

RUBIDOUX COMMUNITY SERVICES DISTRICT  
(951) 684-7580

3590 RUBIDOUX BLVD  
JURUPA VALLEY, CA 92509

P. O. BOX 3098  
JURUPA VALLEY, CA 92519

**RUBIDOUX COMMUNITY SERVICES DISTRICT  
CONTRACT DOCUMENTS FOR  
MARKET STREET AND 24TH STREET PIPELINE RELOCATION**

**BID OPENING: WEDNESDAY, APRIL 19, 2023 AT 2:00 PM**

**Prepared By**

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SIGNATURE \_\_\_\_\_



DATE 03/20/2023

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**NOTICE INVITING BIDS**

RUBIDOUX COMMUNITY SERVICES DISTRICT  
JURUPA VALLEY, CALIFORNIA

**NOTICE INVITING BIDS**

FOR  
MARKET STREET AND 24TH STREET PIPELINE RELOCATION

Prospective bidders are hereby notified that the RUBIDOUX COMMUNITY SERVICES DISTRICT (Owner) will receive sealed bid proposals for MARKET STREET AND 24TH STREET PIPELINE RELOCATION. Such proposals will be received until **Wednesday, April 19, 2023 at 2:00 p.m.** at Owner's office, at which time said bids will be publicly opened and read.

The Work generally consists of providing all equipment, labor, and materials necessary to:

- Install approximately 200 LF of 16" ductile iron pipe, including various valves, appurtenances, and connections.
- Removal and replacement of AC base and cap pavement, as detailed in the Contract Documents.

A **mandatory pre-bid meeting and site tour** will be held on **Wednesday, April 5, 2023** commencing at **9:00 a.m.** at the Project Site (intersection of Market Street and Via Cero, Jurupa Valley, CA 92509). All bidders must have an employee of their firm sign-in and attend the mandatory pre-bid meeting and site tour. Failure to do so shall deem their bid non-responsive.

All questions must be submitted in writing by 5:00 p.m. on **Wednesday, April 12, 2023** to Sinisa Saric at Krieger & Stewart, Incorporated, [ssaric@kriegerandstewart.com](mailto:ssaric@kriegerandstewart.com), with a copy to Lorna Ewing at [lewing@kriegerandstewart.com](mailto:lewing@kriegerandstewart.com). **NO QUESTIONS WILL BE ADDRESSED AFTER THIS TIME.**

Prospective bidders shall be licensed Contractors in the State of California having at least 5 years' experience and being qualified to perform the Work specified in the Contract Documents. Pursuant to Public Contract Code section 3300, bidders (Contractors) shall possess active and current Contractor's License, Class A or Class C-34, which shall be maintained through the course of the Work.

Bidders may examine the Contract Documents online at the District's website at <https://www.rcsd.org/capital-improvement-projects>. **Prospective bidders must be included on the official planholder's list for the project to receive addenda and be eligible to bid this project.** To be added to the planholder's list, send an email to Anthony Strey at [astrey@rcsd.org](mailto:astrey@rcsd.org) to register the name of the company as an interested bidder for the project. It is the responsibility of each prospective bidder to review and verify the completeness of the documents before submitting a bid, and to check for any applicable addenda or updates. Incomplete bids and bids that do not include signed copies of all issued addenda may be subject to disqualification.

Owner reserves the right to reject any and all proposals, to waive any irregularity, or to award a Contract to other than the lowest bidder. If Owner elects to award a contract for the Work, the award will be made within 60 days from the date of the bid opening. Bids shall be valid for said 60 day period.

Each bid proposal must be accompanied by cash, a certified or cashier's check, or bid bond issued by a surety admitted in and regulated by the State of California and further, if the work or project is financed in whole or in part with federal grant or loan funds, listed in the Treasury Department's most current Circular 570 (bid bond shall be submitted on the form included in the Contract Documents or on an equivalent form approved by Owner) for an amount not less than ten percent (10%) of the maximum amount bid. Said check or bond shall be made payable to RUBIDOUX COMMUNITY SERVICES DISTRICT and, when delivered with a bid proposal, shall constitute a guarantee that bidder will, if an award is made to them in accordance with the terms of said bidder's proposal: execute the Contract in the Owner's standard form, together with Labor Code certification thereon; furnish Contract Performance and Payment Bonds with a corporate surety or sureties satisfactory to the Owner, or equivalent substitution in lieu of bonds, each for not less than 100 percent of the bid price; furnish Certificates of Insurance evidencing that all insurance coverage required by the Contract has been secured.

Owner has obtained from the Director of the State of California Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work. Said rates are on file at the Owner's office and they will be made available to any interested party upon request. Said rates can also be obtained from the State of California website ([www.dir.ca.gov/dlsr/pwd](http://www.dir.ca.gov/dlsr/pwd)). Each Contractor to whom a Contract is awarded must pay the prevailing rates and post copies thereof at the job site.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal for, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. No bid will be accepted nor any contract entered into without proof of Bidder's and subidders' current Public Works Contractor Registration with the Department of Industrial Relations. If awarded the Contract, Bidder and subidders of every tier shall maintain active Public Works Contractor Registration with the Department of Industrial Relations for the duration of the project. It shall be bidder's sole responsibility to evaluate and include in their bid the cost of complying with all labor compliance requirements.

Bidder is advised that Contractor may, at his sole and expense, substitute securities equivalent to any monies withheld by the Owner to insure performance under the Contract. Such securities shall be deposited with the Owner or with a State or Federally Chartered Bank as escrow agent who shall pay such monies to the Contractor upon satisfactory completion of the Contract. The Contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon. Securities eligible for substitution shall include those listed in Public Contract Code section 22300. Alternatively, the Contractor may request to have earned retentions paid directly to the escrow agent in accordance with Public Contract Code section 22300.

RUBIDOUX COMMUNITY SERVICES DISTRICT  
JURUPA VALLEY, CALIFORNIA

Dated: March 15, 2023  
Authorization Date

By: Ted Beckwith  
Director of Engineering



**BIDDING DOCUMENTS**

RUBIDOUX COMMUNITY SERVICES DISTRICT  
JURUPA VALLEY, CALIFORNIA

**BIDDING DOCUMENTS**

FOR MARKET STREET AND 24TH STREET PIPELINE RELOCATION

**A. INSTRUCTIONS TO BIDDERS**

**1. Responsible Bidders**

Bidders are advised that in selecting the Contractor, Owner reserves the right to consider the financial responsibility and general competency of each Bidder, his trustworthiness, quality, fitness, capacity, and experience to satisfactorily perform the public works contract, as well as his reputation within the industry. Owner expects each Bidder to fully and truthfully disclose all information required of the Bidder by the Bidding Documents. Each Bidder must be properly licensed and must sign and submit with his bid proposal the Bidder's Statement of Experience, Bidding Sheets, and Certified Data Sheet. Please note that similar information is required in said Bidder's Statement of Experience with respect to any proposed subcontractors (Not required for materials only proposal).

**2. Completion of Bid Proposal and Supporting Documents**

Bidder shall submit his bid proposal on the forms contained within these Bidding Documents (Bid Proposal Packet) provided with the Contract Documents issued by Owner or Owner's representative directly to Bidder. Owner will not accept bid proposals submitted on forms other than those contained within said Bid Proposal Packet included in the Contract Documents. Any addenda or bulletins issued prior to the bid shall be incorporated into the bid proposal and shall be evidenced by Bidder's inclusion of the signed acknowledgement of receipt for each addendum or bulletin with Bidder's submitted bid proposal.

Bidder shall complete the attached bid proposal and supporting documents including any addenda or bulletins issued before receipt of bids and public opening of same together with Statement of Experience (not required for materials only proposal), Bid Schedule, Certified Data, Certified Worker Craft and Classification, Certification of Bidder's Work Site Inspection, Statement on Bonds and Insurance, Certification of Bidding Documents, Non-Collusion Declaration, Public Works Contractor Registration Certification, Iran Contracting Act Certification, Executive Order N-6-22 Certification, and Bid Proposal Guarantee.

Pursuant to Labor Code sections 1725.5 and 1771.1, no bid will be accepted nor any contract entered into without proof of Bidder's and subbidders' current registration with the Department of Industrial Relations. Bidder shall sign and submit with its bid the Public Works Contractor Registration Certification on the form provided, attesting to the facts contained therein. Failure to submit this form may render the bid non-responsive. Each Bidder shall provide the Public Works Contractor Registration Number for each listed subbidder in the space provided in the listing of subbidders.

**Bidder shall complete each blank on each page. Each entry within the Bid Schedule(s) shall be printed by hand in blue or black ink, and each entry on remaining forms shall be completed by hand or typewritten; forms shall be signed in accordance with Item A.4 herein. The completed forms shall be without alterations, erasures, or interlineations. Bidder shall correct errors by striking or lining out mistakes and entering and initialing corrections immediately thereabove. Unless otherwise provided in the Supplemental Instructions to Bidders, Owner will not consider any bid proposal which does not include bids on all bid items set forth in the Bid Schedule(s). Owner will not consider alternative proposals unless they are called for by these instructions or the supplemental instructions appearing in the Bidding Documents themselves.**

Owner may, at its sole discretion, reject any bid to which the Bidder has added conditions, limitations, provisions, or any alterations or interlineations. Owner may also, at its discretion, reject any bid for which the Bidder has failed to supply all requested information or has misrepresented any such information or any matter whatever. Pursuant to Business and Professions Code Section 7028.15, Owner will consider non-responsive and reject any bid submitted by a Contractor not licensed as required by law.

**3. Omissions and Discrepancies**

Should a Bidder find purported discrepancies in, or omissions from the Special Requirements, Basic Specifications, Construction and Standard Drawings, or other documents bound herein, or should Bidder be in doubt as to their meaning, Bidder shall **immediately** notify Owner in writing. Owner may then send written instructions or notification to all Bidders.

**4. Signature and Seal**

If the bid proposal is made by an individual, it shall be signed and his full name and his address shall be given; if it is made by a partnership, it shall be signed with the partnership name by one of the partners, who shall sign his own name and, in addition, the name and address of each partner shall be given; if it is made by a corporation, the name of the corporation shall be signed by its duly authorized officer, or officers, attested by the corporation seal, and the names and titles of all current officers of the corporation shall be given.

**5. Bid Proposal Guarantee**

Each bid proposal shall be accompanied by cash, a certified or cashier's check, or bid bond issued by a surety or sureties admitted in and regulated by the State of California and further, if the Work or project is financed in whole or in part with federal grant or loan funds, listed in the Treasury Department's most current Circular 570 (bid bond shall be submitted on the form attached herein or on an equivalent form approved by Owner), or equivalent substitution in lieu of a bond as authorized by Civil Procedure Code Section 995.710, for an amount not less than 10% of the maximum amount bid.

Said check, bond, or substitute shall be made payable to the Owner and shall be given as a guarantee that the Bidder will enter into the Contract described in the Notice Inviting Bids herein if awarded the Work. By submitting a bid proposal, each Bidder agrees that its failure to enter the Contract if awarded the Work would result in damage to the Owner and that it would be impracticable or extremely difficult to ascertain the actual amount of that damage. For this reason, each Bidder agrees that the Owner may retain the bid proposal guarantee as liquidated damages if the Bidder is awarded the Work but fails to or refuses to timely enter the Contract.

**6. Packaging and Delivery of Bid Proposal and Guarantee**

Once the bid proposal and supporting documents herein have been completed and signed as set forth above, they shall be placed, along with the bid proposal guarantee and any proposed sketches and brochures required by these instructions, in an envelope, sealed and addressed, and delivered or mailed, postage prepaid, to:

**RUBIDOUX COMMUNITY SERVICES DISTRICT**

**Street Address**  
**3590 Rubidoux Boulevard**  
**Jurupa Valley, CA 92509**

**Mailing Address**  
**P.O. Box 3098**  
**Riverside, CA 92519-3098**

Said envelope shall also contain the following in the lower left-hand corner thereof:

Bid Proposal of \_\_\_\_\_ (Bidder's Name)

for \_\_\_\_\_ (Project Name Appearing on Cover Sheet)

No consideration shall be given by the Owner to bid proposals received after the date and time set by the Notice Inviting Bids herein for the opening of bids.

**7. Withdrawal of Bid Proposal**

Any Bidder may, without prejudice, withdraw his bid proposal at any time prior to the date and time set by the Notice Inviting Bids herein for the opening of bids; provided that any request to withdraw is made in writing and duly executed by the Bidder or the Bidder's duly authorized representative and delivered to the Owner at the address set forth in Instruction 6 herein. A bid proposal shall be deemed withdrawn once it has been delivered by the Owner to the Bidder requesting withdrawal, either by personal delivery or deposit in the United States mail, addressed to the address originally given by the Bidder. After withdrawal, the Owner will not recognize modifications of bid proposals attempted by methods other than as set forth in Instruction 8 herein.

**8. Modification of Bid Proposal**

Any Bidder who may wish to modify the bid proposal previously submitted by him may do so only by (a) following the withdrawal procedure set forth in Instruction 7 hereof prior to the date and time set by the Notice Inviting Bids herein for the opening of bids, and (b) submitting a substituted bid proposal which conforms to the requirements set forth in Instruction 1, 2, 4, 5, and 6 hereof. A bid proposal shall be deemed withdrawn once it has been delivered by the Owner to the one requesting withdrawal, either by personal delivery or deposit in the United States mail, addressed to the address originally given by the Bidder. After withdrawal, the Owner will not recognize modifications of bid proposals attempted by methods other than as set forth in this Instruction 8.

**9. Opening and Awarding of Bids**

All bid proposals shall be publicly opened and read at the time and place set forth in the Notice Inviting Bids herein. Bidders and their authorized representatives are invited to be present. The award, if made, will be made within 60 days of the opening. The Owner's policy is to award to the lowest responsible Bidder submitting a responsive bid who can comply with the projected delivery and/or completion schedules. However, the Owner reserves the right to reject any and all bids, to waive any irregularity, or to award the subject Contract to other than the lowest Bidder. Owner may, at its sole discretion, disregard any added conditions, limitations, provisions, or any interlineations or alterations. Notice of Award shall be made to a successful Bidder in writing and mailed to the address as set forth on the signature page of the Bidding Documents.

In the event there are unit price bid items in a bidding schedule and the "amount" indicated for a unit price bid item does not equal the product of the unit price and quantity, the unit price shall govern and the amount will be corrected accordingly. However, if the amount set forth as a unit price is ambiguous, illegible or uncertain for any cause, or is omitted, or is the same amount as the entry in the item cost column, then the amount set forth in the item cost column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price. In the event there is more than one bid item in a bidding schedule and the total indicated for the schedule does not agree with the sum of the prices bid on the individual items, the prices bid on the individual items shall govern and the total for the schedule will be corrected accordingly. Where applicable, in case of discrepancy between the written price and the numerical price, the written price shall prevail.

**10. Return of Proposal Guarantees**

Bid proposal guarantees will be returned to unsuccessful bidders within 60 days from the date that the Contract is awarded to the successful bidder.

**11. Bond(s) and Certificates Required of Successful Bidder**

The successful Bidder shall, upon receipt of notice of acceptance of his bid, promptly secure with a responsible corporate surety or sureties admitted in and regulated by the State of California and, if the Work or project is financed in whole or in part with federal grant or loan funds, listed in the Treasury Department's most current Circular 570, a contract performance bond in an amount of not

less than 100% of the total bid price, conditioned upon faithful performance by said Bidder of all requirements under the Contract.

In addition, the successful Bidder shall promptly secure with a responsible corporate surety or sureties admitted in and regulated by the State of California and, if the Work or project is financed in whole or in part with federal grant or loan funds, listed in the Treasury Department's most current Circular 570, a payment bond (not required for materials only proposal) in an amount of not less than 100% of the total bid price, conditioned upon payment in full of the claims of all persons performing labor upon or furnishing materials to be used in or furnishing appliances or power contributing to the Work to be performed under the Contract.

Owner may request the successful Bidder submit a certified copy of the certificate of authority of the surety insurer issued by the California Insurance Commissioner and to submit copies of the surety insurer's most recent quarterly and annual statements filed with the Department of Insurance pursuant to California Insurance Code, Section 900, et seq.

The successful Bidder shall also furnish Certificates of Insurance as evidence of coverage in accordance with the Contract Appendix.

All bonds shall be subject to the approval of the Owner, and shall be submitted on the forms provided in the Contract section of the Contract Documents. All Certificates of Insurance shall be subject to the approval of the Owner and shall be submitted on the forms provided in the Contract section of the Contract Documents.

## **12. Execution of the Contract**

The Bidder to whom award is made shall execute a written contract with the Owner on the form of Contract provided herein (which shall incorporate by reference the Proposal, addenda or bulletins issued before receipt of bids and public opening of same, Bidder's Statement of Experience (not required for materials only proposal), Bidding Sheet, Certified Data Sheet, Special Requirements, Basic Specifications, and Construction and Standard Drawings), together with the Labor Code Certification (not required for materials only proposal) therein, and furnish good and approved bond(s) and Certificates of Insurance as required in the preceding paragraph within 10 days from the date of mailing the Notice from the Owner to the Bidder, as set forth above, of the acceptance of his proposal.

No bid proposal shall be considered binding upon the Owner until the Contract has been executed. Failure or refusal by the successful Bidder to so enter into a Contract, as herein provided, or to conform to any of the stipulated requirements in connection therewith, shall be just cause for the annulment of the award and the retention by the Owner of the bid proposal guarantee. If the successful Bidder refuses or fails to execute the Contract, the Owner may award the Contract to the Bidder whose bid proposal is next most acceptable to said Owner; and such Bidder shall fulfill every stipulation embraced herein as if he were the party to whom the first award was made.

A corporation to which an award is made will be required, before the Contract is finally executed, to furnish evidence of its corporate existence and of the authority of the officer signing the Contract and bond for the corporation to so sign.

## **13. Withheld Contract Funds**

Bidder is advised that Contractor, at his request and expense and in accordance with Section 22300 of the California Public Contract Code, will be permitted to substitute securities equivalent to monies withheld by Owner to insure performance under the Contract. Alternatively, the Contractor may request to have earned retentions paid directly to the escrow agent in accordance with Public Contract Code Section 22300. Refer to Section 30 of the Contract Appendix and the Escrow Agreement for Security Deposits in Lieu of Payment Retention included within the Contract section of the Contract Documents.

**B. BIDDER'S PROPOSAL WITH SUPPORTING DOCUMENTS**

TO THE PRESIDENT OF THE TO THE PRESIDENT OF THE BOARD OF DIRECTORS, RUBIDOUX COMMUNITY SERVICES DISTRICT, JURUPA VALLEY, CALIFORNIA (Owner):

**1. Proposal**

The undersigned proposes to construct, furnish and install, or furnish only the components or items as set forth in the Bidding Documents for MARKET STREET AND 24TH STREET PIPELINE RELOCATION.

In submitting this Proposal, the undersigned declares that he has read the Notice Inviting Bids, the Instructions to Bidders, the unexecuted Contract, and all other documents incorporated by reference, including the Special Requirements, the Basic Specifications, and the Construction and Standard Drawings and that he has inspected the Work site.

In exchange for consideration of this Proposal by the Owner, the Bidder agrees that if his bid is accepted by the Owner, the Bidder shall execute said Contract, construct, furnish and install, or furnish the items set forth in this Proposal and required by the Contract, Special Requirements, Basic Specifications, and Construction and Standard Drawings (all within the time provided), and shall accept as full payment the prices set forth in the Bid Schedule(s).

The Bidder further agrees that he shall execute such Contract within ten days from the date of mailing to him written notice of the Owner's acceptance of this proposal, that within the same time he shall furnish performance and payment bonds\*, along with required certificates of insurance, and that upon failure to do so within said time, the proposal guaranty shall become the property of the Owner as liquidated damages for such failure or refusal, and shall be deposited as moneys belonging to the Owner; provided that if said Bidder executes the Contract and furnishes the required performance and payment bonds\* and certificates of insurance within the time aforesaid, his proposal guaranty shall be returned to him within ten days thereafter.

In submitting a bid to a public body, the Bidder offers and agrees that if the bid is accepted, it will assign to the Owner all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2 of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, materials, or services by the Bidder pursuant to the bid. Such assignment shall be made and become effective at the time the Owner tenders final payment to the Contractor, without further acknowledgment by the parties.

\*Payment bond not required for materials only proposal.

**2. Statement of Experience\***

a. Bidder

Each Bidder (Contractor) shall list, in addition to name and address, the type of work in which it is qualified, and its years of experience in that type of work. Bidder (Contractor) shall perform Work in excess of thirty percent (30%) of the total bid.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Contractor License No.: \_\_\_\_\_ Class: \_\_\_\_\_

Type of Work: \_\_\_\_\_

Years of Experience: \_\_\_\_\_

DIR Registration No.: \_\_\_\_\_ (also complete certification form herein)

b. Bidder Projects

Each Bidder (Contractor) shall furnish work record for Bidder (Contractor), listing at least four (4) projects similar to the type of work specified that the Bidder has completed within the past three (3) years. Responses shall be full and explicit.

1) Project Name: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Type of Work: \_\_\_\_\_

Owner (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Engineer (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Person in Charge of Project (Name, Phone & Email): \_\_\_\_\_

\_\_\_\_\_

2) Project Name: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Type of Work: \_\_\_\_\_

Owner (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Engineer (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Person in Charge of Project (Name, Phone & Email): \_\_\_\_\_

\_\_\_\_\_

\* Not required for materials only proposal

2. **Statement of Experience\*** (Continued)

b. Bidder Projects (Continued, attach additional sheets if necessary)

3) Project Name: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Type of Work: \_\_\_\_\_

Owner (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Engineer (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Person in Charge of Project (Name, Phone & Email): \_\_\_\_\_

\_\_\_\_\_

4) Project Name: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Type of Work: \_\_\_\_\_

Owner (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Engineer (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Person in Charge of Project (Name, Phone & Email): \_\_\_\_\_

\_\_\_\_\_

5) Project Name: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Type of Work: \_\_\_\_\_

Owner (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Engineer (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Person in Charge of Project (Name, Phone & Email): \_\_\_\_\_

\_\_\_\_\_

\* Not required for materials only proposal



2. **Statement of Experience\*** (Continued)

c. Bidder's Principals and Key Personnel (attach additional sheets if necessary)

If Bidder (Contractor) has less than 5 years' experience in the type of work specified, it shall list the work experience for principals and key personnel to demonstrate that Bidder (Contractor) has sufficient work experience to warrant consideration for award; Owner will determine whether Bidder (Contractor) has sufficient work experience to meet the 5 years' work experience requirement.

1) Name: \_\_\_\_\_

Address: \_\_\_\_\_

Type of Work: \_\_\_\_\_ Years of Experience: \_\_\_\_\_

Capacity (Title): \_\_\_\_\_

2) Name: \_\_\_\_\_

Address: \_\_\_\_\_

Type of Work: \_\_\_\_\_ Years of Experience: \_\_\_\_\_

Capacity (Title): \_\_\_\_\_

d. Has Bidder been involved in litigation with any owner of any project within the last 10 years? \_\_\_\_\_ . If so, please describe the project and the nature and results of any litigation including any lawsuits settled prior to trial. (Attach additional sheets if necessary.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

e. Bidder is advised that it may be required to submit a signed financial statement, financial data, or other information and references sufficiently comprehensive to permit an appraisal of its current financial condition prior to award of Contract. Said statement, data, or information may be considered in selecting the successful Bidder.

\* Not required for materials only proposal



2. **Statement of Experience\*** (Continued)

g. List of Subbidders (copy and attach additional sheets if necessary)

Each Bidder (Contractor) shall list the name and address of each subbidder (subcontractor) who will perform work in excess of one-half of one percent (1/2%) of the total bid amount. Attach additional sheets if necessary. State the subbidders' names, addresses, contractor license information, DIR public works contractor registration number, and the portion of Work to be performed by each. Only one subbidder shall be listed for each specific portion of the Work. Subbidders' experience shall be included in Section B.2.h herein.

If Bidder fails to specify a subbidder for a portion of Work to be performed in excess of one-half of one percent of the Contractor's total bid amount, the Contractor agrees, pursuant to Section 4106 of the California Public Contract Code, that the Contractor is fully qualified to perform that portion, and will perform such portion of the Work.

1) Subbidder Name: \_\_\_\_\_

Address: \_\_\_\_\_

Contractor License No.: \_\_\_\_\_ Class: \_\_\_\_\_

Type of Work: \_\_\_\_\_ Years of Experience: \_\_\_\_\_

DIR Registration No.: \_\_\_\_\_

2) Subbidder Name: \_\_\_\_\_

Address: \_\_\_\_\_

Contractor License No.: \_\_\_\_\_ Class: \_\_\_\_\_

Type of Work: \_\_\_\_\_ Years of Experience: \_\_\_\_\_

DIR Registration No.: \_\_\_\_\_

3) Subbidder Name: \_\_\_\_\_

Address: \_\_\_\_\_

Contractor License No.: \_\_\_\_\_ Class: \_\_\_\_\_

Type of Work: \_\_\_\_\_ Years of Experience: \_\_\_\_\_

DIR Registration No.: \_\_\_\_\_

4) Subbidder Name: \_\_\_\_\_

Address: \_\_\_\_\_

Contractor License No.: \_\_\_\_\_ Class: \_\_\_\_\_

Type of Work: \_\_\_\_\_ Years of Experience: \_\_\_\_\_

DIR Registration No.: \_\_\_\_\_

\* Not required for materials only proposal

h. Subbidder Experience (copy and attach for each subbidder, two pages)

Subbidder Name: \_\_\_\_\_

1) Subbidder Projects:

Bidder (Contractor) shall furnish work record for subbidder (subcontractor) listing at least two (2) projects each that the subbidders have completed within the past three (3) years. Responses shall be full and explicit.

a) Project Name: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Type of Work: \_\_\_\_\_

Owner (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Engineer (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Person in Charge of Project (Name, Phone, & Email): \_\_\_\_\_

\_\_\_\_\_

b) Project Name: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Type of Work: \_\_\_\_\_

Owner (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Engineer (Name, Address, & Phone): \_\_\_\_\_

\_\_\_\_\_

Person in Charge of Project (Name, Phone, & Email): \_\_\_\_\_

\_\_\_\_\_

\* Not required for materials only proposal

2. **Statement of Experience\*** (Continued)

h. Subbidder Experience (Continued, copy and attach for each subbidder)

Subbidder Name: \_\_\_\_\_

2) Subbidder's Principals and Key Personnel (use reverse side or attach additional sheets if necessary)

If any subbidder (subcontractor) has less than 5 years' experience in the type of work indicated, it shall list the work experience for principals and key personnel to demonstrate that subbidder (subcontractor) has sufficient work experience to warrant consideration for award; Owner will determine whether subbidder (subcontractor) has sufficient work experience to meet the 5 years' work experience requirement.

a) Name: \_\_\_\_\_

Address: \_\_\_\_\_

Type of Work: \_\_\_\_\_ Years of Experience: \_\_\_\_\_

Capacity (Title): \_\_\_\_\_

b) Name: \_\_\_\_\_

Address: \_\_\_\_\_

Type of Work: \_\_\_\_\_ Years of Experience: \_\_\_\_\_

Capacity (Title): \_\_\_\_\_

3) Has subbidder been involved in litigation with any owner of any project within the last 10 years? \_\_\_\_\_ . If so, please describe the project and the nature and results of any litigation including any lawsuits settled prior to trial. (Attach additional sheets if necessary.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\* Not required for materials only proposal

**3. Supplemental Instructions to Bidders**

- a. Bidder shall submit a proposal for each bid and subbid item. If award is made, Owner will award the Work to a single Bidder; however, Owner reserves the right to withhold award on certain bid or subbid items.
- b. All Work under these Contract Documents shall be completed in accordance with the Contract Completion Schedule.
- c. Bidder shall be licensed in accordance with the California Contractors State License Law of the Business and Professions Code and shall have a minimum of 5 years' experience in the type of work specified. Subbidders, if any, shall also be licensed in accordance with the same law and shall also have a minimum of 5 years' experience in the type of work specified.
- d. Bidder shall visit and inspect Work site and complete Certification of Bidder's Work Site Inspection to verify same.

**4. Bid Schedule**

The undersigned hereby proposes to furnish all labor, materials, equipment and methods necessary for constructing all Work specified, all in strict accordance with these Contract Documents, at the bid prices and the Completion Date set forth hereafter. The undersigned also acknowledges that all bid prices include sales tax and all other applicable taxes and fees. The costs for any work shown or required in the Contract Documents, but not specifically identified as a bid line item are to be included in the related bid line items and no additional compensation shall be due to Contractor for the performance of the Work. The estimated quantities for unit price items are for purposes of comparing bids only and Owner makes no representation that the actual quantities of Work performed will not vary from the estimates. Final payment shall be determined by Owner from measured quantities of Work performed based upon the unit price.

**BID SCHEDULE  
MARKET STREET AND 24TH STREET PIPELINE RELOCATION**

ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
101	Furnish contract bonds, project insurance, project permits, and project management.	N/A	L.S.	N/A	\$ _____
102	Mobilization of equipment, materials, and labor.	N/A	L.S.	N/A	\$ _____
103	Furnish trench protection in accordance with Cal/OSHA Standards for all trenches greater than 5' deep.	N/A	L.S.	N/A	\$ _____
104	Furnish, install, and maintain traffic control, including approved traffic control plans, all signs, delineators, arrowboards, flagmen, and all related work, all in accordance with the Contract Documents.	N/A	L.S.	N/A	\$ _____
105	Furnish and install 16" ductile iron pipe with restrained joints, including fittings (Stations 10+05.0± to 12+06.0±).	201±	L.F.	\$ _____	\$ _____
106	Furnish and install two (2) 16" butterfly valves (Station 11+85.00).	2	EA	\$ _____	\$ _____
107	Furnish and install connection to existing 16" waterline, including 16" ductile iron pipe and fittings, per Detail, Sheet 3 (Station 10+05.0±).	N/A	L.S.	N/A	\$ _____
108	Furnish and install connection to existing 16" waterline, including 16" ductile iron pipe and fittings, per Detail, Sheet 3 and Notes on Sheet 2 (Station 12+02.0±).	N/A	L.S.	N/A	\$ _____

**BID SCHEDULE  
MARKET STREET AND 24TH STREET PIPELINE RELOCATION**

ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
109	Furnish and install 2" air valve per Std. Dwgs. W1070 and W1080.	1	EA	\$ _____	\$ _____
110	Abandon existing 16" ductile iron pipe in place by filling it with control density fill.	201±	L.F.	\$ _____	\$ _____
111	Furnish and place 6" (min.) asphalt concrete pavement on 6" (min.) Class II base per City of Jurupa Valley Specifications, Standards, and Permit.	201±	L.F.	\$ _____	\$ _____
112	Furnish and place 0.12' asphalt concrete pavement overlay per City of Jurupa Valley Specifications, Standards, and Permit.	201±	L.F.	\$ _____	\$ _____
113	All other items of work not specifically called in bid items above in order to provide RCSD with a complete correctly functioning pipeline and to restore the Project site as required.	N/A	L.S.	N/A	\$ _____

TOTAL BID (Sum of Bid Items 101 through 113):

\_\_\_\_\_ Dollars \$ \_\_\_\_\_

(words) (figures)

Bidder hereby acknowledges that all bid prices include any amounts payable by Owner for taxes which may result from this proposal.

**Bidder's Authorized Representative**

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name (Print)

\_\_\_\_\_  
Title (Print)



**5. Contract Completion Schedule**

a. Contract Completion Schedule

Contractor will be advised of award, if made, immediately following Owner's regular scheduled Board meeting (telephone conversation with letter confirmation). Contract Work shall be complete within 120 calendar days after date of Notice to Proceed.

b. Liquidated Damages

Contractor is advised that "Liquidated Damages" of \$1,000.00 per calendar day may be assessed for each calendar day that the Work remains incomplete following the date established by the Contract Completion Schedule, as adjusted for due cause by Change Order.

**6. Certified Data**

In the blanks provided, fill in the required Certified Data relating to the Bidder's Proposal.

a. Manufacturer of Ductile Iron Pipe and Fittings

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b. Manufacturer of Butterfly Valves

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c. Manufacturer of Air Valves

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d. Supplier of Asphalt Concrete Pavement

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e. Supplier of Class II Base

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**7. Certified Worker Craft and Classification**

Bidder hereby states that the bid proposal has been based on the worker craft and classification set forth below and the Work will be performed by personnel within these classifications unless Bidder specifically requests change in writing and Owner approves same in writing.

Work*	Craft	Classification
<b>Examples:</b>		
Steel Tank Work	Operating Engineer	Group B-Crane Operator
Electrical Work	Electrician	Cable Splicer
Plant Work	Roofer	Helper
a. _____	_____	_____
b. _____	_____	_____
c. _____	_____	_____
d. _____	_____	_____
e. _____	_____	_____
f. _____	_____	_____
g. _____	_____	_____
h. _____	_____	_____
i. _____	_____	_____
j. _____	_____	_____
k. _____	_____	_____
l. _____	_____	_____
m. _____	_____	_____

\* Designate Type of Work, i.e. Earthwork, Concrete Work, Electrical Work, Mechanical Work, Pump Work, Plant Work, Tank Work, Fencing, Painting, Piping

**8. Certification of Bidder's Work Site Inspection**

I certify that I have visited and inspected the Work sites on the following dates:

<u>Site</u>	<u>Date Visited</u>
Market Street and 24th Street Pipeline Relocation	_____

I also certify that I am familiar with local conditions which may affect the performance of the Work and propose to perform the Work generally as follows:

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**Bidder's Authorized Representative**

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Signature

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Name (Print)

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Title (Print)

**9. Statement on Bonds and Insurance**

a. Names and addresses of all members of partnership or names and titles of all corporate officers:

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b. The Bidder declares that the surety or sureties named below have agreed to furnish bonds in the aggregate amounts set forth in the Instructions to Bidders, in the event the Contract is awarded on the basis of this proposal.

Name(s) and address(es) of surety or sureties agreeing to furnish bond

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c. The Bidder declares that the insurers named below have reviewed the insurance requirements set forth in the Contract Appendix (Section 8. Insurance) and have agreed to furnish all insurance specified.

Name(s) and address(es) of insurers agreeing to insurance coverage

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**10. Certification of Bidding Documents**

The Bidder hereby declares and certifies under penalty of perjury that the foregoing statements and all of Bidder's Proposal and Supporting Documents herewith submitted are accurate and correct.

