 days, and 28 days.
- D. The Contractor shall assist the Engineer in obtaining samples of fresh concrete.
- E. Methods of sampling and testing concrete mixtures shall include but not be limited to the following:

Composite Samples:	ASTM C172.
Specimen Preparation:	ASTM C31.
Compressive Strength:	ASTM C39.
Air content:	ASTM C173 or C231.
Slump:	ASTM C143.
Unit Weight:	ASTM C138

- F. Evaluation and acceptance of concrete and concrete structures shall be in accordance with Chapters 17 and 18 of ACI 301.

**END OF SECTION**



## SECTION 04220

### CONCRETE MASONRY UNITS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Work Included

1. The Contractor shall furnish all labor, materials, equipment and incidentals required to construct all concrete masonry unit (CMU) work as shown on the drawings and as specified herein.
2. The work under this Section includes but is not necessarily limited to the following:
  - a. CMU's
  - b. Grouting and mortar
  - c. Control joint construction
  - d. Caulking and sealing
3. The work shall also include the setting and incorporating into the masonry of all bolts, anchors, attachments, nailing blocks, inserts, and reinforcement as indicated on the drawings and as specified herein.

###### B. Related Work Specified In Other Sections

1. Section 01330: Submittals.

##### 1.02 REFERENCE 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.
- B. American Society of Testing Materials (ASTM).

ASTM A82	Steel wire, plain, for concrete reinforcement
ASTM A615	Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C90	Hollow Load-Bearing Concrete Masonry Units
ASTM C140	Sampling and Testing Concrete Masonry Units
ASTM C426	Drying Shrinkage of Concrete Block

- C. International Masonry Industry All-Weather Council (IMIAC)
  - 1. Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

### 1.03 SUBMITTALS

- A. Submit for approval in accordance with Section 01330: SUBMITTALS
- B. Manufacturer's Data
  - 1. CMU's, including all special shape blocks
  - 2. Reinforcement
  - 3. Caulking
- C. Test Reports
  - 1. CMU compressive strength and absorption per ASTM C140.
  - 2. CMU linear shrinkage per ASTM C426.

## PART 2 - PRODUCTS

### 2.01 CMU's

- A. CMU's shall conform to ASTM C90, lightweight, Grade N, Type I, hollow, load bearing units of 8 inches x 16 inches nominal face size and bed dimension as shown on the Drawings. Maximum weights of individual units shall be 30 pounds. Exterior face shall be of the texture called split face. CMU's shall have a compressive strength of 1500 psi at 28 days.
- B. CMU's shall be free from substances that will cause staining or popouts, and shall be fine, even texture with straight and true edges. All units shall have been wet steam cured for at least 18 hours and then air cured in covered storage for not less than 28 days before delivery.
- C. All stretchers and special shape units shall be obtained from one manufacturer to insure even color and texture. The color of the CMU shall be tan or brown.
- D. Provide all special shape CMU's required on this job including: solid, corner, pilaster, lintel, jamb, header, half-hi and control joint units.
- E. All CMU's shall have a minimum net tensile strength of not less than 135 psi.
- F. CMU's shall have been air cured for not less than 28 days or the equivalent.
- G. All CMU's shall have a maximum linear shrinkage of 0.045 of 1 percent from saturated to oven dry conditions, when tested in accordance with ASTM C426.

### 2.02 REINFORCEMENT

- A. Steel Bars: Steel reinforcement bars shall conform to ASTM A615, Grade 60, as indicated on the drawings.

## **2.03 CAULKING**

- A. Provide control joint and miscellaneous caulking as specified in Section 13500.

## **2.04 MORTAR AND GROUT**

- A. Provide mortar and grout for block wall construction as specified in Section 13500

## **PART 3 - EXECUTION**

### **3.01 PROTECTION OF MATERIALS**

- A. All perishable materials for the work of this Section shall be delivered, stored, and handled so as to preclude damage of any nature. Manufactured materials, such as cement and lime, shall be delivered and stored in their original containers, plainly marked with identification of material and maker. Materials in broken containers, or in packages showing water marks or other evidence of damage, shall not be used and shall be removed from the site.
- B. CMU's shall be shipped on pallets, and shall be stored off the ground on the site. In addition, all CMU's stored on the site shall be protected from the weather and staining with the use of tarpaulins or other covering approved by the Resident Engineer.

### **3.02 MASONRY - INSTALLATION**

- A. CMU's shall not be laid at temperature below 40 degrees F or during wet humid weather. Maximum course height shall be 60 inches per day. All work shall be done in such a manner as to insure the proper and normal hardening of all mortar. All masonry work shall be so protected and heated that the temperature at the surface will not fall below 50 degrees F for a period of 72 hours after placing. During dry cold weather above 40 degrees F, follow the recommendations of the IMAIAC. Any completed work found to be affected by freezing shall be taken down and rebuilt by the Contractor at his expense.
- B. All CMUs shall be laid in a full bed of mortar, applied to shells only. Butter the vertical joint of unit already set in the wall and all contact faces of the unit to be set. Each unit shall be placed and shoved against the unit previously laid so as to produce a well compacted vertical mortar joints for the full shell thickness. Units shall set with all cells in a vertical position. The moisture content of the units when laid shall not exceed 35 percent of the total absorption as determined by laboratory test.
- C. CMUs shall be laid in stretcher(running) bond with units machine sawn at panel ends to produce the proper bonding. Tool dense and neat.
- D. Sizes shall be as specified and called for on the Drawings, and where "Soaps" and "Splits" are used, the space between these members and the backup material shall be slushed full of mortar.
- E. Joints of all masonry shall be tooled in accordance with the following:
  - 1. Wait until unit mortar is thumb-print hard before tooling joint. This may require as much as 3 hours in the shade and 1 hour in the sun in summertime.

2. The required personnel of the Contractor shall be kept on the job after hours, if necessary, to properly tool joints.
  3. Both vertical and horizontal joints shall be maintained uniform in spacing.
  4. Joints for CMUs shall be 3/8 inch. All exterior and interior joints shall be concave rodded.
- F. Install all frames required to be set in masonry. Set masonry tightly against frames, and build in all frame anchors.
- G. Control joints shall be installed at the intersection of masonry walls with structural concrete and elsewhere as detailed on the Drawings. Control joints shall be constructed with special shape units that provide a structural interlocking shear key. Joints shall be raked out to a depth of 3/4 inch for the full height of the wall. Joints shall be caulked watertight as specified - Section 07900: SEALANTS. The maximum length, horizontally, between vertical control joints shall be 30 feet, but joints shall be located only as directed or shown. Joints shall be equal in width to the standard mortar joint.
- H. All masonry slots, chases, or openings required for the proper installation of the work of other Sections shall be constructed as indicated on the Drawings or in accordance with information furnished before the work is started at the points affected. No chase shall cut into any wall constructed of CMU's after it is built.
- I. Surfaces shall be brushed as work progresses and maintained as clean as practicable. Unfinished work shall be raked back where possible, and toothed only where absolutely necessary. Before leaving fresh or unfinished work, walls shall be fully covered and protected against rain and wind. Sweep the work surface clean before continuing work on previously CMU's. The tops of walls or other unfinished work shall be protected against all damage by frost or the elements by means of waterproof paper, tarpaulins, boards or other means approved by the Engineer.
- J. The Contractor shall build in all miscellaneous items to be set in masonry for which placement is not specifically provided under separate Divisions, including, anchors, and shall cooperate with other trades whose work is to be installed in the block walls.
- K. All anchorage, attachment, and bonding devices shall be set as to prevent slippage and shall be completely covered with mortar or grout.
- L. All ties and reinforcing for masonry shall be furnished and installed by the Contractor.

### **3.03 TOLERANCES**

- A. Alignment to pilasters shall be maximum 1/4 inch from true line.
- B. Variation from unit to adjacent unit shall be 1/32 inch maximum.
- C. Variation from plane of wall shall be 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.
- D. Variation from level coursing shall be 1/8 inch in 3 feet; 1/4 inch in 10 feet; 1/2 inch maximum.

- E. Variation of joint thickness shall be 1/8 inch in 3 feet.
- F. Maximum variation from cross sectional thickness of walls shall be plus or minus 1/4 inch.

### **3.04 REINFORCING AND GROUTING**

- A. Keep reinforcing bars straight except for bends and hooks.
- B. Lap bars 45 diameters minimum at splices.
- C. Place horizontal steel and lap as work progresses.
- D. Install solid grouting in all cells.

### **3.05 CLEANING**

- A. All holes in exposed masonry shall be pointed, and defective joints shall be cut out and repointed with mortar of same color as that of the original and adjoining work.
- B. Exposed masonry shall be protected against staining by wall coverings, and excess mortar shall be wiped off the surfaces as the work progresses.
- C. All exposed masonry shall be thoroughly cleaned. Before applying any cleaning agent to the entire wall, it shall be applied to a sample wall area of approximately 20 square feet in a location approved by the Resident Engineer. No further cleaning work may proceed until the sample area has been approved by the Resident Engineer after which time the same cleaning materials and method shall be used on the remaining wall area.

**END OF SECTION**

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## SECTION 07610

### SHEET METAL ROOFING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

A. Scope of Work Includes:

1. Metal roof panels.
2. Clips, angles, corners, fasteners, anchors, purlins, beams, insulation, roofing sealants, closures, turbine vent, and all necessary accessories for a complete watertight system.
3. Contractor design of roof support system and complete installation.

##### 1.02 REFERENCE 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.

B. American Society of Testing Materials (ASTM)

ASTM A653	Steel Sheet, Zinc or Zinc-Iron Alloy Coated by the Hot Dip Process.
ASTM A792	Steel Sheet, Aluminum-Zinc Alloy-Coated by the Hot Dip Process.
ASTM A924	Requirements for Hot-Dip Process Metallic-Coated Steel Sheet
ASTM C991	Flexible Glass Fiber Insulation for Metal Buildings
ASTM D226	Asphalt-Saturated Organic Felt used in Roofing and Waterproofing.

C. Sheet Metal Air Conditioning Contractors National Association (SMACNA):

1. Architectural Sheet Metal Manual.

D. Factory Mutual Research Corporation (F.M.)

1. Roof assembly classification, FM 1-90 uplift requirements, Class I Construction.

E. Underwriters Laboratories (UL)

1. UL 580: Tests for Uplift Resistance of Roof Assemblies (previously UL 90).

F. North American Insulation Manufacturers Association (NAIMA)

1. NAIMA Standard 202-96: Standard for Flexible Fiber Glass Insulation Used in Metal Buildings.

##### 1.03 SUBMITTALS

- A. Submit for approval in accordance with Section 01300: SUBMITTALS.
- B. Manufacturer's Data
  - 1. Panel sheet steel, including available colors
  - 2. Sheet steel corners, angles, and closure strips
  - 3. Sheet steel coatings
  - 4. Fastener clips, screws, and associated fasteners
  - 5. Sealants, sealant tapes, and closure gaskets
  - 6. Installation instructions
  - 7. UL 580 conformance
  - 8. Purlin physical and structural properties, including coatings
  - 9. Insulation
  - 10. Turbine Vent
- C. Shop Drawings
  - 1. Sheet steel roof showing jointing pattern details and fastening methods.
  - 2. Roof purlins and structural support system design calculations indicating conformance with California UBC, FM 1-90, and UL 580. Calculations shall be signed by a civil or structural engineer registered in California.
- D. Samples
  - 1. ~~Submit 2" x 3" sample of metal roof panel.~~
- E. Warranty
  - 1. Submit manufacturer's warranty for 20 years covering paint finish, chipping, and fading.
  - 2. After completion, submit a warranty stating that the roofing system and metal flashings will properly shed water and protect the building from rain damage for a period of two years from the acceptance of the contract.

## **PART 2 - PRODUCTS**

### **2.01 SHEET METAL ROOF AND SOFFIT**

- A. The sheet metal roof shall be 24 gauge or thicker steel "Klip-Rib" panel designation manufactured by IMSA Building Products, Inc. (Corporate office West Sacramento, CA.), or approved equal. Roof base metal shall be Zincolume coated conforming to ASTM A792 and ASTM A924. Roof panels shall be shop coated with a 1-mil DFT (dry film thickness) of IMSA's DuraTech™5000 finish, a formulation of Kynar 500/Hylar5000 resins, or approved equal. Engineer to select color from manufacturer's list of

standard colors.

- B. Roof system shall conform to UL 580 for uplift class 90.
- C. The sheet metal soffit shall be the Prestige-12 Series flat panel designation manufactured by IMSA Building Products, Inc. or approved equal. Soffit shall be 24 gauge or thicker steel, Zincolume coated conforming to ASTM A792 and ASTM A924. Shop coat panels with a 1-mil DFT of IMSA's DuraTech™5000 finish. Soffit to be attached to the purlins as recommended by the roof designer. Color shall be "Snowdrift White", or approved equal.

## **2.02 FASTENERS**

- A. Panel fasteners shall be two hole snap seam UL 580 clips, same manufacturer as the panels.