**BIDDER**

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Email: \_\_\_\_\_

Telephone \_\_\_\_\_

By: \_\_\_\_\_

(Authorized Representative, Written Signature)

Corporation organized

under the laws of the

State of: \_\_\_\_\_

\_\_\_\_\_  
(Authorized Representative, Typed or Printed Name)

Title: \_\_\_\_\_

[Individual, Partner, Corporate Officer (Title)]

Federal Tax Identification Number or Social Security Number: \_\_\_\_\_

**CALIFORNIA CONTRACTOR'S LICENSE:**

Class \_\_\_\_\_

(Class A or Class C-34 is required)

(Corporate Seal)

Number \_\_\_\_\_

Expiration Date \_\_\_\_\_

**NOTARY**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF \_\_\_\_\_ )

COUNTY OF \_\_\_\_\_ )

On \_\_\_\_\_, 20\_\_\_\_, before me, \_\_\_\_\_, personally appeared \_\_\_\_\_, who 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.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

\_\_\_\_\_  
Signature of Notary

(Notary Seal)

NOTE: If Notary elects to attach an acknowledgment form, Notary shall use the Notary Acknowledgment form attached at the end of this section (Bidding Documents), or, alternatively, Notary may use a California All-Purpose Acknowledgment form, provided Notary completes the entire form, both the required and optional portions.

**11. Non-Collusion Declaration  
(TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID)**

The undersigned declares:

I am the \_\_\_\_\_ of \_\_\_\_\_, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on \_\_\_\_\_ [date], at \_\_\_\_\_ [city], \_\_\_\_\_ [state].

**BIDDER**

Name: \_\_\_\_\_

By: \_\_\_\_\_  
(Authorized Representative, Written Signature)

\_\_\_\_\_  
(Authorized Representative, Typed or Printed Name)

Title: \_\_\_\_\_  
[Individual, Partner, Corporate Officer (Title)]

**12. Public Works Contractor Registration Certification**

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal for, or enter into a Contract to perform public work must be registered with the Department of Industrial Relations. See <http://www.dir.ca.gov/Public-Works/PublicWorks.html> for additional information.

No bid will be accepted nor any contract entered into without proof of the Bidder's and subbidders' current Public Works Contractor Registration with the Department of Industrial Relations.

Bidder hereby certifies that it is aware of the registration requirements set forth in Labor Code sections 1725.5 and 1771.1 and that Bidder and all listed subbidders (subcontractors) are currently registered with the Department of Industrial Relations.<sup>1</sup>

Name of Bidder: \_\_\_\_\_

DIR Registration Number: \_\_\_\_\_

DIR Registration Expiration: \_\_\_\_\_

Small Project Exemption:  Yes or  No

Bidder further acknowledges:

1. Bidder shall maintain its current DIR registration for the duration of the project.
2. Bidder shall include the requirements of Labor Code sections 1725.5 and 1771.1 in its contract with subcontractors and ensure that all subcontractors maintain DIR registration status for the duration of the project.
3. Failure to submit this form or comply with any of the above requirements may result in a finding that the bid is non-responsive.

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Dated: \_\_\_\_\_

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<sup>1</sup> If the project is exempt from the contractor registration requirements pursuant to the small project exemption under Labor Code Sections 1725.5 and 1771.1, please mark "Yes" in response to "Small Project Exemption."



**13. Iran Contracting Act Certification  
(Public Contract Code Section 2200 *et seq.*)**

As required by California Public Contract Code Section 2204, the Contractor certifies subject to penalty for perjury that the option checked below relating to the Contractor's status in regard to the Iran Contracting Act of 2010 (Public Contract Code Section 2200 *et seq.*) is true and correct:

- The Contractor is not:
  - (i) identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203; or
  - (ii) a financial institution that extends, for 45 days or more, credit in the amount of \$20,000,000 or more to any other person or entity identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203, if that person or entity uses or will use the credit to provide goods or services in the energy sector in Iran.
- Owner has exempted the Contractor from the requirements of the Iran Contracting Act of 2010 after making a public finding that, absent the exemption, Owner will be unable to obtain the goods and/or services to be provided pursuant to the Contract.
- The amount of the Contract payable to the Contractor for the Project does not exceed \$1,000,000.

Signed \_\_\_\_\_

Title \_\_\_\_\_

Firm \_\_\_\_\_

Date \_\_\_\_\_

**NOTE:** In accordance with Public Contract Code Section 2205, false certification of this form shall be reported to the California Attorney General and may result in civil penalties equal to the greater of \$250,000 or twice the Contract amount, termination of the Contract and/or ineligibility to bid on contracts for three years.

**14. Executive Order N-6-22 Certification**

Executive Order N-6-22 issued by Governor Gavin Newsom on March 4, 2022, directs all agencies and departments that are subject to the Governor’s authority to (a) terminate any contracts with any individuals or entities that are determined to be a target of economic sanctions against Russia and Russian entities and individuals; and (b) refrain from entering into any new contracts with such individuals or entities while the aforementioned sanctions are in effect.

Executive Order N-6-22 also requires that any contractor that: (1) currently has a contract with the Owner funded through grant funds provided by the State of California; and/or (2) submits a bid or proposal or otherwise proposes to or enter into or renew a contract with the Owner with State of California grant funds, certify that the person is not the target of any economic sanctions against Russia and Russian entities and individuals.

The contractor hereby certifies, SUBJECT TO PENALTY OF PERJURY, that a) the contractor is not a target of any economic sanctions against Russian and Russian entities and individuals as described in Executive Order N-6-22 and b) the person signing below is duly authorized to legally bind the contractor. This certification is made under the laws of the State of California.

Signature: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Contractor: \_\_\_\_\_

Date: \_\_\_\_\_

**15. Bid Bond**

KNOW ALL MEN BY THESE PRESENTS, that we (Contractor), \_\_\_\_\_ as Bidder and Principal, and \_\_\_\_\_ as Surety, are held firmly bound unto the RUBIDOUX COMMUNITY SERVICES DISTRICT, situated in Riverside County, California, hereinafter called the Owner, in the penal sum of \_\_\_\_\_ dollars, \$ \_\_\_\_\_, for the payment of which sum, well and truly to be made, we bind ourselves, and our successors and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is that whereas Bidder has submitted the accompanying bid dated \_\_\_\_\_, 20\_\_\_\_, for MARKET STREET AND 24TH STREET PIPELINE RELOCATION for Owner.

NOW THEREFORE, (1) if the Bidder shall not withdraw said bid within sixty days after the opening of the same, and (2) shall within ten days after the award of the Contract furnish the required certificates of insurance and enter into a written contract with the Owner in accordance with the bid as accepted, and (3) if the Bidder shall give the required bonds with good and sufficient sureties for the faithful performance and proper fulfillment of said Contract and for the protection of laborers and material men, or (4) in the event of the withdrawal of said bid within the periods specified, or the failure to enter into said Contract, if the Bidder shall within thirty days after request by the Owner pay the Owner the difference between the amount specified in said bid and the amount for which the Owner may procure the required Work or supplies, if the latter amount be in excess of the former, then the above obligations shall be void and of no effect, otherwise they remain in full force and effect.

In the event suit is brought upon this bond by the Owner and judgment is recovered, the Surety shall pay all costs incurred by the Owner in such suit, including reasonable attorney's fee, to be fixed by the court.

For value received, the Surety hereby stipulates and agrees that the obligation of said Surety and its bond shall in no way be impaired or affected by any bid errors or by an extension of time within which the Owner may accept such bid, and said Surety hereby waives notice of any such extension.

IN WITNESS WHEREOF, Bidder and Surety have duly and fully executed this instrument this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

PRINCIPAL:

SURETY:

Name \_\_\_\_\_

Name \_\_\_\_\_

By \_\_\_\_\_  
(Authorized Representative, Written Signature)

By \_\_\_\_\_  
(Authorized Representative, Written Signature)

\_\_\_\_\_  
(Authorized Representative, Typed or Printed Name)

\_\_\_\_\_  
(Authorized Representative, Typed or Printed Name)

Title \_\_\_\_\_  
[Individual, Partner, Corporate Officer (Title)]

Title \_\_\_\_\_  
[Individual, Partner, Corporate Officer (Title)]

Attest: (If Corporation)

Attest: (If Corporation)

By \_\_\_\_\_

By \_\_\_\_\_

Title \_\_\_\_\_

Title \_\_\_\_\_

(Corporate Seal)

(Corporate Seal)

**NOTE:** Both Principal and Surety signatures must be notarized. A copy of the power of attorney to local representatives of the bonding company must be attached hereto.

15. Bid Bond (Continued)

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

NOTARY FOR PRINCIPAL

NOTARY FOR SURETY

STATE OF \_\_\_\_\_ )
COUNTY OF \_\_\_\_\_ )

STATE OF \_\_\_\_\_ )
COUNTY OF \_\_\_\_\_ )

On \_\_\_\_\_, 20\_\_\_\_, before me,
\_\_\_\_\_, personally
appeared \_\_\_\_\_,
who 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.

On \_\_\_\_\_, 20\_\_\_\_, before me,
\_\_\_\_\_, personally
appeared \_\_\_\_\_,
who 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.

I certify under PENALTY OF PERJURY under the laws of the
State of California that the foregoing paragraph is true and
correct.

I certify under PENALTY OF PERJURY under the laws of the
State of California that the foregoing paragraph is true and
correct.

WITNESS my hand and official seal.

WITNESS my hand and official seal.

\_\_\_\_\_  
Signature of Notary

\_\_\_\_\_  
Signature of Notary

(Notary Seal)

(Notary Seal)

NOTE: If Notary elects to attach an acknowledgment form, Notary shall use the Notary Acknowledgment form attached at the end of this section (Bidding Documents), or, alternatively, Notary may use a California All-Purpose Acknowledgment form, provided Notary completes the entire form, both the required and optional portions.

IMPORTANT: Surety companies executing Bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write Surety insurance defined in Section 105 of the California Insurance Code and, if the Work or project is financed, in whole or in part, with federal grant or loan funds, said Surety companies must also appear on the Treasury Department's most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

Name and address of Surety \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Name and address of agent or representative
for service of process in California, if different
from above \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Telephone number of Surety and agent or representative
for service of process in California \_\_\_\_\_

**NOTARY ACKNOWLEDGMENT**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of \_\_\_\_\_ }  
County of \_\_\_\_\_ } ss.

On \_\_\_\_\_ before me, \_\_\_\_\_, a Notary Public, personally appeared \_\_\_\_\_, who 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.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature \_\_\_\_\_ (seal)

**REQUIRED INFORMATION**

**Capacity Claimed by Signer**

**Description of Attached Document**

Corporate Officer - Title(s):  
\_\_\_\_\_  
Title(s)

\_\_\_\_\_  
Document Title or Type

Partner(s):  Limited  General

\_\_\_\_\_

Individual  
 Attorney-in-Fact

\_\_\_\_\_  
Number of Pages

Trustee(s)  
 Guardian or Conservator

\_\_\_\_\_  
Document Date

Other:  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Signer(s) Other Than Above

**Signer is Representing:**

Name of Person(s) or Entity(ies)  
\_\_\_\_\_  
\_\_\_\_\_

NOTE: Notary may use a current California All-Purpose Acknowledgment form; however, Notary must complete the entire form, both required and optional portions.

## **CONTRACT**

**CONTRACT**

This Contract is made and entered into on \_\_\_\_\_, by and between the RUBIDOUX COMMUNITY SERVICES DISTRICT hereinafter called "Owner", and \_\_\_\_\_, hereinafter called "Contractor". This Contract is for that Work described in the Contract Documents entitled MARKET STREET AND 24TH STREET PIPELINE RELOCATION.

**A. Recitals**

1. Contractor, in response to a Notice Inviting Bids issued by Owner, has submitted a bid proposal for the above entitled Work.
2. Owner has duly opened and considered said bid proposal, and has duly awarded said bid to Contractor in accordance with said Notice Inviting Bids, and has given written notice of said award to Contractor on \_\_\_\_\_.

Contractor has obtained and delivers concurrently herewith specified Performance and Payment Bonds and the Certificate of Insurance as required by the Contract Documents.

**B. Terms**

1. Incorporation of Documents

This Contract includes and hereby incorporates in full by this reference the Contract Documents for the above entitled Work.

The Contract Documents set forth herein consist of: Notice Inviting Bids, Bidding Documents, Bid Bond, this Contract including Contractor's Labor Certification and any Contract Change Orders, Performance and Payment Bonds, Certificates of Insurance, Contract Appendix, Special Requirements, Basic and Technical Specifications, Construction and Standard Drawings, and any addenda thereto.

2. Contractor's Basic Obligation

Contractor agrees to provide the Work specified in the following bid schedules and/or bid items:

\_\_\_\_\_

for \_\_\_\_\_ dollars (\$ \_\_\_\_\_), said amount being subject to adjustment in accordance with the applicable terms of the Contract Documents.

Contractor agrees to perform said Work, at said Contract amount, in accordance with the following Contract Completion Schedule:

\_\_\_\_\_

\_\_\_\_\_

Contractor agrees that if the aforesaid Contract Completion Schedule is not met, liquidated damages will apply as provided by the Contract Documents, in the following amounts and under the following conditions:

\_\_\_\_\_

\_\_\_\_\_

3. Owner's Basic Obligation

Owner agrees to engage and does hereby engage said Contractor as an independent contractor to furnish all materials and to perform all Work according to the terms and conditions herein contained for the sum aforesaid and hereby contracts to pay said sum at the time, in the manner, and in accordance with the conditions set forth in the Contract Documents.

4. Contractor's Labor Certification

Contractor states that it is aware of the provisions of Section 3700 of the Labor Code, which require every employer to be insured against liability for worker's compensation or to undertake self insurance in accordance with provisions of that Code, and Contractor agrees to comply with such provisions before commencing the performance of the Work of this Contract.

5. Litigation or Enforcement Action Costs Arising from Contractor's Operations

If the Owner and/or its Officials, Officers, Employees, Agents, Consultants, and Engineers are named, or are required to testify or contribute time and expense in any other way, in any suit or enforcement action of any kind brought to recover alleged damages or remedy alleged violations resulting from the acts or omissions (including negligent acts or omissions) in connection with, or accidents arising from, the acts, operations, and responsibilities of the Contractor, its Subcontractors, or others associated with or working under Contractor, in direct or indirect relation to the performance of the Work, the Owner and/or its Directors, Officers, Employees, Agents, Consultants, and Engineers shall be held financially harmless and they shall be legally defended (with counsel acceptable to the named party) by the Contractor from any claims for damages and they shall be reimbursed for any reasonable costs incurred by them for lost time, expert assistance, and incidental expenses in connection with their need to defend themselves against such claims, or to contribute time and expense in any other such way, whether or not the suit or enforcement action proceeds to final judgment. This section shall apply and be enforceable for the full time of any applicable statute of limitations.

6. Successors

The parties do for themselves, their heirs, executors, administrators, successors, and assigns agree to the full performance of all of the provisions herein contained. Contractor may not, either voluntarily or by action of law, assign any obligation assumed by Contractor hereunder without the prior written consent of Owner.



IN WITNESS WHEREOF, the parties hereto have caused this contract to be executed the day and year first above written.

\_\_\_\_\_  
(Contractor)

By: \_\_\_\_\_  
(Authorized Representative, Written Signature)

\_\_\_\_\_  
(Authorized Representative, Typed or Printed Name)

Title: \_\_\_\_\_  
[Individual, Partner, Corporate Officer (Title)]

ATTEST: (If Corporation)

By \_\_\_\_\_

Title \_\_\_\_\_

Corporate Seal

RUBIDOUX COMMUNITY SERVICES DISTRICT

By: \_\_\_\_\_

Title: \_\_\_\_\_

ATTEST:

\_\_\_\_\_  
Clerk/Secretary

APPROVED AS TO FORM AND EXECUTION

\_\_\_\_\_  
Counsel for Owner

By \_\_\_\_\_

NOTARY (CONTRACTOR)

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF \_\_\_\_\_ )

COUNTY OF \_\_\_\_\_ )

On \_\_\_\_\_, 20\_\_\_\_, before me, \_\_\_\_\_, personally \_\_\_\_\_ appeared \_\_\_\_\_, who 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.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

\_\_\_\_\_  
Signature of Notary

(Notary Seal)

NOTE: If Notary elects to attach an acknowledgment form, Notary shall use the Notary Acknowledgment form attached at the end of the prior section (Bidding Documents) or, alternatively, Notary may use a California All-Purpose Acknowledgment form, provided Notary completes the entire form, both the required and optional portions.

**PERFORMANCE BOND**  
(California Public Work)  
REQUIRED FORM

Bond Number \_\_\_\_\_

Rate of Premium (\$/1,000) \_\_\_\_\_

Amount of Premium \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, RUBIDOUX COMMUNITY SERVICES DISTRICT (also herein "Obligee") has awarded to \_\_\_\_\_ (hereinafter designated "Contractor" and "Principal"), a contract for the Work described as follows: MARKET STREET AND 24TH STREET PIPELINE RELOCATION, County of Riverside, California (hereinafter referred to as the "Public Work"); and

WHEREAS, the Work to be performed by the Contractor is more particularly set forth in that certain contract for the said Public Work dated \_\_\_\_\_, (hereinafter referred to as the "Public Work Contract"), which Public Work Contract is incorporated herein by this reference; and

WHEREAS, the Contractor is required by said Public Work Contract to perform the terms thereof and to provide a bond both for the performance and guaranty thereof,

NOW, THEREFORE, we \_\_\_\_\_, the undersigned Contractor, as Principal, and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the RUBIDOUX COMMUNITY SERVICES DISTRICT in the sum of \_\_\_\_\_ dollars, \$ \_\_\_\_\_, said sum being not less than 100% of the total amount payable by the said Obligee under the terms of the said Public Work Contract, for which payment well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the said Public Work Contract and any alteration thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill the one-year guarantee of all materials and workmanship; and indemnify and save harmless the Obligee, its officers, employees, and agents, as stipulated in the said Public Work Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect. In the event legal action is required to enforce the provisions of this agreement, the prevailing party shall be entitled to recover reasonable attorney's fees in addition to court costs, necessary disbursements, and other damages.

As a condition precedent to the satisfactory completion of the Public Work Contract, unless otherwise provided for in the Public Work Contract, the above obligation shall hold good for a period of one (1) year after the acceptance of the work by Obligee, during which time if Contractor shall fail to make full, complete, and satisfactory repair and replacements and totally protect Obligee from loss or damage resulting from or caused by defective materials or faulty workmanship. The obligations of Surety hereunder shall continue so long as any obligation of Contractor remains. Nothing herein shall limit Obligee's rights or the Contractor or Surety's obligations under the Public Work Contract, law or equity, including, but not limited to, California Code of Civil Procedure Section 337.15.

Whenever Contractor shall be, and is declared by Obligee to be, in default under the Public Work Contract, the Surety shall remedy the default pursuant to the Public Work Contract, or shall promptly, at Obligee's option:

- i. Take over and complete the Project in accordance with all terms and conditions in the Public Work Contract; or

- ii. Obtain a bid or bids for completing the Public Work in accordance with all terms and conditions in the Public Work Contract and upon determination by Surety of the lowest responsive and responsible bidder, arrange for a contract between such bidder, the Surety and Obligee, and make available as work progresses sufficient funds to pay the cost of completion of the Public Work, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term “balance of the contract price” as used in this paragraph shall mean the total amount payable to Contractor by Obligee under the Public Work Contract and any modification thereto, less any amount previously paid by Obligee to the Contractor and any other set offs pursuant to the Public Work Contract.
  
- iii. Permit Obligee to complete the Public Work in any manner consistent with California law and make available as work progresses sufficient funds to pay the cost of completion of the Public Work, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term “balance of the contract price” as used in this paragraph shall mean the total amount payable to Contractor by Obligee under the Public Work Contract and any modification thereto, less any amount previously paid by Obligee to the Contractor and any other set offs pursuant to the Public Work Contract.

Surety expressly agrees that Obligee may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Contractor.

Surety shall not utilize Contractor in completing the Public Work nor shall Surety accept a bid from Contractor for completion of the Public Work if Obligee, when declaring the Contractor in default, notifies Surety of Obligee’s objection to Contractor’s further participation in the completion of the Public Work.

The said Surety, for value received, hereby stipulates and agrees that no change, extensions of time, alteration or addition to the terms of the Public Work Contract or to the Work to be performed thereunder, or the specifications accompanying the same shall in any wise affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract, or to the Work or to Specifications.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_.

PRINCIPAL:

SURETY:

Name \_\_\_\_\_

Name \_\_\_\_\_

By \_\_\_\_\_  
(Authorized Representative, Written Signature)

By \_\_\_\_\_  
(Authorized Representative, Written Signature)

\_\_\_\_\_  
(Authorized Representative, Typed or Printed Name)

\_\_\_\_\_  
(Authorized Representative, Typed or Printed Name)

Title \_\_\_\_\_  
[Individual, Partner, Corporate Officer (Title)]

Title \_\_\_\_\_  
[Individual, Partner, Corporate Officer (Title)]

Attest: (If Corporation)

Attest: (If Corporation)

By \_\_\_\_\_

By \_\_\_\_\_

Title \_\_\_\_\_

Title \_\_\_\_\_

(Corporate Seal)

(Corporate Seal)

**Note:** Both Principal and Surety signatures must be notarized. A copy of the power of attorney to local representatives of the bonding company must be attached hereto.

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

NOTARY FOR PRINCIPAL

NOTARY FOR SURETY

STATE OF \_\_\_\_\_ )  
COUNTY OF \_\_\_\_\_ )

STATE OF \_\_\_\_\_ )  
COUNTY OF \_\_\_\_\_ )

On \_\_\_\_\_, 20\_\_\_\_, before me, \_\_\_\_\_, personally appeared \_\_\_\_\_, who 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.

On \_\_\_\_\_, 20\_\_\_\_, before me, \_\_\_\_\_, personally appeared \_\_\_\_\_, who 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.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

WITNESS my hand and official seal.

\_\_\_\_\_  
Signature of Notary

\_\_\_\_\_  
Signature of Notary

(Notary Seal)

(Notary Seal)

NOTE: If Notary elects to attach an acknowledgment form, Notary shall use the Notary Acknowledgment form attached at the end of the prior section (Bidding Documents) or, alternatively, Notary may use a California All-Purpose Acknowledgment form, provided Notary completes the entire form, both the required and optional portions.

IMPORTANT: Surety companies executing Bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write Surety insurance defined in Section 105 of the California Insurance Code and, if the work or project is financed, in whole or in part, with federal grant or loan funds, said Surety companies must also appear on the Treasury Department's most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

Name and address of Surety \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name and address of agent or representative  
for service of process in California, if different  
from above \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Telephone number of Surety and agent or representative  
for service of process in California \_\_\_\_\_

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, \_\_\_\_\_, certify that I am the \_\_\_\_\_ of the corporation named as principal to the within bond; that \_\_\_\_\_ who signed the said bond on behalf of the principal was then \_\_\_\_\_ of said corporation; that I know his signature, and his signature thereto is genuine; and that said bond was duly signed, sealed and attested for and in behalf of said corporation by authority of its governing Board.

\_\_\_\_\_  
Signature

(Corporate Seal)

**PAYMENT BOND**  
(California Public Work)  
REQUIRED FORM

Bond Number \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, RUBIDOUX COMMUNITY SERVICES DISTRICT (referred to hereinafter as "Obligee") has awarded to \_\_\_\_\_ (hereinafter designated "Contractor" and "Principal"), a contract dated \_\_\_\_\_, for the Work described as follows: MARKET STREET AND 24TH STREET PIPELINE RELOCATION, County of Riverside, California (hereinafter referred to as the "Public Work Contract") and

WHEREAS, said Contractor is required to furnish a bond in connection with said Public Work Contract, providing that if said Contractor or any of his or its subcontractors shall fail to pay for any materials, provisions, provender, or other supplies, or terms used in, upon, for or about the performance of the Work contracted to be done, or for any work or labor done thereon of any kind, or for amounts due under the provisions of Title 3 (commencing with Section 9000) of Part 6 of Division 4 of the California Civil Code, with respect to such work or labor, that the Surety on this bond will pay the same together with a reasonable attorney's fee in case suit is brought on the bond.

NOW, THEREFORE, we \_\_\_\_\_, the undersigned Contractor, as Principal and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the RUBIDOUX COMMUNITY SERVICES DISTRICT and to any and all material men, persons, companies or corporations furnishing materials, provisions, provender and other supplies used in, upon, for or about the performance of the said Public Work, and all persons, companies or corporations renting or hiring teams, or implements or machinery, for or contributing to said Public Work to be done, and all persons performing work or labor upon the same and all persons supplying both work and materials as aforesaid excepting the said Contractor, the sum of \_\_\_\_\_ dollars, \$\_\_\_\_\_, said sum being not less than 100% of the total amount payable by said Obligee under the terms of the said Public Work Contract, for which payment well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if the Principal, his or its subcontractors, heirs, executors, administrators, successors, or assigns, shall fail to pay for any materials, provisions, provender or other supplies or machinery used in, upon, for or about the performance of the Work contracted to be done, or for work or labor thereon of any kind, or fail to pay any of the persons named in California Civil Code Section 9100, or amounts due under the Unemployment Insurance Code with respect to work or labor performed by any such claimant, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the contractor and his subcontractors pursuant to Section 13020 of the Unemployment Insurance Code with respect to such work and labor, and all other applicable laws of the State of California and rules and regulations of its agencies, then said Surety will pay the same in or to an amount not exceeding the sum specified herein.

In case legal action is required to enforce the provisions of this bond, the prevailing party shall be entitled to recover reasonable attorney's fees in addition to court costs, necessary disbursements and other consequential damages. In addition to the provisions hereinabove, it is agreed that this bond will inure to the benefit of any and all persons, companies and corporations entitled to file claims under Title 3 (commencing with Section 9000) of Part 6 of Division 4 of the California Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

The said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or additions to the terms of the said Public Work Contract or to the Work to be performed thereunder or the specification accompanying the same shall in any wise affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the Work or to the Specifications.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_.

PRINCIPAL:

SURETY:

Name \_\_\_\_\_

Name \_\_\_\_\_

By \_\_\_\_\_  
(Authorized Representative, Written Signature)

By \_\_\_\_\_  
(Authorized Representative, Written Signature)

\_\_\_\_\_  
(Authorized Representative, Typed or Printed Name)

\_\_\_\_\_  
(Authorized Representative, Typed or Printed Name)

Title \_\_\_\_\_  
[Individual, Partner, Corporate Officer (Title)]

Title \_\_\_\_\_  
[Individual, Partner, Corporate Officer (Title)]

Attest: (If Corporation)

Attest: (If Corporation)

By \_\_\_\_\_

By \_\_\_\_\_

Title \_\_\_\_\_

Title \_\_\_\_\_

(Corporate Seal)

(Corporate Seal)

**Note:** Both Principal and Surety signatures must be notarized. A copy of the power of attorney to local representatives of the bonding company must be attached hereto.

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

NOTARY FOR PRINCIPAL

NOTARY FOR SURETY

STATE OF \_\_\_\_\_ )  
COUNTY OF \_\_\_\_\_ )

STATE OF \_\_\_\_\_ )  
COUNTY OF \_\_\_\_\_ )

On \_\_\_\_\_, 20\_\_\_\_, before me,  
\_\_\_\_\_, personally  
appeared \_\_\_\_\_,  
who 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.

On \_\_\_\_\_, 20\_\_\_\_, before me,  
\_\_\_\_\_, personally  
appeared \_\_\_\_\_,  
who 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.

I certify under PENALTY OF PERJURY under the laws of the  
State of California that the foregoing paragraph is true and correct.

I certify under PENALTY OF PERJURY under the laws of the  
State of California that the foregoing paragraph is true and  
correct.

WITNESS my hand and official seal.

WITNESS my hand and official seal.

\_\_\_\_\_  
Signature of Notary

\_\_\_\_\_  
Signature of Notary

(Notary Seal)

(Notary Seal)

NOTE: If Notary elects to attach an acknowledgment form, Notary shall use the Notary Acknowledgment form attached at the end of the prior section (Bidding Documents), or, alternatively, Notary may use a California All-Purpose Acknowledgment form, provided Notary completes the entire form, both the required and optional portions.

IMPORTANT: Surety companies executing Bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write Surety insurance defined in Section 105 of the California Insurance Code and, if the work or project is financed, in whole or in part, with federal grant or loan funds, said Surety companies must also appear on the Treasury Department's most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

Name and address of Surety \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name and address of agent or representative  
for service of process in California, if different  
from above \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Telephone number of Surety and agent or representative  
for service of process in California \_\_\_\_\_

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, \_\_\_\_\_, certify that I am the \_\_\_\_\_ of the corporation named as principal to the within bond; that \_\_\_\_\_ who signed the said bond on behalf of the principal was then \_\_\_\_\_ of said corporation; that I know his signature, and his signature thereto is genuine; and that said bond was duly signed, sealed and attested for and in behalf of said corporation by authority of its governing Board.

\_\_\_\_\_  
Signature

(Corporate Seal)



**CONTRACT CERTIFICATE OF INSURANCE**

ISSUE DATE: \_\_\_\_\_

OWNER OR CERTIFICATE HOLDER: \_\_\_\_\_

This certificate is issued as a matter of information only and confers no rights upon the certificate holder; it does not alter, amend, or extend the coverage afforded by the policies listed below.

CONTRACTOR OR INSURED: \_\_\_\_\_

PROJECT: MARKET STREET AND 24TH STREET PIPELINE RELOCATION

Insurance Type	Insurance Company	Policy Number	Policy Effective Date	Policy Expiration Date	Limits		
					Description	Furnished	Specified
<b>Worker's Compensation and Employer's Liability</b>					Statutory	Statutory	Statutory
					Accident-Policy Limit	\$ _____	\$1,000,000
					Disease-Policy Limit	\$ _____	\$1,000,000
					Disease-Each Employee	\$ _____	\$1,000,000
<b>Automobile Liability</b> Business _____ Commercial _____					Combined Single Limit	\$ _____	\$1,000,000
					Bodily Injury (per accident)	\$ _____	\$1,000,000
					Bodily Injury (per person)	\$ _____	\$1,000,000
					Property Damage	\$ _____	\$500,000
<b>General Liability</b> Commercial _____ Comprehensive _____ Claims Made _____ Occurrence _____					General Aggregate*	\$ _____	\$2,000,000
					Each Occurrence*	\$ _____	\$1,000,000
					* Occurrence and aggregate limits apply per project.		
<b>Excess Liability</b> Umbrella Form _____ Other Form _____					Each Occurrence	\$ _____	\$ _____
					Aggregate	\$ _____	\$ _____
<b>Course of Construction or Installation Floater</b>						\$ _____ \$ _____	<b>TOTAL CONTRACT AMOUNT</b>

SIGNATURE OF AUTHORIZED REPRESENTATIVE OF THE INSURER(S)

I, \_\_\_\_\_, certify that I have authority to and hereby execute this certificate on behalf of the insurer(s) referenced above.

Date: \_\_\_\_\_ Signature: \_\_\_\_\_ Title \_\_\_\_\_ Address: \_\_\_\_\_ Telephone: \_\_\_\_\_

See required Contract Insurance Endorsement

**CONTRACT INSURANCE ENDORSEMENT  
(REQUIRED)**

Company names, policy numbers, effective and expiration dates, and furnished limits set forth in the Contract Certificate of Insurance identify applicable insurance policies in which coverage is provided for the named project. Policy of insurance listed in the Certificate of Insurance has been issued to the named insured by each indicated insurance company for the policy period indicated and, as of the date of the aforementioned certificate, is in full force and effect. The insurance afforded by each policy described therein is subject to all the terms, conditions, limitations, and exclusions of such policy.

Automobile liability insurance covers all owned, non-owned, borrowed, and/or hired vehicles used by or for the benefit of Contractor. General liability insurance covers premises and operations, products and completed operations, blanket contractual (oral and written), independent contractors, owners and contractors protective, and, if applicable to the Work, collapse, explosion and underground hazards. Excess liability insurance covers all automobile and general liability coverages. Course of construction insurance covers fire and lightning, extended coverage, and vandalism and malicious mischief.

With respect to automobile, general, and excess liability insurance, Owner and additional insureds, their officials, officers, managers, agents, engineers, employees, and volunteers are covered as additional insureds to the extent of the limits set forth in the Contract Certificate of Insurance, but only while acting in their capacities as such, for liability arising from or in connection with the performance of the Work by Contractor, its agents, associates, representatives, employees, and subcontractors of every tier. With respect to course of construction or installation floater insurance, Owner is covered as additional insured. Insurer waives its rights of subrogation against the additional insureds.

Contractor's insurance is primary for additional insureds with respect to the performance of Contractor, those associated therewith, and those working thereunder, and any like insurance of Owner and additional insureds, their officials, officers, managers, agents, engineers, employees, and volunteers is excess and not contributing insurance with respect to insured claims under Contractor's policies. Contractor's insurance will apply separately to each insured against whom claim is made or suit is brought.

Contractor's insurance will not be cancelled, reduced, suspended, terminated, or voided in coverage or limits [except for general liability where the general aggregate limit has been reduced by claim(s) in which case insurer will immediately notify Owner of reduction in general aggregate limit resulting from such claim(s)] unless thirty (30) days prior written notice, by certified mail return receipt requested, has been given to Owner. Any failure to comply with reporting provisions of policies, including breaches of warranties, will not affect coverage provided to additional insureds.

**SIGNATURE OF AUTHORIZED REPRESENTATIVE OF THE INSURER(S)**

I, \_\_\_\_\_, certify that I have authority to and hereby execute this endorsement on behalf of the insurer(s) referenced below.

Date: \_\_\_\_\_ Signature: \_\_\_\_\_ Title: \_\_\_\_\_  
Address: \_\_\_\_\_ Telephone: \_\_\_\_\_

Insurance policies to which this Contract Insurance Endorsement apply are as follows:

<u>Insurance Type</u>	<u>Insurance Company</u>	<u>Policy Number</u>	<u>Policy Effective Date</u>	<u>Policy Expiration Date</u>
Workers Compensation and Employers Liability	_____	_____	_____	_____
Automobile Liability	_____	_____	_____	_____
General Liability	_____	_____	_____	_____
Excess Liability	_____	_____	_____	_____
Course of Construction or Installation Floater	_____	_____	_____	_____

Use separate Contract Insurance Endorsement if required (copy as needed).

**ESCROW AGREEMENT FOR  
SECURITY DEPOSITS IN LIEU OF PAYMENT RETENTION**

This Escrow Agreement is made and entered into, by and between RUBIDOUX COMMUNITY SERVICES DISTRICT, whose address is 3590 Rubidoux Boulevard, Jurupa Valley, California 92509, hereinafter called "Owner", \_\_\_\_\_, whose address is \_\_\_\_\_, hereinafter called "Contractor", and \_\_\_\_\_, whose address is \_\_\_\_\_, hereinafter called "Escrow Agent".

For the consideration hereinafter set forth, Owner, Contractor, and Escrow Agent agree as follows:

(1) Pursuant to California Public Contract Code Section 22300, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by Owner pursuant to the Construction Contract entered into between Owner and Contractor for MARKET STREET AND 24TH STREET PIPELINE RELOCATION in the amount of \$\_\_\_\_\_ dated \_\_\_\_\_ (hereinafter referred to as the "Contract"). Alternatively, on written request of Contractor, Owner shall make payments of the retention earnings directly to Escrow Agent. When Contractor deposits securities as a substitute for Contract earnings, Escrow Agent shall notify Owner within 10 days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Contract between Owner and Contractor. Securities shall be held in the name of RUBIDOUX COMMUNITY SERVICES DISTRICT and shall designate Contractor as the beneficial Owner.

(2) Owner shall make progress payments to Contractor for such funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided Escrow Agent holds securities in the form and amount specified above.

(3) When Owner makes payment of retention earned directly to Escrow Agent, Escrow Agent shall hold them for the benefit of Contractor until such time as the escrow created under this contract is terminated. Contractor may direct the investment of the payments into securities. All terms and conditions of this agreement and the rights and responsibilities of the parties shall be equally applicable and binding when Owner pays Escrow Agent directly.

(4) Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering Escrow Account and all expenses of Owner. These expenses and payment terms shall be determined by Owner, Contractor, and Escrow Agent.

(5) Interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to Owner.

(6) Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from Owner to Escrow Agent that Owner consents to the withdrawal of the amount sought to be withdrawn by Contractor.

(7) Owner shall have a right to draw upon the securities in the event of default by Contractor. Upon seven days written notice to Escrow Agent from OWNER of the default, Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by Owner.

(8) Upon receipt of written notification from Owner certifying that the Contract is final and complete and that Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The Escrow Account shall be closed immediately upon disbursement of all monies and securities on deposit and payments of fees and charges.

(9) Escrow Agent shall rely on the written notifications from Owner and Contractor pursuant to Sections (5) to (8), inclusive, of this agreement, and Owner and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

(10) The names of the persons who are authorized to give written notice or to receive written notice on behalf of Owner and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

**On behalf of Contractor:**

**On behalf of Owner:**

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

\_\_\_\_\_  
Name

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Address

\_\_\_\_\_  
Address

(11) At the time the Escrow Account is opened, the Owner and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement by their proper officers on the date first set forth above.

**Contractor:**

**Owner:**

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

\_\_\_\_\_  
Name

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

**Escrow Agent:**

\_\_\_\_\_  
Title

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Address

**PAYMENT REQUEST NO.** \_\_\_\_\_

**DATE:** \_\_\_\_\_

RUBIDOUX COMMUNITY SERVICES DISTRICT  
P.O. BOX 3098  
RUBIDOUX, CA 92519

CONSTRUCTION OF MARKET STREET AND 24TH  
STREET PIPELINE RELOCATION

K&S JOB #: 587-19.62.6

CONTRACTOR: \_\_\_\_\_

PAGE \_\_\_ OF \_\_\_

BY: \_\_\_\_\_

**(Signature & Date)**

FEDERAL TAX IDENTIFICATION NO. OR SOCIAL SECURITY NO: \_\_\_\_\_

ORIGINAL CONTRACT AMOUNT: \$ \_\_\_\_\_ ADJUSTED CONTRACT AMOUNT: \$ \_\_\_\_\_

BID ITEM OR CHANGE ORDER NO.	DESCRIPTION	CONTRACT AMOUNT	CONTRACT WORK	
			PERCENT COMPLETED	AMOUNT COMPLETED

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RUBIDOUX COMMUNITY SERVICES DISTRICT  
P.O. BOX 3098  
RUBIDOUX, CA 92519

PAYMENT REQUEST NO. \_\_\_\_\_

DATE: \_\_\_\_\_

CONSTRUCTION OF MARKET STREET AND 24TH  
STREET PIPELINE RELOCATION

K&S JOB #: 587-19.62.6

CONTRACTOR: \_\_\_\_\_

PAGE \_\_\_\_ OF \_\_\_\_

BY: \_\_\_\_\_  
(Signature & Date)

FEDERAL TAX IDENTIFICATION NO. OR SOCIAL SECURITY NO: \_\_\_\_\_

ORIGINAL CONTRACT AMOUNT: \$ \_\_\_\_\_ ADJUSTED CONTRACT AMOUNT: \$ \_\_\_\_\_

BID ITEM OR CHANGE ORDER NO.	DESCRIPTION	CONTRACT AMOUNT	CONTRACT WORK	
			PERCENT COMPLETED	AMOUNT COMPLETED
		SUBTOTAL:		

**ENGINEER'S STATEMENT**

WE HAVE EXAMINED THIS PAYMENT REQUEST  
AND APPROVE IT FOR PAYMENT, SUBJECT TO  
THE NOTED CHANGES AND/OR CORRECTIONS.

5% RETENTION (DEDUCT FROM SUBTOTAL): ( \_\_\_\_\_ )  
BALANCE: \_\_\_\_\_  
PREVIOUS PAYMENTS (DEDUCT FROM BALANCE): ( \_\_\_\_\_ )  
PAYMENT DUE: \_\_\_\_\_

**KRIEGER & STEWART**

**RUBIDOUX COMMUNITY SERVICES DISTRICT**

BY: \_\_\_\_\_  
(Signature & Date)

BY: \_\_\_\_\_  
(Signature & Date)

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**CONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT**

California Civil Code Section 8136

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

**Identifying Information**

Name of Claimant: \_\_\_\_\_

Name of Customer: \_\_\_\_\_

Job Location: \_\_\_\_\_

Owner: \_\_\_\_\_

Project: \_\_\_\_\_

**Conditional Waiver and Release**

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: \_\_\_\_\_

Amount of Check: \$ \_\_\_\_\_

Check Payable to: \_\_\_\_\_

**Exceptions**

This document does not affect any of the following:

Disputed claims for extras in the amount of: \$ \_\_\_\_\_

**Signature**

Claimant's Signature: \_\_\_\_\_

Claimant's Title: \_\_\_\_\_

Date of Signature: \_\_\_\_\_

**CONTRACT CHANGE ORDER NO. \_\_\_\_\_**

**W.O. 587-19.62.6 F/C**

**To Contract:** MARKET STREET AND 24TH STREET PIPELINE RELOCATION , dated \_\_\_\_\_

**by and between:** RUBIDOUX COMMUNITY SERVICES DISTRICT (OWNER),

**and:** \_\_\_\_\_ (CONTRACTOR),

**Contractor is hereby directed to make the following change in Contract Work:**

Item No.	Description of Change	Decrease \$	Increase \$
<b>Total Decrease in Contract Amount:</b>		\$	
<b>Total Increase in Contract Amount:</b>			\$
<b>Net Change in Contract Amount:</b>		\$	
<b>Contract Amount Prior to Change:</b>		\$	
<b>Contract Amount Adjusted for Change:</b>		\$	

**By reason of Change Order No. \_\_\_\_\_, time of completion shall be adjusted as follows: \_\_\_\_\_ calendar days. Adjusted Contract Completion Date shall be \_\_\_\_\_. All provisions of the Contract shall apply hereto, and shall become effective when fully executed (signed and dated) by both parties.**

Contractor accepts the terms and conditions stated herein as full and final settlement of any and all claims arising from this Change Order. The adjustments to the contract price and contract time in this Change Order constitute the entire compensation and/or adjustment thereto due to Contractor, including but not limited to all direct, indirect, consequential, profit, labor, equipment, tools, idle time, incidentals, and overhead (field and home office) costs, due to Contractor arising out of or related to the change in the Work covered by this Change Order. The Contractor hereby releases and agrees to waive all rights, without exception or reservation of any kind whatsoever, to file any further claim or request for equitable adjustment of any type, for any reasonably foreseeable cause that shall arise out of, or as a result of, this Change Order and/or its impact on the remainder of the Work under the Contract.

**Recommended by (Engineer)** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Accepted by (Contractor)** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Approved by (Owner)** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Remarks** \_\_\_\_\_



### DAILY EXTRA WORK REPORT

Report No. \_\_\_\_\_

Work Order No. 587-19.62.6 F/C  
 Date Performed \_\_\_\_\_  
 Date of Report \_\_\_\_\_  
 Project \_\_\_\_\_  
 Description of Work: RUBIDOUX COMMUNITY SERVICES DISTRICT - MARKET STREET AND 24TH STREET PIPELINE RELOCATION

Work Performed By: \_\_\_\_\_  
 Contractor \_\_\_\_\_  
 Subcontractor \_\_\_\_\_

Daily Extra Work - Page 1 of 1

Equip. No.	Equipment	Hours	Hourly Rate	Total Amounts		Labor	Hours	Hourly Rate	Total Amounts
							OT		
							REG		
							OT		
							REG		
							OT		
							REG		
							OT		
							REG		
							OT		
							REG		
							OT		
							REG		
							OT		
							REG		
							OT		
							REG		
							OT		
							REG		
<b>MATERIAL and/or SUBCONTRACT WORK</b>									
Description		No. Unit	Unit Cost						
						Subtotal REG:			
						Subtotal OT:			
						Labor Surcharge at _____ % for REG:			
						Labor Surcharge at _____ % for OT:			
						TOTAL COST OF LABOR:			
Total Cost of Equipment, Materials, and Subcontract Work:				●					
						Plus 20% on Labor Cost			
						Plus 15% on Equipment - Material & Work Cost			
Contractor's Representative									
Subcontractor's Representative						<b>TOTAL THIS REPORT:</b>			
						<b>RECEIVED</b>			
						<b>INSPECTOR</b>			

## CONTRACT APPENDIX

### 1. Definitions

Wherever words or phrases defined here, or pronouns used in their stead, occur in any of the contract documents, they shall have the meanings here given:

- A. The word "Owner" shall mean the RUBIDOUX COMMUNITY SERVICES DISTRICT, P.O. Box 3098, Jurupa Valley, CA 92519, Riverside County, California and shall include Owner's officers, agents, consultants, and employees acting within their authority.
- B. The word "Contractor" shall mean the successful bidder who is entering into this contract with the RUBIDOUX COMMUNITY SERVICES DISTRICT, for the furnishing of the material, equipment, and/or services specified in this contract, and the legal representatives of said party, or the agent appointed to act for said party in the execution of the contract. Said party is referred to throughout the contract documents as if of the singular number and the masculine gender.
- C. The word "Engineer" shall mean the Registered Professional Engineer designated by Owner to give the Work general engineering supervision.
- D. The phrase "Owner Property" shall mean the Work site(s) upon which Contractor shall be required to perform under the contract including property owned in-fee by Owner or upon which it holds an appropriate lease, license, or encroachment permit.
- E. The phrase "Contract Documents" shall mean the Notice Inviting Bids, Bidding Documents including addenda or bulletins, executed Contract forms including, but not limited to, bonds, insurance, and endorsements, Contract Appendix, Special Requirements, Basic Specifications, Technical Specifications, and Contract Drawings including Construction and Standard Drawings.
- F. The word "Work" shall mean the construction to be performed pursuant to the Contract.
- G. The phrase "Liquidated Damages" as defined under Section 21 of this Contract Appendix shall be the amount specified in Paragraph B.2 of the Contract.
- H. The word "County" wherever used shall mean the County in which the Work is situated.

### 2. Authority of Owner

- A. Power of Decision. Owner shall decide every question regarding the interpretation of the Contract Documents or the true meaning or import of any provisions contained herein. A dispute which arises from Owner's final decision shall be submitted to independent arbitration, if mutually agreeable to the parties; otherwise by litigation in a court of competent jurisdiction.
- B. No Power to Waive Contract. It is expressly agreed that Owner shall not have any power to waive the obligation of the contract for the performance of work and/or furnishing by Contractor of the equipment and/or material conforming to the Contract Documents.
- C. Access to Contractor's Plant. Owner shall at all times have immediate access to all parts of Contractor's plant(s) where the production of any equipment and/or material for delivery under this agreement is in progress and shall be afforded there, without charge to Owner, full facilities for determining that all said equipment and/or material is being produced so as to comply strictly with the Contract Documents.

- D. Access to the Work Site. Owner shall at all times have immediate access to the Work site and to all parts of Contractor's plant used in conjunction with work being performed hereunder on Owner property and shall be afforded there, without charge to Owner, full facilities for determining that all said work is being performed so as to comply strictly with the Contract Documents. Such use or inspection shall not constitute acceptance of work.

### 3. **Contract Document Priority**

In the event of any inconsistency between discrete portions of the Contract Documents, the following documents first listed shall govern over all other documents subsequently listed, according to the following priority:

- A. Contract Change Orders issued during the course of the Work.
- B. Addenda and Bulletins issued during the bidding process.
- C. Contract
- D. Construction Drawings.
- E. Special Requirements.
- F. Technical Specifications.
- G. Basic Specifications.
- H. Standard Drawings as included or referenced.
- I. Contract Appendix, specifically the applicable provisions therein.
- J. Available or referenced reports.

### 4. **Contractor Responsibility**

- A. Legal Address. Contractor shall provide, at the end of Contractor's proposal herein, an address which shall be the place to which all notices, letters, and other communications to Contractor shall be mailed or delivered. The mailing to or delivering at the above-named place of any notice, letter, or other communication to Contractor shall be deemed sufficient service thereof upon Contractor. The date of service shall be the date of such mailing or delivery. Such address may be changed at any time by a written notice signed by Contractor and hand delivered to Owner. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon Contractor personally.
- B. License Classification. Pursuant to Section 7059 of the Business and Professions Code, Contractor (bidder) must have a license classification which is sufficient to permit him to perform a majority of the Work. The Owner has determined and set forth in the Notice Inviting Bids the class of license necessary for this project. If the bidder is a specialty contractor, the bidder is alerted to the requirements of the Business and Professions Code Section 7059.
- C. Contractors' State License Board Notice. Contractors are required by law to be licensed and regulated by the Contractors' State License Board which has jurisdiction to investigate complaints against contractors if a complaint regarding a patent act or omission is filed within four years of the date of the alleged violation. A complaint regarding a latent act or omission pertaining to structural defects must be filed within 10 years of the date of the alleged violation. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, P.O. Box 26000, Sacramento, CA 95826.
- D. Cooperation with Owner. Contractor shall comply with all orders of Owner in regard to maintaining adequate progress, but neither the making of such demands nor the failure of Owner to make such demands shall relieve Contractor of his obligation to secure the quality of equipment and/or material and/or performance of work and the rate of delivery of said equipment and/or material and/or completion of work as stipulated in the Contract, and Contractor alone shall be responsible for the safety, efficiency, and adequacy of Contractor's plant, equipment, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance, or operation.

- E. Examination of Site and Documents. Contractor acknowledges and warrants that he has examined the Contract Documents, and all available or referenced reports, and has visited and examined the delivery route(s) and the installation site for equipment and/or materials which he has agreed to supply herein, and/or the Work site upon which he has agreed to perform herein and is familiar with local conditions which may affect the manufacture and delivery of the said equipment and/or materials, and/or performance of said work, and that except as provided herein, he will make no claims for additional compensation over and above the quotations set forth in the Bidding Documents because of difficulties, real or anticipated.

Contractor is hereby advised that all available or referenced reports that are furnished to and are reviewed by Contractor are intended to provide general, not specific, information to assist Contractor in understanding the Work. These reports shall not be considered comprehensive, exhaustive, or conclusive; they shall be considered advisory only. Information contained in any available or referenced report shall not relieve Contractor of his obligation to perform the Work as specified herein.

Contractor is hereby advised that any available or referenced geological report that provides geotechnical data describing geologic conditions and material characteristics at the Work site shall not be considered a warranty of geologic conditions and material characteristics to be encountered in performing the Work. The geotechnical information shall be limited to and not extrapolated beyond the borings, excavations, holes, and pits constructed, examined, or used in the geotechnical investigation. Contractor shall determine, to his satisfaction, all geologic conditions which may affect the Work as specified herein and Contractor shall conduct all necessary geologic investigations to make that determination.

- F. Contractor to Furnish Information. Before erecting any construction plant, including sheeting, bracing, and other temporary structures upon property of Owner, Contractor shall furnish Owner with information and drawings of all such structures as may be required by Owner. Contractor shall furnish, and submit for approval, drawings and prints in such detail as may be required for articles, machinery, or fabricated materials entering into permanent construction, which are by the Contract Documents required to be furnished by Contractor. Once approved, said drawings and prints shall become property of Owner; however, such approval shall not operate to waive or modify any provision or requirement contained in the Contract Documents.
- G. Contract Documents. Contractor shall keep at the Work site the Contract Documents and shall at all times give Owner access thereto. Contractor shall check all dimensions and quantities contained in the Contract Documents and he shall notify Owner of any errors which are discovered by examining and checking said Contract Documents. He shall not take advantage of any error or omission in the Contract Documents. For those portions of the Contract Documents specifically describing the Work, Owner will furnish full instructions should such error or omission be discovered and Contractor shall carry out such instructions as if originally specified.
- H. Risk of Loss. Until by formal acceptance by Owner of the Work of Contractor hereunder either by furnishing equipment and/or materials or by performance of work, Contractor shall have the charge and care thereof and shall bear the risk of injury or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the Work. Contractor shall rebuild, repair, restore, replace, and make good all injuries or damages to any portion of that which he is to improve, provide, or complete hereunder occasioned by any of the above causes before completion and acceptance and shall bear the expense thereof, except for such injuries or damages as are occasioned by acts of the Federal Government and the public enemy, and only to the extent of five (5) percent of the Contract amount where such injuries or damages are proximately caused by an act of God (an earthquake in excess of magnitude 3.5 on the Richter Scale or a tidal wave) as defined in Public Contract Code Section 7105. In case of suspension of work from any cause whatsoever, Contractor shall be responsible for all equipment and/or materials then upon Owner property and shall properly store them, if necessary, and shall erect temporary structures where necessary in so doing. Nothing in this Contract shall be considered as vesting in Contractor any right of property in materials used

after they have been attached or affixed to the Work or Owner property, but all such materials shall, upon being so attached or so affixed, become property of Owner.

- I. Copyrights and Patents. Contractor shall and does hereby hold and save Owner harmless from liability of any nature and kind, including costs and expenses, for or on account of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article or appliance, manufactured, furnished, or used by him in the performance of this Contract, including use by Owner, unless otherwise specifically stipulated in this Contract.
- J. Contractor's Personal Attention and Supervision. Contractor shall give his personal attention constantly to the faithful prosecution of the Work, and shall be present, either in person or by a duly authorized and competent representative, on the site of the Work, continually during progress of any work hereunder upon Owner property, to receive directions or instructions from Owner. Whenever Contractor is not present on any part of the Work where it may be desired to give directions, orders may be given by Owner and shall be received and obeyed by the superintendent or foreman who may have charge of the particular part of the Work in reference to which orders are given.
- K. Materials, Workmanship, and Tests. All materials furnished by Contractor shall be new and of the best quality for their particular use. Pursuant to Public Contract Code Section 20676, sellers of "mined materials" must be on an approved list of sellers published pursuant to Resources Code Section 2717(b) in order to supply mined material for this Contract. Work shall be performed by skilled workmen fully qualified for their trade, and shall be subject to the approval of Owner.

Contractor shall submit to Owner samples, specimens, or test pieces of such materials to be furnished or used in the Work as Owner may require. All materials must be of the specified quality and equal to approved sample, if samples have been submitted. All work shall be done and completed in a thorough, workmanlike manner, notwithstanding any omission from the Contract Documents.

Contractor shall furnish, without cost to Owner, such quantities of concrete, concrete aggregates, and other construction material as may be required for test purposes and shall place at Owner's disposal all available facilities for and cooperate with him in the sampling and testing of all materials and workmanship.

- L. Laws and Regulations. Contractor shall keep himself fully informed of all laws, ordinances, and regulations in any manner affecting those engaged or employed on the Work, or the materials used in the Work, or in any way affecting the conduct of the Work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over the Work. If any discrepancy or inconsistency should be discovered in the Contract Documents in relation to any such law, ordinance, regulation, order, or decree, Contractor shall forthwith report the same in writing to Owner. He shall at all times himself observe and comply with and shall cause all his agents and employees to observe and comply with all such applicable laws, ordinances, regulations, orders, and decrees in effect or which may become effective before completion of the Work; and shall protect and indemnify Owner and its officers and agents against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself, by his employee, or by a subcontractor. Except as otherwise explicitly provided elsewhere in the Contract Documents, all permits and/or licenses necessary for the prosecution of the Work shall be secured by Contractor at his own expense, and he shall pay all taxes properly assessed against his equipment or property used or required in connection with the Work.
- M. Removing Obstructions and Maintenance of Existing Improvements. When the Work hereunder involves performance upon Owner property, and when the proper completion of said Work requires their temporary or permanent removal, Contractor shall, at his own expense, remove, and without unreasonable delay temporarily or permanently replace or relocate in a workmanlike manner and to the satisfaction of Owner and of any other person or agency having jurisdiction, all water pipes, gas pipes, drainage lines, irrigation lines, sewer lines, pipelines, conduits, culverts,

roads, driveways, fences, bridges, railroad tracks, wires, poles, towers, retaining walls, buildings, curbs, gutters, concrete walks, trees, shrubs, lawns, and all other improvements of whatsoever character not required by law to be removed by Owner thereof; and all such improvements temporarily removed shall be maintained until permanently replaced, all at Contractor's expense.

Where the Work is to be constructed in or adjacent to areas which have been improved by lawns, trees, shrubs, or gardens, Contractor shall remove such trees or plants as may be necessary for the prosecution of the Work and give them proper care and attention until the Work has been satisfactorily completed, after which Contractor shall replace them in as nearly the original condition and location as is reasonably possible. Where it is necessary to deposit excavated materials on lawns during the process of construction, Contractor shall first lay burlap or canvas on the lawns to prevent contact between the excavated material and the lawns.

Unless otherwise indicated in the Contract Documents, all utility lines, conduits, wires, or structures shall be maintained by Contractor and shall not be disturbed, disconnected, or damaged by him during the progress of the Work, provided, that should Contractor in the performance of the Work disturb, disconnect, or damage any of the above, all expenses arising from such disturbance or in the replacement or repair thereof shall be borne by Contractor. However, in accordance with Section 4215 of the California Government Code, Contractor shall be compensated for costs of locating and repairing damage to main or trunkline utility facilities located on the Work site and for costs of operating equipment on the Work site necessarily idled during such work where Contractor has exercised reasonable care in removing or relocating utility facilities which are inaccurately indicated in the Contract Documents.

With regard to subsurface installations, locating of utilities shall be in conformance with Government Code Section 4216 set seq. Contractor shall, at least two (2) working days but no more than fourteen (14) calendar days before commencing any excavation on the Work, notify the regional notification center (i.e. Underground Service Alert) of its intent to excavate. Contractor shall also obtain from the regional notification center an inquiry identification number and maintain an active and valid inquiry identification number throughout the course of the Work. Contractor shall have the inquiry identification number validated and revalidated as necessary to have operators approximately locate their subsurface installations during the course of the Work. Contractor shall delineate with delineators or suitable markings, including white paint if appropriate, areas to be excavated. Following the approximate locations of subsurface installations, Contractor shall determine the exact locations of the subsurface installations by excavating with hand tools before using any power operated or power driven equipment within the approximate locations of the subsurface installations, except that power operated or power driven equipment may be used for the removal of existing pavement which does not contain any subsurface installations.

N. Hazardous Conditions. Contractor shall promptly, within three (3) calendar days, notify Owner, in writing, of the following Work site conditions upon their discovery and before they are disturbed:

- 1) subsurface or latent physical conditions at the site differing from those indicated in the Contract Documents; or
- 2) unknown physical conditions at the site of any unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the Work specified in the Contract Documents; or
- 3) material differing from that indicated in the Contract Documents which Contractor believes may be hazardous waste, as defined in Section 25117 of the California Health & Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law.

Contractor's failure to provide written notification promptly on discovery and before disturbance shall constitute a waiver of all claims in connection therewith.

Upon such notification, Owner shall promptly investigate such conditions. If Owner finds that the reported conditions materially differ, or involve hazardous waste, and cause a decrease or increase in Contractor's cost of, or the time required for, performance of any part of the Work, Owner shall issue a change order pursuant to the procedures described in this Contract. Owner will advise Contractor in writing if such conditions do not warrant the issuance of a change order. If Contractor disagrees with Owner's determination, Contractor shall so advise Owner in writing.

In the event a dispute arises between Owner and Contractor as to whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in Contractor's cost of, or time required for, performance of any part of the Work, Contractor shall not be excused from any scheduled completion date specified by this Contract, but shall proceed with all work to be performed under this Contract. Contractor shall retain any and all rights provided either by Contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

- O. Pursuant to Public Contract Code Section 6109, contractors or subcontractors who are ineligible to perform work on a public works project as determined by the Department of Industrial Relations pursuant to Section 1777.1 or Section 1777.7 of the California Labor Code shall not perform any portion of the work contemplated herein. Any subcontract between the Contractor and an ineligible subcontractor shall be void as a matter of law, and the ineligible subcontractor shall not receive any payment for performing such work. Any public money that has been paid to the ineligible subcontractor on the project shall be returned to the Owner. The Contractor shall be responsible for the payment of wages to workers of an ineligible subcontractor who has been allowed to work on the project.
- P. Iran Contracting Act. Pursuant to Public Contract Code Sections 2200-2208, if this Contract is in the amount of \$1,000,000 or more, the Contractor shall have certified at the time of submission of its bid that it is not identified in the list established pursuant to Public Contract Code Section 2203, unless otherwise exempt from the requirement to so certify.
- Q. Independent Contractor. Contractor shall be an independent contractor for Owner and not an employee. Contractor understands and agrees that it and all of its employees shall not be considered officers, employees, or agents of Owner and are not entitled to benefits of any kind normally provided employees of Owner, including but not limited to, state unemployment compensation or workers' compensation. Contractor assumes full responsibility for the acts and omissions of its employees or agents related to the Work.

## 5. Contractor's Liability

- A. Contractor shall be responsible, and Owner shall not be answerable or accountable in any manner, for any loss or damage that may happen to the Work to be performed hereunder by Contractor, subcontractors, or those associated with or working under Contractor, or for any materials or equipment used or employed in performing the Work, or for injury to any person or persons, including employees, the public or others, or for damage to property from any cause other than the Owner's sole negligence, willful misconduct, or active negligence.
- B. To the fullest extent permitted by law, Contractor shall immediately defend (with counsel of the Owner's choosing), indemnify and hold harmless the Owner, its officials, officers, employees, agents, and authorized volunteers, and each of them from and against:
  - 1. Any and all claims, demands, causes of action, costs, expenses, injuries, losses or liabilities, in law or in equity, of every kind or nature whatsoever, but not limited to, injury to or death, including wrongful death, of any person, and damages to or destruction of property of any person, arising out of, related to, or in any manner directly or

indirectly connected with the Work or this Contract, including claims made by subcontractors for nonpayment, including without limitation the payment of all consequential damages and attorney's fees and other related costs and expenses, however caused, regardless of whether the allegations are false, fraudulent, or groundless, and regardless of any negligence of the Owner or its officials, officers, employees, agents, or authorized volunteers (including passive negligence), except such loss or damages caused by the sole negligence or willful misconduct or active negligence of the Owner or its officials, officers, employees, or authorized volunteers.

2. Contractor's defense and indemnity obligation herein includes, but is not limited to damages, fines, penalties, attorney's fees and costs arising from claims under the Americans with Disabilities Act (ADA) or other federal or state disability access or discrimination laws arising from Contractor's Work during the course of construction of the improvements or after the Work is complete, as the result of defects or negligence in Contractor's construction of the improvements.
  3. Any and all actions, proceedings, damages, costs, expenses, fines, penalties or liabilities, in law or equity, of every kind or nature whatsoever, arising out of, resulting from, or on account of the violation of any governmental law or regulation, compliance with which is the responsibility of Contractor.
  4. Any and all losses, expenses, damages (including damages to the Work itself), attorney's fees, and other costs, including all costs of defense which any of them may incur with respect to the failure, neglect, or refusal of Contractor to faithfully perform the Work and all of Contractor's obligations under Contract. Such costs, expenses, and damages shall include all costs, including attorney's fees, incurred by the indemnified parties in any lawsuit to which they are a party.
- C. Contractor shall indemnify, defend, and hold Owner harmless from any and all claims, demands, fines, and penalties imposed or levied by any Federal, State, or local agency associated with or related to the taking (as defined by the United States Fish and Wildlife Service and, or the California Department of Fish and Game) of any protected animal or plant species or habitat by Contractor, subcontractors, or those associated with or working under Contractor.
- D. Contractor shall immediately defend, at Contractor's own cost, expense and risk, with the counsel of the Owner choosing, any and all such aforesaid suits, actions or other legal proceedings of every kind that may be brought or instituted against the Owner or its officials, officers, employees, agents, or authorized volunteers. Contractor shall pay and satisfy any judgment, award or decree that may be rendered against the Owner or its officials, officers, employees, agents, or authorized volunteers, in any such suit, action or other legal proceeding. Contractor shall reimburse the Owner and its officials, officers, employees, agents, and authorized volunteers for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided. The only limitations on this provision shall be those imposed by Civil Code section 2782.
- E. The provisions of this Section shall survive the termination of this Contract howsoever caused, and no payment, partial payment, or acceptance of occupancy in whole or part of the Work shall waive or release any of the provisions of this Section. Contractor's obligation to indemnify the Owner shall not be restricted to insurance proceeds, if any, received by the Owner and its officials, officers, employees, agents, and authorized volunteers.
- F. Until final disposition of any claims, demands, fines, penalties, and suits made for such loss, damage, or take, Owner may retain as much from amounts still unpaid under the Contract as may be necessary to assure enforcement of this provision.



## **6. Safety**

In accordance with generally accepted construction practices, Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons and property during performance of the Work. Said requirement shall apply continuously and not be limited to normal working hours. Contractor's duty to preserve safety shall include, but not be limited to: placement and use of guards; erection and maintenance of temporary fences, bridges, railings and barriers; placement, maintenance, and operation of needed lights and signals; and all other precautions and measures required by applicable laws and regulations, including but not limited to those specified by Title 8 of the California Code of Regulations and enforced by the California Occupational Safety and Health Administration (Cal/OSHA).

Before excavating any earth or soil to a depth of five (5) feet or more, Contractor shall, pursuant to Labor Code Section 6705, submit to the Owner detailed drawings (hereafter referred to as excavation safety drawings) showing design of shoring, bracing, sloping, or other provisions to be made for worker, individual, or property protection. Said excavation safety drawings shall comply with OSHA Construction Safety Orders (Cal/OSHA or Federal OSHA, whichever is applicable at time of construction) and shall be prepared and certified by a registered civil or structural engineer, engaged by Contractor at his expense, who shall affix his signature and seal to each sheet of said excavation safety drawings. Contractor shall not excavate until the Owner has received and acknowledged properly certified excavation safety drawings. Contractor shall comply with all other applicable requirements of Labor Code Section 6705 and, as therein provided, no requirements of that Section shall be construed to impose tort liability on Owner or Owner's representatives, including Owner's Engineer.

Contractor shall advise Owner of intended use, production, or storage of all materials or substances which contain one (1) or more ingredients or components which are listed in the "Chemical Cross-Index", latest edition, published by the State of California Office of Environmental Protection, Office of Hazardous Materials Data Management, P.O. Box 2815, Sacramento, CA, 95812. In addition, Contractor shall furnish with other Contract submittal documents Material Safety Data Sheets (MSDS) for all said materials or substances which may be used, produced, or stored on the jobsite.

Any duty on the part of the Engineer to give general engineering supervision of Contractor's performance is not intended to and shall not include the review of the adequacy of Contractor's safety measures. Nothing herein shall relieve Contractor of his sole and complete responsibility for safety conditions on the jobsite.

Owner's project relationship may or may not include direct on-site observation of Contractor's work. Even if on-site observation is provided, continuous presence of Owner's representatives shall not be an obligation under this Contract and shall not be expected. Furthermore, no special training or knowledge in the specific area of safety engineering or safety practices shall be required or expected of Owner's representatives.

## **7. Trespass**

Contractor shall be responsible for all damage or injury which may be caused on any property by trespass by Contractor, his agents, employees, or subcontractors in the course of performance of the Work hereunder, whether said trespass was committed with or without the consent or knowledge of Contractor.

## **8. Bonds, Insurance, and Endorsements**

Contractor shall furnish bonds issued on the forms provided in these Contract Documents by a bonding company (surety) admitted in and regulated by the State of California, and by the United States Treasury if the work or project is financed in whole or in part with federal grant or loan funds, as approved by Owner, prior to commencement of the Work hereunder.

Contractor shall maintain for the duration of the Contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with performance of the Work by Contractor, its agents, associates, representatives, employees, and subcontractors of every tier and their agents, associates, representatives, and employees.

Contractor shall not commence work under this Contract until it has secured all specified and required insurance. Also, Contractor shall not allow any subcontractor to commence work on any subcontract until the subcontractor has secured similar insurance, as appropriate to the subcontract work, with limits no less than those specified for Contractor. Contractor shall be responsible for type and form of all subcontractor's insurance for the benefit of Contractor and Owner. Further, Contractor shall be responsible to Owner for any deficiencies in subcontractor's insurance.

In accordance with Section 3700 of California Labor Code, Contractor shall, at its expense, (a) maintain adequate Workers' Compensation Insurance under the laws of the State of California for all labor employed by Contractor or any subcontractor, or (b) secure from the Director of Industrial Relations a certificate to self-insure such labor, when such labor comes within the protection of such Workers' Compensation Insurance Laws. In addition, Contractor shall, at its expense, maintain Employer's Liability Insurance with limits of \$1,000,000 each for bodily injury by accident (each accident), bodily injury by disease (policy limit), and bodily injury by disease (each employee).