## **2.03 ACCESSORY MATERIALS**

- A. All roof sealants and closure gaskets shall be as supplied and/or recommended for use by the panel manufacturer, so as to assure compatibility with the roof materials.
- B. Screws shall be zinc plated, phillips drive, #10-12 x 1" with wafer head. Pop rivets shall not be used.
- C. Cleats, corners, angles, closure, and starter strips shall be of same material as sheet furnished by the panel manufacturer.
- D. Purlins and structural roof support members shall be galvanized, and formed from steel conforming to ASTM A653. Roof designer shall determine member steel yield strength requirements, sizes, and spacings.
- E. Insulation shall conform to NAIMA Standard 202-96 and ASTM C991 Type II material; shall be factory faced with vinyl reinforced polyester; and shall have an R-19 thermal resistance. Insulation shall be "Certified R Metal Building Insulation" manufactured by Owens-Corning Fiberglass, or approved equal.

## **2.04 TURBINE VENT**

- A. Roof mounted turbine vent shall have a 12" diameter neck; be constructed of 24 gauge or heavier galvanized steel; have an adjustable base, waterproof flashing and have chrome plated Dupon Delrin bearings, or approved equal.

## **PART 3 - EXECUTION**

### **3.01 STORAGE AND HANDLING**

- A. Store metal roofing out of weather in a clean and dry location.
- B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion.
- C. Prevent contact with other materials during storage which may cause discoloration or staining.

### **3.02 PREPARATION**

- A. Maintain tolerances required for layout conformance with the approved shop drawings. Panels shall be installed full length with no horizontal joints.

### **3.03 INSTALLATION**

- A. Contractor to install roof per manufacturer's recommendations, per approved shop drawings, and in accordance with SMACNA standards.
- B. Lap, lock, cleat, seam, and seal all joints. Use rubber asphalt bedding compound for joints between metal and bitumen or metal and felts.
- C. Install starter and edge strips, and cleats before starting installation of roofing sheets.
- D. Do not install panels or trim in contact with dissimilar materials.
- E. Minimize foot traffic on the completed roof.
- F. Securely attach turbine vent to the roof as per the approved roof plans and the vent manufacturers recommendations. Contractor shall ensure that the installation is waterproof. Contractor shall install a rubber seal or spacer between the turbine vent and metal soffit.
- G. Install insulation between the metal roof and soffit in accordance with the manufacturers recommendations. All seams shall be taped as recommended by the manufacturer to prevent insulation particles from circulating within the enclosed building space. The insulation must securely maintain it's position during operation of the ventilation system.

### **3.04 FASTENERS AND SEALANTS**

- A. Install panel fastener clips within at least 6" from the ends, and all other fasteners as shown on the approved shop drawings.
- B. Install flashings and panels so as to avoid all contact between dissimilar metals. Install sealants as shown on the drawings and as recommended by the roof panel manufacturer.

### **3.05 CLEAN-UP AND CLOSE-OUT**

- A. Touch-up damaged paint surfaces with an air dry touch-up paint provided by the manufacturer. Small brush application only.
- B. Cleaning and Repairing: At the completion of each days work and at completion of work, sweep panels, flashing, downspouts, and gutters clean. Do not allow fasteners, cuttings, fillings, or scraps to accumulate. Remove all debris from project.

**END OF SECTION**

## SECTION 08100

### STEEL DOORS AND FRAMES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: The Contractor shall furnish all labor, materials, equipment, and incidentals necessary to perform all the work shown on the drawings, and as specified herein, including, but not limited to providing steel doors and frames with solid core and flush faces.
- B. Related Work
1. Section 01330: Submittals
  2. Section 08710: Door and Finish Hardware
  3. Section 09900: Painting

##### 1.02 REFERENCE 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 their basic designation only. The latest edition of referenced publications in effect at the time of the bid shall govern.

1. American Society of Testing Materials (ASTM)

ASTM A 653	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process
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2. Steel Door Institute (SDI)

SDI 105	Standard Steel Doors and Frames
SDI 117	Manufacturing Tolerances for Standard Steel Doors and Frames

3. The Society for Protective Coatings (SSPC)

SSPC SP-1	Solvent Cleaning
SSPC SP-5	White Metal Blasting

4. American National Standards Institute (ANSI)

ANSI 250.6	Hardware on Standard Steel Doors (Reinforcement--Application).
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ANSI A250.7	Nomenclature for Standard Steel Doors and Steel Frames.
ANSI A250.8	Recommended Specifications for Standard Steel Doors & Frames.
ANSI A250.10	Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
ANSI A115.IG	Installation Guide for Doors and Hardware.

### 1.03 SUBMITTALS

- A. Submit for approval in accordance with Section 01330, SUBMITTALS.
- B. Manufacturers catalog data for specified steel doors and frames.
- C. Shop drawings shall show door, door frames, head and jamb seals, door bottom construction, embedded sill detail, and hardware. Also, show frame and door sizes and types, as scheduled and detailed.
- D. Instructions: Manufacturers written instructions for rough-in and installation.
- E. Certificates: Product certificates signed by the manufacturer certifying material compliance with ANSI A250.8 and specified performance/physical requirements.

### 1.04 QUALITY ASSURANCE

- A. Utilize experienced installers in performing work of this section who are specialized in installation of work similar to that required for this project.
- B. Provide all steel doors and frames from a single manufacturer.
- C. Coordinate field and fabrication measurements with construction progress to avoid construction delays.

## PART 2 - PRODUCTS

### 2.01 STEEL DOORS AND FRAMES

- A. Doors and frames shall be fabricated in conformance with ANSI A250.6, A250.7, A250.8, and SDI-117, and as specified herein.
- B. Inner and outer door panels shall be flush type with no visible seams on either face, fabricated from nominal 16 gauge (0.064-inch thick), A40 Galvannealed, CS Type B sheet steel conforming to ASTM A653. The doors shall be a nominal 1¾ inches thick, with a solid polystyrene core resistant to fungus, moisture, mildew, and rot, that is securely bonded to the steel panels with thermosetting adhesive. Join door faces at the edge with a continuous laser welded seam using filler material to create a smooth unbroken surface on door edge.
- C. Door top and bottom shall be a minimum of 16 gauge channels. Door top shall be flush and closed with no holes. Door bottoms shall have inverted channels. Doors shall

be fabricated with 6 gauge hinge reinforcement, 12 gauge closer reinforcement and 14 gauge lock reinforcement.

- C. Frames shall be one-piece assemblies with head and jambs securely welded. Fabricate frames from 14 gauge (nominal 0.078-inch thick), A60 Galvannealed, CS Type B sheet steel conforming to ASTM A653, with 18 gage channel-shaped reinforcements at each miter joint. Frames shall be double rabbeted style with mitered corners, 5/8-inch height stops, one welded-in floor anchor per jamb, steel lock in anchors on twenty-four (24) inch centers per jamb for field insertion, and three (3) rubber silencers in the strike jamb. Mitered corners shall be continuously arc welded, then ground smooth on the frame faces.
- D. Frames shall be mortise reinforced, drilled, and tapped for specified mortise hardware. Hinge reinforcing plates shall be nominal 3/16 inch thick steel welded in place. Strike reinforcement shall be nominal 10 gauge steel. Reinforcement for specified surface applied hardware shall be nominal 14 gauge steel. Where necessary, frames shall be supplied with temporary spreaders to prevent distortion during shipment.
- E. Unless otherwise indicated, conform to recommendations of Steel Door Institute or Door and Hardware Institute for location of locks, hinges, handle sets, and closer reinforcements.
- F. After fabrication doors and frames shall be cleaned in conformance to SSPC SP-5. All oil and grease shall be removed and then doors and frames shall be etched with ten percent (10%) phosphoric acid and rinsed. Spot touch-up all welded areas and all damaged galvanized surfaces. Comply with ANSI A250.10 test procedures and acceptance criteria for prime painted steel surfaces for steel doors and frames. Prime paint with a 3 mil baked on coating of zinc oxide primer, or approved equal.
- E. Furnish Series 27LE full flush galvanized polystyrene core doors and Series 400 Interlok™ frames as manufactured by Amweld Building Products, Inc., or approved equal.

## **PART 3 - EXECUTION**

### **3.01 PRODUCT DELIVERY, STORAGE, AND HANDLING**

- A. Upon receiving, doors and frames shall be inspected for shipping damage. Any shipping damage shall be rectified by the Contractor and reported to the Engineer. All doors shall be individually protected by completely covering entire door and frame to prevent damage, or marring of the finish. Doors and frames shall be stored in an upright position, under cover on the building site, on wood sills or on floors, in a manner that will prevent rust and damage. Avoid creating a humidity chamber by using a plastic or canvas shelter and by venting or heating the area covered.

### **3.02 INSTALLATION**

- A. Doors and frames shall be installed in strict accordance with the manufacturers written instruction, SDI 105, and ANSI A115.IG. Frames must be set plumb and square,

anchored securely to the floor and wall construction with maximum diagonal distortion of 1/16 inch. Coordinate installation with work of other trades. Select fasteners of adequate type, number, and quality to perform intended functions, and secure anchorages and connections to adjacent construction.

B. Frame Installation Tolerances:

1. Plumbness: Plus or minus 0.063 inch measured through a line intersecting corner of vertical members and the head to the floor.
2. Squareness: Plus or minus 0.063 inch measured through a line 90 degrees from one jamb at upper corner to opposite jamb.
3. Alignment: Plus or minus 0.063 inch measured on jambs, through a horizontal line parallel to plane of wall.
4. Twist: Plus or minus 0.063 inch measured at face corners of jambs, on parallel lines perpendicular to plane of wall.

C. Area inside door frame sections shall be grouted to full height of both jambs and across header. Grout shall be in accordance with **Section 13500**.

### **3.03 ADJUSTMENT**

- A. During installation of hardware, doors shall be adjusted for continuous contact and alignment with the frame.
- B. After the door and frame assembly, and all finish hardware has been installed, all operating parts shall be adjusted for smooth operation and continuous contact between perimeter seals and adjoining surfaces. Adjusting of doors shall be witnessed by the Engineer.

### **3.04 CLEANING**

- A. After installation, solvent clean per SSPC SP-1 and then touch-up paint scratched or damaged surfaces with zinc oxide primer.

### **3.05 PAINTING**

- A. Doors and frames shall be finish coated after installation in accordance with Section 09900, PAINTING.

**END OF SECTION**

## SECTION 08710

### DOOR AND FINISH HARDWARE

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: The Contractor shall furnish all labor, materials, equipment, and incidentals necessary to perform all the work shown on the drawings, and as specified herein, including, but not limited to:
1. Provide finish hardware, trim attachments and fastenings, specified, or otherwise required, for proper and complete installation.
  2. Provide butts, locks, thresholds, mutes, weatherstripping, signs, and all other miscellaneous hardware for all doors on this job.
- B. Related Sections
1. Section 01330: Submittals
  2. Section 08100: Steel Doors and Frames

##### 1.02 REFERENCES

- 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.
- B. American National Standards Institute (ANSI) Standards:

ANSI A156.1	Butts and Hinges
ANSI A156.2	Bored and Preassembled Locks and Latches
ANSI A156.4	Door Controls — Closers
ANSI A156.5	Auxiliary Locks and Associated Products
ANSI A156.6	Architectural Door Trim
ANSI A156.7	Template Hinge Dimensions
ANSI A156.8	Door Controls — Overhead Holders
ANSI A156.15	Closer Holder Release Devices

ANSI A156.16	Auxiliary Hardware
ANSI A156.18	Materials and Finishes
ANSI A117.1	Accessibility Requirements for Physically Handicapped People

C. Door and Hardware Institute (DHI) Publications

1. Recommended Locations for Hardware for Standard Steel Doors and Frames

**1.03 SUBMITTALS**

A. Submit for approval in accordance with Section 01330, SUBMITTALS.

B. Manufacturers Data

1. Butt Hinges
2. Door Lock and Panic Bar
3. Closers
4. Thresholds and Weatherstrip
5. Mutes, Stops, and Hardware

C. Shop Drawings

1. Contractor shall submit a materials list conforming to the hardware groups listed in paragraph 3.05 FINISH HARDWARE SCHEDULE.

D. Operations and Maintenance Manuals

1. Hinges, closers, and locks

**PART 2 - PRODUCTS**

**2.01 GENERAL REQUIREMENTS**

- A. All material furnished under this section shall be from manufacturer's that are members of both the American Hardware Manufacturers Association (AHMA) and Builders Hardware Manufacturers Association (BHMA).
- B. All material shall comply with all Building, Safety, Fire and Accessibility codes and rules. Exit doors shall be openable from the inside without the use of a key or any special knowledge or effort. All doors shall have lever hardware door controls or panic hardware. All thresholds and doorway cover plates shall be a maximum of ½ inch high.
- C. To the maximum extent practicable, furnish for each item and all similar items (such as "door butt type 1" and "door butts" ) only the product of a single manufacturer (such as

“Hager”). For each of the required items of finish hardware, provide from the specified manufacturer or from one of the indicated possible substitutes:

Specified:	Possible Substitutes:
Butts: Hager	McKinney, Stanley
Locks: Best	None
Misc.: Trimco	Ives, B.B.W., Baldwin, Quality
Thresholds & Seals: Pemco	Reese, National Guard, Ultra
Mutes: Glynn-Johnson	Quality, Ceco
Signs: Trimco	Builders Brass Works, G&R Plastics

D. Provide hardware with finishes as follows:

1. Butts: 32D
2. Locks: 626 or 26D
3. Miscellaneous: 32D
4. Thresholds & Seals: Mill Finish

E. ~~Double padlock bars shall be stainless steel and conform to Section 05505, MISCELLANEOUS METALS. Double padlock bar and its mounting hardware shall be installed on outside of one door only as indicated on the Plans.~~

## 2.02 BUTT HINGES

A. Butt hinges for standard steel doors and frames shall conform to ANSI 156.1. They shall be full mortise type with five knuckles, two ball bearings, non-rising removable pin and button tip and plug. Ball bearing unit shall be attached to the leaf knuckle to prevent loss when the hinge is disassembled. Hinges shall be standard weight and the finish shall be satin stainless steel (#US32D) with stainless steel pin. Pin shall be non-removable with concealed set screw capture. Furnish Hager #BB1 199 or approved equal.