In addition to Worker's Compensation and Employer's Liability Insurance, Contractor shall, at its expense, maintain in effect at all times during the performance of the Work at least the following, or equivalent, insurances and limits, unless otherwise specified in the Contract Certificate of Insurance set forth in the Contract Documents.

- A. Business or commercial automobile liability, with a combined single limit of \$1,000,000 per accident for bodily injury and property damage, covering all owned, non-owned, borrowed, and/or hired vehicles used by or for the benefit of Contractor.
- B. Commercial or comprehensive general liability, with an occurrence limit of \$1,000,000 and a general aggregate limit of \$2,000,000 for bodily injury, personal injury, and property damage, covering premises and operations, products and completed operations, blanket contractual (oral and written), independent contractors, owners and contractors protective, and, if applicable to the Work, collapse, explosion, and underground hazards.

Both the occurrence and general aggregate limits shall apply on a project basis.

- C. Excess or umbrella liability with coverage for automobile and general liability at limits sufficient to meet the specified insurance requirements set forth in the Contract Documents.
- D. Course of construction, or alternatively, installation floater where permitted by Owner, with limits of liability equal to the full Contract amount. Course of construction insurance shall, at a minimum, cover perils of fire and lightning, extended coverage, vandalism and malicious mischief. It shall also cover perils of theft of installed and uninstalled materials and other perils if additionally specified in the Contract Certificate of Insurance and the Contract Insurance Endorsement.

With respect to the automobile, general, and excess liability insurance specified above, Owner, its officials, officers, managers, agents, engineers, employees, and volunteers shall be covered as additional insureds, but only while acting in their capacities as such, for liability arising from or in connection with the performance of the Work by Contractor, its agents, associates, representatives, employees, and subcontractors of every tier. With respect to course of construction or installation floater insurance, Owner shall be covered as additional insured. Contractor's insurer(s) shall waive rights of subrogation against additional insureds.

Contractor's insurance shall be primary for all additional insureds with respect to the performance of Contractor, those associated therewith, and those working thereunder, and any like insurance of said additional insureds shall be excess and not contributing insurance with respect to insured claims under Contractor's policies. Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought.

Contractor's insurance shall not be cancelled, reduced in scope, suspended, terminated, or voided in coverage, nor shall the limits of liability be reduced [except for reductions in the general aggregate caused by claim(s), in which case insurer shall immediately notify Owner of reduction in general aggregate limits resulting from such claim(s)] unless thirty (30) days prior notice, by certified mail return receipt requested, has been given to Owner. Any failure to comply with reporting provisions of policies, including breaches of warranties, shall not affect coverage provided to additional insureds.

Promptly upon execution of the Contract and prior to commencement of any work, Contractor shall furnish Owner with certificates of insurance for all applicable policies required hereunder on the Contract certificate form, or alternatively, on an ACORD certificate form issued by the insurer(s) provided it contains the same information and statements, by notations thereon or addenda thereto. The certificates shall be signed on behalf of the insurer(s) by an authorized representative thereof.

In addition, Contractor shall promptly furnish Owner with insurance endorsements for all applicable policies to reflect the additional insured, primary and not contributing insurance, and waiver of subrogation requirements specified herein, as well as any coverage necessary to augment insurance policies to meet requirements specified herein, on the Contract Insurance Endorsement form, or alternatively, on standard insurance endorsement forms provided they contain the same information and statements or are amended to satisfy the same requirements as set forth in the Contract Insurance Endorsement form. The endorsements shall be signed on behalf of the insurer(s) by an authorized representative thereof.

Contractor agrees, upon written request, to furnish Owner with certified copies of policies and/or endorsements executed by authorized representative(s) of the insurer(s).

All insurance issued under the provisions of this section shall be issued in forms consistent with industry standards and by insurers having a Best's Rating of at least "A(VII)", all as approved by Owner, prior to commencement of the Work hereunder.

## **9. Agents of Owner Not Personally Liable**

No agent of Owner shall be personally responsible for any liability arising under this Contract, and no claim shall be made or filed, and neither Owner nor any of its agents shall be liable for or held to pay any money, except as specifically provided in this Contract.

## **10. Subcontracts**

- A. Contractor represents and warrants that he has read and is familiar with the provisions of The Subletting and Subcontracting Fair Practices Act (Public Contract Code Sections 4100, et. seq.), which are incorporated herein and made a part hereof by this reference.
- B. A copy of each subcontract, if in writing, or if not in writing then a written statement signed by Contractor, giving the name of the subcontractor, and the terms and conditions of such subcontract, shall be filed with Owner before the subcontractor commences performance of the Work. Each subcontract shall contain a reference to the agreement between Owner and Contractor, and the terms of that agreement and all parts thereof shall be made a part of such subcontract insofar as applicable to the Work covered thereby. Each subcontract shall provide for its annulment by Contractor at the order of Owner, if, in Owner's opinion, the subcontractor fails to comply with the requirements of the principal Contract insofar as the same may be applicable to his work. Nothing herein contained shall create any contractual relation between any subcontractor and Owner or relieve Contractor of any liability or obligation hereunder.
- C. Contractor is hereby alerted to provisions of Section 7107 of the Public Contract Code, requiring Contractor to pay to each of its subcontractors from whom retention has been withheld, each subcontractor's share of the retention received, within ten (10) days from receipt of all or any portion of such retention proceeds from Owner.

D. Pursuant to Public Contract Code Section 6109, subcontractors who are ineligible to perform work on a public works project as determined by the Department of Industrial Relations pursuant to Section 1777.1 or Section 1777.7 of the California Labor Code shall not perform any portion of the work contemplated herein. Any subcontract between the Contractor and an ineligible subcontractor shall be void as a matter of law, and the ineligible subcontractor shall not receive any payment for performing such work.

**11. Assignment Forbidden**

Contractor shall not assign, transfer, convey, or otherwise dispose of this Contract, or of his right, title or interest in or to the same or any part hereof, without the previous consent in writing of Owner; and he shall not assign by power of attorney, or otherwise, any of the monies to become due and payable under the Contract, unless by and with the like consent signified in like manner. If Contractor shall, without such previous written consent, assign, transfer, convey, or otherwise dispose of the Contract, or of his right, title or interest therein, or of any of the monies to become due under the Contract to any other person, company, or other corporation, the Contract may, at the option of Owner, be terminated and revoked, and Owner shall thereupon be relieved and discharged from any and all liability and obligations growing out of the same to Contractor, and to his assignee or transferee. No right under the Contract, nor any right to any money to become due hereunder, shall be asserted against Owner in law or equity by reason of any so-called assignment of the Contract, or any part thereof, or by reason of the assignment of any monies to become due hereunder, unless authorized as aforesaid by the written consent of Owner.

**12. Lines, Grades, and Measurements**

Unless otherwise provided in the Special Requirements, any and all lines and grades will be furnished by Owner. Contractor shall provide such materials and give such assistance as may be required. Contractor shall preserve all bench marks, monuments, survey marks, and stakes upon Owner property, and in case of their removal or destruction by him, his employees, or subcontractors, he shall be liable for the cost of their replacement. Contractor shall keep Owner informed, a reasonable time in advance, of the times and places at which he intends to do work, in order that lines and grades may be furnished, that inspection may be provided, and that necessary measurements for record and payment may be made with the minimum of inconvenience to Owner or delay to Contractor. Whenever Owner finds it necessary to carry on his operations outside of regular working hours or at other times when the Work of Contractor is not in progress, Contractor shall furnish all necessary service and assistance. No payment shall be made to Contractor for any of the Work or delay occasioned by giving lines and grades, or making other necessary measurements, or by inspection.

**13. No Discrimination**

Contractor shall not discriminate in the employment of persons upon the Work because of the age, ancestry, color, race, sex, marital status, national origin, mental disability, physical disability, or religious creed of such persons, or as otherwise prohibited by law, except as provided by Government Code Section 12940. Contractor shall cause an identical clause to be included in every subcontract for the Work.

**14. Legal Day's Work**

Pursuant to the California Labor Code, eight (8) hours of labor shall constitute a legal day's work, and the time of service of any worker employed on the Work shall be limited and restricted to eight (8) hours during any one (1) calendar day and forty (40) hours in any one (1) calendar week except when payment for overtime is made in accordance with Labor Code Section 1815. Contractor or any subcontractor shall, as a penalty to the Owner, forfeit twenty-five (\$25.00) for each worker employed in the execution of this Contract by the respective Contractor or subcontractor for each calendar day during which the worker is required or permitted to work more than eight (8) hours in any one (1) calendar day and forty (40) hours in any one calendar week in violation of the provisions of this article. Contractor shall be responsible for ensuring compliance with this and all other provisions of the Labor Code.

## 15. Prevailing Rates of Wages

The Contractor is aware of the requirements of Labor Code sections 1720 *et seq.* and 1770 *et seq.*, as well as California Code of Regulations, Title 8, Section 16000 *et seq.* ("Prevailing Wage Laws"). As indicated in the Notice Inviting Bids, Owner has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holidays and overtime work in the locality in which work is to be performed for each craft, classification, or type of worker needed to execute the Contract, a copy of which is hereby incorporated by reference into this Contract Appendix. Copies of the prevailing rates of per diem wages are on file at Owner's office and are available to any interested party. Contractor shall make copies of the prevailing rates of per diem wages for each craft, classification, or type of worker needed to perform work on the project available to interested parties upon request, and shall post copies at the Contractor's principal place of business and at the project site. Contractor shall defend, indemnify and hold Owner, its officials, officers, employees and authorized volunteers free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure or alleged failure to comply with the Prevailing Wage Laws.

Contractor shall forfeit to Owner, as a penalty, \$200.00 for each calendar day, or a portion thereof, for each worker paid less than said per diem wage for any work done under the Contract by him or by any subcontractor under him in violation of the provisions of the California Labor Code. It is hereby stipulated by and between Owner that Contractor will comply with provisions of California Labor Code, Section 1775. All wages and penalties withheld for failure by Contractor to pay said per diem wages shall be withheld and retained by Owner to the extent authorized or required by the Labor Code.

Contractor shall keep accurate payroll records on forms provided by the Division of Labor Standards Enforcement, or alternatively, Contractor shall keep accurate payroll records containing the same information. Said information shall include, but not be limited to, a record of the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and actual per diem wages paid to each journeyman, apprentice, or worker employed by Contractor. Such records shall be available for inspection at all reasonable hours, and a copy shall be made available to employee or his authorized representative, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards in compliance with California Labor Code, Section 1776. Upon written notice from Owner or the Division of Labor Standards Enforcement, Contractor shall within ten (10) days file with Owner a certified copy of the payroll records. Contractor shall cause an identical clause to be included in every subcontract for the Work. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency, Owner, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement shall be marked or obliterated in such a manner as 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. Should noncompliance still be evident after such 10-day period, the Contractor shall pay a penalty of one hundred dollars (\$100.00) to Owner 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, such penalties shall be withheld from progress payment then due.

In accordance with Labor Code section 1771.4, Contractor and each subcontractor shall furnish certified payroll records directly to the Department of Industrial Relations on a weekly basis and in the format prescribed by the Department of Industrial Relations. Contractor shall comply with all requirements and regulations from the Department of Industrial Relations relating to labor compliance monitoring and enforcement.

Contractor shall have an affirmative obligation to verify that all subcontractors are currently and validly registered with the Department of Industrial Relations to perform public work and shall not permit a subcontractor of any tier to perform work on the project without first verifying the subcontractor's Public Works Contractor Registration. Contractor shall include the requirements of Labor Code sections 1725.5 and 1771.1 in all contracts with subcontractors and ensure that all subcontractors are registered at the time of bid opening and maintain valid registration for the duration of the project.

Any stop orders issued by the Department of Industrial Relations against Contractor or any subcontractor that affect Contractor's performance of Work, including any delay, shall be Contractor's sole responsibility. Any delay arising out of or resulting from such stop orders shall be considered Contractor caused delay subject to any applicable liquidated damages and shall not be compensable by Owner. Contractor shall defend, indemnify and hold Owner, its officials, officers, employees and agents free and harmless from any claim or liability arising out of stop orders issued by the Department of Industrial Relations against Contractor or any subcontractor.

**16. Mandatory Certification of Contractor and Employment of Apprentices**

This Contract shall not prevent the employment of properly indentured apprentices in accordance with the California Labor Code, and no employer or labor union shall refuse to accept otherwise qualified employees as indentured apprentices on the Work performed hereunder solely on the grounds of age, ancestry, color, race, sex, marital status, national origin, mental disability, physical disability, religious creed, or other protective classification. Every qualified apprentice shall be paid the standard wage paid to apprentices under the regulations of the craft or trade in which he or she is employed, and shall be employed only in the craft or trade to which he or she is indentured.

If California Labor Code Section 1777.5 applies to the Work, Contractor and any subcontractor hereunder who employs workers in any apprenticeable craft or trade shall apply to the joint apprenticeship council administering applicable standards for a certificate approving Contractor or subcontractor for the employment and training of apprentices. Upon issuance of this certificate, Contractor and any subcontractor shall employ the number of apprentices provided for therein, as well as contribute to the fund to administer the apprenticeship program in each craft or trade in the area of work hereunder.

The parties expressly understand that the responsibility for compliance with this Section 17 and with Sections 1777.5, 1777.6, and 1777.7 of the California Labor Code in regard to all apprenticeable occupations lies with Contractor hereunder.

In accordance with Labor Code Section 1773.3, Owner will send notice of the award of this Contract to the Division of Apprenticeship Standards within five (5) days after award if the Contract is awarded to a general or specialty contractor in the amount of at least \$30,000.00 and involves work in an apprenticeable craft or trade.

**17. Payment of Wages**

The issuance as payment for wages of any evidence of indebtedness is prohibited unless the same is negotiable and payable on demand without discount. Wages must be paid at least semi-monthly on regular pay days established in advance, and shall include all amounts for labor or services performed by employees of every description, as required under the California Labor Code.

**18. Overtime - No Extra Compensation**

Overtime work, i.e., work in excess of eight (8) hours in any one (1) calendar day or forty (40) hours in any one (1) calendar week, or work performed on a Sunday or other legal holiday, shall not entitle Contractor to any compensation for any Contract item in addition to that stipulated in the Contract for the kind of work performed, even though such overtime or legal holiday work may be required under emergency conditions and may be ordered by Owner. In case of extra work ordered by Owner under the provisions hereof, no additional payment will be made to Contractor because of the payment by him of overtime or legal holiday rates for such work, unless the use of overtime or legal holiday rates in connection with such extra work is specifically ordered by Owner and then only to such extent as extra payment is regularly being made by Contractor to his men for overtime or legal holiday work of a similar nature in the same locality.

**19. Time and Order of Performance**

Time is of the essence to this Contract ("Time" is defined herein as the time(s) specified by the bidder in the Bidding Documents within which he would perform if awarded the Contract, and if there be no such

specific designation, "Time" shall be the time for completion designated in the Contract Completion Schedule located in the Special Requirements herein). Contractor shall at all times employ such force, equipment, plant, materials, and/or tools as will be sufficient, in the opinion of Owner, to complete the performance of the Contract and every part thereof within the time limit(s) fixed by the Contract. If, in the opinion of Owner, Contractor fails to employ sufficient force, equipment, plant, materials, and tools, or to maintain adequate progress toward meeting the said time limits, he may, after such failure, be required to increase the efficiency, capacity, or character of his equipment, or to modify his plans and procedure in such manner and to such extent as Owner may direct. No extension of time shall be made for ordinary delays and accidents, and the occurrence of such shall not relieve Contractor from the necessity of maintaining the required progress. If Owner grants an extension of time for completion of the Contract, as hereinafter provided, Owner may prescribe a revised schedule of progress in accordance with such extension of time.

It shall be understood and agreed by Contractor hereunder that no material shall be delivered and/or on site work commenced upon Owner property until Contractor is given written Notice to Proceed by Owner. It shall be further understood and agreed by Contractor that his performance hereunder must be coordinated by Owner with other work in progress in the immediate vicinity; that unavoidable delays may occur and that the time schedule as set forth on the Bidding Documents or designated in the Special Requirements shall be subject to adjustment by Owner, all at no additional cost to Owner.

## **20. Delays**

- A. If delay to the critical path results as the consequence of acts of God or other natural disaster occurring at the project site, terrorism or the acts of a public enemy, orders of the Government (including, without limitation, unreasonable and unforeseeable delay in the issuance of permits or approvals by governmental authorities that are required for the Work), strikes, fires, floods, freight embargoes, pandemics, epidemics or quarantine restrictions or other unforeseeable causes beyond the control and without the fault or negligence of Contractor (all of which shall be determined by Owner, whose determination and certification thereof shall be binding and conclusive upon Contractor), Contractor shall be entitled to additional time wherein to perform and complete the Contract on his part as Owner determines to be necessary and certifies in writing to be just.
- B. Application for extension of time must be made promptly in writing, stating cause. No delay shall be made the basis in any application for extension of time, unless Contractor calls such delay and the causes thereof to the attention of Owner in writing within ten (10) days of the beginning of such delay, and Contractor thereafter advises Owner in writing of the extent of such delay within ten (10) days of the end of such delay. Applications for extension of time shall be addressed to Owner.
- C. Permitting Contractor to continue and complete the delivery of the equipment and/or material or any part thereof after the date fixed herein for delivery to be completed or after expiration of any extension of said time, shall not operate as a waiver on the part of Owner of any of its rights under this Contract.
- D. Contractor shall receive no compensation on account of any suspension of deliveries, and/or performance of work either in whole or in part, or for any delay or hindrance herein mentioned, except as required by Public Contract Code Section 7102 or as provided elsewhere herein. Damages caused by unreasonable Owner delay shall be based on actual costs only, no proportions or formulas shall be used to calculate any delay damages.
- E. Nothing herein shall be construed to require Contractor to be responsible for the cost of repairing or restoring damage to the Work in excess of five (5) percent of the Contract amount, if such damage is proximately caused by an act of God (an earthquake in excess of magnitude 3.5 on the Richter Scale or a tidal wave) as defined in Public Contract Code Section 7105.

## **21. Liquidated Damages**

It is agreed by the parties to this Contract that in case all construction called for under the Contract is not completed per the Contract Completion Schedule herein, as extended by delays approved in accordance with the next-prior paragraph, damage will be sustained by Owner, and that it is, and will be impracticable or extremely difficult to ascertain and determine the actual damages Owner will sustain in the event of and by reason of such delay. It is, therefore, agreed that such damages shall be presumed to be the amount set forth in Paragraph B.2 of the Contract, and that Contractor will pay to Owner, or Owner may retain from amounts otherwise payable to Contractor said amount for each day after failure to meet the requirements of the Contract Completion Schedule herein.

Contractor will be assessed liquidated damages for each day after failure to meet the Contract Completion Date(s) or Schedule(s) until the Work has been completed. Payments made after the scheduled Contract Completion Date(s) or Schedule(s) shall not constitute a waiver of liquidated damages. In accordance with Government Code, Section 4215, Contractor shall not be assessed liquidated damages for any delay in completion of the Work if such delay is caused by failure of Owner to provide for removal or relocation of existing main or trunkline utility facilities not indicated in the Drawings or Specifications with reasonable accuracy.

## **22. Changes in Work**

- A. If Owner finds it impracticable for Contractor to comply with the Contract Documents in performance of work, Owner may alter or modify requirements or methods of said work; and for such purposes, Owner may, at any time during the life of the Contract, by written Contract change order on the form contained in the Contract section of the Contract Documents, make such changes as it shall then find necessary in the design, line, grade, form, location, dimensions, plan, or material of any part of the work, material, or equipment hereinafter specified or in the quantity or character of the work material, or equipment to be furnished.
- B. If such changes reduce the quantity or amount of work to be done, they shall not constitute the basis for claim(s) for damages or anticipated profits on the work eliminated; provided, that if such changes render useless any work already done or material or equipment already furnished or used in the Work, Owner shall make reasonable allowance therefor, which action shall be binding upon both parties.
- C. If such changes decrease the Work, the work actually done or materials or equipment actually furnished shall be paid according to unit price(s) or lump sum(s) listed for such work in the Bidding Documents. If such changes increase the Work, the additional work shall be considered extra work and shall be paid according to prices established as hereinafter provided for extra work.

## **23. Extra Work**

- A. Any extra work performed hereunder shall be subject to all of the provisions of the Contract and considered a part thereof, and Contractor's sureties shall be bound with reference thereto as under the original Contract. Contractor shall notify immediately its sureties of any changes in Contract Work and Contract amount. Contractor shall not perform any extra work unless authorized by Owner to do so in advance of performance. Owner will not pay for extra work unless covered by Contract Change Order. Contractor agrees that he shall not be entitled to impact costs, extended job costs, extended overhead costs, or construction acceleration costs related to any and all changes in the Work.
- B. If, during the performance of the Contract, it shall, in the opinion of Owner, become necessary or desirable for the proper completion of the Contract to order work done and/or materials and/or equipment furnished which, in the judgment of Owner, is of like character to and susceptible of classification under the unit price or lump sum items of the Contract as specified, the extra work shall be paid at the unit price(s) or lump sum(s) listed for such work in the Bidding Documents. Such extra work shall be ordered in writing before such work is started.



- C. If, during the performance of the Contract, it shall, in the opinion of Owner, become necessary or desirable for the proper completion of the Contract to order work done and/or materials and/or equipment furnished which, in the judgment of Owner, are not susceptible of classification under the unit price or lump sum items listed in the Bidding Documents, the extra work shall be paid at the unit prices or lump sums mutually established by the Owner and the Contractor. Such extra work shall be ordered in writing before such work is started.
- D. Whenever, in the judgment of Owner, the price for extra work, extra material, extra equipment, and extra subcontract work, as the case may be, cannot be agreed upon by the Owner and the Contractor or it is impracticable to fix the price before the extra work order shall be issued, extra work, material, equipment, and subcontract work, when furnished by Contractor, shall be paid at actual necessary cost of labor, materials, equipment, and subcontract work, plus (for profit, general expenses, excise taxes, property taxes, bond premiums, license and inspection fees imposed by any governmental authority, and all other items of expense, whether enumerated herein or otherwise) twenty percent (20%) of actual cost of labor and fifteen percent (15%) of actual cost each for materials, equipment, and subcontract work. Extra subcontract work shall be paid at actual necessary cost of labor, materials, and equipment, plus (for profit, general expenses, excise taxes, property taxes, license and inspection fees, and all other items of expense, whether enumerated herein or otherwise) twenty percent (20%) of actual cost of labor and fifteen percent (15%) of actual cost each for materials and equipment. Owner's determination and certification of said actual, necessary cost shall be binding and conclusive on Contractor, and Owner shall be deemed the arbiter to determine the cost of such work.

Labor costs for workers (including foremen) shall consist of employer paid actual wages, together with health and welfare, pension, vacation, holidays, and training, plus a surcharge for Workers' Compensation, Social Security, Medicare, Federal Unemployment, State Unemployment, and State Training taxes. Said surcharge shall be based on the labor surcharge set forth in the California Department of Transportation publication entitled "Labor Surcharge & Equipment Rental Rates" in effect during the performance of the Work.

Material costs shall consist of invoiced amounts or lowest current price at which such materials are locally available and delivered to the job site, plus sales taxes and freight and delivery charges. Owner reserves the right to approve materials and sources of supply. Owner also reserves the right to supply materials to the Contractor if necessary, but the Contractor shall not apply any markups to Owner furnished materials.

Regardless of ownership, equipment costs shall consist of rental rates set forth in the California Department of Transportation publication entitled "Labor Surcharge & Equipment Rental Rates" in effect during the performance of the Work. The rental rates shall include the cost of fuel, oil, lubrication, supplies, small tools, storage, necessary attachments, repairs and maintenance, depreciation and insurance, and all incidental expenses. Charges, other than the hourly rate, shall not apply to equipment already on the job site.

If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to the Owner than holding it at the work site, it shall be returned unless the Contractor elects to keep it at the work site at no cost to the Owner.

Copies of the California Department of Transportation publication entitled "Labor Surcharge and Equipment Rental Rates" may be downloaded: <http://www.dot.ca.gov/hq/construc/equipmnt.html>.

If any work and/or materials and/or equipment is ordered by Owner under this section on an actual necessary cost basis, Contractor shall, while performing work and/or furnishing materials and/or equipment, render to Owner signed daily written reports within two (2) days of the end of the day in which the extra work was performed, on forms provided in the Contract section of the Contract documents, showing name and number of each worker employed thereon, number of hours employed thereon, character of work performed, wages paid or to be paid, materials and equipment delivered and used, quantity and character of such material and equipment, from whom

purchased, net amount paid or to be paid therefor, and such other information as directed by Owner.

If required by Owner, Contractor shall also produce copies of any books, invoices, receipts, vouchers, other records, or memoranda which will assist Owner in determining the true, necessary cost of work and materials furnished by Contractor within two (2) days of the Owner's request. Contractor shall certify in writing that the copies of the records conveyed are accurate and that they pertain to the actual extra work.

Owner will establish Contract Change Order amounts based on Owner review of the aforementioned Contractor supplied daily written reports, and if requested, other pertinent records. If Contractor fails to furnish said daily written reports and other pertinent records as requested within the aforementioned two (2) days as required, Owner will establish Contract Change Order amounts in the absence of the aforementioned reports and records and said Contract Change Order amounts shall be binding and conclusive on Contractor.

- E. In the event Contractor requests a Contract Change Order for extra work required as a result of field conditions which are significantly different from those reasonably anticipated when the Contract was executed, such request shall be submitted to the Owner in writing no later than ten (10) days after Contractor discovers the circumstances causing the need for a Contract Change Order. It shall be accompanied by the following declaration, signed by the Contractor:

I, \_\_\_\_\_, (name of contractor's authorized representative) being the \_\_\_\_\_ (title of contractor's authorized representative) of \_\_\_\_\_

\_\_\_\_\_ (contractor's name) ("Contractor"), declare under penalty of perjury under the laws of the State of California, and do personally certify and attest that: I have thoroughly reviewed the attached claim for additional compensation and/or extension of time, know its contents, and know said claim is made in good faith; the supporting data is truthful and accurate; the amount requested accurately reflects the contract adjustment for which Contractor believes the Owner is liable. I am familiar with California Penal Code Section 72 and California Government Code Sections 12560 et seq., pertaining to false claims, and I know and understand that submission or certification of a false claim may lead to fines, imprisonment, and/or other severe legal consequences.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

Submission of a claim, properly certified, with all required supporting documentation, and written rejection or denial of all or part of the claim by Owner, is a condition precedent to any action, proceeding, litigation, suit, or demand for arbitration by Contractor.

Contractor recognizes and acknowledges that timely submission of a Change Order request, whether or not the circumstances of the change may be known to Owner or available to Owner through other means, is not a mere formality but is of crucial importance to the ability of Owner to promptly identify, prioritize, evaluate and mitigate the potential effects of changes. Any form of informal notice, whether verbal or written (including, without limitation, statements in requests for information, statements in submittals, statements at any job meeting or entries on monthly reports, daily logs or job meeting minutes), that does not strictly comply with the formal requirements of this Section, shall accordingly be insufficient.

Contractor's failure to provide a complete and timely Change Order request, or to comply with any other requirement of this Section, shall constitute a waiver by Contractor of the right to a contract adjustment on account of such circumstances and a waiver of any right to further recourse or recovery by reason of or related to such change by means of the claims dispute resolution process or by any other legal process otherwise provided for under applicable laws.

- F. Contractor's disagreement over the amount to be paid for extra work shall not relieve Contractor of the obligation to continue to perform all Work required by the Contract.

## **24. Protests**

In the event Contractor considers any requirement demanded of him to be outside the requirements of the Contract, or if he considers any order or ruling of Owner or of any inspector to be unfair, he shall within five (5) days upon such requirement being demanded or such order or ruling being made, ask that it be confirmed in writing delivered to him, and he shall, within ten (10) days after receipt of same, and without delaying performance of such order or ruling, file a written protest with Owner, stating clearly and in detail his objections and the reasons therefor. Except for such grounds of protest or objections as are made of record in the manner specified and within the time stated herein, Contractor hereby waives all grounds for protests or objections to the orders, rulings, instructions, or decisions of Owner, and hereby agrees that as to all matters not included in such protests, the orders, instructions, and decisions of Owner shall be final and conclusive.

## **25. Inspection and Testing**

All materials and equipment furnished and all work performed shall be subject to rigid inspection by Owner. Work covered or performed in the absence of such inspection or without inspector's knowledge shall be, upon order of Owner, uncovered to the extent required to permit inspection, removed and replaced under proper inspection as necessary for compliance, and recovered, all at Contractor's sole cost. Contractor shall bear all costs and fees incurred as a result of inspection services furnished by utilities or others. Inspection shall not constitute acceptance by the Owner nor relieve Contractor from its obligations under this Contract.

Whenever Contractor arranges to perform work outside regular or specified work periods or to vary the work period for any particular day, he shall give Owner twenty-four (24) hours notice so Owner may arrange and provide proper inspection. Such work shall be performed without extra compensation.

Contractor shall not pay Owner for inspection services during regular hours during regular work days and during otherwise specified work hours except for scheduled but aborted, defective, or failed compliance inspection and testing; however, if Contractor requests to work outside the stated working hours or on Saturdays, Sundays, and holidays and Owner agrees to same, Contractor shall pay Owner for inspection services in excess of eight (8) hours during regular work days and for Saturdays, Sundays and holidays, except during otherwise specified work hours, in accordance with Owner established rates.

Certain materials, equipment, and facilities furnished or constructed shall be subject to rigid and thorough compliance inspection and testing. Contractor shall schedule such inspection and testing only after furnished or constructed materials, equipment, or facilities are operational and function as intended. Once inspection and testing have been scheduled for any particular or specific material, equipment, or facility, Contractor shall pay for all aborted, defective, or failed inspection and testing thereof attributable to Contractor's, subcontractor's, or supplier's performance and operations, or materials and equipment. Materials, equipment, and facilities subject to inspection and testing shall include, but shall not be limited to, earthwork (especially compaction testing), concrete (especially strength testing), pumping and process equipment (laboratory and field testing), electrical and control equipment, piping and pipelines, valves and fittings, and reservoirs and vessels. Inspection and testing shall include start up and final testing as well as performance and operation testing of mechanical and electrical facilities and systems.

**26. Examination of the Work**

Contractor shall furnish Owner every reasonable facility for ascertaining whether the Work is in accordance with the requirements and intention of the Contract Documents, even to the extent of uncovering or taking down portions of finished work which have been previously approved or authorized to be covered. Should such previously approved work thus exposed or examined prove satisfactory, the uncovering or taking down and the replacing of the covering or the making good of the parts removed shall be included in the Contract Payment estimates and will be paid at the Contract prices for the kind of work done or as extra work, as determined by Owner; but should the work exposed or examined prove unsatisfactory, the uncovering, taking down, replacing, and making good shall be at the expense of Contractor, and he shall be charged with the cost to Owner of any materials furnished by Owner for the unsatisfactory work and its replacement in excess of the requirements for satisfactory original construction.

**27. Defective Materials**

- A. The inspection of the Work to be performed under the Contract shall not relieve Contractor of any of his obligations to fulfill his Contract, as herein prescribed, and all defective materials or workmanship shall be made good notwithstanding such material or workmanship may have been previously inspected by Owner and accepted or estimated for payment. If the material or workmanship shall be found defective at any time before the final acceptance of the entire Contract performance, Contractor shall forthwith make good such defect, without compensation, in a manner satisfactory to Owner. Owner shall be the sole judge of determining whether any defective material or workmanship is the result of the materials and methods of Contractor or whether the defects have been caused by other contractors of Owner having the responsibility of supplying the material.
- B. If Contractor shall fail or neglect to make ordered repairs of defective material or workmanship or to remove condemned material from the Work within ten (10) days after the service by Owner of an order to do such repair work or remove such materials, Owner may make the ordered repairs or remove the condemned materials and deduct the cost thereof from any monies due Contractor.

**28. Unpaid Claims**

Pursuant to Section 9350 et seq. of the California Civil Code, upon or before completion of the Work agreed to be performed or at any time prior to the expiration of the period within which claims may be filed for record, certain persons claiming to have performed labor or furnished material, supplies, or services toward the performance of this Contract may file with Owner a verified statement of such claim, stating in general terms the kind of labor and materials and the name of the person to or for whom the same was performed or furnished or both, together with a statement that the same has not been paid. If so, or if any person brings any action against Owner or against any officer thereof to enforce such claim, Owner shall withhold from the money under its control so much of said money due or to become due Contractor under this Contract as shall be sufficient to satisfy and discharge the amount claimed and potential costs of suit, but in no event less than one and one-fourth (1-1/4) times the amount claimed. However, if Owner in its discretion permits Contractor to file such additional bond as is authorized by Section 9364 of the Civil Code in a penal sum equal to one and one-fourth (1-1/4) times the amount of the claim, Owner shall not thereafter withhold said money on account of the claim.

**29. Partial Estimates and Payments**

Each month, Contractor shall submit to Owner on the forms provided in the Contract section of the Contract Documents a written request for payment, together with such supporting data as Owner may request, covering the amount of the Work then completed. Unless specified otherwise, such request and supporting data shall be submitted by Contractor so that it is received by Owner no later than the 20th day of the month preceding the month in which payment will be made. Upon approval by Owner, payment in the amount of ninety-five percent (95%) of the estimated value of the Work will be made by the 20th day of the month following the month in which request for payment is made.

Review and payment of such requests by Owner under this section are also subject to provisions of Section 20104.50 of the California Public Contract Code, summarized below:

Upon failure to make any progress payment within thirty (30) days after receipt of an undisputed and properly submitted payment request from Contractor, as set out below, Owner shall pay interest to Contractor equivalent to the legal rate set forth in subdivision (a) of Section 685.010 of the California Code of Civil Procedure.

Each payment request shall be reviewed by Owner as soon as practicable after receipt for the purpose of determining that the payment request is a proper payment request. Any payment request determined by Owner not to be a proper payment request suitable for payment shall be returned to Contractor as soon as practicable, but not later than seven (7) days after receipt. A request returned pursuant to this paragraph shall be accompanied by a document setting forth in writing the reason why the payment request is not proper.

The number of days available to Owner to make a payment without incurring interest pursuant to Section 20104.50 of the California Public Contract Code shall be reduced by the number of days by which Owner exceeds the seven (7) day return requirement set forth herein. For purposes of Section 20104.50 of the California Public Contract Code, "progress payments" include all payments properly due to Contractor, except that portion of the final payment designated by this Contract as retention earnings.