## 2.03 DOOR LOCKS AND PANIC BAR

A. **The Locks and panic bar shall be fire rated and tested in accordance to ANSI A156.3, 1989, Grade 1. The lock/panic bar shall be Von Duprin 22L-F or approved equal. The panic bar to be mounted inside the door shall be Von Duprin 22EO-F. The matching trim to be mounted outside the door shall be Von Duprin 230L with Mortise cylinder. This cylinder shall fit for City provided core by Best Locks. The lever style shall be standard, the finish color shall be dark bronze. The strike shall be 299F. The**

SSPC-Paint 5	Zinc Dust, Zinc Oxide, and Phenolic Varnish Paint
<b>American Society for Testing and Materials:</b>	
ASTM A780	Repair of Damaged & Uncoated Areas of Hot-Dip Galvanized Coatings

### 1.03 SUBMITTALS

- A. Submit the following for approval, in accordance with Section 01330, SUBMITTALS:
1. Samples: The manufacturer's Standard pre-mixed color selection chart. Colors, unless herein indicated otherwise, will be selected by the Engineer.
  2. Manufacturer's Data: Manufacturer's current printed product description, Federal Specification conformance, technical data, detailed mixing, thinning and application instructions, minimum and maximum application temperature, curing time and drying time between coats, shall be submitted for the following surface coatings:
    - a. Zinc Primer(s).
    - b. Semi-Gloss alkyd enamel.
    - c. Zinc Dust-Zinc Oxide galvanizing repair paint.

## PART 2 - PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS

- A. Glidden, Ameritone, Fuller-Obrien, Rust-Oleum, H&C (a Division of Sherwin Williams), Monopole, Frazee, Dunn Edwards, or approved equal.

### 2.02 MATERIALS

- A. General: Materials shall conform to the requirements of the Specifications listed herein, and the **PAINTING SCHEDULE**.
- B. Semi-Gloss alkyd enamel shall conform to Federal Specification TT-E-529G. The associated Primer, unless otherwise approved, shall conform to either Federal Specification TT-P-645B, or SSPC Paint 25. Finish coats shall be the color selected by the Engineer.
- C. Zinc dust-zinc oxide primer coatings for repair of galvanized surfaces shall conform to SSPC-Paint 5, ASTM A780, and shall contain at least 65% zinc dust by weight when dried.

- D. The concrete floor in the electrical control room shall be painted with clear Monochem Aquaseal by Frazee Paint Co., or approved equal. Contractor shall apply the Monochem Aquaseal in the presence of the inspector to insure the sealer is applied correctly.
- E. All exterior masonry surfaces shall be painted with two coats of H&C Shield Plus Concrete Stain (sandstone color), or approved equal. Contractor shall apply the concrete stain in the presence of the inspector to insure the stain is applied correctly.
- F. Polyamide Epoxy shall be a two component semi-gloss pigmented system with separately packaged base and curing agent. Solids content of the finish coat material shall be at least 55% by volume. Provide Sherwin Williams Tile-Clad High Solids, or Porter Coatings' PorterGlaze 4400 HB Semi-Gloss Epoxy, or approved equal finish coat. Use finish coat manufacturer's recommended primer.

### **PART 3 - EXECUTION**

#### **3.01 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver paint materials in sealed, original labeled containers, bearing manufacturer's name, type of paint, brand name, color designation, and instructions for mixing and/or reducing.
- B. Provide adequate storage facilities. Store paint materials at minimum ambient temperature of 45 degrees F in well ventilated areas.
- C. Take precautionary measures to prevent fire hazards and spontaneous combustion.

#### **3.02 ENVIRONMENTAL CONDITIONS**

- A. Ensure surface and surrounding air temperatures are at least 60 °F, unless a higher temperature is recommended by the manufacturer, before applying paint.

#### **3.03 PROTECTION**

- A. Adequately protect other surfaces from preparation and paint damage. Repair damage and remove all splattered paint as a result of inadequate or unsuitable protection.
- B. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being painted and, in particular, surfaces within storage and preparation area.
- C. Place cotton waste, clothes, and material which may constitute a fire hazard in closed metal containers and remove daily from site.

#### **3.04 INSPECTION**

- A. Thoroughly examine surfaces scheduled to be painted prior to commencement of work. Report in writing to the Engineer, any condition that may potentially affect proper application. Do not commence until such defects have been corrected.

### **3.05 PREPARATION OF SURFACES**

- A. Preparation of metallic surfaces shall be conducted in accordance with the applicable portion of the latest surface preparation specifications of the SSPC, and the coating manufacturer's recommendations. Any sharp or rough areas shall be ground or filed smooth prior to initiation of surface preparation for painting.
- B. Blast cleaning shall conform to SSPC SP-6 "Commercial Blast Cleaning".
- C. Solvent cleaning shall conform to SSPC SP-1 "Solvent Cleaning".
- D. Pressure washing shall be performed using commercial machines operating with a nozzle pressure of at least 1000 psi, unless otherwise approved.
- E. Surfaces to be painted shall be clean before applying paint or surface treatments. Oil and grease shall be removed with clean cloths and cleaning solvents prior to mechanical cleaning. Cleaning solvents shall be of low toxicity with a flashpoint in excess of 100 degrees F. Cleaning shall be programmed so that dust and other contaminants will not fall on wet, newly painted surfaces.
- F. Remove mildew by scrubbing with solution of trisodium phosphate and bleach. Rinse with clean water and allow surface to dry completely.
- G. Remove dirt, powdery residue, and foreign matter from piping and metals designated for finishing.
- H. Remove grease, rust, scale, dirt, and dust from steel and iron surfaces. Where heavy coatings of scale are evident, remove by wire brushing, sandblasting, or any other approved method.
- I. Sand and scrape shop primed steel surfaces to remove loose primer and rust. Feather-out edges to make touch-up patches inconspicuous. Clean surfaces with solvent.
- J. Shop painted ferrous surfaces shall be protected from corrosion by treating and touching-up corroded areas immediately upon detection.
- K. Concrete masonry and concrete floors shall be cleaned and cured as specified in Sections 03300, CAST-IN-PLACE CONCRETE and 04220, CONCRETE MASONRY UNITS, then prepared as specified by the coating manufacturer.

### **3.06 APPLICATIONS**

- A. General: All painting shall conform to the coating manufacturer's submitted, and approved, technical data and recommendations, and to the following general conditions:
  - 1. Thickness of coating in mils shall mean the dry film thickness. The number coats specified shall mean the minimum number of coats to be used. Additional coatings shall be required if necessary to obtain the specified film thickness.

2. Prime coats, where called for, shall be provided as part of the painting system. Shop prime coats shall conform to the specified painting system for the given item. It shall be the responsibility of the Contractor to coordinate work so that factory primed items are primed or painted with a coating compatible with the specified painting system.
- B. Paint may be applied by brush, roller, or spray except as hereinafter specified. At time of application, paint shall show no signs of deterioration. Uniform suspension of pigments shall be applied so finished surfaces shall be free from runs, drops, ridges, waves, laps, brush marks, and variations in color, texture, and finish. Hiding shall be complete. Each coat shall be applied as a film of uniform thickness.
  - C. Rollers for applying paints and enamels shall be of a type designed for the coating to be applied and the surface to be coated. Special attention shall be given to insure that all surfaces, including edges, corners, crevices, welds, and rivets receive a film thickness equivalent to that of adjacent painted surfaces. Adequate ventilation shall be provided during paint application. Respirators shall be worn by all persons engaged in spray painting. Adjacent areas shall be protected by the use of drop cloths or other approved precautionary measures shall be taken.
  - D. The first coat shall include repeated touching-up of suction spots or overall applications of primer or sealer to produce a uniform color and gloss. Paint shall be applied only to surfaces that are completely free of surface moisture, as determined by sight or touch.
  - E. Coating Progress: Sufficient time shall elapse between successive coats to permit proper drying. This period shall be modified, as necessary, to suit adverse weather conditions. Oil base or oleoresinous solvent-type paints shall be considered dry for recoating when the paint feels firm, does not deform or feel sticky under moderate pressure of the thumb, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.
  - F. Metal Surfaces: Apply all coats by spray, unless otherwise approved.
  - G. All galvanized metal surfaces shall be painted, unless specified otherwise.
  - H. Time Between Surface Preparation and Painting: Surfaces that have been cleaned, pretreated, and otherwise prepared for painting shall be given a coat of the specified first coat as soon as practicable after such pretreatment has been completed, but prior to any deterioration of the prepared surface.

### **3.07 MECHANICAL AND ELECTRICAL EQUIPMENT**

- A. Do not paint over nameplates or other identification plates.
- B. Do not paint flexible conduit or wiring.

### **3.08 CLEANING**

- A. As work proceeds, and upon completion, promptly remove paint where spilled, splashed or spattered.

- B. During progress of work keep premises free from any unnecessary accumulation of tools, equipment, surplus materials and debris.
- C. Upon completion of work leave premises neat and clean, to the satisfaction of the Engineer.

**3.09 PAINTING SCHEDULE**

- A. The following **PAINTING SCHEDULE** prescribes the surfaces to be painted, required surface preparation, and the number and types of coats of paint to be applied. Applied dry film thicknesses per coat shall conform to the manufacturer's recommended thicknesses.

Surface	Surface Preparation	1st Coat	2nd Coat	3rd Coat
Exterior galvanized surfaces touch-up	Touch-up damaged coatings per paragraph 2.02.C.			
Concrete masonry units, including retaining wall units.	See paragraph 3.05	Two coats of H&C Shield. Apply per manufacturer's recommendations. Color shall be light brown.		
Metal doors, door frames, louvers, gutters, & trim of control building.	Solvent Clean, and prepare per paragraph 3.05	One coat of industrial grade primer per TT-P-645B, SSPC Paint 25, or approved equal.	Two coats of alkyd enamel weathered copper color to match the color of the building roof.	
Trash rake structure. Exposed conduit.	Solvent Clean, and prepare per paragraph 3.05	One coat of industrial grade primer per TT-P-645B, SSPC Paint 25, or approved equal.	Two coats of "City of Sacramento - Centari Brown" alkyd enamel from Spectra-Tone Paints (916) 722-7454, per TT-E-529G, or approved equal.	
Existing metal pump motor housings and exposed pump columns.	Pressure wash, then wire brush, sand, scrape, and solvent clean, per paragraph 3.05	One coat of industrial grade primer per TT-P-645B, SSPC Paint 25, or approved equal. doors.	Two coats of "City of Sacramento - Hi-lite Buff" alkyd enamel from Dunn Edwards or approved equal.	

Surface	Surface Preparation	1st Coat	2nd Coat	3rd Coat
Exterior galvanized surfaces touch-up	Touch-up damaged coatings per paragraph 2.02.C.			
Concrete masonry units, including retaining wall units.	See paragraph 3.05	Two coats of H&C Shield. Apply per manufacturer's recommendations. Color shall be light brown.		
Existing steel checker plate sump wetwell covers, sump support beams, sump ladder.	Blast clean.	One coat of manufacturer's recommended primer.	Two coats of gray Polyamide Epoxy.	
Galvanized surface Repair	Solvent Clean, per paragraph 3.05	Apply one coat SSPC-Paint 5	Apply two coats per TT-E-529G, or as approved.	
Concrete floor of control building	See paragraph 3.05	Two coats of Monochem Aquaseal or approved equal. Apply per manufacturer's recommendations.		

END OF SECTION



## SECTION 11333

### TRASH BAR SCREEN HOIST

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. Description of Work: Furnish and install trash bar screen hoist and appurtenances as shown on the Drawings and as specified herein.
- B. Related Sections:
1. Section 01330: Submittals.
  2. Section 16010: Electrical Work

##### 1.02 REFERENCES

- A. REFERENCES: This section contains references to the following documents. They are a part of this section as specified and modified. The latest edition of referenced publications in effect at the time of the bid shall govern. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.
1. Codes:
    - a. National Electrical Code (NEC)
    - b. National Fire Protection Association (N.F.P.A.) Codes and Standards.
    - c. Office of Safety & Health Standards (O.S.H.A.)
    - d. State Fire Marshal (SFM)
  2. Agency Standards:
    - a. American Gear Manufacture's Association (AGMA)
    - b. American National Standards Institute, Inc. (ANSI)
    - c. American Society of Mechanical Engineers (ASME)
    - d. American Society of Testing and Materials (ASTM)
    - e. Hoist Manufacturer's Institute (HMI)
    - f. National Electrical Manufacturer's Association (NEMA)
    - g. Underwriters' Laboratories, Inc. (UL)

##### 1.03 SUBMITTALS

- A. Shop Drawings: Submit Shop Drawings. Shop Drawings shall include the information

where the device is located, and the device number corresponding to the device on the system one-line diagram.