### **30. Withheld Contract Funds**

Contractor, at his request and expense and in accordance with Section 22300 of the California Public Contract Code, will be permitted to substitute securities equivalent to any monies withheld by Owner to ensure performance under the Contract as follows.

- A. At the request and expense of Contractor, securities equivalent to the amount withheld shall be deposited with Owner, or with a state or federally chartered bank in California as the escrow agent, and thereafter, Owner shall pay Contractor the retained amounts as they become due. Except as otherwise provided in the Contract Documents, upon satisfactory completion of the Contract, the securities shall be returned to Contractor.
- B. Alternatively, Contractor may request, at his expense, that Owner make payment of retention earned directly to the Escrow Agent. Contractor may, at his expense, direct the investment of the payments into securities and receive the interest earned on those investments upon the same terms provided in Public Contract Code Section 22300. The Escrow Agent shall pay Contractor all securities, interest, and payments received by the Escrow Agent from Owner pursuant to such Section, upon satisfactory completion of the Contract. Contractor shall pay to each subcontractor, not later than twenty (20) days following receipt of payment, respective amounts of interest earned, net of costs attributed to retention withheld from each subcontractor, on the amount of retention withheld to ensure performance of Contractor.
- C. Securities eligible for investment shall include those listed in California Government Code Section 16430, bank or savings and loan Certificates of Deposit, interest-bearing demand deposit accounts, standby letters of credit, or any other security mutually acceptable to Contractor and Owner. Contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.
- D. In accordance with conditions of Public Contract Code Section 22300, any escrow agreement entered pursuant to these conditions shall be executed in the form included in the Contract section of the Contract Documents.

### **31. Final Estimate and Payment**

Contractor shall be entitled to final payment of unpaid and undisputed amounts due on the Contract within 60 days after completion of the Work, as hereinafter provided. Prior to that date, Owner will prepare a final estimate of the Work done by Contractor and compute therefrom the total value of the Work done by Contractor, from which Owner will deduct: (a) all previous partial payments made to Contractor under this Contract, (b) any amounts to be deducted from the Contract pursuant to the terms of the Contract, (c) 150% of all unpaid Contract amounts then in dispute, and (d) 125% of all stop notices then on file with Owner. The net amount shall be paid to Contractor upon Contractor's transmittal to Owner of the properly executed release, upon the form provided in the Contract section of the Contract Documents, releasing Owner from all claims or liability relating to undisputed Contract amounts or work performed in relation to said amounts. Amounts withheld from final payment pending resolution of disputes, or to satisfy third-party claims or stop notices, will be subsequently released to Contractor according to the terms of such settlements as may be subsequently reached between the parties thereto.

It shall be understood and agreed by Contractor that all partial payments are estimates only and may be revised, adjusted, and corrected at the time of computing final payment. For purposes of final payment on the Contract, the term "completion" shall mean any of the following:

- A. Occupation, beneficial use, and enjoyment of the Work, performed pursuant to the Contract, excluding any operation only for testing, start-up, or commissioning, by Owner or its agent, accompanied by cessation of labor on the Contract.
- B. Acceptance of the Work by Owner.
- C. Cessation of labor on the Contract for a continuous period of 100 days or more, due to factors beyond Contractor's control.
- D. After commencement of the Work on the Contract, cessation of labor for a continuous period of 30 days or more, if Owner has filed for record a Notice of Cessation or a Notice of Completion.

### **32. Sales and Use Taxes**

The Contract price includes all taxes, and Contractor shall pay all taxes of any nature due and payable by Owner or by Contractor to the State of California and its political subdivisions or to any charter city, and all taxes of every nature due and payable by Owner or by Contractor to the United States of America or any of its agencies in connection with any or all work or equipment provided for in the Contract. This shall include, but not be limited to, sales taxes and use taxes. Contractor is hereby notified that in accordance with Revenue and Taxation Code Section 107.6 the Contract Documents may create a possessory interest subject to personal property taxation, for which Contractor is responsible.

### **33. Payment Only in Accordance with Contract**

Contractor shall not demand or be entitled to receive payment for work to be performed and/or equipment and/or materials furnished, or any portion thereof, except in the manner set forth in this Contract; nor unless each and every one (1) of the promises, agreements, stipulations, terms, and conditions herein contained to be performed, kept, observed, and fulfilled on the part of Contractor shall have been performed, kept, observed, and fulfilled, and Owner shall have accepted the Work.

### **34. Monies to be Retained**

Owner may keep any monies which would otherwise be payable at any time hereunder and apply the same, or so much as may be necessary therefor, to the payment of any expenses, losses, or damages as determined by Owner, incurred by Owner for which Contractor is liable under the Contract. Owner shall also withhold all forfeited funds pursuant to applicable provisions of the Labor Code.

**35. Recovery of Damages**

The making of an estimate and payment in accordance therewith shall not preclude Owner from demanding and recovering from Contractor such damages as it may sustain by reason of his failure to comply with the Contract Documents.

**36. Acceptance of the Work Not a Waiver**

Neither the acceptance of all or part of the Work by Owner, nor any order, measurements, or certificate by the Engineer, nor the filing of a Notice of Completion, nor granting an extension of time, nor payment of any money, nor any possession taken by Owner shall operate as a waiver of any portion of this Contract or of any power herein provided; nor shall any waiver of any breach of this Contract be held to be a waiver of any other or subsequent breach.

**37. Maintenance and Guarantee**

A. Contractor hereby guarantees that all materials and workmanship furnished by him under the Contract will meet fully all requirements thereof as to quality or workmanship and of materials furnished by him. Contractor hereby agrees to replace all materials and pay for all installation costs made necessary by defects in materials or workmanship supplied by him that become evident within one (1) year after the date of final payment and to pay for all work necessary to remove, restore, and replace the materials to full serviceability and to full compliance with the requirements of the Contract Documents, including the test requirements for any part of the materials furnished hereunder which, during said one (1) year period, are found to be deficient with respect to any provision of the Contract Documents.

Contractor also agrees and does hereby hold Owner harmless from claims of any kind which may arise from injury or damage due to said defects. Contractor shall replace all defective materials promptly upon receipt of written orders for same from Owner. If Contractor fails to replace all defective materials promptly, Owner may secure the service of others to do this work, and Contractor and his surety shall be liable to Owner for the cost, including removal and replacement thereof.

B. The guarantees, indemnifications and agreements set forth in Subsection a. hereof are secured by the Contract Performance Bond provided by Contractor herein, and for this purpose said bond shall remain in force for the entire period for which the Contractor has any remaining obligations, whether under such guarantees, indemnifications, and agreements, or in law or in equity.

C. This article shall not limit the Owner's rights under this Contract or with respect to latent defects, gross mistakes, or fraud. The Owner specifically reserves all rights relating to defective work, including but not limited to those relating to defect claims pursuant to Code of Civil Procedure Section 337.15.

**38. Suspension of Contract**

A. If the equipment and/or material to be furnished or the work to be performed by Contractor under the Contract shall be abandoned by Contractor, or if Contractor shall make a general assignment for the benefit of his creditors or be adjudicated a bankrupt, or if a receiver of his property or business be appointed by a court of competent jurisdiction, or if his Contract shall be assigned by him otherwise than hereinbefore specified, or if, at any time, Owner shall be of the opinion that the performance of the Contract is unnecessarily or unreasonably delayed, or that Contractor is willfully violating any of the conditions or covenants of the Contract, or of the Specifications, or is executing the same in bad faith or not in accordance with the terms thereof, or if the terms of the Contract be not fully completed within the time named in the Contract for its completion or within the time to which the completion of the Contract may have been extended, as hereinbefore provided, Owner may, by written notice, instruct Contractor to suspend the operation of all or any

part of the Contract, and Contractor shall do so and shall resume the same only upon written instruction by Owner.

- B. Upon such suspension of the Contract, Owner may procure the equipment and/or the materials, and/or performance of the work necessary to fulfill the Contract requirements in such manner as it may deem proper. In so doing, Owner may take possession of and use any of any materials, plant, tools, equipment, supplies, and property of every kind which may be provided by Contractor upon Owner property for the purposes of his work. Owner may procure other equipment and/or materials and provide labor for the completion of the same, or Contract therefor, and charge the expense of completion by either method to Contractor. These charges shall be deducted from such monies as may be due or may at any time hereafter become due Contractor under and by virtue of this Contract or any part thereof. In case such expense shall exceed the amount which would have been due Contractor under the Contract if the same had been completed by him, Contractor shall pay the amount of such excess to Owner and in case such expense shall be less than the amount which would have been payable under this Contract if the same had been completed by Contractor, he shall have no claim to the difference, except to such extent as may be necessary, in the opinion of Owner, to reimburse Contractor or Contractor's sureties for any expense properly incurred for plant, camp, equipment, materials, supplies, and labor devoted to the prosecution of the Work of which Owner shall have received the benefits and which shall not have been otherwise paid by Owner. In computing such expense so far as it shall relate to plant and equipment taken over by Owner the salvage value of such plant and equipment at completion of the Work shall be deducted from the depreciated value thereof at the time taken over by Owner, and the difference shall be considered an expense. Evidence of such expense, satisfactory to Owner, shall be required, and all necessary estimates and appraisements shall be made by him. When any particular part of the Work is being carried on by Owner, by Contract or otherwise, under the provisions of this section, Contractor shall continue the remainder of the Work in conformity with the terms of his Contract and in such manner as in nowise to hinder or interfere with the persons or workers employed, as above provided, by Owner, by Contract or otherwise, to do any part of the Work or to complete the same under the provisions of this Section.
- C. In the determination of the question whether there has been such non-compliance with the Contract as to warrant its suspension or the procurement of the equipment, labor, or material elsewhere by Owner as herein provided, the decision of Owner shall be final. Suspension of the Contract or any portion thereof shall operate only to terminate the right of Contractor to proceed with the furnishing of the equipment and/or material, or performing the work covered by the Contract or the suspended portions thereof. All other stipulations of the Contract, shall be and remain in full force and effect after such suspension and until the Contract shall have been completed, final payment made, and formal acceptance given.

### **39. Additional Surety**

If, during the continuance of the Contract, any of the sureties upon the performance or payment bonds in the opinion of Owner, are or become insufficient, Owner may require additional sufficient sureties, which Contractor shall furnish to the satisfaction of Owner within fifteen (15) days after notice, and in default thereof, the Contract may be suspended with the same force and effect as provided in Section 38.

### **40. Termination of Contract**

If, at any time before manufacture of all equipment and/or materials, or completion of performance of work, it shall be found by Owner that reasons beyond the control of the parties hereto render it impossible or against the public interest of Owner to buy and receive any remaining portion of the equipment and/or materials or have the Work completed, Owner at any time, by written notice to Contractor, may call for discontinuance of manufacture of the equipment and/or materials and/or performance of work, and terminate the Contract. Upon the service of such notice of termination, Contractor shall discontinue the manufacture and/or performance of work in such manner, sequence, and at such times as Owner may direct, continuing after said notice only such manufacturing of the equipment and/or material and/or only such performance of work and only until such time, or times, as Owner may direct, and Contractor shall



have no claim for damages for such discontinuance or termination of the Contract; nor shall Contractor have any claim for anticipated profits on the equipment and/or materials or performance of work thus dispensed with, nor any other claim except for the equipment and/or materials and/or of work actually manufactured or performed up to the times of said notice, or in accordance therewith.

**41. Right to Occupy Completed Portions of the Work**

Owner may wish to occupy or place in service completed portions of the Work before final completion of the Contract and shall be at liberty to do so, but such occupancy or placing in service of any completed portion of the Work shall not void the Contract nor relieve Contractor of his responsibility of protection and care of all Work until final completion and acceptance of the entire Work, provided, however, that expense directly attributable to operation and placing in service the portions of the Work shall not be chargeable to Contractor.

**42. Anti Trust Claims and Third Party Claims**

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

Pursuant to Public Contract Code Section 9201, the Owner shall provide Contractor with timely notice of the receipt of third party claims relating to this Contract.

**43. Dispute Resolution**

Contractor shall timely comply with any and all requirement of the Contract Documents pertaining to notices and requests for changes to the contract time or contract price. The failure to timely submit a notice of delay or notice of change, or to timely request a change to the time for completion or Contractor's compensation, or to timely provide any other notice or request required herein shall constitute a waiver of the right to further pursue the claim under the Contract or at law.

A. Intent. Effective January 1, 1991, Section 20104 et seq., of the California Public Contract Code prescribes a process utilizing informal conferences, non-binding judicial supervised mediation, and judicial arbitration to resolve disputes on construction claims of \$375,000 or less. Effective January 1, 2017, Section 9204 of the Public Contract Code prescribes a process for negotiation and mediation to resolve disputes on construction claims. The intent of this Section is to implement Sections 20104 et seq. and Section 9204 of the California Public Contract Code. This Section shall be construed to be consistent with all applicable law, including but not limited to these statutes.

B. Claims. For purposes of this Section, "Claim" means a separate demand by the Contractor for:

1. An adjustment to the time for completion including, without limitation, for relief from damages or penalties for delay assessed by Owner;
2. Payment by Owner of money or damages arising from Work done by or on behalf of the Contractor pursuant to the Contract, payment for which is not otherwise expressly provided or to which the Contractor is not otherwise entitled; or
3. An amount the payment of which is disputed by Owner.

A "Claim" does not include any demand for payment for which the Contractor has failed to provide notice, request a change order, or otherwise failed to follow any procedures contained in the Contract Documents.

- C. Filing Claims. Claims governed by this Section may not be filed unless and until the Contractor completes any and all requirements of the Contract Documents pertaining to notices and requests for changes to the contract time or contract price, and Contractor's request for a change has been denied in whole or in part. Claims governed by this Section must be filed no later than thirty (30) days after a request for change has been denied in whole or in part or after any other event giving rise to the Claim. The Claim shall be submitted in writing to Owner and shall include on its first page the following words in 16 point capital font: "THIS IS A CLAIM." The Claim shall include the all information and documents necessary to substantiate the Claim, including but not limited to those identified below. Nothing in this Section is intended to extend the time limit or supersede notice requirements otherwise provided by Contract Documents. Failure to follow such contractual requirements shall bar any Claims or subsequent proceedings for compensation or payment thereon.
- D. Documentation. The Contractor shall submit all Claims in the following format:
1. Summary description of Claim including basis of entitlement, merit and amount of time or money requested, with specific reference to the Contract Document provisions pursuant to which the Claim is made
  2. List of documents relating to Claim:
    - a. Specifications
    - b. Drawings
    - c. Clarifications (Requests for Information)
    - d. Schedules
    - e. Other
  3. Chronology of events and correspondence
  4. Narrative analysis of Claim merit
  5. Analysis of Claim cost, including calculations and supporting documents
  6. Time impact analysis in the form required by the Contract Documents or, if the Contract Documents do not require a particular format, CPM format, if an adjustment of the contract time is requested
- E. Owner's Response. Upon receipt of a Claim pursuant to this Section, Owner shall conduct a reasonable review of the Claim and, within a period not to exceed 45 days, shall provide the Contractor a written statement identifying what portion of the Claim is disputed and what portion is undisputed. Any payment due on an undisputed portion of the Claim will be processed and made within 60 days after Owner issues its written statement.
1. If Owner needs approval from its governing body to provide the Contractor a written statement identifying the disputed portion and the undisputed portion of the Claim, and Owner's governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a Claim sent by registered mail or certified mail, return receipt requested, Owner shall have up to three days following the next duly publicly noticed meeting of Owner's governing body after the 45-day period, or extension, expires to provide the Contractor a written statement identifying the disputed portion and the undisputed portion.

2. Within 30 days of receipt of a Claim, Owner may request in writing additional documentation supporting the Claim or relating to defenses or Claims Owner may have against the Contractor. If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of Owner and the Contractor. Owner's written response to the Claim, as further documented, shall be submitted to the Contractor within 30 days (if the Claim is less than \$50,000, within 15 days) after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information or requested documentation, whichever is greater.
- F. Meet and Confer. If the Contractor disputes Owner's written response, or Owner fails to respond within the time prescribed, the Contractor may so notify Owner, in writing, either within 15 days of receipt of Owner's response or within 15 days of Owner's failure to respond within the time prescribed, respectively, and demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand, Owner shall schedule a meet and confer conference within 30 days for settlement of the dispute.
- G. Mediation. Within 10 business days following the conclusion of the meet and confer conference, if the Claim or any portion of the Claim remains in dispute, Owner shall provide the Contractor a written statement identifying the portion of the Claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the Claim shall be processed and made within 60 days after Owner issues its written statement. Any disputed portion of the Claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with Owner and the Contractor sharing the associated costs equally. The Owner and Contractor shall mutually agree to a mediator within 10 business days after the disputed portion of the Claim has been identified in writing, unless the parties agree to select a mediator at a later time.
1. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator.
  2. For purposes of this Section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this Section.
  3. Unless otherwise agreed to by Owner and the Contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.
  4. The mediation shall be held no earlier than the date the Contractor completes the Work or the date that the Contractor last performs Work, whichever is earlier. All unresolved Claims shall be considered jointly in a single mediation, unless a new unrelated Claim arises after mediation is completed.
- H. Procedures After Mediation. If following the mediation, the Claim or any portion remains in dispute, the Contractor must file a Claim pursuant to Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code prior to initiating litigation. For purposes of those provisions, the running of the period of time within which a Claim must be filed shall be tolled from the time the Contractor submits his or her written Claim pursuant to subdivision (a) until the time the Claim is denied, including any period of time utilized by the meet and confer conference.

I. Civil Actions. The following procedures are established for all civil actions filed to resolve Claims of \$375,000 or less:

1. Within 60 days, but no earlier than 30 days, following the filing or responsive pleadings, the court shall submit the matter to non-binding mediation unless waived by mutual stipulation of both parties or unless mediation was held prior to commencement of the action in accordance with Public Contract Code section 9204 and the terms of this Agreement. The mediation process shall provide for the selection within 15 days by both parties of a disinterested third person as mediator, shall be commenced within 30 days of the submittal, and shall be concluded within 15 days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court.
2. If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1114.11 of that code. The Civil Discovery Act of 1986 (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of Part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration. In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, (A) arbitrators shall, when possible, be experienced in construction law, and (B) any party appealing an arbitration award who does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, also pay the attorney's fees on appeal of the other party.

J. Government Code Claim Procedures.

1. This Section does not apply to tort claims and nothing in this Section is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.5 of Title 1 of the Government Code.
2. In addition to any and all requirements of the Contract Documents pertaining to notices of and requests for adjustment to the contract time, contract price, or compensation or payment for extra Work, disputed Work, construction claims and/or changed conditions, the Contractor must comply with the claim procedures set forth in Government Code Section 900, et seq. prior to filing any lawsuit against Owner.
3. Such Government Code claims and any subsequent lawsuit based upon the Government Code claims shall be limited to those matters that remain unresolved after all procedures pertaining to adjustment of the contract time or contract price for extra Work, disputed Work, construction claims, and/or changed conditions have been followed by Contractor. If Contractor does not comply with the Government Code claim procedure or the prerequisite contractual requirements, Contractor may not file any action against Owner.
4. **A Government Code claim must be filed no earlier than the date the Work is completed or the date the Contractor last performs Work on the Project, whichever occurs first. A Government Code claim shall be inclusive of all unresolved claims known to Contractor or that should reasonably be known to Contractor excepting only new unrelated Claims that arise after the Government Code claim is submitted.**
5. Non-Waiver. Owner's failure to respond to a Claim from the Contractor within the time periods described in this Section or to otherwise meet the time requirements of this Section shall result in the Claim being deemed rejected in its entirety, and shall not constitute a waiver of any rights under this Section.

- K. Waiver of Rights. Except as set forth in this Section 43, or as otherwise provided under State law, it is understood and agreed by the parties that all rights any of them may have to arbitration for the settling of disputes, claims, and other matters arising out of or relating to this Contract or the breach thereof are hereby specifically waived by all of them.

## **SPECIAL REQUIREMENTS**

## SPECIAL REQUIREMENTS

### 1. The Work

The Contract Work to be performed hereunder includes the furnishing of all labor and equipment and furnishing and installing all materials, unless herein specifically excepted, necessary for the complete and satisfactory construction of the Market Street and 24th Street Pipeline Relocation project.

Contractor shall, upon completion of the work required herein, initially operate all components of the Contract Work, and make any additional adjustments, corrections, repairs, replacements, and reconstructions necessary to provide Owner with complete, correctly operating pipelines and appurtenances.

### 2. Work Site

The Contract work site is located within the City of Jurupa Valley in that portion of the Rubidoux Community Services District as shown on Sheet 1 of the Construction Drawings. Work site is located in the intersection of Market Street and 24<sup>th</sup> Street/Via Cerro.

### 3. Contract Drawings

The following Contract Drawings are made a part of these Contract Documents:

#### CONSTRUCTION DRAWINGS (24" x 36")

<u>Title</u>	<u>Sheet No.</u>
Title Sheet, Location and Vicinity Maps, and Drawing Index	1
Construction Notes	2
Plan and Profile – Station 10+05.0± to Station 12+06.0±	3

#### STANDARD DRAWINGS (8-1/2" x 11")

(Attached in the back of these Contract Documents)

<u>Title</u>	<u>Drawing No.</u>
Pipeline Trench	G20
Concrete Thrust Protection	G40
Gate Valve Installation	W1020
Butterfly Valve Installation	W1030
1" or 2" Air Valve Installation	W1070
Guard Post/Flexible Delineator Installation	W1160

### 4. Authorization to Proceed

Upon Notice of Award, Contractor is hereby authorized to execute Contract and secure Performance and Payment Bonds and Certificates of Insurance.

Upon Execution of Contract by Owner, Contractor is authorized to begin Contract work submittal document submission, material ordering, and construction scheduling.

Upon acceptance of submittal documents necessary to begin construction and following preconstruction meeting, Contractor may proceed with construction.

**5. Preconstruction Meeting**

Contractor shall attend a preconstruction job meeting at Owner's office as soon after award as Owner considers necessary. Contractor will be given adequate notice of such meeting. Contractor shall submit a proposed construction schedule at said meeting, for Owner's subsequent review and acceptance.

**6. Permits, Certificates, Laws, and Ordinances**

Contractor shall, at his own expense, procure all permits, certificates, and licenses required of him by law for the execution of the Work. He shall comply with all federal, state, and local laws, ordinances, or rules and regulations relating to the performance of said Work.

All of the permit requirements shall be satisfied by Contractor and accepted by all issuing agencies and Owner before a notice of completion will be recorded for the project. In the event of conflict between said permit requirements and the other contract documents, the most stringent requirements shall prevail.

**7. Rights-of-Way**

All work shall be performed within the limits of the City of Jurupa Valley rights-of-way, as shown on the Construction Drawings. If Contractor is required to perform any work outside the City right-of-way, Contractor shall obtain written permission from property owner and provide Owner a copy of said written permission prior to starting work.

Contractor shall confine all of his operations, including parking, equipment operation, equipment storage, and material storage to the existing rights-of-way. Under no circumstances, shall Contractor, subcontractors, or employees operate any equipment outside the limits of the rights-of-way.

If Contractor performs work outside the limits of said rights-of-way, Contractor shall stop all work immediately and restore all areas to their preconstruction condition to the satisfaction of Owner, property owner, and City of Jurupa Valley. The Contractor shall also provide an indemnification letter to Owner regarding any unauthorized work outside said rights-of-way.

**8. Notifications**

Contractor shall notify Owner, all residents, all commercial and public establishments, and City of Jurupa Valley of impending work a minimum of two weeks prior to beginning construction as follows:

- A. For Owner, Contractor shall notify Owner's Inspector.



- B. Contractor shall notify residents, commercial, and public establishments of impending work. Printed notices shall be sent to all residences, commercial, and public establishments in the vicinity of the work at least fourteen days in advance of construction. Said notices shall first be approved by Owner and shall contain a general description of the work, dates work will be performed, descriptions of areas where travel and parking will be restricted, and names of streets which will be closed to through traffic or where traffic will be restricted.
- C. For the City of Jurupa Valley, Contractor shall notify the City's inspector as designated in the preconstruction meeting.

**9. Traffic Control**

The Contractor, on behalf of Owner, shall direct all construction activities so as to minimize obstruction of vehicular and pedestrian traffic. Contractor shall keep the Owner continuously informed as to his operations so that the Owner can keep the appropriate police, fire, and ambulance authorities continuously informed.

Contractor shall at all times provide approved barricades, lights, and other traffic control devices which comply with all requirements of "The Manual on Uniform Traffic Control Devices", latest edition. All barricades shall be equipped with flashing lights.

Contractor shall prepare traffic control drawings and obtain approval of same from the City of Jurupa Valley.

**10. Construction Staking**

Upon Contractor's request, Owner will provide construction staking along the 12" waterline at pipe joints and at grade breaks, angle points, vaults, and appurtenances. Cut sheets will be prepared using flow line of pipe as shown on drawings and 1" x 2" hubs or nails and tins set along pipeline alignment. All points will be staked to 0.10± of design position and elevation. Contractor will be furnished three copies of cut sheets prior to trenching.

Contractor shall provide full access, free of obstructions, for the survey crew. Any obstructions such as dirt piles, vehicles, construction supplies, or equipment must be moved prior to the survey crew's arrival. Any costs associated with such obstructions that interfere with staking shall be paid for by the Contractor.

Contractor shall notify Owner two weeks prior to beginning of construction to allow ample time for construction staking. Contractor shall use the construction stakes for construction of the pipeline. Owner will use them for inspection of the work. Contractor shall protect all survey monuments and stakes and shall pay all costs to reestablish any monuments or stakes destroyed or disturbed during the course of construction.

**11. Inspection and Inspection Fees**

Owner's inspector will provide inspection of the Contract work and will perform inspection during the specified workdays and hours at no cost to Contractor; however, the Contractor shall bear all costs and fees incurred as a result of inspection services furnished by utilities or others. In the event the Contractor requests to work outside the stated working hours, or on holidays, Saturdays, or Sundays, and the Owner agrees to same, the Contractor shall pay for the Owners inspector's time at the following rates:

<u>Work Period</u>	<u>Inspection Rates</u>
Weekdays, 8 hours to 12 hours	\$181.00
Weekdays, more than 12 hours	\$218.00
Saturday, 12 hours or less	\$181.00
Saturday, more than 12 hours	\$218.00
Sunday and Holidays	\$218.00

Inspector's holidays are: New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day, the Day after Thanksgiving, and Christmas.

Said rates are subject to change when the Department of Industrial Relations establishes new prevailing wage rates.

**12. Compliance with Contract Documents**

Contractor shall comply with the Contract Documents, including timely completion of work each day, backfilling trenches each day, placement of pavement, work site cleanup, control of traffic, placement of signs, placement of barricades, and use of flashing lights. If Contractor does not comply with the Contract Documents, then Owner shall provide the required labor, materials, and equipment to perform same and shall deduct the cost from monies otherwise due under the contract.

**13. Preservation of Paved Surfaces, Restoration of Work Site, and Disposal of Spoil and Waste Materials**

A. Contractor shall perform his operations so that existing streets and other paved surfaces adjacent to or in the vicinity of the work site are not damaged. Contractor shall repair any damaged pavement which results from his operations (except that which is specifically a part of the Contract Work) to the satisfaction of Owner and the City of Jurupa Valley, all at the Contractor's expense.

B. All areas shall be restored to preconstruction conditions and shall meet the requirements of the Owner, City of Jurupa Valley, and property owners.

Owner is obligated to keep visual impact of the work sites to a minimum; therefore, Contractor is required to restore all areas altered by construction to preconstruction conditions. Such areas shall include, but shall not be limited to, areas used for travel, parking, and storage of vehicles, equipment and materials.

- C. Contractor shall provide proper disposal of all waste materials resulting from his operations, including rubbish, packaging materials, discarded equipment parts, and damaged construction materials, in a manner and at locations suitable to the Owner, City of Jurupa Valley, and all health and other regulatory agencies.

Pavement materials shall not be placed in pipeline trenches (unless Contractor elects to grind said pavement). Contractor shall remove said pavement materials and dispose of same at an approved location.

#### **14. Compaction Testing**

Unless noted otherwise, trench backfill and pipe zone backfill shall be compacted to 90% relative compaction minimum after all sheeting, shoring, or shields have been removed. The upper 12" of subgrade shall be compacted to 95% compaction minimum for those areas to receive asphalt concrete pavement.

Contractor shall notify Owner when any segment of trench backfill or aggregate base is complete and ready for compaction testing. After such notification, Owner will have all necessary tests made by a soils engineer of its choosing. The Owner will pay for all passing tests, Contractor shall pay for all failing tests.

Compaction tests will be taken in the pipe zone, at various levels in the backfill above the pipe zone, in the subgrade, and in the crushed aggregate base as determined by Owner or the Owner's Geotechnical Engineer. Contractor shall assist, at no additional cost to Owner, Geotechnical Engineer in taking all compaction tests. Contractor shall furnish all equipment (including shoring), labor, and materials needed for such assistance. Compaction testing shall be compacted and accepted by Owner prior to hydrostatic and leakage testing. Contractor shall notify Owner a minimum of 24 hours prior to time of actual testing.

#### **15. Survey Monuments and Benchmarks**

The Contractor shall not disturb existing survey monuments or benchmarks. Contractor shall have a Licensed Land Surveyor registered in the State of California locate, mark, reference and prepare a Corner Record prior to construction, for all monuments that might be disturbed pursuant to Business and Professions Code, Sections 8700 to 8805 of the Land Surveyor's Act, specifically Section 8771(b). Contractor shall notify Owner at least 72 hours prior to working near any monuments or benchmarks. Should these monuments be destroyed or disturbed, Contractor shall have a Licensed Land Surveyor registered in the State of California reset the monuments and file a Corner Record or a Record of Survey with the County Surveyor prior to Owner recording a Certificate of Completion for the project.

#### **16. Emergency Vehicle and Response Access**

Access for emergency vehicle response shall be provided as required throughout the project. All conditions imposed by emergency agencies (police, fire, or ambulance) due to access limitations shall be the responsibility of the Contractor, including costs of same.

**17. Mail, Utility, Refuse, Bus Service, Residence and Business Access, Deliveries, and Collection**

Contractor shall assist and make access available for U.S. Mail and private carrier deliveries and collections to and from residents within the project area. Contractor shall provide access for routine utility company operations, refuse collection, bus service, and residence and business access.

**18. Storage of Materials and Equipment**

Contractor shall not store materials or equipment on private or public property without written permission from the affected property owner and Owner approving such use. Said written permission shall be submitted to Owner prior to Contractor moving materials or equipment onto site.

All equipment and materials shall be removed from public rights-of-way and placed in the Contractor's construction yard at the end of each workday.

Contractor shall provide all security measures necessary to secure stored materials and equipment. Owner is not responsible for items lost, damaged, or stolen from the Contractor's construction yard.

**19. Notifications**

Contractor shall provide written notification to all residents and commercial establishments in the vicinity of the work of impending work at least seven (7) days prior to beginning construction. Said notices shall first be approved by Owner and shall contain a general description of the work, dates work will be performed, descriptions of areas where travel and parking will be restricted, and names of streets which will be closed to through traffic or where traffic will be restricted. Contractor shall maintain, as a minimum, one (1) access location to each establishment at all times.

If Owner or City receives complaints from individuals affected by construction, Contractor shall take immediate action to correct same as directed by the Owner. If Contractor receives complaints directly, Contractor shall report same immediately to Owner. Thereafter, Contractor shall take immediate action to correct same as directed by Owner.

**20. Payment Requests**

Contractor shall submit all partial payment requests and final payment request to Owner. Payment requests shall be submitted by the last day of the month preceding the month in which payment will be made. On approval by the Owner, partial payments will be made by the thirtieth day of the month following the month in which request for payment is made. Final payment will be made within 35 days following date of filing Notice of Completion.

All payment requests shall show all bid items and sub-bid items for the Contract Work and the amounts bid. In addition, said requests shall show the percentage of completion of each bid item and sub-bid item and the amount thereof, said amounts being totaled to arrive at the value of the completed Work. The net partial payment amount shall equal 95% of said total. Contractor shall use the Payment Request Form in the Contract Documents.

## **21. Data to be Submitted by Contractor**

Contractor shall furnish Owner the following data and said data shall be approved by Owner prior to ordering materials. All materials shall comply with Owner's List of Approved Manufactured Materials (Appendix A). Data (electronic) shall be submitted to Owner for approval. Unless otherwise specified by the District, Contractor shall submit all documents (ie: RFIs, Contract Documents, Design Submittals, and Materials and Equipment Submittals) electronically via Bluebeam.

- A. All data required by the Contract Documents including but not limited to trench protection, construction schedule, encroachment and excavation permits (Special Requirements, Section 6), and emergency telephone numbers.
- B. Site specific Injury and Illness Prevention Plan and Confined Space Program.
- C. Manufacturers data on all materials to be furnished by Contractor for the water improvements, including, but not limited to, pipe, fittings, gaskets, nuts, bolts, valves, valve covers, air valves, air valve covers, couplings, fire hydrants, copper tubing, vaults, and all other materials and equipment to be furnished and installed as part of the Work.
- D. All data on imported pipe zone backfill materials, asphalt concrete pavement, Portland Cement Concrete, and Class II base.
- E. A detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during excavation of any trenches five feet or more in depth. Said plan shall be signed and stamped by a registered civil or structural engineer licensed in the State of California.
- F. Detailed written plan for pipe testing, filling, cleaning, disinfection, and flushing.

## **22. Trench and Excavation Protection**

Before making any excavation or trench 5' or more in depth, Contractor shall submit to Owner a detailed drawing showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection. Drawings shall be specific as to where the design applies (which stations). If said drawings do not vary from the requirements of the OSHA Construction Safety Orders (Cal/OSHA or FED OSHA, whichever is applicable at the time of construction), a statement signed by a registered civil or structural engineer licensed in the State of California, engaged by Contractor at his expense, shall be submitted certifying that the Contractor's excavation safety drawings comply with OSHA Construction Safety Orders. If said drawing varies from said OSHA Construction Safety Orders, the drawings shall be prepared and certified by a registered civil or structural engineer licensed in the State of California and said engineer shall affix his seal and signature to each sheet of said drawing.

Contractor shall not excavate until Owner has received and acknowledged the properly certified excavation safety drawings.