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 or 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.
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:

<b>American National Standards Institute (ANSI) Publications:</b>	
C33.92	Flexible Liquid-tight Metal Conduit
C80.1	Rigid Steel Conduit
C80.4	Rigid Steel Conduit Fittings
<b>National Electrical Manufacturers Association (NEMA)</b>	
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
<b>Underwriters Laboratories Inc.</b>	
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 #J1205 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. Conduits in concrete slabs shall be rigid galvanized steel and may be installed in structural slabs, or in slabs on fill, having a minimum thickness of 4" of concrete around the entire conduit.
2. Conduits will not be permitted to interfere with proper placement of principal reinforcement steel and must be located as directed. In structural slabs, place conduits carefully between upper and lower layers of steel. In prestressed concrete slab construction, place conduits in center of slab and do not support from prestressed steel.
3. Space conduits 8" minimum on centers, except place as wide as possible where they converge at panels or junction boxes.

4. Place conduits running parallel to slab supports (beams, columns, walls, etc.) not less than 12" from such supports.

D. Underground Conduits:

1. Buried Conduit:

- a. Buried conduits shall be a minimum of 24 inches below grade on runs not exposed to vehicular traffic and a minimum of 36 inches below grade when exposed to vehicular traffic. Buried conduits shall be installed per the Conduit Installation Table, see end of section for table. Backfill shall be compacted to 95%. Paved surfaces disturbed during trenching shall be repaired to pre-construction condition after installation is complete.
- b. All conduits entering or leaving the ground shall be sealed to prevent condensation of moisture inside the conduit. 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.
- c. Concrete shall be Class "D" PCC in accordance with section 10-5 of the City of Sacramento Standard Specifications and shall have a compressive strength of 3000 PSI. A red oxide in the amount of 5 lbs. per cubic yard shall be mixed uniformly throughout the concrete.
- d. Contractor to place a 6" wide electrical caution warning tape in trench 12" above concrete as directed by the Engineer.

2. Duct Lines:

- a. Duct lines shall have a continuous slope downward toward pull boxes and away from switchgear with a pitch not less than 4 inches in 100 feet. Install end bells at duct terminations in handholes. Except at conduit risers, changes in direction or more than 5 degrees, either vertical or horizontal, shall be accomplished by long sweep bends having a minimum radius of curvature of 25 feet, sweep bends may be made up of one or more manufacturer's 30 degree curved sections and straight sections. Manufactured risers shall have a minimum radius of 18 inches. The joints of the conduits shall be staggered by rows and layers so as to provide a duct line having the maximum strength. All duct runs shall be placed on an undisturbed excavated soil base wherever possible. Where duct runs pass through backfilled areas, the soil base shall be compacted to 95%.
- b. Duct joints shall be made by brushing a plastic solvent cement on

insides of plastic coupling fittings and the outside of duct ends. Each duct and fitting shall then be slipped together with a quick one-quarter turn twist and held in to set the joint tightly.

- c. Plastic spacers as manufactured by the conduit supplier shall be used and shall be located five feet on centers. These spacers shall provide for conduit separation by a minimum of two inches between and four inches on the top, bottom and sides. Wire ties shall be made at each spacer location and shall be securely anchored to prevent conduit flotation during pouring. Duct runs shall be watertight.
  - d. All ducts shall be inspected by the Engineer prior to pouring concrete. He shall inspect for backfill compaction, drainage slope, spacers, flotation ties and conduit condition, joints, and end bells. Concrete shall not be poured until this inspection is complete.
  - e. Conduits shall be thoroughly swabbed immediately upon completion of pouring.
  - f. After the concrete has set, but before backfilling, a mandrel having a diameter the nominal conduit inside diameter, minus 1/4 inch, and not less than 8 inches long, shall be pulled through each conduit. The mandrel shall be lead covered or painted white to give indication of any protrusion on the inside of the conduit, which might injure the cable sheath. The ends of all conduits shall be suitably plugged, capped and protected from damage during construction.
  - g. Ducts shall be stored to avoid warping and deterioration with ends sufficiently plugged to prevent entry of any water or solid substances. Ducts shall be thoroughly cleaned before being laid. Plastic ducts shall be stored on a flat surface and protected from the direct rays of the sun.
  - h. Concrete shall be Class "D" PCC in accordance with section 10-5 of the City of Sacramento Standard Specifications and shall have a compressive strength of 3000 PSI. A red oxide in the amount of 5 lbs. per cubic yard shall be mixed uniformly throughout the concrete.
  - i. Contractor to place a 6" wide electrical caution warning tape in trench 12" above concrete as directed by the Engineer.
3. Conduit in Structural Concrete:

Runs of conduit to be embedded in concrete shall be rigidly supported in their proper positions while concrete is being placed. Ends of conduits shall be suitable plugged or capped during construction to prevent the entrance of

concrete or other foreign matter. Connections shall be checked for tightness before being embedded.

4. 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.

5. 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 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

### CONDUIT INSTALLATION

### CONDUIT TYPE

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 From Junction Box  
to Outside Building Lights:

Conduit From Junction Box  
to Trash Rack Lights:

Risers or Conduit Stubs Rising  
Up From Concrete Duct Bank:

Equipment Subject to Vibration

## CONDUIT TYPE

Rigid galvanized steel conduit.

Flexible liquid tight metal conduit.

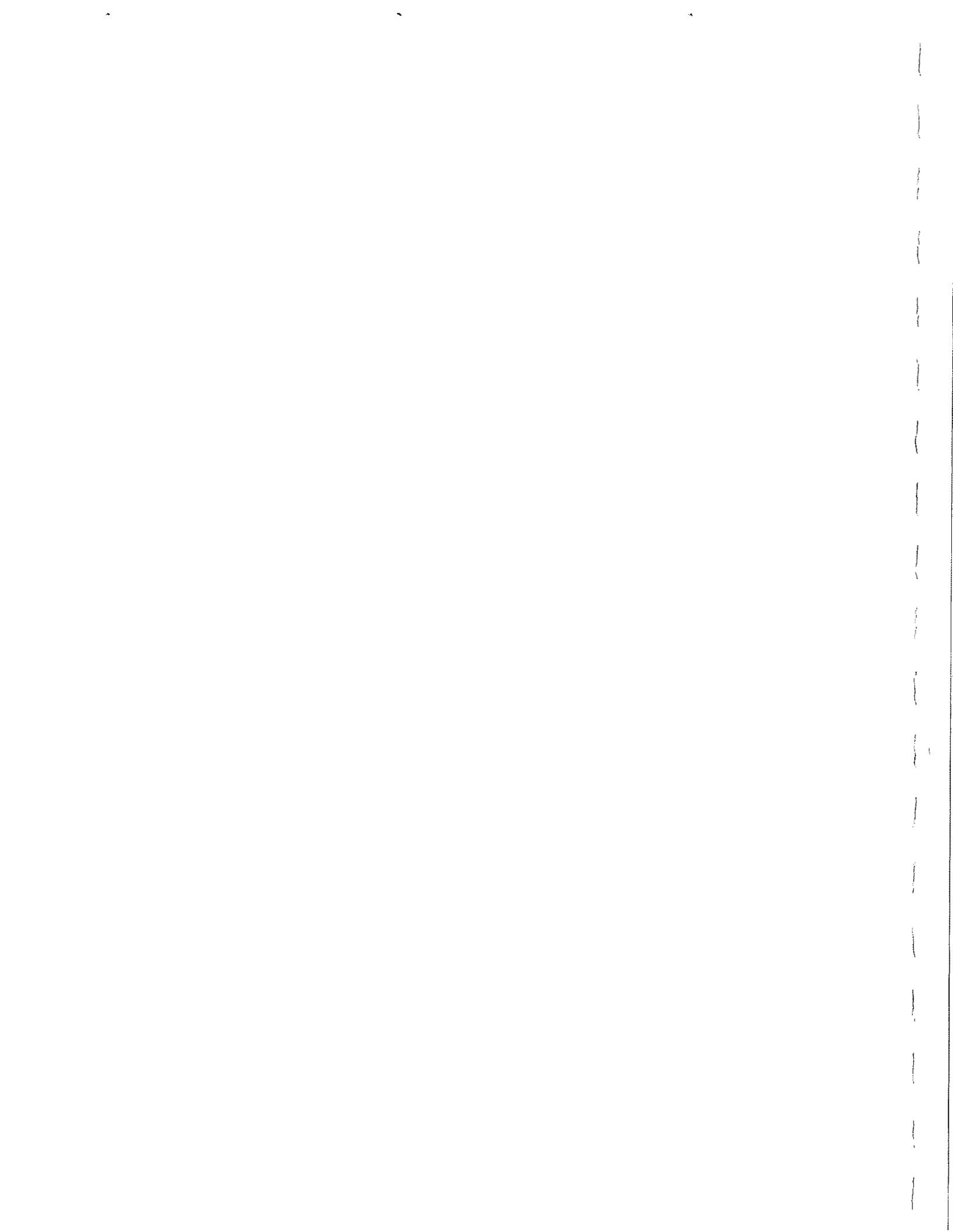
Rigid galvanized steel PVC coated conduit.

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:

<b>American Society Testing Materials (ASTM)</b>	
B-8	Concentric-Lay-Stranded Copper Conductors

<b>Insulated Cable Engineers Association (ICEA)</b>	
S-68-516	Ethylene Propylene Rubber Insulation

<b>Underwriters Laboratory (UL)</b>	
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

<b>National Electrical Manufacturers Association (NEMA)</b>	
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
Grounding	All	TW or bare
Feeders	No. 6 and above	THHN/THWN
Cords	No. 12	SO
Wet Locations	All	THWN
Corrosive Locations	All	THHN/THWN
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-5E or 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 has three symmetrically placed grounds to reduce problems associated with Pulse-Width Modulated AC drives. Continuous corrugated aluminum sheath 99.5% is applied over the assembly. The continuous sheath will be impervious to moisture, liquids, and gases. Black PVC jacket, sunlight and oil resistant, per UL 1569. The cable shall be by Omni Cable or equal.

### 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:

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

<b>480/277 volt power wiring</b>	
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 conductors at each unconnected outlet. The free ends of conductors and coil 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.
  - E. 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 16430

### LOW VOLTAGE MAIN SWITCHBOARD

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. This specification section covers Main Switchboard and includes coordinating the electrical hookup with SMUD.
- B. The provisions of Sections 16010 and 16120 of these specifications shall apply unless otherwise specified in this Section.

##### 1.02 ELECTRIC SERVICE COORDINATION

- A. The new SMUD service will be 3-phase, 4-wire, 480/277 V.
- B. The Contractor shall coordinate the electric service hookup with SMUD such that the service is available to match the project construction schedule. The Contractor shall call SMUD dispatch schedule desk at 916-732-7074 two weeks in advance to schedule the work. The Contractor shall refer SMUD job # 30051410 when calling SMUD for this work.
- C. The 480/277 Vac electric service for this project will be fed from a new SMUD pad-mounted transformer. The Contractor shall furnish and install the underground duct, and conductors, per the Plans and in accordance with SMUD requirements. SMUD will make all connections at the transformer. The existing H structure for the existing SMUD transformer will be removed by SMUD.
- D. The Contractor shall make sure that the electrical service phase rotation is A-B-C clockwise.

##### 1.03 SUBMITTALS

- A. Submittals for the Main Switchboard shall include, but shall not be limited to, the following:
  - 1. Catalog cuts showing and identifying manufacturer, catalog numbers, dimensions, weights and material.
  - 2. Assembly drawings of the equipment.
  - 3. Operating and Maintenance Manuals as specified in Section 01330.

4. Dimensioned "as-built" drawings.
5. Certified test reports prepared by manufacturer.

#### **1.04 QUALITY ASSURANCE**

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

### **PART 2 - PRODUCTS**

#### **2.01 MAIN SWITCHBOARD**

##### **A. CONSTRUCTION**

Enclosure shall be designed for bottom entry of incoming and outgoing conduits. Enclosure shall meet NEMA 1 standards with gasket and be constructed as shown on the Plans. The Main Switchboard shall be factory assembled, tested, and subsequently shipped to the job site as a complete operational assembly.

Fabrication shall be of welded steel with all welds ground smooth. The enclosure shall be constructed of leveled hot rolled pickled steel, No. 12 gage except that 14 gauge can be used for interior parts. The exterior doors shall have a heavy duty hasp for padlocking. All doors and dead fronts shall have continuous stainless steel piano type hinges. All hardware shall be stainless steel.

1. Meter sockets, current transformer mounting brackets, test switches and wiring shall be furnished and installed as required by SMUD.
2. Identification: The switchboard shall have a permanent metal identification plate providing the following information: manufacturer, serial number, type and electrical ratings.
3. Bus arrangement shall be phase A-phase B-phase C, left-to-right, top-to-bottom, front-to-rear as viewed from the front.
4. An interior copper bar ground bus at 1/4 inch by 1 inch minimum shall be provided along the entire length of the assembly, located near the bottom, and bolted to the frame. The ground bus shall include lugs for equipment grounding conductors.

##### **B. CIRCUIT BREAKER - MOLDED CASE TYPE**

The circuit breaker shall be operated by a toggle type handle and shall have a quick-make, quick-break, over-center switching mechanism that is mechanically trip-free from the handle so that the contacts cannot be held closed against short circuits and abnormal currents. Tripping due to overload or short-circuit shall be clearly indicated by the handle automatically assuming a position midway between the manual ON and OFF positions.

Contacts shall be of non-welding silver alloy.