### **23. Exploratory Excavations (Potholing)**

Existing utility locations shown on the Construction Drawings are based on available records and are considered approximate. Water service locations, where shown, are based on approximate locations of existing meter boxes. Sewer laterals, where shown, are based on available construction drawings. Gas services, where shown, are based on approximate location of visible "gas" markings. Where underground main conductors or conduits such as water, gas, sewer, telephone, electric power, cable television, or other utilities are shown on construction drawings, Contractor shall assume that a service lateral from each utility facility extends to every parcel or property, whether or not a service lateral is shown.

At least ten days prior to ordering materials, Contractor shall excavate, expose, and determine ("pothole") the exact location and depth of each and every utility crossing the proposed waterlines (including utilities crossing water services, air valves, blowoffs, fire hydrant piping, fire service piping, and connection piping). All facilities shown specifically on the construction drawings, or which have been marked by their respective owners shall be potholed. All potholing shall be completed and the results furnished to the Owner at least five (5) days prior to ordering any materials. Contractor shall adjust locations of proposed waterlines as necessary, all at no cost to Owner, to avoid all utilities shown on the construction drawings, or as located in the field during Contractor's potholing operation. Changes or delays caused by Contractor's failure to perform "potholing" and interference location work shall not be eligible for extra work compensation or time extension.

In addition, at least ten days prior to any ordering of any materials, Contractor shall pothole all facilities that are parallel with, and within 10 feet, of the proposed waterlines, as marked in the field by their respective owners to determine exact location of said facilities. If locations vary from those shown on the Construction Drawings, Owner may redesign alignment of waterline. Contractor shall construct the waterline in accordance with the redesigned alignment at no additional cost to Owner.

In some locations, the type of existing waterlines is noted on the Construction Drawings. Said information, where shown, is based on information shown on available Construction Drawings. Said information is not guaranteed to be accurate. Contractor shall pothole waterlines parallel to the proposed pipelines and shall pothole waterlines crossing the proposed pipelines to determine their exact location (horizontal and vertical) and materials of construction. Contractor shall protect all waterlines parallel to the pipelines and crossing the pipelines in place, all based on Contractor's field measurements and at no additional cost.

Upon learning of the existence or location of any utility facility omitted from or shown incorrectly on construction drawings, or improperly marked or otherwise indicated, Contractor shall immediately notify the Owner, providing full details as to depth, location, size and function.

Contractor shall not interrupt or disturb any utility facility without authority from the utility company or order from Owner. Where protection is required to ensure integrity of utility facilities located as shown on the construction drawings or visible to Contractor or marked or otherwise indicated as stated herein, Contractor shall, unless otherwise provided, furnish and place all necessary protection at no additional cost to Owner.

The Work requires Contractor to construct proposed water facilities adjacent to existing utilities (water, sewer, gas, telephone, irrigation, agricultural drain, storm drain, electric power, cable TV, etc.) and existing improvements (curb, gutter, sidewalk, spandrel, catch basins, etc.). Owner has

no information about compaction of trench backfill for said utilities and improvements. If said trench backfill fails during construction of proposed water facilities, Contractor shall remove and replace said backfill, repair existing facilities (if damaged), compact as specified herein, and remove and replace any asphalt concrete pavement and Portland cement concrete as required, all at no additional cost to the Owner.

Contractor shall have a sufficient supply of repair or replacement materials on the job site to repair or replace damaged or destroyed facilities including, but not limited to, sewer laterals, sewer mains, water mains, and water services. Repairs shall be made with like materials and said repairs shall be approved by Owner and owners of damaged utilities prior to backfill.

#### **24. Pipeline Appurtenances (Air Valves and Connections)**

Prior to ordering materials for air valves and connection piping, Contractor shall excavate and expose existing utilities and required connection points to determine exact location (horizontal and vertical) and size of each. In addition, for each connection location, Contractor shall determine outside diameter and type of pipe for each connection. For each appurtenance and each connection, Contractor shall determine all piping and fittings required including the appropriate couplings, adapters, horizontal bends, and vertical bends. Contractor shall furnish and install all piping and fittings required for field installations necessary to clear (6" clearance minimum) all existing utilities or interferences and to connect to existing facilities, all based on Contractor's field measurements, and all at no additional cost. All existing waterlines that are cut shall be sealed by installing a concrete plug (minimum length 12").

Contractor shall construct appurtenances at the locations specified by Owner.

For air valves, Contractor shall install air valve piping with a continuous upslope (2% maximum) from pipeline to air valve.

For fire hydrants and blowoffs, Contractor shall install fire hydrant piping level or have continuous downslope (2% maximum) from pipeline to vertical piping.

#### **25. Restoration**

##### **A. General**

All work sites shall be restored to pre-job conditions and shall meet the requirements of Owner, City, and property owner(s). The Contractor shall repair or replace damaged improvements as directed by Owner.

Contractor shall protect in place or remove and replace all existing utilities and public and private improvements (except those improvements specified to be removed) including, but not limited to, power poles, guy wires, berms, curbs, gutters, concrete pavement, asphalt concrete pavement, walkways, sidewalks, cross gutters, spandrels, medians, driveways, bikeways, trailways, storm drains, landscaping, trees, landscaping materials, landscape irrigation systems, walls, fences, signs, mailboxes, street lights, guard rails, traffic signal facilities, and traffic striping. If said facilities are undermined or disturbed as determined by Owner, said facilities shall be removed and replaced. Contractor shall correct or replace any damaged utilities or improvements as part of the Contract Work at no additional cost.

Certain existing improvements are specified on the Construction Drawings to be protected in place or removed and replaced. Contractor shall protect in place or remove and replace all damaged existing public and private improvements whether they are specifically noted on the Construction Drawings or not.

For each appurtenance larger than 4" crossing beneath curb and gutter, Contractor shall remove and replace existing curb and gutter. During replacement of curb and gutter, Contractor shall replace sections of curb and gutter between existing construction joints.

Where appurtenances will be installed in existing concrete or asphalt concrete pavement areas, Contractor shall remove and replace sections of sidewalks or asphalt concrete pavement areas as required to accommodate said appurtenances. Areas shall be sawcut and sidewalks shall be removed in complete panels at existing joints. If colored or textured sidewalk is removed, Contractor shall replace with colored and/or textured sidewalk to match existing.

Where pipelines or appurtenances are constructed underneath existing concrete spandrels or cross gutters, Contractor shall remove and replace said spandrels or cross gutters. Spandrels or cross gutters shall be sawcut at existing construction joints and removed unless directed otherwise by Owner.

Contractor shall, as a minimum, have accomplished by the end of each workday, the following:

- 1) Remove all debris, construction materials, and equipment from public streets and private property.
- 2) Fill all excavations with compacted backfill compacted to 90% relative compaction minimum; however, if approved by District and City, Contractor may use traffic plates to cover portions of the trench each day. If traffic plates are used, trench shoring shall be left in place. Traffic plates shall be recessed flush with adjacent pavement, tack welded together, reinforced to support traffic, and shall consist of non-skid surfaces and comply with City permit requirements.
- 3) Place 2" minimum thickness temporary asphalt concrete pavement on all trenches where existing asphalt concrete pavement was removed, compacted, and rolled smooth and flush with adjacent pavement sufficient to support traffic.

Said pavement may be placed cold provided it is placed smooth and flush with adjacent existing pavement and rolled with a steel-wheeled pavement roller and property maintained. Compaction of pavement by other equipment including, but not limited to, backhoes, loaders, or trucks will not be allowed.

- 4) Clean all work areas including, but not limited to, sweeping and washing all streets, driveways, gutters, and sidewalks; and removing all trash. Contractor shall wash and/or sweep work areas more than once a day if requested by Owner.
- 5) Place temporary traffic striping.
- 6) Remove all traffic control except traffic control required for safety and open all streets to traffic.



If trenches are not backfilled and compacted to 90% relative compaction minimum, work areas are not properly cleaned, and if temporary asphalt concrete pavement is not properly placed and maintained on a daily basis, Owner will prohibit any construction work until compaction meets specified requirements, work sites are clean, and temporary asphalt concrete pavement is properly placed and maintained.

In addition, Contractor shall inspect entire job site at the end of each workday and at least once a day, on Saturdays, Sundays, and holidays and correct any traffic, dust control, pavement (temporary and permanent), or backfill deficiencies. Contractor shall maintain streets, including backfilled trenches in good repair.

If Owner receives complaints from individuals or agencies affected by the project, Contractor shall take immediate action to correct the situation as directed by the Owner. If Contractor receives complaints directly, Contractor shall report same immediately to Owner. Thereafter, Contractor shall take immediate action to correct the situation as directed by Owner.

Contractor shall respond immediately to all requests to Owner for remedial work. Contractor shall have a crew available to respond to said requests at all times.

B. Permanent Asphalt Concrete Pavement

1) Preparation

Contractor shall remove all temporary asphalt concrete pavement, dispose of it at an authorized disposal site, backfill trench as required, compact subgrade as specified, and then place permanent pavement.

Contractor shall saw cut pavement edges to straight, neat, vertical edges, either perpendicular to or parallel with the trench. Under no circumstances shall the saw cut be less than 2' from the existing edge of pavement. If the saw cut is less than 2' from the existing edge of pavement, or the existing pavement adjacent to the trench is scarred, broken, or removed, Contractor shall remove existing pavement between the trench and existing edge of pavement or remove said broken or scarred pavement and replace same with hot placed asphalt concrete pavement in accordance with the Contract Documents prior to placing asphalt concrete overlay. Prior to placing asphalt concrete pavement, Contractor shall excavate underlying subgrade to proper grade and compact it to 95% relative compaction minimum and obtain approval of same by the City inspector.

2) Pavement

a. General

Pavement shall consist of trench pavement and a pavement overlay.

Contractor shall not place permanent asphalt concrete pavement overlay until the pipeline and appurtenances have been tested and disinfected by Contractor and approved by Owner. All pavement overlays shall be placed with a self-propelled paving machine, Barber Greene or equal.

b. Trench Pavement

Pavement and base material shall be in accordance with the latest City Standards and Specifications.

Trench pavement shall consist of 6" of asphalt concrete pavement (C2-PG 64-10) placed over 6" of Class II aggregate base compacted to 95% relative compaction minimum.

c. Pavement Overlay

For any travel lane where existing pavement is damaged or removed, the pavement overlay (D2-PG 64-16) shall extend over the entire travel lane. The pavement overlay shall have a minimum thickness of 0.12'

Prior to placing the pavement overlay, Contractor shall grind all existing pavement and new trench pavement within the limits of the area to receive the pavement overlay. The thickness of the pavement grind shall be a minimum of 0.12'.

All joints shall be vertical butt joints and shall be placed on the lane line. Contractor shall grind to produce a vertical butt joint at limits of the overlay. Edges shall be straight and parallel with the trench or travel lane. After placement, pavement shall not vary more than 0.01' from a straight edge placed across the trench.

C. Adjust to Grade

After the asphalt concrete pavement overlay work is complete, Contractor shall adjust all manholes, vaults, and valve boxes to grade.

D. Traffic Signing and Striping

Contractor shall protect in place or remove and replace all existing traffic signs and traffic striping.

All traffic striping and markings including but not limited to, centerlines, lane lines, stop bars, and crosswalks destroyed or damaged during construction shall be replaced with temporary striping or markings by method approved by the permitting agency (City or RCTD). Existing traffic striping to be removed shall be removed by method approved by City. Said temporary striping shall be placed at the end of each work day, prior to reopening street to traffic. Within three days of placement of final pavement overlay, all traffic striping and pavement markings shall be permanently restored or replaced with permanent traffic striping and pavement markings, all in accordance with City Permit.

Not all traffic signs and traffic striping and markings are shown on the Construction Drawings. Contractor shall review project site to determine extent of same and base his bid accordingly.

E. Traffic Loops

Any traffic loops, detectors, or conduits damaged or destroyed during construction shall be immediately replaced by a traffic signal Contractor acceptable to the City in accordance with Caltrans Standard Specifications. Temporary repair of said traffic loops, detectors, and conduits is acceptable until placement of final pavement overlay. Final replacement of traffic loops, detectors, and conduits shall be completed within 72 hours of placement of final pavement overlay. All work shall be performed by a traffic signal contractor acceptable to the City and shall be in accordance with Caltrans Standard Specifications.

Not all traffic loops, detectors, or conduits are shown on the Construction Drawings. Contractor shall review project site to determine extent of same and base his bid accordingly.

**26. Excavation, Bedding, and Backfill**

Contractor is advised that rock or unacceptable trench backfill material may be encountered during trenching operations. Where such materials are encountered, Contractor shall excavate said material by any method Contractor deems necessary and as approved by the Owner and furnish and install suitable bedding and backfill material all in accordance with the Contract Documents.

Pipe zone (bottom of trench to one foot over top of pipe) backfill materials shall be clean imported sand with a minimum sand equivalent of 30 and 6% maximum fines.

Backfill above the pipe zone backfill materials shall be either commercial imported material or select native material (screened or washed). All rock or unacceptable trench backfill material shall be hauled to and discarded at a legal disposal site at Contractor's expense. Contractor shall not dispose of such material on vacant private or public property with or without permission.

**27. Pipeline Materials and Appurtenances**

All ductile iron pipe shall be Class 250, per AWWA Standard C150. All pipe shall be cement mortar lined, double thickness, and bitumastic coating shall not be applied over the cement lining.

**28. Best Management Practices**

Contractor shall implement the following mitigation measures to reduce construction impacts:

- A. If petroleum products are accidentally released to the environment by the Contractor, the area or contamination shall be defined and any contaminated soil or material shall be removed and disposed of legally. Identification, testing, and removal shall be performed by a properly licensed contractor.
- B. Contractor shall operate all construction equipment with required noise attenuation devices (such as mufflers) based on the regulations in place at the time of construction. Contractor shall comply with the City Noise Regulations.
- C. Contractor shall place all trash and food items in secure containers, and remove them to an approved disposal site on a daily basis.

**29. Excess Excavated Materials**

Excess soils from excavation shall be spoiled entirely at Contractor's expense off the project site at an approved legal disposal area. In no instances shall excess spoil become a public nuisance or threat to public safety.

**30. Pipeline Connections and Disinfection**

The Contractor shall notify the Owner one (1) week in advance of the planned pipeline connections and also provide 48 hour and 24 hour advance confirmation of when the work will be performed.

Contractor shall be responsible for dewatering, dechlorination, and disposal of all water from pipeline testing, flushing, and connection activities. Discharge of all water shall have a maximum residual chlorine concentration of 0.1 mg/l. Contractor shall also protect existing water pipelines from contamination during connection procedures. Contractor shall disinfect all new pipelines, pipeline connection closure materials and the existing pipeline at connection points per AWWA Standard C-651.

The existing water system valves will not achieve 100% closure; therefore, water leakage will occur during connections to the existing water system. Contractor shall continuously dewater the existing water system during connection work as required.

**31. Contract Document Priority**

In the event of any inconsistency between discrete portions of the Contract Documents, the following documents first listed shall govern over all other documents subsequently listed, according to the following priority:

- A. Contract Change Orders issued during the course of the Work.
- B. Addenda and Bulletins issued during the bidding process.
- C. Special Requirements.
- D. Construction Drawings.
- E. Technical Specifications.
- F. Basic Specifications.
- G. Standard Drawings as included or referenced.
- H. Contract Appendix, specifically the applicable provisions therein.
- I. Available or referenced reports.

**32. Sequence of Construction**

- A. Contractor shall follow the construction sequence provided herein, unless Contractor submits an alternative construction sequence and said sequence is approved by Owner. Sequence of Construction is not intended to cover every specific item of work necessary, and shall not relieve the Contractor from responsibility to coordinate and perform all work in accordance with the Construction Drawings and Specifications.

Any proposed modifications to the Sequence of Construction provided herein shall be submitted in writing to the Owner for approval. If approved, said modified Sequence of Construction shall be implemented by the Contractor at no additional cost to the Owner. Any proposed modifications to the specified Sequence of Construction shall reflect the necessary changes in all other project components.

The construction sequence is summarized in the following paragraphs:

- B. Prior to ordering materials, Contractor shall:
  - 1) Attend Preconstruction Meeting.
  - 2) Pothole all utilities including all utilities for 16" pipeline, water services, fire hydrants, and connections.
- C. Prior to starting construction, Contractor shall:
  - 1) Obtain all permits.
  - 2) Submit and obtain approval on all submittals.
  - 3) Notify residents, commercial, and public establishments of impending work.
- D. Existing waterline and water services shall remain in service during construction. Therefore, Contractor shall protect said facilities in place by any methods Contractor deems necessary and as approved by Owner.
- E. Prior to Owner closing existing valves for connections, Contractor shall have all materials onsite and have area excavated. Connections shall be completed within six hours.

### **33. General Testing and Disinfection Procedures**

#### **A. General**

At least ten (10) calendar days prior to filling, cleaning, testing, or disinfecting pipelines, Contractor shall prepare and submit a detailed written plan for same. Said plan shall include, as a minimum, pipe cleaning methods, disinfection equipment, sampling locations, test equipment, testing procedures, and water quality sampling procedures. Contractor shall disinfect the pipelines and appurtenances in accordance with AWWA C-651, latest, and in accordance with the requirements of this section. Said plan shall be reviewed and approved by Owner prior to filling, testing, disinfecting, or flushing any pipelines. In addition, Contractor shall submit copies of all required permits for disposal of all flushing water or copies of correspondence confirming that said permits are not required.

Contractor shall provide Owner with at least two weeks notice prior to filling any pipeline. The rate of which the water will be supplied for filling the pipeline will be determined by the Owner based on existing system demands. As a result, Contractor may be required to fill the pipelines over a period of several days.

All valves shall be tested in the open position.

B. Pipe Cleaning

Contractor shall keep pipelines clean during construction. Pipelines shall be free of sand, gravel, and rock as well as other foreign material. During construction, Contractor shall, as a minimum:

1. Inspect all pipe and fittings as they are delivered to the job site to ensure all ends of pipe and fittings are sealed to prevent the entrance of dust, soil, or debris.
2. Inspect all pipe, fittings, and appurtenances daily. All pipe joints and fittings shall remain tightly sealed until just prior to installation.
3. Tightly seal all openings into the pipe and the ends of the pipe in the trench at all times when work is not in progress to prevent entrance of animals and foreign materials.

C. Disinfection

Contractor shall fill pipeline through the 2" outlet shown on the Construction Drawings and use the other outlet for flushing.

Once the pipe interior has been cleaned by Contractor and approved by the Owner, Contractor(s) shall disinfect the pipelines by introducing chlorine gas into the pipelines during the filling procedure. Immediately after introducing said chlorine gas, the concentration of chlorine within the pipelines shall be homogeneous and at least 50 ppm and it shall not exceed 200 ppm. Once the chlorination is completed, Contractor shall verify the chlorination concentration. Contractor shall also disinfect all pipeline appurtenances during the disinfection of the pipelines by operating all of the new valves.

Pipelines shall be filled by fire hydrants through construction meter (furnished by Owner) and backflow device (furnished by Contractor and approved by Owner). Contractor shall provide all necessary piping and appurtenances to convey water from the existing water facilities to the new water facilities.

After chlorinated water has been maintained in the pipelines for a period of twenty-four (24) hours, Contractor shall perform hydrostatic and leakage tests. Chlorinated water shall be used for hydrostatic and leakage tests. At no time shall the Contractor pressurize any part of the pipelines above 225 psi for the hydrostatic tests and 150 psi for the leakage tests.

If the pipelines do not pass either hydrostatic or leakage tests, Contractor shall, perform all work necessary to locate and repair all leaks. Contractor shall also correct all other defects discovered during such work. Thereafter, the required tests shall be repeated until the pipelines meet specified requirements. Contractor shall pay for any water used for re-disinfection or retesting of the pipelines.

After the pipelines have passed the hydrostatic and leakage tests, Contractor shall take chlorine residual samples at the top outlet.

The chlorine residual shall be 25 ppm minimum. All sampling shall be done by the Contractor in presence of the Owner.

After said chlorine residual requirement has been satisfied, Contractor shall flush pipeline as follows:

All treated water shall be thoroughly flushed from the pipelines and appurtenances until the replacement water throughout its lengths has a chlorine residual of less than one (1) mg/l. In the event chlorine is normally used in the source of supply, then the chlorine residual shall not exceed the chlorine concentration in the source of supply.

Contractor shall not allow any discharges from the construction site which may have an adverse effect on receiving waters of the United States.

Contractor shall not allow any pipeline flushing or disinfection water to be discharged into surface waters from construction sites except in full compliance with the "General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (De Minimis) Threat to Water Quality" (Order No. R8-2020-0006) adopted by the California Regional Water Quality Control Board, Santa Ana Region (Regional Board). Said permit requires that Contractor dechlorinate any disinfection water discharged into surface waters from the construction site to a maximum chlorine concentration of 0.1 mg/l. If the discharge will percolate into the ground before reaching surface waters, Contractor may apply to the Regional Board for a waiver of waste discharge requirements under Regional Board Resolution No. R8-2019-0062.

For flushing, the Owner will only operate existing valves. Contractor shall have all valves operational (valve box shall be in place and operating nut shall be accessible including valve extension when required) prior to requesting the Owner's operation of valves for flushing, Contractor shall operate all other valves (pipelines and appurtenances) to flush water from pipelines and all appurtenances.

Contractor shall protect all property from flooding and other damage during flushing operations. Contractor shall post "Flooding Ahead" signs in streets and sandbags as required and as directed by Owner or City. Because of demand on the existing water system, Contractor may be required to flush the pipelines over several days or evenings.

Contractor's disinfection obligation will not be considered satisfied until evidenced by acceptable bacteriological analyses which shall include, but not be limited to, total coliform (presence/absence test) and heterotrophic plate count. Acceptable results shall be 'Absent' for total coliform and 500 cfu or less for heterotrophic plate count. If total and/or fecal coliform are present in any sample or if the HPC in any sample is greater than 500 colony forming units, then the sample fails. For any failing sample, Contractor shall take corrective action as necessary and

submit a re-sample. In the event of an unsatisfactory bacteriological test, the original chlorination procedure shall be repeated by the Contractor until satisfactory test results are obtained.

Contractor shall remove all piping and fittings from the outlets and water services used for sampling. Contractor shall then complete all appurtenance construction.

Contractor shall be responsible for all dewatering, dechlorination, and disposal of all water from pipeline flushing including all permits for same.

#### **34. Miscellaneous Environmental Requirements**

- a. Contractor shall immediately clean up and properly dispose of all spilled hydraulic fluid and other petroleum substances.
- b. Contractor shall not use nor store any hazardous material or substance onsite without specific authorization by Owner, with the exception of gasoline, diesel fuel, lubricating oil, anti-freeze and hydraulic oil.
- c. Contractor shall immediately notify Owner of any fatalities, hazardous materials or hazardous substances accidents, spills or releases that occur on the project site during the course of construction.
- d. Contractor shall comply with all federal, state and local laws and ordinances pertaining to the storage, use, clean up and disposal of hazardous materials and wastes.



## **BASIC AND TECHNICAL SPECIFICATIONS**

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**SECTION 01000  
GENERAL REQUIREMENTS**

**1. Definitions**

Whenever the terms herein defined occur in these Specifications or other related documents, they shall have the meanings here given.

- a. "Agency" or "Owner" shall mean the RUBIDOUX COMMUNITY SERVICES DISTRICT, Post Office Box 3098, 3590 Rubidoux Boulevard, Rubidoux, California, 92519-3098, its Manager, and any other person or persons designated by the Owner to act on its behalf.
- b. "Manager" shall mean the person designated by the Board of Directors of the RUBIDOUX COMMUNITY SERVICES DISTRICT to have charge, supervision, and administration of said Owner.
- c. "Contractor" shall mean the person, firm, or corporation responsible for the construction of facilities and improvements or any portions thereof to be integrated into Owner's facilities, either on behalf of the Owner or on behalf of a Developer.

Contractor shall at all times be represented on the Work in person or by a duly designated agent or superintendent. Contractor shall hold a valid Contractor's License in accordance with the provisions of Division 3, Chapter 9 of the Business and Professions Code of the State of California, and any amendments thereto.

- d. "Work" shall mean all Work to be performed by Contractor and shall be as specified by these Specifications and the Construction Drawings, Special Requirements, and Specific Directions for any particular project.

The Owner may at any time during Work, by written order, make such changes as found necessary in the character, quality, or quantity of the Work to be furnished.

- e. "Construction Drawings" shall mean those drawings approved by the Owner showing dimensions, details, features, and requirements of the Work. Said Construction Drawings shall be used in conjunction with Special Requirements or Specific Directions and shall be augmented by these Specifications and the Standard Drawings.
- f. "Special Requirements" shall mean those requirements describing Work not specified by Construction Drawings or Specific Directions, clarifying Work as shown by Construction Drawings or as described by Specific Directions, or supplementing or modifying these Specifications. Said requirements may be written or verbal.
- g. "Specific Directions" shall mean those instructions of the Owner supplementing or modifying the Construction Drawings, Special Requirements, and Specifications and shall include all Work not specified by Construction Drawings or Special Requirements. Said instructions may be written or verbal.
- h. "Specifications", also "Construction Specifications", shall mean the requirements contained herein and shall apply to all Work, where applicable, unless specified otherwise, in the Construction Drawings, Special Requirements, or Specific Directions. Said Specifications

shall augment Construction Drawings, Special Requirements, or Specific Directions and shall pertain to all methods and materials of construction.

- i. "Standard Drawings" shall mean all drawings referenced as such and bound with the Specifications. Said Standard Drawings shall be considered an integral part of the Specifications.
- j. "Standard Specifications" shall mean the Standard Specifications for Public Works Construction, latest edition, as published by Building News, Inc, Los Angeles, California. The Standard Specifications shall augment, not supersede, the "Construction Specifications". As used herein, the Standard Specifications shall not apply to measurement, payment, schedule, delays, or extra work.

## **2. Abbreviations**

Whenever used in these Specifications, the following abbreviations shall refer to the agency shown:

a.	AASHTO	American Association of State Highway and Transportation Officials
b.	ACI	American Concrete Institute
c.	AISC	American Institute of Steel Construction
d.	AISI	American Iron and Steel Institute
e.	ANSI	American National Standards Institute
f.	API	American Petroleum Institute
g.	ASTM	American Society for Testing Materials
h.	AWWA	American Water Works Association
i.	AWS	American Welding Society
j.	CRSI	Concrete Reinforcement and Steel Institute
k.	DIPRA	Ductile Iron Pipe Research Institute
l.	EIA	Electronic Industries Association
m.	IEEE	Institute of Electrical and Electronic Engineers
n.	IPCEA	Insulated Power Cable Engineers' Association
o.	NBFU	National Board of Fire Underwriters
p.	NEC	National Electrical Code
q.	NEMA	National Electrical Manufacturing Association
r.	REA	Rural Electrification Administration
s.	SSPC	Steel Structures Painting Council
t.	UL	Underwriters' Laboratories

All references to Specifications of any of the above agencies shall mean the latest editions thereof.

## **3. Permits, Certificates, Laws, and Ordinances**

Unless specified otherwise, Contractor shall at no cost to the Owner obtain all necessary permits, certificates, and licenses from such Federal, State, and local agencies as required to perform the Work. Contractor shall comply with all laws, ordinances, or rules and regulations of said agencies in performance of the Work.

## **4. Contractor's Liability**

Contractor shall be responsible, and the Owner shall not be answerable or accountable in any manner, for any loss or damage that may happen to the Work performed by Contractor, subcontractors, or those

associated with or working under Contractor, or for any of materials or equipment used or employed in performing the Work, or for injury to any person or persons, including employees, the public, or others, or for damage to property from any cause which might have been prevented by Contractor, subcontractors, or those associated with or working under Contractor. Contractor having control over such Work must properly guard and does indemnify and hold the Owner harmless, and will defend the Owner therefrom at Contractor's own expense, against all injuries or damages to persons and property.

Contractor shall indemnify, defend, and hold the Owner harmless from any and all claims, demands, fines, and penalties imposed or levied by any Federal, State, or local agency associated with or related to the taking (as defined by the United States Fish and Wildlife Service and, or the California Department of Fish and Game) of any protected animal or plant species or habitat by Contractor, subcontractors, or those associated with or working under Contractor.

## **5. Rights-of-Way**

### **a. Permanent Rights-of-Way**

For Developer financed Work, Developer shall provide the Owner with all permanent rights-of-way or permanent easements in a form approved by the Owner, unless specified otherwise.

For Owner financed Work, Owner will obtain all permanent rights-of-way or permanent easements as required to perform the Work unless specified otherwise. Said rights-of-way will not include rights-of-way for which permits, certificates, and licenses are required from Federal, State, and local agencies, unless specified otherwise.

### **b. Access or Temporary Rights-of-Way**

Contractor shall, at no cost to the Owner, obtain all access or construction rights-of-way of a temporary nature other than specified.

## **6. Interferences**

Any and all crossings of public utility facilities such as water mains, sewer lines, gas lines, electrical or control cables and/or conduits, telephone and/or telegraph cables and/or conduits shall be made by Contractor in accordance with requirements and Specifications of appropriate agencies. Contractor shall obtain any necessary permits, licenses, and/or agreements required by said agencies.

Whenever facilities are encountered by Contractor, he shall ascertain the ownership thereof and shall make all necessary arrangements with the owners for the protection, removal, relocation, and/or replacement thereof. Contractor shall give the owners due notice of his requirements and shall give them convenient access and cooperate with them in every way while any work of removal and/or replacement is being performed.

## **7. Sanitation**

All parts of the Work shall be maintained in a neat, clean, sanitary condition. Fixed and portable toilets, inaccessible to insects, shall be provided wherever needed for use by employees and their use shall be strictly enforced. All waste and refuse from sanitary facilities or from any source related to Contractor's operations shall be disposed of in a sanitary manner satisfactory to the Owner and in accordance with laws and regulations pertaining thereto. Contractor shall rigorously prohibit and prevent committing of nuisance within the Work area or upon the Owner's right-of-way or adjacent private property.

Contractor shall furnish all facilities and means for proper sanitation for the Work and shall indemnify, protect, and save the Owner harmless from any liability resulting from improper or insufficient sanitation.

## **8. Accident Prevention and First Aid**

Contractor shall provide a safe working environment for all persons working on or affected by the Work. Contractor shall take precautions for the protection of persons and property at all times during the course of the Work. Contractor shall exercise and observe the safety provisions of applicable laws and building and construction codes. Contractor shall maintain in good and safe operating condition all equipment and facilities required for proper execution and inspection of the Work.

Contractor shall guard machinery, equipment, and hazards in accordance with safety provisions of the Manual of Accident Prevention in Construction, published by the Associated General Contractors of America, the Construction Safety Orders and Trench Construction Safety Orders as issued by the Division of Industrial Safety of the Department of Industrial relations of the State of California, and Chapter 8 ("Traffic Control and Protection of Workmen") of the Manual of Instruction for the Maintenance Department of the State of California Department of Transportation, to the extent that such provisions are not inconsistent with applicable laws or regulations.

All warning signs, lights, barricades, and other measures designed to protect the traveling public shall be erected and maintained in good order by Contractor in accordance with applicable provisions of Chapter 21 ("Maintenance Signs, Barricades, and Traffic Control") of the Manual of Instruction for the Maintenance Department of the State of California Department of Transportation and of the applicable ordinances of the public agency having jurisdiction over the maintenance and policing of highways, thoroughfares, and streets. Special regard shall be given to the rights and convenience of the traveling public and the property owners and residents in the area of Work. Cross-over boards or steel plates approved by the Owner shall be placed and other precautions taken whenever necessary to provide for at least one-way traffic along all traveled streets and to provide access to driveways and residences, unless specified otherwise.

## **9. First Aid Facilities**

Contractor shall keep first aid facilities and supplies on the jobsite. Contractor shall provide instruction in first aid as required by State regulations. Contractor shall provide emergency first aid treatment and supplies for his employees sufficient to comply with all applicable laws.

## **10. Materials**

Contractor shall furnish only approved materials as listed in the Owner's approved material list. All materials to be furnished by Contractor shall be new and of the best quality for their intended use. All like materials shall be of one manufacture for any particular project.

Contractor shall submit 3 copies of all material lists to the Owner for approval thereof. Said material lists shall include manufacturer's name, designation, description, and related information of all materials to be furnished and installed or otherwise used by Contractor in the performance of the Work. Said material lists shall be submitted at or prior to project preconstruction meeting and said lists shall be approved by the Owner prior to beginning construction.

## **11. Construction**

Contractor alone shall be responsible for the safety, efficiency, and adequacy of his plant, equipment, appliances, and methods and for any damage which may result from their failure or their improper construction, maintenance, or operation.

Contractor shall be responsible for examining all Construction Drawings, Specifications, Standard Drawings, Work site, delivery routes, and local conditions which may affect the Work.

Before proceeding with the Work, Contractor shall furnish the Owner any information required of him by the Construction Drawings, Specifications, Standard Drawings, Special Requirements, and Directions of the Owner.

Contractor shall keep at jobsite a complete set of Construction Drawings, Specifications, Standard Drawings, permits, certificates and licenses for the Work, and all other data required by the Owner. Contractor shall be responsible for checking all dimensions and quantities on said drawings or schedules and shall notify the Owner of any errors and omissions found.

Until acceptance of the Work by the Owner, Contractor shall bear the risk of injury or damage to any part of the Work by action of the elements or from any other cause and Contractor shall rebuild, repair, restore, and make good any injuries or damages to the Work except as limited in the Contract Appendix.

Contractor shall cooperate with other contractors who are working in the project area as the Owner may specify and he shall comply with all orders of the Owner. Contractor shall employ only competent and skillful persons to perform the Work. Said persons shall be qualified or certified to perform the Work in accordance with requirements of said person's trade.

Contractor shall submit to the Owner for approval a construction schedule covering all Work based on normal work periods. Contractor shall not deviate from approved schedule without prior permission from the Owner. Whenever Contractor arranges to work at night or at any time other than normal work periods or to vary the period during which Work is to be carried on each day, he shall obtain special permission from the Owner to do so and he shall keep the Owner properly informed of his activities. Construction schedule shall show the order in which Contractor proposes to carry out Work, dates of anticipated commencement and completion of Work and salient components thereof, and estimated percentage of Work to be completed at any time during the construction period.

## **12. Records of Construction**

Contractor shall maintain at least one complete set of Construction Drawings on the jobsite during the course of construction upon which he shall note any changes in the Work as they occur. Contractor shall maintain said Drawings so that the Owner may at any time during the course of construction ascertain the changes that have occurred. Said Construction Drawings shall be the basis of the two sets of record drawings that Contractor shall provide the Owner upon completion of the Work.