Each pole shall provide inverse time delay and instantaneous circuit protection, and the minimum interrupting rating shall be as shown on the Plans.

The circuit breaker shall have solid state trip with long time, short time, instantaneous and ground fault tripping characteristics.

The main circuit breaker shall be padlockable as specified in the current edition of the EUSERC standards.

The circuit breaker shall be General Electric, Square D, Cutler-Hammer or equal and shall be NEMA rated.

#### C. BUS BARS

Bus bars shall be silver-plated copper. All bus bars shall be sized to limit the heat rise to 65 degrees Centigrade above ambient temperature of 40 degrees Centigrade maximum.

Bus joints shall be welded, brazed, or bolted. Bolted joints shall be silver surfaces. Bolts and associated hardware shall be corrosion-resistant and shall be rear accessible.

Insulating barriers shall be provided where primary busses pass from one compartment to another. The main and riser bus shall be fully isolated from the circuit breaker and instrument and auxiliary compartments. The bus bar shall be bolted where horizontal and vertical busses are joined. All bolted connections shall be silver-plated. Solid vertical insulating barriers shall be provided in the section between the cable and bus compartments. A barrier system shall be provided that isolated the bus from the cable compartment.

#### D. IDENTIFICATION

Main breaker nameplate shall be Red background with white lettering. Minimum letter size 3/8".

#### E. FUSES

Fuses shall be Bussman, General Electric, or equal. Equality shall be based on Bussman time current characteristic curves.

F. SPACE HEATERS AND THERMOSTAT

Space heaters and an adjustable thermostat shall be provided for the switchboard. Heater shall be large enough to prevent condensation from forming. Voltage shall be 120 V, single phase. 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.

G. SPARE PARTS

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

H. TRANSIENT VOLTAGE SURGE SUPPRESSOR (TVSS)

The TVSS shall be provided at the load side of the main breaker to protect AC electrical circuits and electronic equipment from the effects of lightning induced voltages, external switching transients and internally generated switching transients.

The TVSS shall have real time audible and visual reporting of unit status, phase loss/protection loss and transient event (alarm and reset & mute) and shall have a surge counter to provide non-volatile event history recording. The TVSS shall be Innovative Technology

**Model # PTX080-3Y201-SD (for 277/480, 0~800A system)**  
or Engineer approved equal.

The TVSS shall be installed as close to its connection point as possible.

I. GENERATOR CONNECTORS

**For services over 100 A and 480 V provide Crouse-Hinds E1016 Series, 600 V, 400 A, female, double set-screw, cable connectors as shown on the Plans. The connector color shall be provided per Plans.**

J. DIGITAL POWER METER, ACCESSORIES, AND CURRENT TRANSFORMERS

**Digital power meter shall be Electro Industries 3 Phase Digital Multi-Function Power Monitor model number DMMS300+-3E-V-A-KW-3G-115A-MODR for 3 phase 4 wire, 480 system. A 3-pole fuse block with neon blown fuse indicator rated 600V, 30A, 200kAIC RMS symmetrical with Class CC fuses shall be provided for the Digital Power Meter as shown on the Plans. The fuse holder shall be Allen-Bradley Catalog #1492-FB3C30-L or equal. A safety cover for each meter shall also be provided.**

**Provide the following unit for Modbus protocol communication:  
Electro Industries Model No. SF485DB: RS485 interface converter**

The digital power meter shall utilize utility grade current transformers (CTs) for measuring current. The CTs shall have an accuracy of 0.3% and shall meet ANSI/IEEE specification C57.13. CTs shall be mounted in such a way as to provide easy access for inspection and maintenance. The CTs shall be landed on terminal blocks. The terminal blocks shall be Marathon Heavy Duty Terminal Blocks 1600 SC series or equal.

**The Contractor shall call SMUD (916) 732-5390 to make sure the SMUD metering CT ratio and Digital Power Meter CT ratio are the same.**

**K. PANEL METERS**

Panel meters shall be iron-vane type,  $\pm 2\%$  accuracy with full scale faceplate, 3 1/2" face, 90° rotation, front panel surface mount. Ammeter shall be instrument transformer rated to match CT ratio as shown on the Drawings and sized to read 150% of FLA minimum.

**PART 3 - EXECUTION**

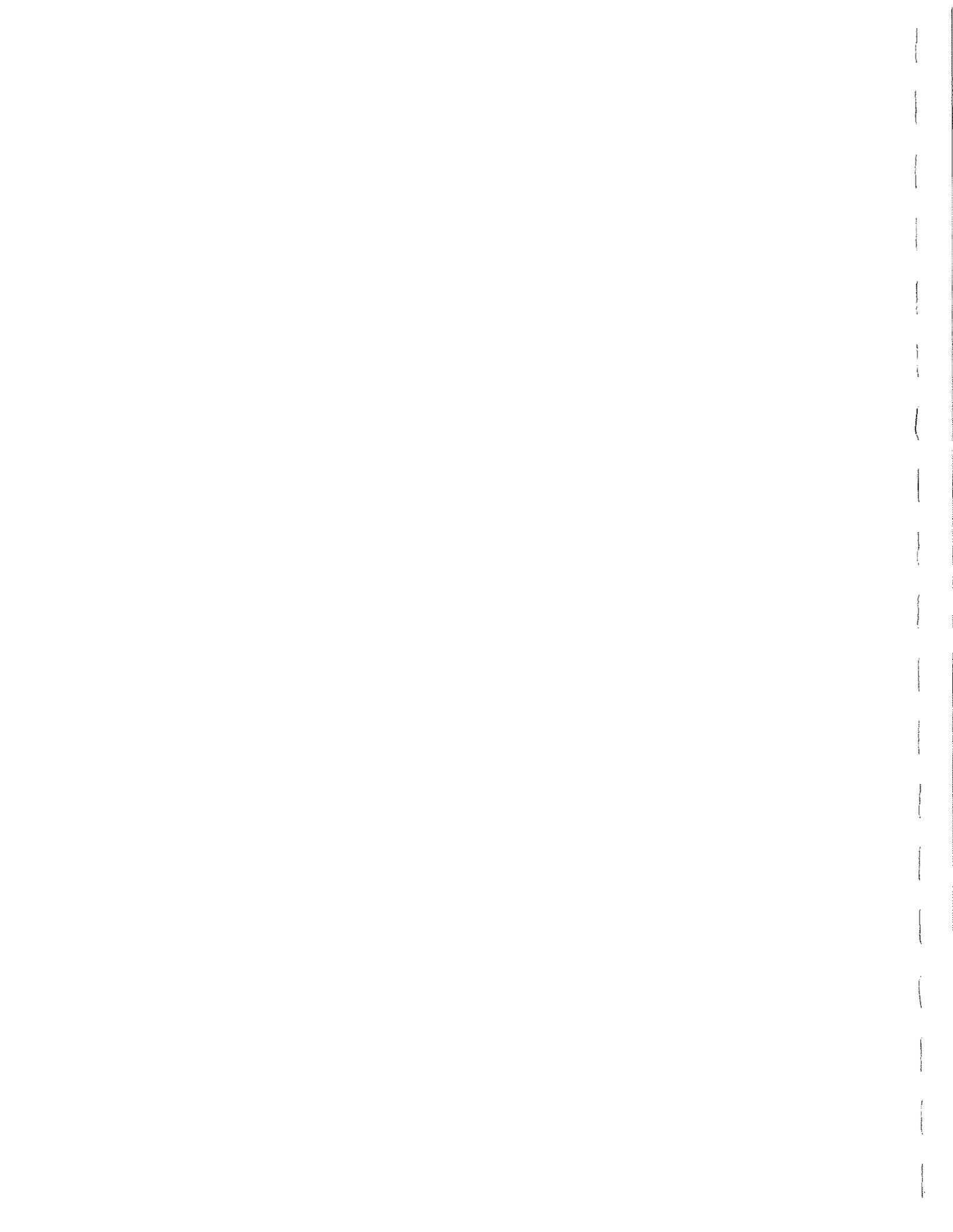
**3.01 FACTORY TESTING**

1. All switchboards 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 AND TESTS**

- A. Facilities for SMUD service shall be inspected and approved prior to acceptance of the Contractor's work.
- B. Contractor shall furnish all material and labor including, but not limited to, transportation, loading, lifting, jacking, wiring to completely install Main Switchboard as shown on the drawings and shall conform with the National Electric Code (NEC).
- C. Refer to Section 16950 for all the testing requirements.

**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.

##### 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. For those enclosures containing across the line motor starters the enclosure shall be NEMA 12 construction and labeled as NEMA 12 with no vents. While those enclosures containing variable frequency drives and/or soft starters shall be NEMA 12 construction with filtered louvered vents and labeled as NEMA 1A. 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, General Electric 8000 Line, Square D Model 6I, Cutler-Hammer 2100, 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.**
- 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 or Diversified Electronics SLA Series, Catalog No. SLA 440 ASA. 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 600 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**

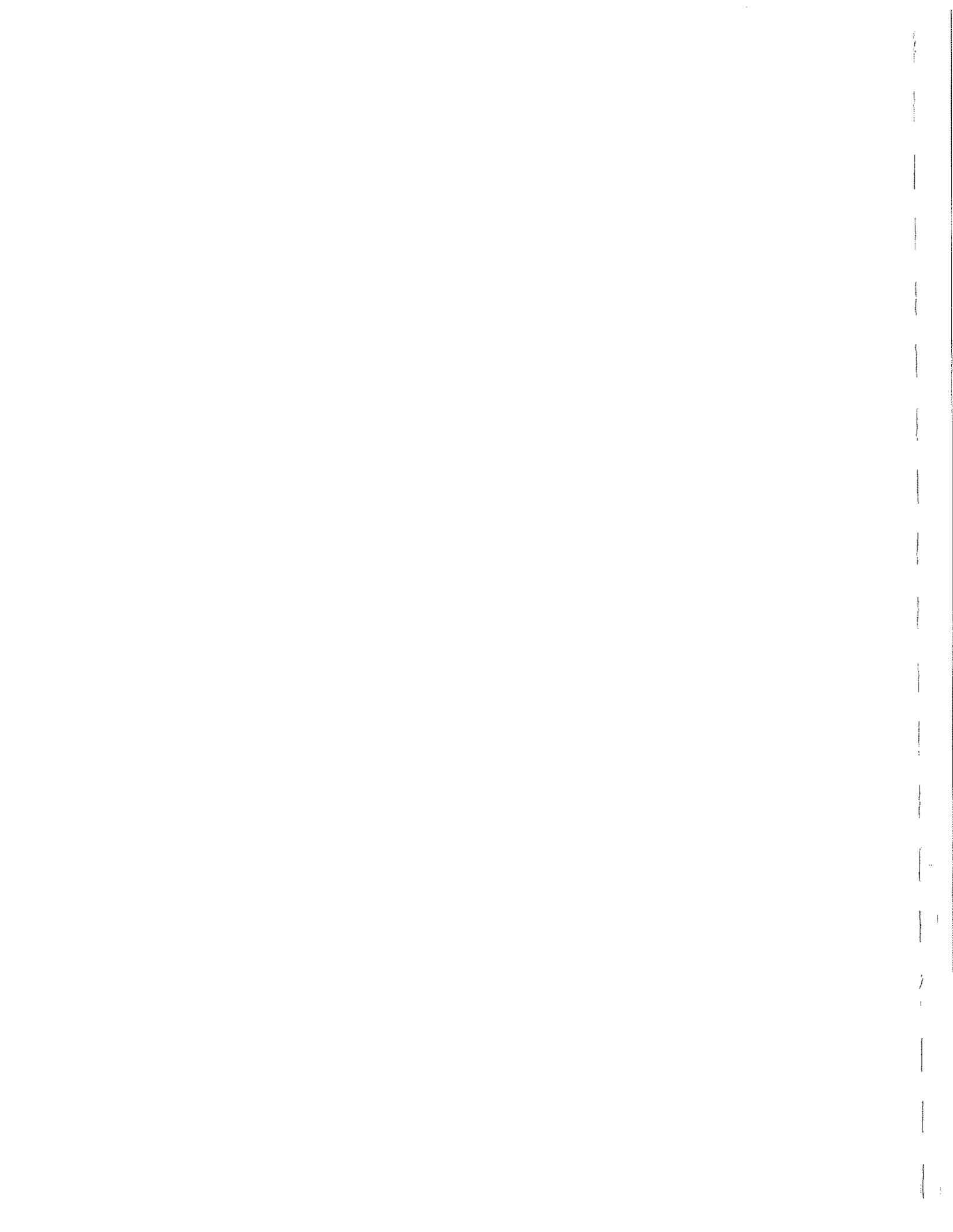
### **3.01 FACTORY TESTING**

- 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 16482

### SOFT STARTER

#### PART 1 - GENERAL

##### 1.01 SCOPE OF WORK

- A. The Contractor shall supply along with complete startup and testing services for the Soft starter (SS) as specified herein. This document describes the function and operation of the system and particular components, but does not necessarily describe all necessary devices. All components and devices shall be furnished and installed as required to provide a complete operable and reliable system for accomplishing the functions and meeting the performance set forth hereinafter.
- B. Furnish all required labor, materials, safety equipment, transportation, test equipment, incidentals and services to provide a complete and operational SS system as described in these Specifications.
- C. Work includes that specified in Section 16010 - Electrical and Section 16120 - Low Voltage Wire and Cable.
- D. The SS scope of work includes providing:
  - 1. Providing modular soft starters with full up to speed bypass for the three (3) 75 hp lift pump motors.
  - 2. Installation of the complete SS system.
  - 3. Submittal data and drawings.
  - 4. Startup.
  - 5. Testing and training.
  - 6. Operation and maintenance manuals.
  - 7. Warranty of all components of the SS system.
- E. The Soft Starter shall be rated for continuous full load operation when powered from the normal Utility power and standby power source. Soft starter supplier to provide any additional equipment necessary to be compatible with operating generator.

##### 1.02 SUBMITTALS

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

## **PART 2 - PRODUCTS**

### **2.01 QUALITY**

- A. All equipment and materials shall be new and the products of reputable suppliers having adequate experience in the manufacture of these particular items. For uniformity, only one manufacturer will be accepted for each type of product.
- B. All equipment shall be designed for the service intended and shall be of rugged construction, of ample strength for all stresses which may occur during fabrication, transportation, erection, and continuous or intermittent operation. All equipment shall be adequately stayed and braced and anchored and shall be installed in a neat and workmanlike manner. Appearance and safety, as well as utility, shall be given consideration in the design of details. All components and devices installed shall be standard items of industrial grade, unless otherwise noted, and shall be of sturdy and durable construction suitable for long, trouble free service. Light duty, fragile and competitive grade devices of doubtful durability shall not be used.
- C. Products that are specified by manufacturer, trade name or catalog number establish a standard of quality and do not prohibit the use of equal products of other manufacturers provided they are favorably reviewed by the City's Engineer prior to installation.
- D. Underwriters Laboratories (UL) listing is required for all substituted equipment when such a listing is available for the first named equipment.

### **2.02 SOFT STARTER**

- A. 

The soft starter shall be provided as a stand alone system packaged in an integral unit. The soft start motor controller shall be of the latest technology used exclusively for providing ramp starting and stopping of a three-phase 75 hp, 95 FLA, 480V AC, three phase induction motor driving a centrifugal lift pump. The soft starter shall be designed to meet the applicable NEMA, UL, IEEE, CSA, IEC, and EN standards. The soft starter shall be microprocessor based and be provided with both acceleration and deceleration pump speed control. The soft starter shall be sized for continuous rating of 125% of the motor FLA. The soft starter shall be compatible with power provided by a back-up generator. The soft starter shall be Allen-Bradley SMC Dialog Plus (Bulletin 150) with pump control option, or Engineer approved equal. The soft starter shall have appropriate size landing lugs to accommodate the motor conductors as shown on the Plans. The by-pass contactor shall be automatically energized after the

motor has reached normal operational speed. In addition, the by-pass contactor shall be capable of being manually closed in the event of a failure of the Smart Motor Controller.

The soft starter shall provide the following starting modes:

1. Soft start with selectable kickstart.
  2. Current limit.
  3. Full voltage.
- C. Configuration - The soft starter shall be an open modular device, and shall consist of a logic component and power components. The control module shall be designed for integral mounting on the power section. It shall require no additional panel space or wiring. Front or top control terminals shall be provided and shall be easily accessible for wiring. The control terminals shall be UL rated for 300V, 20A maximum. They shall accept a maximum of two wires each, ranging from #18 to #12 AWG.
- D. Electrical - The control module shall be microprocessor based and shall consist of all the circuitry required to drive the power semiconductors located in the power section.

The power section shall consist of six (6) SCRs, rated for a minimum repetitive peak inverse voltage of 1400 V at 480 VAC. The power section shall be capable of the following:

1. Full voltage rating: 600%, 10 seconds.
2. Centrifugal Pump and Fan Duty: 300%, 30 seconds.
3. Continuous Full Load Rating: 125 % of the FLA of the driven motor.

The power section of the controller shall have integral fan forced air cooling.

- D. Functional - The soft starter shall have the following features switch or keyboard selectable:
1. Acceleration ramp time adjustable from 2 to 30 seconds.
  2. Initial torque setting adjustable from 5% to 90% of locked rotor torque.
  3. A kickstart function providing an adjustable time pulse of current limit prior to the normal starting mode. The current is held at 500% of full load for a time adjustable between 0.4 and 2 seconds. This feature shall be field defeatable.

4. A deceleration ramp time of soft stop adjustable from 2 to 60 seconds.
5. One (1) N.O. and one (1) N.C. Form C auxiliary contact. The contacts can be setup either to change state instantaneously on a start command or when the controller has determined that the motor is up to speed.
6. Protection - The following protective functions shall be provided during "starting and "running" modes:
  - a. Start Fault
  - b. Line Fault
  - c. Temperature Fault
  - d. Stalled Motor

When these conditions are detected, starting of the controller shall be inhibited or the controller shall be shut down if it is operating.

- E. Operator Interface - Interface to the drive shall be provided via a removable Human Interface Module (HIM ) with integral display. The display shall be a 2 line, 16 character alphanumeric, backlit LCD used to show drive operating conditions, fault indications, status, and programming information. HIM shall display the following items:

1. Control voltage present
2. Starting
3. Running
4. Energy saver
5. Stopping
6. Start Fault
7. Stalled Motor
8. Temperature Fault
9. Line Fault

The display can also be configured for simultaneously displaying two values using customized multi-lingual text and user scaled units.

This removable HIM shall store up to 2 drive configuration in EEPROM.

The HIM shall provide programming plus an operational keypad with Start, Stop, direction control / indication and Jog.

**The HIM shall be mounted on the front of the drive's enclosure.**

- F. Input terminations - The soft starter assembly shall have functional provisions and termination points at terminal blocks for remote input of each of the following:

1. Start/stop command from an external dry contact.
  2. Emergency stop shutdown and lockout.
  3. Output terminations - The soft starter assembly shall have functional provisions and termination points at terminal blocks for remote monitoring of the following:
    - a. Run relay dry contact, Form C.
- G. The soft starter shall have a NEMA rated by-pass contactor, as shown on the Plans, and a selector switch mounted on the enclosure. The by-pass contactor shall be wired before the current limiting fuses as shown on the Plans.
- H. **Enclosure - The enclosure shall be motor control center construction as specified in Section 16480 - Low Voltage Motor Control Center. All components shall be accessible from the front of the enclosure. Rear or side access shall not be required in order to remove or service any component. The enclosure shall include the following in its construction:**
1. Lugs and provisions for connecting the motor power leads to output of the SS shall be provided at the bottom of the enclosure and sized per the motor feeder shown on the drawings.
  2. The SS shall incorporate fans for cooling. The air flow through the SS compartment shall provide proper cooling of the operating SS at a room ambient temperature of 110° Fahrenheit.
  3. **The complete SS unit, including the enclosure assembly, shall be U.L. listed for a minimum of 22,000 RMS symmetrical ampere fault withstand capability. SS assemblies consisting of the soft starter, enclosure and all accessories that are not U.L. listed will not be approved.**
  4. The soft starter shall have a NEMA rated overload trip mounted per soft starter manufacturer's standards.
  5. Protective modules for the SMC Dialog PLUS controller shall be required on both the line side and the load side of the unit. The protective modules shall contain metal oxide varistors and capacitors to protect the SMC Dialog PLUS from electrical transients and/or electrical noise.

## 2.03 SPARE PARTS

- A. The Contractor shall furnish the following spare parts to the City:

1. One set of three spare fuses, of the proper size, for each size of soft starter installed.
2. One set of tools required for maintenance of all soft starters as recommended by the manufacturer.

## **PART 3 - EXECUTION**

### **3.01 WORKMANSHIP**

- A. All work in this Section shall conform to the codes and standards specified in Section 16010 and 16120.
- B. The Supplier shall employ personnel that are skilled and experienced in the startup and testing of all elements, equipment, devices, instruments, accessories, and assemblies. All installation labor shall be performed by qualified personnel who have had soft starter experience on similar projects. Provide first class workmanship for all installations.
- C. Ensure that all equipment and materials fit properly in their installations.
- D. Perform any required work to correct improper installations at no additional expense to the City.

### **3.02 MAINTAINABILITY**

- A. The following minimum provisions shall be included for the Soft Starter assembly maintainability:
  1. **All control circuit voltages (12 VDC, 24 VDC and 120 VAC) shall be physically and electrically isolated from power circuit voltages (380 to 600 VAC) to insure safety to maintenance personnel.**
  2. A control compartment for all low voltage signals and circuit boards shall be provided which is physically separated from the power compartment and power wiring.
  3. All printed circuit boards shall utilize quick disconnect plugs and/or pull apart terminal blocks to facilitate maintenance by providing quick change out without disconnecting terminal strip connections thereby reducing wiring errors.
  4. The Soft Starter assembly shall be modular in construction to provide for ease and speed of maintenance. The modules shall be designed to allow for their removal by one maintenance technician.

5. The Soft Starter shall be capable of starting and operating without a motor connected in order to run tests of only the Soft Starter assembly.
6. The supplier of the Soft Starter shall have a factory trained service representative in domestic residence within 150 miles of the job site. This factory representative shall be trained in the maintenance and troubleshooting of the equipment specified herein.

### **3.02 RELIABILITY**

- A. The quality assurance and testing program shall at a minimum consist of the following:
1. Component testing - All power semiconductors and integrated circuits shall be 100% tested.
  2. Computerized ATE testing - Computerized automated test equipment (ATE) shall be used to evaluate the functional performance of printed circuit boards. Printed circuit boards shall receive a thermal stress test with temperatures cycled between 0° C and 65° C and receive electrical power-on and power-off cycle tests.
  3. Burn-in testing - The burn-in test shall be conducted with a 100% inductive motor load drawing the rated soft starter amperage.
  4. System testing - The complete soft starter assembly shall be tested at the systems house prior to shipment. All modes of operations shall be tested with a small motor load to check functionality in compliance with the specifications.
  5. Failures - The manufacturer shall repeat each entire test upon any component failure, modification, or replacement. All component failures, modifications, or replacements shall be listed on the test documentation.
  6. Test documentation - Two (2) certified copies of the test procedures and results shall be submitted for approval. A complete description of suppliers quality assurance and testing program shall be included in this submittal. Shipment of the soft starter assembly to the job site shall not occur until the Engineer has approved the results of the test procedures and results.

### **3.03 FIELD TESTING & STARTUP**

- A. Testing, checkout and start-up of the Soft Starter equipment shall be performed under the technical direction of the manufacturer's service engineer. Under no circumstances are any portions of the drive system to be energized without authorization from the manufacturer's representative.

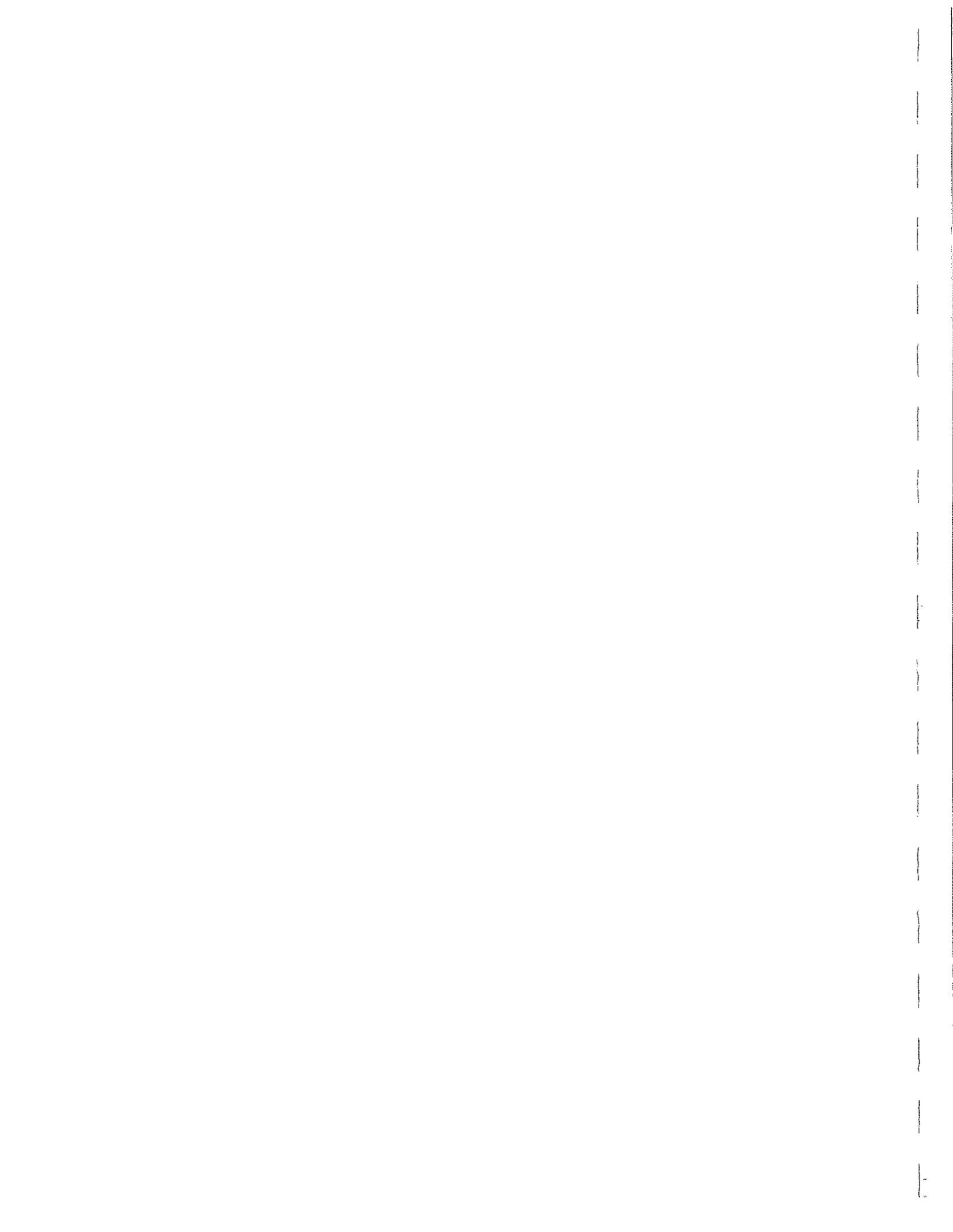
1. The Soft Starter manufacturer shall provide to the Contractor a start-up service for all Soft Starter's provided. This service shall include inspection, final adjustments, operational checks and a final report for record purpose. The start-up service shall be provided by a factory service engineer experienced in the operations and principles of the hydraulics and control of large water pumps.
  2. The setup and programming of the Soft Starter shall be provided by a field technician who is authorized by the Soft Starter manufacturer to perform the startup. This setup and programming shall be done prior to and during the first application of power to the pump motor.
  3. Provide any additional field testing as specified in Section 16950 - **OPERATIONAL TESTING.**
- B. A four (4) hour training course for the City's personnel shall be presented by representatives of the manufacturer at the jobsite.