## **13. Inspection**

All materials and equipment furnished and all Work performed shall be subject to rigid inspection by the Owner. Contractor may be required to remove and replace under proper inspection any Work performed in the absence of prescribed inspection, with the entire cost being borne by Contractor irrespective of whether such Work is found to be defective. Work covered up without authority of the

Owner shall, upon order of the Owner, be uncovered to the extent required to permit inspection, repair, or replacement and thereafter be recovered, and Contractor shall bear entire cost.

**14. Examination of Work**

Contractor shall furnish the Owner every reasonable facility for ascertaining whether Work is being accomplished in accordance with the requirements and intention of the Construction Drawings, Specifications, Standard Drawings, Special Requirements, and Directions of the Owner.

**15. Right to Occupy Work**

The Owner may wish to occupy or place in service portions of the Work before its final completion and shall be at liberty to do so. Such occupancy or placing in service of any portion of the Work shall not relieve Contractor of his responsibility of protection and care of all Work until final completion and acceptance provided, however, that expense directly attributable to operation and placing portions of Work in service shall not be chargeable to Contractor.

**16. Maintenance and Guarantee**

Contractor shall guarantee that all Work performed by him meets all requirements specified as to character, quality, and quantity of materials and workmanship. Contractor shall replace all materials and pay all installation costs made necessary by defects in materials or workmanship supplied by him that become evident within one year after acceptance of the facilities or the date of final payment, whichever occurs later.

Contractor shall replace all defective materials promptly upon receipt of written notice from the Owner. If Contractor fails to replace all defective materials promptly, the Owner may secure the service of others to perform the Work and Contractor shall be liable to the Owner for any costs including removal and replacement thereof.

**17. Construction Power**

Contractor shall provide all necessary power required for his operations, and shall provide and maintain in good order such modern power equipment and installation as shall be adequate, in the opinion of the Owner, to perform the required Work in a safe and satisfactory manner.

**18. Construction Water**

Unless specified otherwise, the Owner will provide construction water to Contractor from its existing system at established rates. Contractor shall furnish and install all necessary piping and appurtenances necessary to convey water from the Owner's metered service connection to place of use.

**19. Welding**

Welding shall be done by the electric arc method using a process which excludes the atmosphere from the molten metal, except where otherwise approved by the Owner. Welding electrodes used for manual welding shall be an approved type. Except as modified herein, welding process qualification and operator qualification shall comply with the applicable requirements of the "Code for Arc and Gas Welding in Building Construction" of the AWS.



Each weld shall be uniform in width and size throughout its entire length. Each layer shall be smooth, free from slag, cracks, pinholes, and undercut and shall be completely fused to adjacent weld beads and base metal. Cover pass shall be completely free of course ripples, irregular surfaces, non-uniform bead pattern, high crown, deep ridges, or valleys between beads, and shall blend smoothly and gradually into surface of base metal. Butt welds shall be slightly convex, of uniform height, and shall have full penetration. Fillet welds shall be of size indicated, with full throat, and with each leg of equal length. Repair, chipping, or grinding of welds shall not gouge, groove, or reduce base metal thickness.

## **20. Environmental Factors**

Contractor shall take all reasonable precautions to protect the environment.

### **a. Air Pollution**

Contractor shall use only machinery and equipment which is equipped with suitable air pollution control devices so that undue quantities of pollutants are not added to the atmosphere in the vicinity of the Work site. Contractor's equipment shall meet all Federal, State, and local requirements for air quality emissions and Contractor shall comply with all applicable Federal, State, and local air pollution control regulations.

Contractor shall also take all necessary precautions to control dust created by construction operations. Contractor shall be especially diligent in implementing his dust control program and he shall be prepared to respond immediately and positively to any instructions for corrective action given by the Owner. Contractor shall use dust palliatives if necessary to satisfactorily control dust; however, Contractor shall secure the Owner's approval for use of dust palliatives other than water.

### **b. Explosives**

Contractor shall handle, transport, store, and use explosives in accordance with applicable Federal, State, and local laws and regulations. Contractor shall be responsible for and make good any damage caused by his use of explosives.

### **c. Fires**

Contractor shall exercise all precautions necessary to prevent unauthorized fires within or adjacent to the limits of the Work. Contractor shall be responsible for all damage resulting from fire due directly or indirectly to his or his employees' activities or the activities of his subcontractors or their employees.

### **d. Drainage and Flooding**

Contractor shall manage excavation and spoil banks such that existing drainage conditions are not impaired. Contractor shall provide drainage in all cases where the existing drainage conditions are being unavoidably altered or disturbed by his operations. Temporary diversions, ditches, checks, swales, or other drainage structures or features necessary to ensure proper drainage and flood control shall be provided by Contractor at no extra cost to the Owner.

e. Historical and Archaeological Sites

If Contractor should encounter any evidence of historical or archaeological significance, he shall immediately cease construction, notify the Owner, and refrain from any activity until the Owner orders Work to resume. The Owner will assume full responsibility for any delays caused by historical or archaeological investigations.

f. Noise Pollution

Contractor shall equip all machinery and equipment used for construction with noise control devices such as mufflers for internal combustion engines or other suitable noise suppressors. Noise produced by construction operations shall be kept to a minimum and shall be consistent with reasonable human health requirements considering time of day and location of Work site. Contractor shall comply with all applicable Federal, State, and local noise pollution control regulations.

Unless specified otherwise, noise levels in connection with the Work shall not exceed 75 dB(A) at a distance of one hundred (100) feet for relatively continuous exposure and they shall not exceed 90 dB(A) at that same distance for relatively infrequent intermittent exposure. Contractor shall be prepared to respond immediately and positively to any instructions for corrective action given by the Owner particularly with respect to complaints from the public.

g. Public Relations

Contractor shall give due consideration to the comfort and convenience of the public and he shall instruct his employees to be polite and respectful in their dealings with the public at the Work site and in traveling to and from the Work site.

h. Traffic

Contractor shall adequately protect the public using any roads which are involved in Contractor's operations and he shall maintain safe traffic flow in the vicinity of the Work. Contractor shall use signs, barricades, delineators, flashers, and flagmen, all in strict compliance with Federal, State, and local rules and regulations regarding traffic control. Public roadways shall not be barricaded or blockaded except in accordance with requirements of public agencies having jurisdiction over same. Contractor shall provide access to all walkways, sidewalks, driveways, and streets at all times. If requested by the Owner, Contractor shall furnish a traffic control program for the Work.

i. Vegetation and Wildlife

Contractor shall not destroy or disturb any vegetation or habitat unless absolutely necessary for the performance of the Work. Contractor shall take all steps necessary to ensure that his employees do not destroy or disturb any vegetation or wildlife in the prosecution of the Work or incidental thereto, including travel to and from the Work site.

j. Water Pollution

Contractor shall discard materials which might adversely affect ground or surface water at approved dump sites only. Chemicals and other water pollutants shall not be discharged into

natural watercourses or on land tributary to said watercourses. Contractor shall comply with all applicable Federal, State, and local water pollution control regulations.

k. Cleanup

Contractor shall keep the premises occupied by him in a neat, clean condition free from unsightly accumulation of rubbish. Contractor shall maintain all Work areas within or without the project limits free from dust which would cause a hazard to the Work, operations of other contractors, or other persons or property. Upon completion of the Work, Contractor shall at his own expense satisfactorily dispose of or remove from the vicinity of the Work all plants, building, rubbish, unused materials, concrete forms, and other equipment and materials belonging to him or used under his direction during construction and, if he fails to do so, the same may be removed and disposed of by the Owner at Contractor's expense.

**END OF SECTION**

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**SECTION 02500**  
**BASIC PAVING SPECIFICATIONS**

**1. Scope**

Contractor shall furnish all labor, materials, and equipment and perform all operations necessary for construction of pavement surfacing and resurfacing in all areas of construction as specified by the Owner or as shown by the Drawings. Drawings shall consist of construction drawings, standard drawings, and clarifying diagrams or sketches.

Whenever pavement surfacing or resurfacing is to be constructed in rights-of-way not under jurisdiction of the Owner (public highways, thoroughfares, streets), it shall be constructed in accordance with permits issued by the agency having jurisdiction (State, County, City).

Whenever pavement surfacing or resurfacing is to be constructed in rights-of-way over which the Owner has jurisdiction (pumping plants, reservoirs, service yards, access roads), it shall be constructed in accordance with the specifications.

Whenever the words "Standard Specifications" are used herein, they shall mean the Standard Specifications for Public Works Construction as published by Building News, Inc., Los Angeles, California, latest edition. The Standard Specifications shall augment, not supersede, these specifications. As used herein, the Standard Specifications shall not apply to measurement, payment, schedule, delays, or extra work.

**2. New Pavement Surfacing**

New pavement surfacing shall be asphalt concrete or Portland cement concrete placed on a prepared surface in accordance with the specifications and in conformance with the lines, grades, and dimensions as specified in the Drawings.

A. Subgrade Preparation

Subgrade shall be brought to proper grade, prepared, and compacted in conformance with the requirements of Subsection 301-1 of the Standard Specifications. All organic material shall be removed and discarded at legal disposal site(s), at Contractor's expense. The top 12 inches of such subgrade material shall be scarified, cultivated and then compacted to not less than 95 percent relative compaction (ASTM D1557).

B. Aggregate Base

1) General

Aggregate base material shall be furnished, placed, and compacted at the locations and thickness as specified in the Contract Documents.

2) Materials

Aggregate base material shall consist of crushed aggregate base conforming to requirements of Subsection 200-2.2 of the Standard Specifications.

3) Placement of Aggregate Base

Aggregate base material shall be spread and compacted in conformance with the requirements of Subsection 301-2.3 of the Standard Specifications. Aggregate base material shall be compacted to a relative compaction of not less than 95 percent (ASTM D1557).

C. Asphalt Concrete Pavement

1) General

Asphalt concrete pavement shall be furnished, placed, and compacted at the locations and thicknesses specified.

2) Materials

a. Asphalt

Asphalt to be mixed with mineral aggregate shall conform to Subsection 203-6.2.1 of the Standard Specifications. The viscosity grade shall be AR-4000 unless specified otherwise.

b. Aggregate

Aggregate shall conform to the requirements in Subsection 203-6.2.2 of the Standard Specifications. Course aggregate shall be crushed rock.

The grading of combined aggregates and percentage asphalt shall be in accordance with Subsection 203-6.3 of the Standard Specifications. Unless otherwise specified the following asphalt concrete mixtures shall be used:

All asphalt concrete except overlays shall be C1-AR-4000

Overlays (2" maximum, leveling courses and overlaps) DI-AR-4000

3) Placement of Asphalt Concrete

a. General

All construction methods shall conform to the requirements of Subsection 302-5 of the Standard Specifications. Along all pavement edges which will not abut existing concrete paving, building foundations, curbs, gutters, or other similar structures, a firmly staked 2 inch x 4 inch redwood header shall be placed unless specified otherwise.

b. Weed Killer

Weed killer, "SPIKE" (manufactured by Dow Elanco) or equal shall be applied to the area to be paved at the rate of 100 gallons per 10,000 square feet. The mixture applied shall consist of 1 pound of chemical per

100 gallons of water or per manufacturer's recommendations. Contractor shall obtain a permit to use "SPIKE" weed killer prior to its application.

c. Prime Coat

A prime coat consisting of grade SC-250 liquid asphalt shall be applied at a rate between 0.10 and 0.25 gallons per square yard. Grade SC-70 liquid asphalt may be used when approved by the Owner. Unless otherwise specified prime coat shall be required on all aggregate base material or untreated subgrade on which asphalt concrete pavement is to be directly placed. The prime coat shall be allowed to cure 24 hours and any excessively oily areas shall be blotted with sand in preparation for application of asphalt concrete.

d. Tack Coat

A tack coat shall be required at all joints, overlays and overlaps. Tack coat shall conform to the requirements of Subsection 302-5.4 of the Standard Specifications and shall be Grade SS-1h emulsified asphalt. Tack coat shall be applied at approximate rates of 0.05 gallon per square yard for leveling courses and overlays, and 0.10 gallon per square yard for asphalt concrete roll berms and dikes.

e. Geotextile Fabric

Geotextile fabric shall conform to the requirements in Subsections 213 and 302-7 of the Standard Specifications. Geotextile fabric shall be placed such that wrinkles large enough to cause laps do not occur. Geotextile fabric shall be placed in accordance with manufacturer's recommendations.

f. Fog Seal Coat

A seal coat shall be applied to surface of all asphalt concrete no sooner than 24 hours nor later than 14 days after placement. Seal coat shall consist of an emulsion paving asphalt (Grade SS-1h) conforming to test requirements of Subsection 203-3.2 of the Standard Specifications. Seal coat shall be applied to provide a coverage of 0.10 gallon per square yard. Seal coat shall not be applied when weather conditions are unsuitable or when atmospheric temperature is below 40°F. Seal coat shall be applied to only one traffic lane at a time and the entire width of the lane shall be covered in one operation. The cut off of asphaltic emulsion shall be made on building paper or similar suitable material spread over the surface. Traffic shall not be allowed on seal coat until emulsion breaks and seal coat is sticky to the touch and will not be picked up by traveling vehicles.

g. Rolling

Unless specified otherwise, at least 2 operational steel drum pavement rollers shall be present during all paving operations.

4) Temporary Surfacing

Unless permanent pavement is to be placed immediately, temporary surfacing 2 inches thick, or as otherwise specified, shall be placed and properly maintained as determined by the Owner until the permanent pavement is placed at locations specified. In any event, in paved streets where immediate access is required to provide for public or private use, Contractor shall place and maintain said temporary pavement. Temporary pavement shall be placed at all locations which are not barricaded and are open to traffic. When Contractor delays the placing or repairing of temporary pavement, Owner reserves the right to have such pavement placed or repaired at Contractor's expense.

Temporary resurfacing shall conform to Subsection 306-1.5.1 of the Standard Specifications and shall be placed as soon as trench backfill is 95% compacted and shall remain in place until permanent resurfacing is placed. Prior to permanent resurfacing, temporary resurfacing shall be removed and discarded at legal disposal site(s) at Contractor's expense. The cost of furnishing, placing, maintaining, removing and disposing of temporary resurfacing shall be included in the Contractor's bid price for related work if no bid item is specifically called out in the bid sheets.

At the end of each day, temporary striping shall be placed complying with the Drawings and State, County, or City requirements. Temporary striping shall conform with Section 214 of the Standard Specifications.

5) Permanent Resurfacing

Unless otherwise specified, all permanent resurfacing shall be 1" or greater in thickness than the original surfacing removed. Contractor shall remove all loose pieces of existing pavement prior to placing any pavement. Said pavement shall be replaced in accordance with requirements of the agency (State, County, City) having jurisdiction over the roadway.

D. Portland Cement Concrete Pavement

1) General

Portland cement concrete shall comply with the Basic Concrete Specifications unless specified otherwise. Construction methods shall comply with Subsection 302-6 of the Standard Specifications. Portland cement concrete shall be furnished and placed at the locations and thicknesses specified.

2) Concrete Design Mix

All concrete shall be 520-C-2500 concrete in accordance with Subsection 201-1.1.2 of the Standard Specifications. Design mix shall be approved by the Owner prior to purchase or placing of concrete.



3) Reinforcement

Replacement concrete pavement shall have equal or better reinforcement than original concrete pavement. Reinforcement shall be provided whenever and wherever specified. Grade 60 reinforcing steel shall be used unless specified otherwise.

4) Admixtures

Admixtures shall conform to Subsection 201-1.2.4 of the Standard Specifications. Unless otherwise specified, concrete mixtures shall have air entrainment of  $5\% \pm 1\%$ .

5) Placing Concrete

Concrete shall be placed on an aggregate base sufficiently dampened to ensure that no moisture will be absorbed from the newly placed concrete. Concrete shall be placed on the aggregate base to specified uniform depth.

6) Finishing

Concrete shall be distributed uniformly between forms as soon as it is placed, struck off, and tamped. Tamping shall continue until concrete is thoroughly consolidated into the specified cross-section and sufficient mortar for finishing purposes has been brought to the surface. After tamping, surface of concrete shall be floated and finished. Where the concrete placed is to abut existing concrete surfaces, it shall be finished to match existing concrete as nearly as practical. Vat black or other approved pigments shall be added to concrete to obtain required result. Edges which do not abut existing concrete shall be rounded to a 1/2 inch radius. Upon completion of final finishing, work surface shall be free of any unevenness greater than 1/8 inch when checked with a 10-foot straightedge placed on the surface.

7) Curing

Pavement shall be cured by a pigmented sealing compound method. Curing shall commence as soon as free water leaves the concrete surface but no later than 3 hours following initial placement of concrete upon aggregate base. Curing compound shall be applied to the entire surface by spraying at the rate of one gallon per 200 square feet. All curing compounds shall be approved by the Owner. Curing compound shall conform to the requirements of Subsection 201-4 of the Standard Specifications.

8) Temporary Striping

At the end of each day, temporary striping shall be placed complying with the Drawings and State, County, or City requirements. Temporary striping shall conform with Section 214 of the Standard Specifications.

### 3. **Pavement Removal**

Pavement removal shall be limited to the maximum trench width as shown by the standard drawings plus a reasonable allowance for sloping sides of trench as required by appropriate safety standards or as otherwise specified.

Pavement shall be removed to clean straight lines. Pavement edges shall be saw cut unless an acceptable alternative method is permitted. Contractor shall discard all removed pavement at legal disposal site(s) at Contractor's expense. Removal and disposal of materials shall conform to the requirements of Subsection 300-1.3 of the Standard Specifications.

### 4. **Finishing Pavement Surfaces**

#### A. General

Upon completion of all construction operations the entire roadway area or newly surfaced areas shall be finished, cleaned, and left in a neat, presentable condition.

#### B. Shoulders

The shoulders around paved surfaces shall be trimmed and shaped to produce a smooth uniform cross section. Shoulders shall be finished, graded, and compacted so as to match the finish grade of the newly paved surfacing. Excess earth, debris, or other waste material shall be removed and discarded at legal disposal site(s) at Contractor's expense.

#### C. Paved Surfaces

All finished paved surfaces shall be clean of all dirt, debris, and foreign material. All manholes, boxes, and covers, shall be raised to finished grade. All curbs, gutters, and cross gutters shall be broomed clean and flushed with water to insure proper drainage. All street signs and striping shall comply with the construction drawings, specifications, and Section 214 of the Standard Specifications.

#### D. Survey Monuments

Prior to construction, Contractor shall have a registered civil engineer or licensed land surveyor set at least 4 ties for each monument within the construction area. After construction, Contractor shall have the same civil engineer or licensed land surveyor use the aforementioned ties to replace any monuments which have been disturbed or destroyed. Contractor shall file a corner record for all replaced monuments. Contractor shall also place monument wells in compliance with City or County standards over all monuments in the construction area.

**END OF SECTION**

**SECTION 03100**  
**BASIC CONCRETE FORMWORK SPECIFICATIONS**

**PART 1 - GENERAL**

**1.01 General Requirements**

Contractor shall furnish all materials for concrete formwork, bracing, shoring, and supports and shall design and construct all falsework, all in accordance with the provisions of the Contract Document.

**1.02 Reference Specifications, Codes, and Standards**

A. Codes

The Building Code, as referenced herein, shall be the California Building Code (CBC) of the California Building Standards Commission, latest edition.

B. Commercial Standards

ACI 347            Guide to Formwork for Concrete, latest edition.

**1.03 Contractor Submittals**

All submittals shall be in accordance with Section 01300, Contractor Submittals and Requests Technical Specifications.

A. Falsework Calculations and Drawings

Contractor shall comply with the provisions of Section 1717 of the Division of Industrial Safety, Construction Safety Orders, as revised November 1973, which requires that all falsework or vertical shoring installations where the heights of the falsework or vertical shoring, as measured from the top of the sills to the soffit of the superstructure, exceeds 14 feet, or where individual horizontal span lengths exceed 16 feet, or provision for vehicular or railroad traffic through falsework or vertical shoring is made, shall be approved and signed by a Civil Engineer, registered in the State of California; provided further, that a copy of the falsework plan or shoring layout shall be available on the job site at all times.

B. Contractor shall submit detailed plans of the falsework proposed to be used. Such plans shall be in sufficient detail to indicate the general layout, sizes of members, anticipated stresses, grade of materials to be used in the falsework, and typical soil conditions.

**1.04 Quality Assurance**

Tolerances

The variation from established grade, line, plumbness, or thickness shall be as set forth in Part 1.04F of Section 03300, Basic Concrete Specifications, and there shall be no offsets or

visible waviness in the finished surface. All other tolerances shall be as specified in Chapter 3 of ACI 347.

## **PART 2 - PRODUCTS**

### **2.01 General**

Except as otherwise expressly accepted by the Engineer, all lumber brought on the job site for use a forms, shoring, or bracing shall be new materials. All forms shall be smooth surface forms and shall be of the following materials:

Walls	-	Steel or plywood panel
Columns	-	Steel, plywood, or fiber glass
Roof and Floor slabs	-	Plywood
All other work	-	Steel panels, plywood or tongue and groove lumber

### **2.02 Form and Falsework Materials**

- A. Materials for concrete forms, formwork, and falsework shall conform to the following requirements:
1. Lumber shall be Douglas Fir or Southern Pine, construction grade or better, in conformance with U.S. Product Standard PS20, American Softwood Lumber Standard.
  2. Plywood for concrete formwork shall be new, waterproof, synthetic resin bonded, exterior type Douglas Fir or Southern Pine plywood manufactured especially for concrete formwork and shall conform to the requirements of PS 1, Structural Plywood, for Concrete Forms, Class I, and shall be edge sealed.
  3. Form materials shall be metal, wood, plywood, or other approved material that will not adversely affect the concrete and will facilitate placement of concrete to the shape, form, line, and grade shown. Metal forms shall be an approved type that will accomplish such results. Wood forms for surfaces to be painted shall be Medium Density Overlaid plywood, MDO Ext. Grade.
- B. Unless otherwise shown, exposed edges and corners in concrete members shall be provided with 3/4-inch chamfers. Re-entrant corners in concrete members shall not have fillets unless otherwise shown.
- C. Forms and falsework to support the roof and floor slabs shall be designed for the total dead load, plus a live load of 30 psf (minimum).

### **2.03 Form Ties**

- A. Form ties with integral waterstops shall be provided with a plastic cone or other suitable means for forming a conical hole to insure that the form tie may be broken off back of the face of the concrete. The maximum diameter of removable cones for rod ties, or of other removable form-tie fasteners having a circular cross-section, shall not exceed

1-1/2 inches; and all such fasteners shall be such as to leave holes of regular shape for reaming.

- B. Form ties for water-retaining structures shall have integral waterstops. Removable taper ties may be used when approved by the Engineer. A preformed neoprene or polyurethane tapered plug sized to seat at the center of the wall shall be inserted in the hole left by the removal of the taper tie.

## **PART 3 - EXECUTION**

### **3.01 General**

- A. Forms to confine the concrete and shape it to the required lines shall be used wherever necessary. Contractor shall assume full responsibility for the adequate design of all forms, and any forms which are unsafe or inadequate in any respect shall promptly be removed from the work and replaced at the Contractor's expense. A sufficient number of forms of each kind shall be provided to permit the required rate of progress to be maintained. The design and inspection of concrete forms, falsework, and shoring shall comply with applicable local, state and federal regulations. Plumb and string lines shall be installed before concrete placement and shall be maintained during placement. Such lines shall be used by the Contractor's personnel and by the Engineer and shall be in sufficient number and properly installed. During concrete placement, the Contractor shall continually monitor plumb and string line form positions and immediately correct deficiencies.
- B. Concrete forms shall conform to the shape, lines, and dimensions of members as called for on the Contract Drawings, and shall be substantial, free from surface defects, and sufficiently tight to prevent leakage. Forms shall be properly braced or tied together to maintain their position and shape under a load of freshly-placed concrete. If adequate foundation for shores cannot be secured, trussed supports shall be provided.

### **3.02 Form Design**

All forms shall be true in every respect to the required shape and size, shall conform to the established alignment and grade, and shall be of sufficient strength and rigidity to maintain their position and shape under the loads and operations incident to placing and vibrating the concrete. Suitable and effective means shall be provided on all forms for holding adjacent edges and ends of panels and sections tightly together and in accurate alignment so as to prevent the formation of ridges, fins, offsets, or similar surface defects in the finished concrete. Plywood, 5/8-inch and greater in thickness, may be fastened directly to studding if the studs are spaced close enough to prevent visible deflection marks in the concrete. Forms shall be tight so as to prevent the loss of water, cement and fines during placing and vibrating of the concrete. Specifically, the bottom of wall forms that rest on concrete footings or slabs shall be provided with a gasket to prevent loss of fines and paste during placement and vibration of concrete. Such gasket may be a 1 to 1-1/2 inch diameter polyethylene rod held in position to the underside of the wall form. Adequate clean-out holes shall be provided at the bottom of each lift of forms. The size, number, and location of such clean-outs shall be as acceptable to the Engineer.

### 3.03 Construction

#### A. Vertical Surfaces

All vertical surfaces of concrete members shall be formed, except where placement of the concrete against the ground is shown. Not less than 1-inch of concrete shall be added to the thickness of the concrete member as shown where concrete is permitted to be placed against trimmed ground in lieu of forms. Such permission will be granted only for members of comparatively limited height and where the character of the ground is such that it can be trimmed to the required lines and will stand securely without caving or sloughing until the concrete has been placed.

#### B. Construction Joints

Concrete construction joints shall not be placed at locations other than those shown or specified, except as may be acceptable to the Engineer. When a second lift is placed on hardened concrete, special precautions shall be taken in the way of the number, location, and tightening of ties at the top of the old lift and bottom of the new to prevent any unsatisfactory effect whatsoever on the concrete. Pipe stubs and anchor bolts shall be set in the forms where required.

#### C. Form Ties

1. **Embedded Ties:** Holes left by the removal of form tie cones shall be reamed with suitable toothed reamers so as to leave the surface of the holes clean and rough before being filled with mortar as specified in Part 3.12C of Section 03300, Basic Concrete Specifications. Wire ties for holding forms shall not be used. Form-tying devices or parts thereof, other than metal, shall not be left embedded in the concrete. Ties shall not be removed in such manner as to leave a hole extending through the interior of the concrete members. Contractor shall not use snap-ties which cause spalling of the concrete upon form stripping or tie removal. If steel panel forms are used, rubber grommets shall be provided where the ties pass through the form in order to prevent loss of cement paste. Where metal rods extending through the concrete are used to support or to strengthen forms, the rods shall remain embedded and shall terminate not less than 1-inch back from the formed face or faces of the concrete.
2. **Removable Ties:** Where taper ties are approved for use, the larger end of the taper tie shall be on the wet side of walls in water retaining structures. After the taper tie is removed, the hole shall be thoroughly cleaned and roughened for bond. A precast neoprene or polyurethane tapered plug shall be located at the wall centerline. The hole shall be completely filled with non-shrink grout for water bearing and below-grade walls. The hole shall be completely filled with non-shrink or regular cement grout for above-grade walls which are dry on both sides. Exposed faces of walls shall have the outer 2 inches of the exposed face filled with a cement grout which shall match the color and texture of the surrounding wall surface.

### **3.04 Reuse of Forms**

Forms may be reused only if in good condition and only if acceptable to the Engineer. Light sanding between uses will be required wherever necessary to obtain uniform surface texture on all exposed concrete surfaces. Exposed concrete surfaces are defined as surfaces which are permanently exposed to view. In the case of forms for the inside wall surfaces of hydraulic/water retaining structures, unused tie rod holes in forms shall be covered with metal caps or shall be filled by other methods acceptable to the Engineer.

### **3.05 Removal of Forms**

Careful procedures for the removal of forms shall be strictly followed, and this work shall be done with care so as to avoid injury to the concrete. Contractor shall not apply heavy loading on green concrete. In the case of roof slabs and above-ground floor slabs, forms shall remain in place until test cylinders for the roof concrete attain a minimum compressive strength of 75 percent of the 28-day strength specified in Section 03300, Basic Concrete Specifications; provided, that no forms shall be disturbed or removed under an individual panel or unit before the concrete in the adjacent panel or unit has attained 75 percent of the specified 28-day strength and has been in place for a minimum of 14 days. The time required to establish said strength shall be as determined by the Engineer who will make several test cylinders for this purpose from concrete used in the first group of roof panels placed. If the time so determined is more than the 14-day minimum, then that time shall be used as the minimum length of time. Forms for all vertical foundations, walls, and columns shall remain in place at least 48 hours after the concrete has been placed (commencing from the time the last concrete is placed for that day). Forms for all parts of the work not specifically mentioned herein shall remain in place for periods of time as determined by the Engineer.

### **3.06 Maintenance of Forms**

Forms shall be maintained at all times in good condition, particularly as to size, shape, strength, rigidity, tightness, and smoothness of surface. Forms, when in place, shall conform to the established alignment and grades. Before concrete is placed, forms shall be thoroughly cleaned. Form surfaces shall be treated with a nonstaining mineral oil or other lubricant acceptable to the Engineer. Any excess lubricant shall be satisfactorily removed before placing the concrete. Where field oiling of forms is required, Contractor shall perform the oiling at least two weeks in advance of their use. Oil shall be kept off the surfaces of steel reinforcement and other metal items to be embedded in concrete. If oil is inadvertently placed on said metal surfaces, Contractor shall remove oil by sandblasting.

### **3.07 Falsework**

- A. Contractor shall be responsible for the design, engineering, construction, maintenance, and safety of all falsework, including staging, walkways, forms, ladders, and similar appurtenances, which shall equal or exceed the applicable requirements of the provisions of the OSHA Safety and Health Standards for Construction, the requirements of the Construction Safety Orders of the California Division of Industrial Safety, and the requirements specified herein.

- B. All falsework shall be designed and constructed to provide the necessary rigidity and to support the loads. Falsework for the support of a superstructure shall be designed to support the loads that would be imposed if the entire superstructure were placed at one time.
  
- C. Falsework shall be placed upon a solid footing, safe against undermining, and protected from softening. When the falsework is supported on timber piles, the maximum calculated pile loading shall not exceed 20 tons. When falsework is supported on any portion of the structure which is already constructed, the load imposed by the falsework shall be spread, distributed, and braced in such a way as to avoid any possibility of damage to the structure.

**END OF SECTION**



**SECTION 03200**  
**BASIC CONCRETE REINFORCEMENT SPECIFICATIONS**

**PART 1 - GENERAL**

**1.01 General Requirements**

Contractor shall furnish, fabricate, and place all concrete reinforcement steel, welded wire reinforcement, couplers, and concrete inserts for use in reinforced concrete and masonry construction and shall perform all appurtenant work, including all the wires, clips, supports, chairs, spacers, and other accessories, all in accordance with the Contract Documents.

**1.02 Reference Specifications, Codes, and Standards**

A. Codes

The Building Code, as referenced herein, shall be the California Building Code (CBC) of the California Building Standards Commission, latest edition.

B. Commercial Standards

Where not covered in this specification, all work shall comply with the following standards, latest editions:

ACI 315	Details and Detailing of Concrete Reinforcement.
ACI 318	Building Code Requirements for Structural Concrete and Commentary.
WRI	Manual of Standard Practice for Structural Welded Wire Reinforcement.
AWS D1.4	Structural Welding Code - Reinforcing Steel.
CRSI	Manual of Standard Practice.

**1.03 Contractor Submittals**

All submittals shall be in accordance with Section 01300, Contractor Submittals and Requests Technical Specifications.

- A. Contractor shall furnish shop bending diagrams, placing lists, and drawings of all reinforcement steel prior to fabrication.
- B. Details of concrete reinforcement steel and concrete inserts shall be submitted by the Contractor at the earliest possible date after receipt by the Contractor of Notice to Proceed. Said details of reinforcement steel for fabrication and erection shall conform to ACI 315 and the requirements specified and shown. Shop bending diagrams shall show the actual lengths of bars, to the nearest inch measured to the intersection of the extensions (tangents for bars of circular cross section) of the outside surface. Shop

drawings shall include bar placement diagrams which clearly indicate the dimensions of each bar splice.

- C. Where mechanical couplers are required or permitted to be used to splice reinforcement steel, Contractor shall submit manufacturer's literature which contains instructions and recommendations for installation for each type of coupler used; certified test reports which verify the load capacity of each type and size of coupler used; and shop drawings which show the location of each coupler with details of how they are to be installed in the formwork.
- D. If reinforcement steel is spliced by welding at any location, Contractor shall submit mill test reports which shall contain the information necessary for the determination of the carbon equivalent as specified in AWS D1.4. Contractor shall submit a written welding procedure for each type of weld for each size of bar which is to be spliced by welding; merely a statement that AWS procedures will be followed is not acceptable.

#### **1.04 Quality Assurance**

- A. If requested by the Engineer, Contractor shall provide samples from each heat of reinforcement steel delivered in a quantity adequate for testing. Costs of initial tests will be paid by the Owner. Costs of additional tests due to material failing initial tests shall be paid by the Contractor.
- B. If reinforcement steel is spliced by welding at any location, Contractor shall submit certifications of procedure qualifications for each welding procedure used and certification of welder qualifications, for each welding procedure, and for each welder performing the work. Such qualifications shall be as specified in AWS D1.4.
- C. If requested by the Engineer, Contractor shall provide samples of each type of welded splice used in the work in a quantity and of dimensions adequate for testing. At the discretion of the Engineer, radiographic testing of direct butt welded splices will be performed. Contractor shall provide assistance necessary to facilitate testing. Contractor shall repair any weld which fails to meet the requirements of AWS D1.4. The costs of testing will be paid by the Owner; except, the costs of all tests which fail to meet specified requirements shall be paid by the Contractor.

### **PART 2 - PRODUCTS**

#### **2.01 Reinforcement Steel**

- A. All reinforcement steel for all cast-in-place reinforced concrete construction shall conform to the following requirements:
  - 1. Bar reinforcement shall conform to the requirements of ASTM A 615 for Grade 60 Billet Steel Reinforcement with supplementary requirement S-1, or as otherwise shown.
  - 2. Welded wire reinforcement shall conform to the requirements of ASTM A 185 and the details shown; provided, that welded wire reinforcement with longitudinal wire of W9.5 size wire shall be either furnished in flat sheets or in

rolls with a core diameter of not less than 10 inches; and provided further, that welded wire reinforcement with longitudinal wires larger than W9.5 size shall be furnished in flat sheets only.