### **3.04 WARRANTY**

- A. The system supplier shall have a staff of experienced personnel available to provide service on a 2 working days notice during the warranty period. Such personnel shall be capable of fully testing and diagnosing the hardware and software delivered; and of implementing corrective measures.
- B. If the system supplier "fails to respond" in 2 working days, the City at its option will proceed to have the warranty work completed by other resources; the total cost for these other resources shall be reimbursed in full by the Contractor. "Fail to respond" shall be defined as: The Contractor has not shown a good faith effort and has not expended adequate resources to correct the problem. The use of other resources, as stated above, shall not change or relieve the Contractor or supplier from fulfilling the remainder of the warranty requirements.
- C. Each time the Supplier's repair person responds to a system malfunction during the warranty period, he or she must contact the designated City maintenance supervisor for scheduling of the work, access to the jobsite, and permission to make repairs. Operation of facilities necessary to test equipment shall only be performed by or under the direction City staff. The City reserves the right at its sole discretion to deny operations requested by the Supplier.
- D. Prior to "final acceptance", the Contractor shall furnish to the Engineer a listing of warranty information for all manufacturers of materials and equipment used on the project. The listing shall include the following:
1. Manufacturer's name, service contact person, phone number, and address.

2. Material and equipment description, equipment number, part number, serial number, and model number.
3. Manufacturers warranty expiration date.

**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 contact 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.
- 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.

## **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

### RTU SYSTEM

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. This Section covers the relocation and installation of an existing Remote Telemetry Unit (RTU) system in a new enclosure, antenna cable, and other appurtenances necessary for a complete and operating system.
- B. The existing RTU panel shall be relocated and installed by the Contractor into the new motor control center lineup as shown on the Plans. The Contractor shall make all the re-connections and new connections per Plans. The City will verify Contractor made RTU 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 RTU point-to-point testing and start-up.

#### PART 2 - PRODUCTS

##### 2.01 TRANSMISSION CABLE(S)

- A. The Contractor shall provide a new transmission cable to connect the radio antenna port (via 50 ohm "Superflex" cable/lightning arrester) with the antenna (the existing antenna cable is not long enough to reach the relocated RTU system). This cable shall be low-loss foam-dielectric type, ½ inch in diameter, and sufficient length to route the cable from the antenna to the lightning arrester (field verify). The cable shall be weatherproof suitable for direct environmental exposure. Use "O" ring seals on connectors. The transmission cable shall be Andrew Corp. LDF4-50A. The cable shall be installed without splices.
- B. Provide a section of "Superflex" cable between the radio and lightning arrester. This cable shall be Andrew Corp. FSJ1-50A.
- C. Connectors shall be type N.
- D. The Contractor shall field verify the length of antenna cable required for the project. The cable shall be installed without splices.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. The Contractor shall be responsible for the relocation and installation of the RTU 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 RTU system shall be installed in accordance with manufacturer's written instructions. The City will conduct tests to determine its acceptability.
- B. The City will perform the following work:
  - 1. Verify the correct installation of RTU 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 RTU system.
  - 3. Verify the correct connection of all power sources supplied to and from the RTU system.
  - 4. Verify I/O terminations and proper device calibrations.
- C. If deficiencies are found in section "B" items 1 through 4 above, the Contractor shall immediately correct the problem at no additional cost to the City.

### **3.02 FIELD TESTING**

- A. After finishing all the connections, The Contractor shall perform a point to point test of all the PLC 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 RTU.
  - 2. Analog output testing of outputs from the RTU to the field device controlled.
  - 3. Digital input testing of all digital devices from the field to the RTU.
  - 4. Digital output testing of outputs from the RTU 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 Contractor assigned representative.

**END OF SECTION**

## SECTION 16922

### MISCELLANEOUS EQUIPMENT

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. This Section covers the furnishing, installation and relocation of the following equipment: magnetic door switch, ultrasonic level transmitter system, UPS, reactive air bell system, pressure transmitters, float switch and solenoid valve.

##### 1.02 REFERENCE PUBLICATIONS

- A. The equipment covered under this contract shall be designed, manufactured, and tested in accordance with the latest version of the applicable industrial standards.

##### 1.03 SUBMITTALS

- A. Manufacturers' Data:

1. Magnetic door switch.
2. Float switch
3. Solenoid valve
4. Ultrasonic level element (U1)

- B. Shop Drawings.

- C. Operations and Maintenance Manuals as specified in Section 01330.

##### 1.04 QUALITY ASSURANCE

- A. The manufacturer shall verify that they have been fabricating and assembling similar equipment for a minimum of five (5) years. Manufacturer shall be located in the United States. Assembly plant shall be TESCO, IEM, CMC, KB, Meyer Control or approved equal.

#### PART 2 - PRODUCTS

##### 2.01 ANTENNA POLE

- A. Existing antenna and antenna pole to remain in place.

1. A new antenna cable shall be provided by the Contractor.

## 2.02 MAGNETIC DOOR SWITCH (DS)

- A. Magnetic door switch shall be Sentrol model number 1043TW or approved equal. Color shall be natural (off-white).

## 2.03 UNINTERRUPTIBLE POWER SUPPLY

- A. Re-use the existing UPS and make all the necessary re-connections.

## 2.04. ULTRASONIC LEVEL INDICATING TRANSMITTER

- A. Re-use the existing Hydroranger and make all the necessary re-connections.
- B. Replace the existing Ultrasonic Level Element (LE) Transducer U1 with the same new level element that is **Miltronics XPS-15F with sufficient cable length back to the RTU panel. Cable splice shall not be acceptable.** Contractor to deliver the removed LE to City's CWTP at 1395 35<sup>th</sup> Avenue.
- B. All programmable parameters shall be set up and entered by the Contractor for level measurement.
- C. The Contractor shall be responsible for accurately measurement of the sump level. If the ultrasonic detector does not accurately measure the sump level the Contractor shall reinstall the sensor at their cost until an accurate reading can be obtained.

## 2.05 REACTIVE AIR BELL SYSTEM

- A. The Contractor shall re-connect the existing reactive air bell system to the relocated RTU panel.
- B. Re-use the existing air compressor and accessories and make all the necessary re-connections.
- C. ~~Provide a new reactive air bell and tubing as a back-up as shown on the Plan.~~

## 2.06 PRESSURE TRANSMITTER

- A. Re-use the existing pressure transmitters and make all the necessary re-connections including the water pressure transmitter.

## 2.07 FLOAT SWITCH

- A. Float switch shall utilize a weighted Polypropylene float which moves with liquid level to actuate a mercury switch. The Float switch shall have a minimum electrical rating of 300 V, 0.5 A. The float switch shall be a Anchor Scientific Mini-Float SM10, Hydr-O-Matic 3900, Scientific Technologies Inc. FQ series or approved equal.
- B. The float switch shall be secured to its suspension cable, allowing enough cable length for actuation of float. Tie-wrap multiple suspended cables together inside sump with enough play to allow float or other sensor to operate freely. The Contractor shall set the elevation of the float within the wet well per the Engineer's requirements.

## 2.08 SOLENOID VALVES

- A. Re-use the existing solenoid valves for the air bell system and make all the necessary re-connections.
- B. Existing solenoid valves for all motor oilers shall be replaced with new 120 Vac, ASCO Red-Hat valves, model number 8262G210 or equal.
- C. For all motors, install new Lukenhimer adjustable drippers, or equal, with sight glass after the solenoid valve and adjust to drip 15 drops per minute.

## PART 3 - EXECUTION

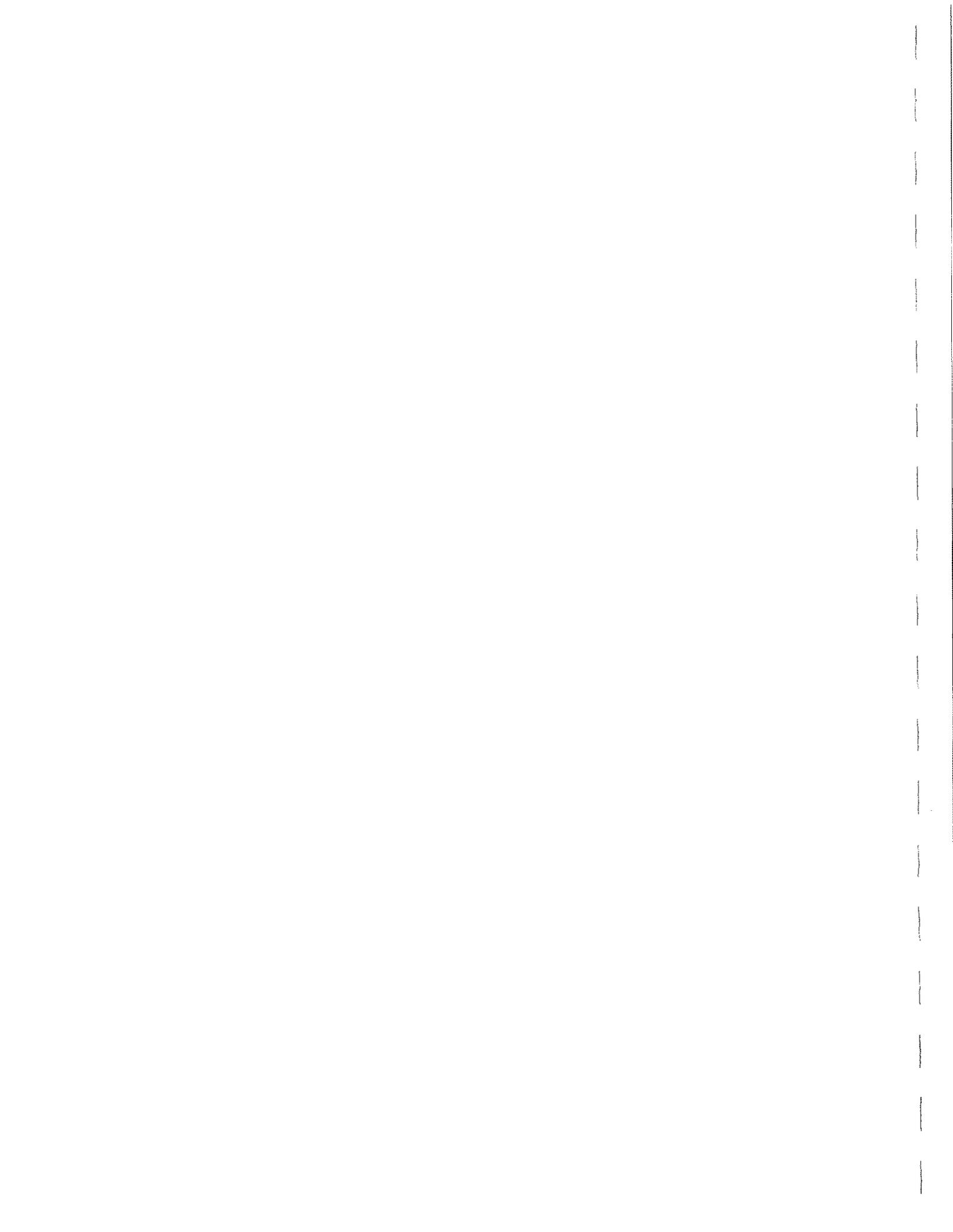
### 3.01 INSTALLATION

- A. The Contractor shall be responsible for the installation of the equipment specified and shall pull all the cables and wires and make all the connections as shown on the Plans. The City will conduct tests to determine its acceptability.

### 3.02 FILED TESTING

- A. After finishing all the connections, the Contractor shall cooperate with the City during the testing.

**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. Switchboard and MCC device test, generator receptacle test.
5. Mechanical preoperational test.
6. 600 volt conductor test.

## **7. 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 SWITCHBOARD & 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
3/4"	10	1,400	116
7/8"	9	1,950	162
1"	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 MECHANICAL PREOPERATIONAL TESTING**

**A. Pneumatic Leakage Testing:**

1. All bubbler air piping shall be pneumatically air tested for leakage as a complete system. Oil aerosols shall be removed by the utilization of a coalescing filter with a filter efficiency of 1 ppm oil aerosols and filtering to 3 microns particles.
2. All joints and couplings shall be left uncovered and exposed for examination during the pneumatic test.
3. A preliminary pneumatic test not to exceed 10 psig shall be applied as a means of locating major leaks. Leakage on the bubbler air system shall be detected by the soap bubble or equivalent method. From 10 psig, the test pressure shall be increased in steps of 5 psig until the required test pressure listed in Table 1 is reached.

<b>Table 1 - Pneumatic Test Pressure/Duration</b>		
<b>Service</b>	<b>Air Test Pressure</b>	<b>Duration Time</b>
Bubbler Air	25 psig	1 hour

**3.07 600 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.

### **3.08 WIRING TEST**

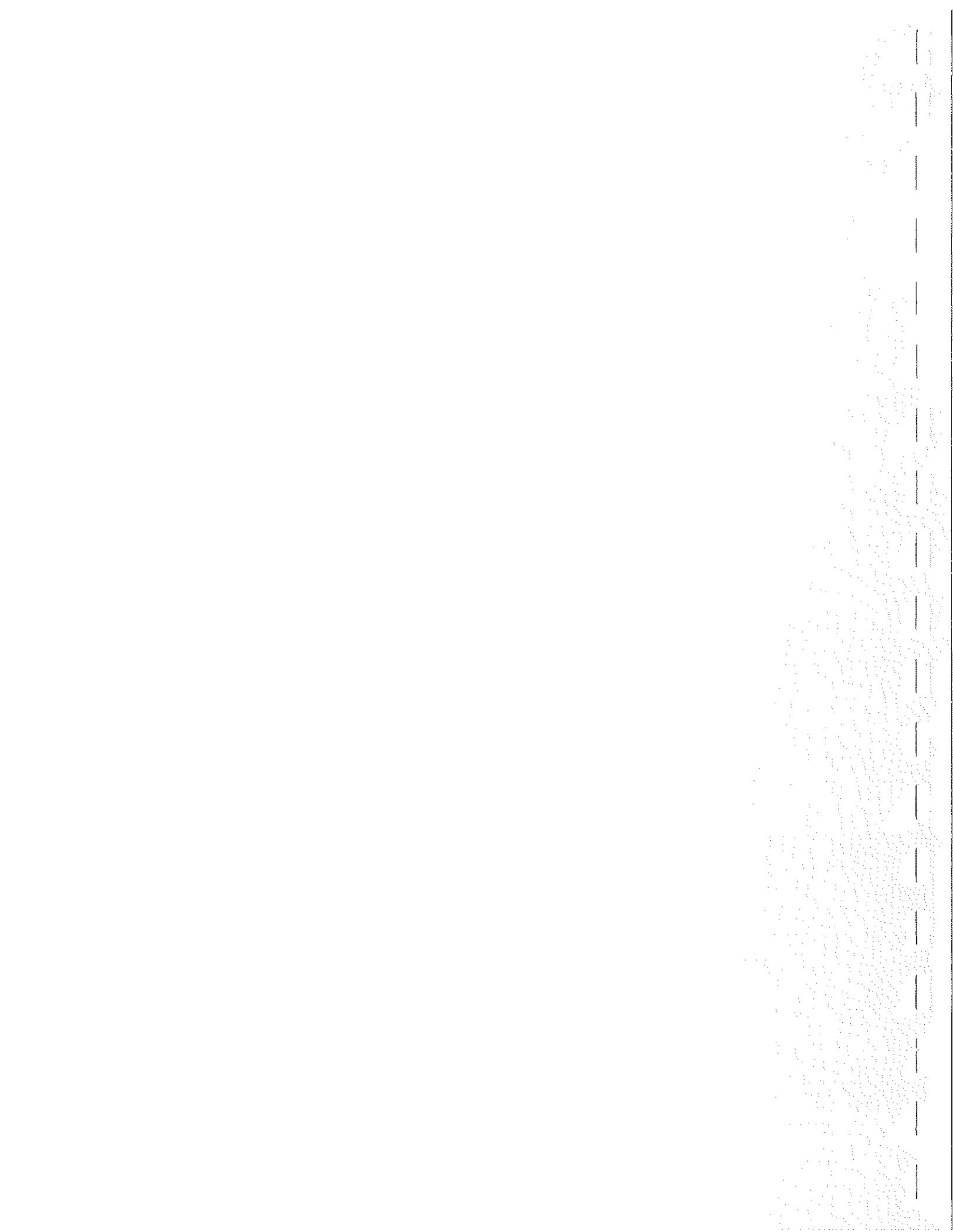
- A. Verify all wire connections/terminations are per contact drawings or approved changes. Check for proper termination of all wires.

### **3.09 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**

**APPENDIX A**  
**ENVIRONMENTAL NOTICE OF EXEMPTION**





## NOTICE OF EXEMPTION

TO: X County Clerk  
County of Sacramento

FROM: City of Sacramento  
Environmental Planning Services  
1231 I Street, Room 300  
Sacramento, CA 95814

— Office of Planning and Research  
1400 10th Street, Room 121  
Sacramento, CA 95814

ACTIVITY/PROJECT TITLE: Sump 37 Pump Station Electrical Improvements (WM56)

ACTIVITY/PROJECT LOCATION: 4800 Power Inn Road, between 14<sup>th</sup> Avenue & Fruitridge Road @ RR tracks

CITY: Sacramento

COUNTY: Sacramento

DESCRIPTION OF ACTIVITY/PROJECT: This project consists of installing an emergency generator connection, new switchgear and motor control centers, new pumps and valves, conduit, wires and lights and a new perimeter fence. A new control building approximately the same size as the existing building, will house the new switchgear. Remove and replace the existing plant concrete. No tree trimming is anticipated with this project. All work will take place within the City's right-of-way.

NAME OF PUBLIC AGENCY APPROVING ACTIVITY/PROJECT: City of Sacramento

NAME OF PERSON/AGENCY CARRYING OUT ACTIVITY/PROJECT: City of Sacramento Dept. of Utilities 1395 35<sup>th</sup> Avenue Sacramento, CA 95822; Contact: Jian Zhuang (916) 808-1428.

THE CITY OF SACRAMENTO FINDS THAT THE ACTIVITY/PROJECT IS EXEMPT.

Exempt Status: (Check One)

- Activity is not a project as defined in Section 15378 [Section 15061(b)(1)]
- Activity has no potential for causing a significant effect on the environment [Section 15061(b)(3)]
- Statutory Exemption [Section 21080(b)(8)]
- Ministerial Exemption [Section 15268]
- Declared Emergency Exemption [Section 15269(a)]
- Emergency Project [Section 15269(b) and (c)]
- Categorical Exemption-State Class1 and Section Number(s)15301(a)15301(b)15301(d)15302(c)15303(e)

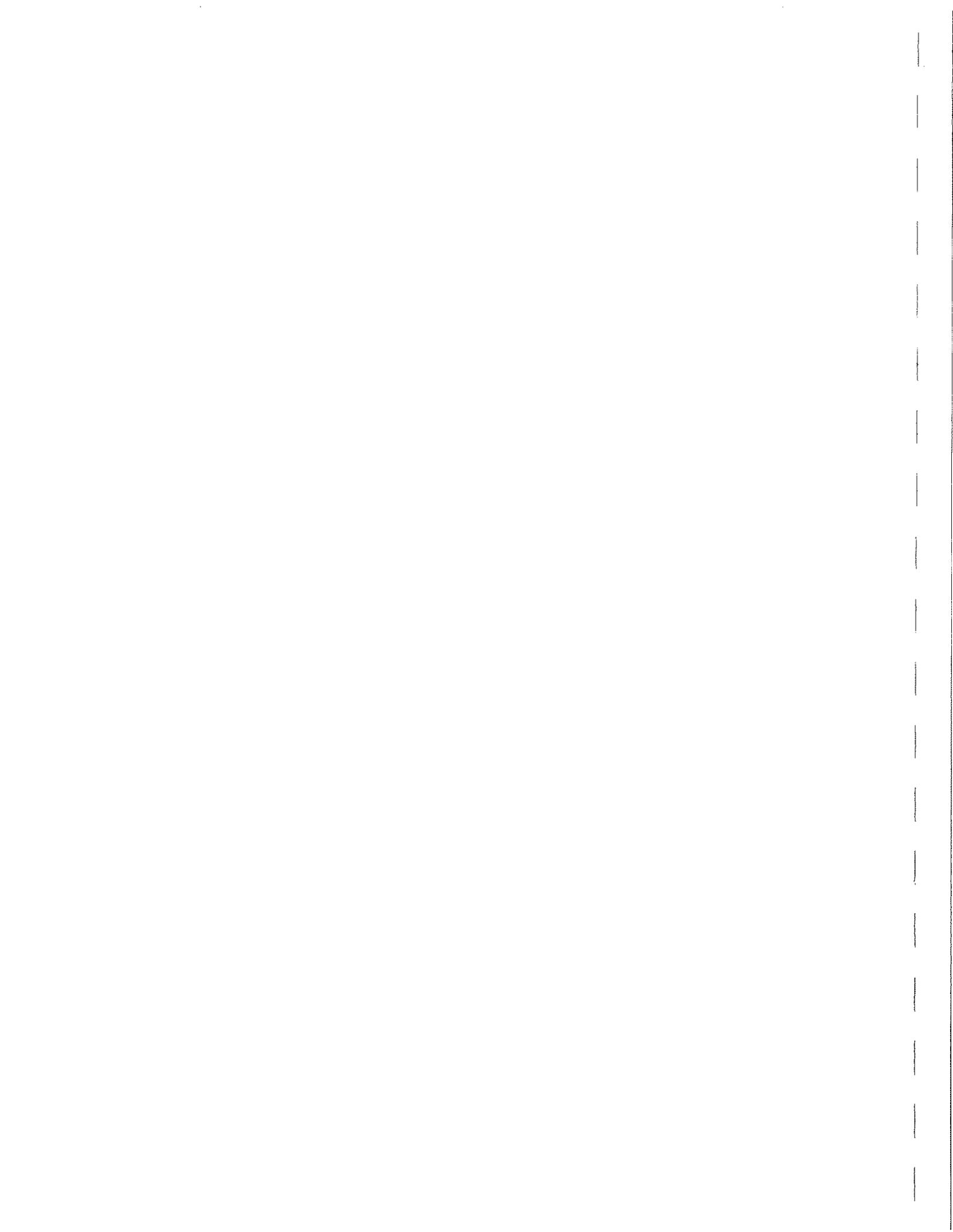
REASONS WHY ACTIVITY/PROJECT IS EXEMPT: 15301(a) Interior or exterior alterations involving electrical or plumbing conveyances; 15301(b) Repair and/or minor alteration of existing facilities used to provide electric power; 15301(d) Restoration or rehabilitation of deteriorated or damaged structures, facilities or mechanical equipment to meet current standards of public safety; 15302(c) Replacement or reconstruction of existing utility systems and/or facilities involving negligible or no expansion of capacity. 15303(e) New construction of accessory structures including fences.

CONTACT PERSON: Ronnie Bess, Planning Technician

TELEPHONE: (916) 808-1909

SIGNED: \_\_\_\_\_

DATED: \_\_\_\_\_



## CONSTRUCTION NOTES

The following are Construction notes. They must be included in all construction documents in order for the project to be exempt.

### Tree Protection Notes

1. The contractor shall hire an International Society of Arboriculture (ISA) certified arborist to do any required pruning for equipment clearance. The contractor shall contact the City Arborist (Dan Pskowski, 768-8604) for a root inspection(s) for trenching activities within the dripline(s) of the trees.
2. If during excavation for the project, tree roots greater than two inches in diameter are encountered, work shall stop immediately until the project arborist can perform an on-site inspection. All roots shall be cut clean and the tree affected may require supplemental irrigation/fertilization and pruning as a result of the root cutting. The project sponsor will be responsible for any costs incurred.
3. The contractor shall be liable for any damage to existing trees, i.e. trunk wounds, broken limbs, pouring of any deleterious materials, or concrete washout under the drip line of the trees. Damages will be assessed using the "*Guide to Plant Appraisal*" ninth edition, published by the International Society of Arboriculture (ISA). The contractor shall hire an ISA certified arborist to do the appraisal and submit a report for review by the City Arborist.
4. Supplemental irrigation will be required for trees and adjacent to the project site where the irrigation been turned off or modified because of construction activities.
5. The trees to be preserved and the protection methods noted above shall be identified on all construction plans for this project.

### Cultural Resources

This language should be included on construction notes for exempt projects involving underground work in the downtown area especially:

1. If subsurface archaeological or historical remains are discovered during construction, work in the area shall stop immediately and a qualified archaeologist and a representative of the Native American Heritage Commission shall be consulted to develop, if necessary, further mitigation measures to reduce any archaeological impact to a less-than-significant level before construction continues.
2. If human remains are encountered, all work in the are shall stop immediately and the Sacramento County Coroner's office shall be notified immediately. If the remains are determined to be Native American in origin, both the Native American Heritage Commission and any identified descendants must be notified and recommendations for treatment solicited (CEQA Section 15064.5); Health and Safety Code 7050.5; Public Resources Code Section 5097.94 and 5097.98.



**APPENDIX B**

**SMUD ELECTRICAL SERVICE COMMITMENT**