3. Spiral reinforcement shall be cold-drawn steel wire conforming to the requirements of ASTM A 82.

**B. Hot-Dip Galvanized Reinforcing Bars**

When reinforcing bars are indicated on the Drawings to be hot-dip galvanized, they shall be galvanized in accordance with ASTM A767 and ASTM A143. The bars shall be galvanized in conformance with a Class 1 coating and shall be galvanized after fabrication and shearing.

**C. Accessories**

1. Accessories shall include all necessary chairs, slab bolsters, concrete blocks, tie wires, dips, supports, spacers, and other devices to position reinforcement during concrete placement. Slab bolsters shall have gray plastic-coated legs.
2. Concrete blocks (dobies), used to support and position reinforcement steel, shall have the same or higher compressive strength as specified for the concrete in which it is located. Where the concrete blocks are used on concrete surfaces exposed to view, the color and texture of the concrete blocks shall match that required for the finished surface. Wire ties shall be embedded in concrete block bar supports.

**2.02 Mechanical Couplers**

- A. Mechanical couplers shall be provided where shown and where approved by the Engineer. The couplers shall develop a tensile strength which exceeds 125 percent of the yield strength of the reinforcement bars being spliced at each splice.
- B. Where the type of coupler used is composed of more than one component, all components required for a complete splice shall be supplied. This shall apply to all mechanical splices, including those splices intended for future connections.
- C. The reinforcement steel and coupler used shall be compatible for obtaining the required strength of the connection.
- D. Couplers which are located at a joint face shall be a type which can be set either flush or recessed from the face as shown. The couplers shall be sealed during concrete placement to completely eliminate concrete or cement paste from entering. After the concrete is placed, Contractor shall plug and seal couplers intended for future connections to prevent any contact with water or other corrosive materials. Threaded couplers shall be plugged with plastic plugs which have an O-ring seal.

### 2.03 Welded Splices

- A. Welded splices shall be provided where shown and where approved by the Engineer. All welded splices of reinforcement steel shall develop a tensile strength which exceeds 125 percent of the yield strength of the reinforcement bars which are connected.
- B. All materials required to perform the welded splices to the requirements of AWS D1.4 shall be provided.

## PART 3 - EXECUTION

### 3.01 General

All reinforcement steel, welded wire reinforcement, couplers, and other appurtenances shall be fabricated, and placed in accordance with the requirements of the Building Code and the supplementary requirements specified herein.

### 3.02 Fabrication

#### A. General

Reinforcement steel shall be accurately formed to the dimensions and shapes shown, and the fabricating details shall be prepared in accordance with ACI 315 and ACI 318, except as modified by the Drawings. Stirrups and tie bars shall be bent around a pin having a diameter not less than 1-1/2 inch for No. 3 bars, 2-inch for No. 4 bars, and 2-1/2 inch for No. 5 bars. Bends for other bars shall be made around a pin having a diameter not less than 6 times the minimum thickness, except for bars larger than 1 inch, in which case the bends shall be made around a pin of 8 bar diameters. Bars shall be bent cold.

- B. Contractor shall fabricate reinforcement bars for structures in accordance with bending diagrams, placing lists, and placing drawings.

#### C. Fabricating Tolerances

Bars used for concrete reinforcement shall meet the following requirements for fabricating tolerances:

1. Sheared length:  $\pm 1$  inch
2. Depth of truss bars:  $+ 0, - 1/2$  inch
3. Stirrups, ties, and spirals:  $\pm 1/2$  inch
4. All other bends:  $\pm 1$  inch

### 3.03 Placing

#### A. Placing

Reinforcement steel shall be accurately positioned as shown, and shall be supported and wired together to prevent displacement, using annealed iron wire ties or suitable clips at intersections. All reinforcement steel shall be supported by concrete, plastic or metal supports, spaces or metal hangers which are strong and rigid enough to prevent any displacement of the reinforcement steel. Where concrete is to be placed on the ground, supporting concrete blocks (or dobies) shall be used, in sufficient numbers to support the bars without settlement, but in no case shall such support be continuous. All concrete blocks used to support reinforcement steel shall be tied to the steel with wire ties which are embedded in the blocks. For concrete over formwork, Contractor shall furnish concrete, metal, plastic, or other acceptable bar chairs and spacers.

B. The portions of all accessories in contact with the formwork shall be made of concrete, plastic, or steel coated with a 1/8 inch minimum thickness of plastic which extends at least 1/2 inch from the concrete surface. Plastic shall be gray in color.

C. Tie wires shall be bent away from the forms in order to provide the specified concrete coverage.

D. Bars additional to those shown which may be found necessary or desirable by the Contractor for the purpose of securing reinforcement in position shall be provided by the Contractor at its own expense.

#### E. Placing Tolerances

Unless otherwise specified, reinforcement placing tolerances shall be within the limits specified in Section 7.5, Placing Reinforcement, of ACI 318 except where in conflict with the requirements of the Building Code.

F. Bars may be moved as necessary to avoid interference with other reinforcement steel, conduits, or embedded items. If bars are moved more than one bar diameter, or enough to exceed the above tolerances, the resulting arrangement of bars shall be as acceptable to the Engineer.

G. Welded wire reinforcement placed over horizontal forms shall be supported on slab bolsters having gray, plastic-coated standard type legs as specified in Part 3.03B herein. Slab bolsters shall be spaced not less than 30 inches on centers, shall extend continuously across the entire width of the reinforcement mat, and shall support the reinforcement mat in the plane shown.

H. Welded wire reinforcement placed over the ground shall be supported on wired concrete blocks (dobbies) spaced not more than 3 feet on centers in any direction. Contractor shall not utilize the construction practice of placing welded wire reinforcement on the ground and hooking into place in the freshly placed concrete.

### 3.04 Spacing of Bars

- A. The clear distance between parallel bars (except in columns and between multiple layers of bars in beams) shall be not less than the nominal diameter of the bars nor less than 1-1/3 times the maximum size of the coarse aggregate, nor less than 1 inch.
- B. Where reinforcement in beams or girders is placed in 2 or more layers, the clear distance between layers shall be not less than 1 inch.
- C. In columns, the clear distance between longitudinal bars shall be not less than 1-1/2 times the bar diameter, not less than 1-1/2 times the maximum size of the coarse aggregate, nor less than 1-1/2 inches.
- D. The clear distance between bars shall also apply to the distance between a contact splice and adjacent splices or bars.

### 3.05 Splicing

#### A. General

Reinforcement bar splices shall only be used at locations shown. When it is necessary to splice reinforcement at points other than where shown, the character of the splice shall be as acceptable to the Engineer.

#### B. Splices of Reinforcement

The length of lap for reinforcement bars, unless otherwise shown shall be in accordance with ACI 318, Section 12.15.1 for a Class B splice.

- C. Laps of welded wire reinforcement shall be in accordance with the ACI 318. Adjoining sheets shall be securely tied together with No. 14 tie wire, one tie for each 2 running feet. Wires shall be staggered and tied in such a manner that they cannot slip.
- D. Splices in column spiral reinforcement, when necessary, shall be made by welding or by a lap of 1-1/2 turns.

#### E. Bending or Straightening

Reinforcement shall not be straightened or rebent in a manner which will injure the material. Bars with kinks or bends not shown shall not be used. All bars shall be bent cold, unless otherwise permitted by the Engineer. No bars partially embedded in concrete shall be field-bent except as shown or specifically permitted by the Engineer.

### 3.06 Cleaning and Protection

- A. Reinforcement steel shall at all times be protected from conditions conducive to corrosion until concrete is placed around it.

- B. The surfaces of all reinforcement steel and other metalwork to be in contact with concrete shall be thoroughly cleaned of all dirt, grease, loose scale and rust, grout, mortar and other foreign substances immediately before the concrete is placed. Where there is delay in depositing concrete, reinforcement shall be reinspected and, if necessary recleaned.

**END OF SECTION**

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**SECTION 03300**  
**BASIC CONCRETE SPECIFICATIONS**

**PART 1 - GENERAL**

**1.01 General Requirements**

- A. Contractor shall furnish all materials for concrete in accordance with the provisions of this Section and shall form, mix, place, cure, repair, finish, and do all other work as required to produce finished concrete, all in accordance with the requirements of the Contract Documents.
- B. All cast-in-place concrete falls into one of the following categories and shall comply with all requirements of this basic specification.
  - 1. Prestressed Concrete (or Class "AA" Concrete). Concrete to be used for prestressed reservoir core walls.
  - 2. Structural Concrete (or Class "A" Concrete). Concrete to be used in all cases except where noted otherwise in the Contract Documents.
  - 3. Sitework Concrete (or Class "B" Concrete). Concrete to be used for curbs, gutters, catch basins, sidewalks, pavements, fence and guard post embedment, underground duct bank encasement and all other concrete appurtenant to electrical facilities unless otherwise shown.
  - 4. Lean Concrete (or Class "C" Concrete). Concrete to be used for thrust blocks, pipe trench cut-off blocks and cradles, where the preceding items are detailed on the drawings as unreinforced. Concrete to be used as protective cover for dowels intended for future connection.
- C. Only one class of concrete shall be present at the job site at any one time.

**1.02 Reference Specifications, Codes, and Standards**

A. Specifications

Items specified elsewhere in these Contract Documents:

Concrete Formwork - See Section 03100, Basic Concrete Formwork Specifications.

Concrete Reinforcement - See Section 03200, Basic Concrete Reinforcement Specifications.

B. Codes

The Building Code, as referenced herein, shall be the California Building Code (CBC), of the California Building Standards Commission, latest edition.

C. Commercial Standards

Where not covered in this specification, all work shall comply with the following standards, latest editions:

ACI 214	Evaluation of Strength Test Results of Concrete
ACI 301	Specifications for Structural Concrete
ACI 315	Details and Detailing of Concrete Reinforcement
ACI 347	Guide to Formwork for Concrete
ACI 318	Building Code Requirements for Structural Concrete and Commentary
ACI 350	Code Requirements for Environmental Engineering Concrete Structures and Commentary
ASTM C 494	Standard Specification for Chemical Admixtures for Concrete

**1.03 Contractor Submittals**

All submittals shall be in accordance with the Section 01300, Contractor Submittals and Requests Technical Specifications.

A. Mix Designs

Prior to beginning the work, Contractor shall submit to Owner, for review, preliminary concrete mix designs which shall show the proportions and gradations of all materials proposed for each class and type of concrete to be used on the job. The mix designs shall be designed by an independent testing laboratory acceptable to Owner. All costs related to such mix design shall be borne by the Contractor.

B. Certified Delivery Tickets

Where ready-mix concrete is used, Contractor shall provide certified delivery tickets at the time of delivery of each load of concrete. Each certificate shall show the total quantities (by weight) of cement, sand, each class of aggregate, and admixtures, and the amounts of water (by gallons) in the aggregate and added at the batching plant as well as the amount of water allowed to be added at the site for the specific design mix. Each certificate shall, in addition, state the mix number, total yield in cubic yards, and the time of day, to the nearest minute, corresponding to when the batch was dispatched, when it left the plant, when it arrived at the job, the time that unloading began, and the time that unloading was finished.

**1.04 Quality Assurance**

A. Tests on component materials and for compressive strength of concrete will be performed as specified herein. Test for determining slump will be in accordance with the requirements of ASTM C 143.

- B. The cost of all laboratory tests on concrete will be borne by the Owner. However, Contractor shall be charged for the cost of any additional tests and investigation on work performed which fails to meet specification.
- C. Concrete for testing shall be supplied by Contractor at no cost to the Owner, and Contractor shall provide assistance to the Owner in obtaining samples, and disposal and cleanup of excess material.
- D. Field Compression Tests
  - 1. Compression test specimens will be taken during construction from the first placement of each class of concrete specified herein and at intervals thereafter as selected by the Owner to insure continued compliance with these specifications. Each set of test specimens will be a minimum of 4 cylinders.
  - 2. Compression test specimens for concrete shall be made in accordance with ASTM C 31. Specimens shall be 6" diameter by 12" high cylinders.
  - 3. Compression tests shall be performed in accordance with ASTM C 39. One test cylinder will be tested at 7 days and two will be tested at 28 days.

The remaining cylinder will be held to verify test results, if needed.

E. Evaluation and Acceptance of Concrete

- 1. Evaluation and acceptance of the compressive strength of concrete shall be according to the requirements of ACI 350, Chapter 5, "Concrete Quality, Mixing, and Placing", and as specified herein.
- 2. If any concrete fails to meet these requirements, immediate corrective action shall be taken to increase the compressive strength for all subsequent batches of the type of concrete affected.
- 3. All concrete which fails to meet the ACI requirements and these specifications is subject to removal and replacement at the cost of the Contractor.

F. Construction Tolerances

Contractor shall set and maintain concrete forms and perform finishing operations so as to ensure that the completed work is within the tolerances specified herein. Surface defects and irregularities are defined as finishes and are to be distinguished from tolerances. Tolerance is the specified permissible variation from lines, grades, or dimensions shown. Where tolerances are not stated in the specifications, permissible deviations will be in accordance with ACI 347.

- G. The following construction tolerances are hereby established and apply to finished walls and slab unless otherwise shown:

<u>Item</u>	<u>Tolerance</u>
Variation of the constructed linear outline from the established position in plan	In 10 feet: 1/4 inch; In 20 feet or more: 1/2 inch
Variation from the level or from the grades shown	In 10 feet: 1/8 inch; In 20 feet or more: 1/4 inch
Variation from the plumb	In 10 feet: 1/8 inch; In 20 feet or more: 1/4 inch
Variation in the thickness of slabs and walls	Minus 1/4 inch; Plus 1/2 inch
Variation in the locations and sizes of slab and wall openings	Plus or minus 1/4 inch

Regardless of the tolerances listed herein, it shall be the responsibility of the Contractor to limit deviations in line and grade to tolerances which will permit proper installation and operation of mechanical equipment and piping.

## **PART 2 - PRODUCTS**

### **2.01 Concrete Materials**

- A. Materials shall be delivered, stored, and handled so as to prevent damage by water or breakage. Only one brand of cement shall be used. Cement reclaimed from cleaning bags or leaking containers shall not be used. All cement shall be used in the sequence of receipt of shipments.
- B. All materials furnished for the work shall comply with the requirements of Section 4.2.1 of ACI 301.
- C. Storage of materials shall conform to the requirements of Section 4.1.4 of ACI 301.
- D. Materials for concrete shall conform to the following requirements:
1. Cement shall be standard brand Portland cement conforming to ASTM C 150 for Type II or Type V. Portland cement shall contain not more than 0.60 percent alkalis. A single brand of cement shall be used throughout the work, and prior to its use, the brand shall be acceptable to the Owner. The cement shall be suitably protected from exposure to moisture until used. Cement that has become lumpy shall not be used. Stacked cement shall be stored in such a manner so as to permit access for inspection and sampling. Certified mill test reports for each shipment of cement to be used shall be submitted to the Owner if requested regarding compliance with these specifications.

2. Fly Ash or other pozzolans are not permitted as a component in the concrete mix.
3. Water shall be potable, clean, and free from objectionable quantities of silty organic matter, alkali, salts and other impurities. The water shall be considered potable, for the purposes of this section only, if it meets the requirements of the local governmental agencies. Agricultural water with high total dissolved solids (over 1000 mg/l TDS) shall not be used.
4. Aggregates shall be obtained from pits acceptable to the Owner, shall be non-reactive, and shall conform to ASTM C 33. Maximum size of coarse aggregate shall be as specified in Part 2.07B herein. Lightweight sand for fine aggregate will not be permitted.
  - a. Coarse aggregates shall consist of clean, hard, durable gravel, crushed gravel, crushed rock or a combination thereof. The coarse aggregates shall be prepared and handled in two or more size groups for combined aggregates with a maximum size greater than 3/4". When the aggregates are proportioned for each batch of concrete the two size groups shall be combined.
  - b. Fine aggregates shall be natural sand or a combination of natural and manufactured sand that are hard and durable.
  - c. Combined aggregates shall be well graded from coarse to fine sizes, and shall be uniformly graded between screen sizes to produce a concrete that has optimum workability and consolidation characteristics. Where a trial batch is required for a mix design, the final combined aggregate gradations will be established during the trial batch process.
5. Ready-mix concrete shall conform to the requirements of ASTM C 94.
6. Air-entraining agent meeting the requirements of ASTM C 260, shall be used. Sufficient air-entraining agent shall be used to provide a total air content of 3 to 5 percent; provided that, when the mean daily temperature in the vicinity of the worksite falls below 40°F for more than one day, the total air content provided shall be 5 to 7 percent. The Owner reserves the right, at any time, to sample and test the air-entraining agent received on the job by the Contractor. The air-entraining agent shall be added to the batch in a portion of the mixing water. The solution shall be batched by means of a mechanical batcher capable of accurate measurement.
7. Admixtures shall be required as stated herein and at the Owner's discretion or, if not required, may be added at the Contractor's option to control the set, effect water reduction, and increase workability. In either case, the addition of an admixture shall be at the Contractor's expense. The use of an admixture shall be subject to acceptance by the Owner. Concrete containing an admixture shall be first placed at a location determined by the Owner. If the use of an admixture is producing an inferior end result, Contractor shall discontinue use of the admixture. Admixtures specified herein shall conform to the requirements of ASTM C 494. The required quantity of cement shall be used in the mix regardless of whether or not an admixture is used. Admixtures shall contain no free chloride ions, be non-toxic

after 30 days, and shall be compatible with and made by the same manufacturer as the air entraining admixture.

- a. Low range water reducer shall be used in all structural and sitework concrete and shall conform to ASTM C 494, Type A. It shall be either a hydroxylated carboxylic acid type or a hydroxylated polymer type. The quantity of admixture used and the method of mixing shall be in accordance with the manufacturer's instructions and recommendations.
- b. Set controlling admixture shall be either with or without water-reducing properties. Where the air temperature at the time of placement is expected to be consistently over 80°F, a set retarding admixture such as Sika Chemical Corporation's Plastiment, BASF's Pozzolith 300R, or equal shall be used. Where the air temperature at the time of placement is expected to be consistently under 40°F, a set accelerating admixture such as Sika Chemical Corporation's Plastocrete 161FL, BASF's Pozzolith 122HE, or equal shall be used.
- c. High range water reducer may be used if approved by Owner. If allowed it shall be sulfonated polymer conforming to ASTM C 494, Type F or G.

High range water reducing agent shall only be added to the concrete at the batch plant. It shall be second generation type, Daracem 100 as manufactured by W.R. Grace & Co., Rhedbuild 1000 as manufactured by BASE, or equal. High range water reducer shall be added to the concrete after all other ingredients have been mixed and initial slump has been verified.

Concrete shall be mixed at mixing speed for a minimum of 30 mixer revolutions after the addition of the high range water reducer.

8. Calcium Chloride shall not be added to or used in concrete.
9. Floor Hardener shall be provided where specified on the Drawings. Floor hardener shall be natural aggregate dry shake hardener for concrete. Hardener shall be composed of crushed, washed, and specially graded quartz silica aggregate, cementitious binders, plasticizers, dispersing agents and stable colorants. Contractor shall coordinate adjustments in concrete mix design necessary to accommodate proposed floor hardener, including air entrainment and admixtures. Unless specified otherwise, hardener color shall be natural light gray.

Floor hardener shall be ConColor by ChemMasters, Lithochrome by L.M. Scofield Co., Colorcron by Master Builders, or equal. Floor hardener shall be applied in strict accordance with the manufacturer's printed instructions.

## 2.02 Curing Materials

Materials for curing concrete shall conform to the following requirements:

- A. Concrete curing compound shall be Resi-Chem manufactured by Symons, or approved equal. The curing compound shall contain a fugitive dye so that areas of application will be readily distinguishable.
- B. Polyethylene sheet for use as concrete curing blanket shall be white, and shall have a nominal thickness of 6 mils. The loss of moisture when determined in accordance with the requirements of ASTM C 156 shall not exceed 0.055 grams per square centimeter of surface.
- C. Polyethylene-coated waterproof paper sheeting for use as concrete curing blanket shall consist of white polyethylene sheeting free of visible defects, uniform in appearance, having a nominal thickness of 2 mils and permanently bonded to waterproof paper conforming to the requirements of Federal Specification UU-B-790A (Int. Amd. 1). The loss of moisture, when determined in accordance with the requirements of ASTM C 156, shall not exceed 0.055 gram per square centimeter of surface.
- D. Polyethylene-coated burlap for use as concrete curing blanket shall be 4 mil thick, white opaque polyethylene film impregnated or extruded into one side of the burlap. Burlap shall weigh not less than 9 ounces per square yard. The loss of moisture, when determined in accordance with the requirements of ASTM C 156, shall not exceed 0.055 grams per square centimeter of surface.
- E. Curing mats for use in Curing Method 6 as specified in Part 3.09G herein, shall be heavy shag rugs or carpets or cotton mats quilted at 4" on center. Curing mats shall weigh a minimum of 12 ounces per square yard when dry.
- F. Evaporation retardant shall be a material such as Confilm as manufactured by BASF, Cleveland, OH; or equal.

## 2.03 Waterstop

- A. Contractor shall provide waterstops at all construction and expansion joints in all water holding structures. Waterstop shall be Greenstreak PVC Style 732, 6" wide, or Style 735, 9" wide, as specified on Drawings.
- B. Contractor shall heat fuse joints and connections in strict compliance with manufacturer's instructions using heating tools and devices recommended by same. Waterstops shall be continuous in joints, following offsets and angles in joint until spliced to waterstops at intersecting joints, completely sealing the structure. Waterstops shall be aligned and centered in joints. Contractor shall secure flanges of waterstops to reinforcing bars with 18 gauge wire ties spaced maximum 18" on center. Waterstop joints shall be properly heat-spliced at ends and crosses to preserve continuity. Contractor shall locate waterstops where shown on drawings and in all waterbearing walls and slabs where common to: earth-bearing or earth-support; occupied areas; or above-grade exposed surfaces.

- C. All joints with waterstops involving more than 2 ends to be jointed together, and all joints which involve an angle cut, alignment change, or the joining of 2 dissimilar waterstop sections shall be prefabricated by the Contractor prior to placement in the forms, allowing not less than 24" long strips of waterstop material beyond the joint. Upon being inspected and approved, such prefabricated waterstop joint assemblies shall be butt welded to the straight run portions of waterstop.
- D. Waterstop splices shall have a tensile strength of not less than 60 percent of the unspliced materials tensile strength.

#### **2.04 Expansion Joints**

- A. Contractor shall provide expansion joints where indicated on Construction Drawings. Expansion joints shall consist of joint filler material and joint sealant. Filler material shall be held down 1/2" for sealant unless otherwise shown.
- B. Expansion joint filler material shall be performed sponge neoprene or cork conforming to ASTM D 1752. Filler material containing asphalt shall not be used.

#### **2.05 Joint Sealant**

- A. Joint sealant for use in construction, control, and expansion joints shall be Sika-Flex 1a as supplied by the Sika Corporation, or approved equal.

Joint primer shall be as produced and/or recommended by sealant manufacturer.

- B. Contractor shall clean all locations where sealant is placed by sandblasting and be free from oil, foreign materials, and moisture. Lower surfaces of joints shall be isolated with a bond breaker such as polyethylene, polyethylene tape, or equal as recommended by sealant manufacturer.
- C. Sealant shall be placed in strict accordance with manufacture's recommendations by a firm specializing in this type of work, or by the Contractor under direct supervision of the manufacturer. If the Contractor chooses to apply sealant, manufacturer's technical representative shall be present at the beginning of sealant placement to observe and advise on methods for mixing, joint preparation, and application of sealant.

#### **2.06 Concrete Bond Breaker**

- A. Bond breaker shall be Spec Tilt WB Bond Breaker as manufactured by SpecChem; Tilt-EEZ WB Bond Breaker as manufactured by Conspec; or approved equal. It shall contain a fugitive dye so that areas of application will be readily distinguishable.
- B. Contractor shall strictly follow manufacturer's application guidelines. Just prior to application, joint shall be thoroughly soaked so that concrete contains approximately the same surface moisture as newly cast concrete. Bond breaker shall be brush applied with a minimum of two coats. Extreme care must be taken to prevent any bond breaker from contacting waterstops. If necessary, wrap waterstop during bond breaker application.



## 2.07 Concrete Design Requirements

### A. General

Concrete shall be composed of cement, admixtures, aggregates and water. These materials shall be of the qualities specified. The exact proportions in which these materials are to be used for different parts of the work will be determined during the trial batch. In general, the mix shall be designed to produce a concrete capable of being deposited so as to obtain maximum density and minimum shrinkage and, where deposited in forms, to have good consolidation properties and maximum smoothness of surface. Mix designs shall not contain more than 43 percent of sand of the total weight of fine and coarse aggregate. The aggregate gradations shall be formulated to provide fresh concrete that will not promote rock pockets around reinforcing steel or embedded items. The proportions shall be changed whenever necessary or desirable to meet the required results at no additional cost to the Owner. All changes shall be approved by Owner.

### B. Water-Cement Ratio and Compressive Strength

The minimum compressive strength and cement content of concrete shall be not less than that specified in the following tabulation.

<u>Type of Work</u>	<u>Min. 28-Day Compressive Strength (psi)</u>	<u>Max. Size Aggregate (in.)</u>	<u>Min. Cement per cu yd (sacks)</u>	<u>Max. W/C Ratio (by wt.)</u>
Prestressed Concrete (Class "AA")	5,000	1	7.0	0.40
Structural Concrete (Class "A"):				
Walls, floor slabs, columns, and footings of hydraulic (water or wastewater) bearing structures	4,000	1	6.2	0.42
Walls, roof slabs, floor slabs, columns, and footings and all other concrete items not specified elsewhere	4,000	1	6.2	0.48
Sitework concrete (Class "B"):	3,000	1	5.5	0.52
Lean concrete (Class "C"):	2,000	1	4.0	0.60

**Note:** One sack of cement equals 94 lbs.

### C. Adjustments to Mix Design

Mixes used shall be changed whenever such change is necessary or desirable to secure required strength, density, workability, and surface finish and Contractor shall be entitled to no additional compensation because of such changes. Approval shall be obtained from Owner prior to any changes.

## 2.08 Consistency

The quantity of water entering into a batch of concrete shall be just sufficient, with a normal mixing period, to produce concrete which can be worked properly into place without segregation, and which can be compacted by vibratory methods herein specified to give desired density, impermeability and smoothness of surface. The quantity of water shall be changed as necessary, with variations in the nature of moisture content of the aggregates, to maintain uniform production of desired consistency. The consistency of the concrete in successive batches shall be determined by slump tests in accordance with ASTM C 143. The slumps shall be as follows:

<u>Part of Work</u>	<u>Slump</u>
Structural concrete	4" ( $\pm 1$ " )
Other work	4" ( $\pm 1$ " )
With high range water reducer added	8" max.

## 2.09 Ready-Mixed Concrete

- A. At Contractor's option, ready-mixed concrete may be used provided it meets all requirements as to materials, batching, mixing, transporting, and placing as specified herein and in accordance with ASTM C 94, including the supplementary requirements specified in Parts 2.09B through 2.09F herein.
- B. Ready-mixed concrete shall be delivered to the site of the work, and discharge shall be completed within 90 minutes after the addition of the cement to the aggregates or before the drum has been revolved 250 revolutions, whichever is first. In hot weather (ambient temperature above 95°F) or under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 85°F or above, the time between the introduction of the cement to the aggregates and discharge shall not exceed 45 minutes. Maximum concrete temperature at any time shall not exceed 95°F.
- C. Truck mixers shall be equipped with electrically-actuated counters by which the number of revolutions of the drum or blades may be readily verified. The counter shall be of the resettable, recording type, and shall be mounted in the driver's cab. The counters shall be actuated at the time of starting mixers at mixing speeds.
- D. Each batch of concrete shall be mixed in a truck mixer for not less than 70 revolutions of the drum or blades at the rate of rotation designated by the manufacturer of equipment. Additional mixing, if any, shall be at the speed designated by the manufacturer of the equipment as agitating speed. All materials including mixing water shall be in the mixer drum before actuating the revolution counter for determining the number of revolution of mixing.
- E. Truck mixers and their operation shall be such that the concrete throughout the mixed batch as discharged is within acceptable limits of uniformity with respect to consistency, mix, and grading. If slump tests taken at approximately the 1/4 and 3/4 points of the load during discharge give slumps differing by more than 1" when the specified slump is 4" or less, or if they differ by more than 2" when the specified slump is more than 4", the mixer shall not be used on the work unless the causing condition is corrected and satisfactory performance

is verified by additional slump tests. All mechanical details of the mixer, such as water measuring and discharge apparatus, condition of the blades, speed of rotation, general mechanical condition of the unit, and clearance of the drum, shall be checked before a further attempt to use the unit will be permitted.

- F. Each batch of ready-mixed concrete delivered at the job site shall be accompanied by a certified weighmaster delivery ticket furnished to the Owner in accordance with Part 1.03B herein.
- G. Non-agitating equipment for transporting ready-mixed concrete shall not be used. Combination truck and trailer equipment for transporting ready-mixed concrete shall not be used. The quality and quantity of materials used in ready-mixed concrete and in batch aggregates may be subject to continuous inspection at the batching plant by the Owner.
- H. Transit mix trucks delivering concrete to the site shall have full water tanks upon arrival at the site. Any addition of water must be approved by Owner. Added water must be incorporated by additional mixing of at least 35 revolutions.
- I. When ambient temperatures are expected to exceed 95°F during concrete placement, concrete mix water shall be refrigerated or ice shall be added to the mix up to 100 percent of the water requirement. Ice, when introduced into the mixer, shall be in such form that it will be completely melted and dispersed throughout the mix at the completion of the mixing time. The mixing time shall be held to the minimum practicable consistent with producing concrete meeting the specified requirements.
- J. When ambient temperatures exceed 95°F, forms and reinforcing steel shall be cooled by fog spraying and evaporation immediately prior to placing concrete. Forms shall be free of standing water when concrete is placed.

## **PART 3 - EXECUTION**

### **3.01 Proportioning and Mixing**

#### **A. Proportioning**

Proportioning of the concrete mix shall conform to the requirements of Section 4.2.3 of ACI 301; provided, that the maximum slump for any concrete shall not exceed 4" except when the use of high range water reducer is permitted which increases the maximum slump to 8".

#### **B. Mixing**

Mixing of concrete shall conform to the requirements of Section 4.3.1 of ACI 301 specifications.

#### **C. Slump**

Maximum slumps shall be as specified in Part 2.08 herein.

D. Retempering

Concrete or mortar which has partially hardened shall not be retempered.

**3.02 Preparation of Surfaces for Concreting**

A. General

Earth surfaces shall be thoroughly wetted by sprinkling, prior to placing any concrete, and these surfaces shall be kept moist by frequent sprinkling up to the time of placing concrete thereon. These surfaces shall be free from standing water, mud, and debris at the time of placing concrete.

B. Joints in Concrete

The location of all construction joints not specifically noted or shown shall be approved by Owner. Concrete surfaces upon or against which concrete is to be placed, where the placement of the old concrete has been stopped or interrupted so that, as determined by the Owner, the new concrete cannot be incorporated integrally with that previously placed, are defined as construction joints. The surfaces of horizontal joints shall be given a compacted, roughened surface for good bond. Except where the drawings call for joint surfaces to be coated, the joint surfaces shall be cleaned of all laitance, loose or defective concrete, and foreign material. Such cleaning shall be accomplished by sandblasting or waterblasting to remove laitance and to provide a uniform surface texture with 1/4" of surface amplitude. Sandblasting shall be followed by thorough washing. All pools of water shall be removed from the surface of construction joints before the new concrete is placed.

C. Placing Interruptions

When placing of concrete is to be interrupted long enough for the concrete to take a set, the working face shall be given a shape by the use of forms or other means, that will secure proper union with subsequent work; provided that construction joints shall be made only where acceptable to the Owner.

D. Embedded Items

1. Concrete shall not be placed until all formwork, installation of parts to be embedded, reinforcement steel, and preparation of surfaces involved in the placing have been completed and accepted by the Owner at least 4 hours before placement of concrete. All surfaces of forms and embedded items that have become encrusted with dried grout from concrete previously placed shall be cleaned of all such grout before the surrounding or adjacent concrete is placed.
2. All reinforcement, anchor bolts, sleeves, inserts, and similar items shall be set and secured in the forms where shown on Contract Drawings and shall be acceptable to the Owner before any concrete is placed. Accuracy of placement is the responsibility of the Contractor.
3. Anchor Bolts shall be accurately set, and shall be maintained in position by templates while being embedded in concrete.

4. Concrete anchor bolts and expansion anchors shall be ASTM type A-316 stainless steel and shall be inserted to the minimum depths listed below, unless noted otherwise:

<u>Size</u>	<u>Reinforced Concrete</u>
1/4"	3"
3/8"	4"
1/2"	5"
3/4"	6"

5. Expansion anchors shall be stainless steel Hilti Kwik Bolt TZ, or equal.
6. All smooth dowels shall have at least one side coated with a bond breaker. Dowel bond breaker shall be a heavy duty industrial grease hand applied. A wax paper or PVC sleeve may be used at the Contractor's option if specifically manufactured to create slip dowels. Paper tubing shall be multi-ply stock and heavily impregnated with paraffin. Maximum sleeve thickness shall be 1/16" and sleeve shall fit snugly over dowel.

E. Casting New Concrete Against Old

1. Where new concrete is to be cast against existing (old) concrete (concrete which is greater than 60 days of age), surfaces of old concrete shall be roughened by mechanical means to provide an aggregate-fractured surface with a 1/4" (min.) profile and cleaned of all loose concrete and dust. The remaining surface shall be saturated in advance of concrete placement but be free of standing water. A bonding agent such as Sika Armatec 110 shall be applied to the interface between old and new concrete just prior to concrete placement.
2. Overlays of existing concrete and repair of holes, cavities, and depressions in existing concrete due to removal of existing facilities or installation of new facilities shall be as follows:
  - a. Remaining concrete surfaces shall be prepared as specified in Part 3.02E.1 herein.
  - b. A bonding agent shall be applied to all concrete and metal surfaces to receive repair mortar or concrete. Bonding agent shall be Sika Armatec 110, or equal.
  - c. Overlays, holes, cavities, and depressions shall be filled with Sika Monotop 611 mortar, or equal. For placements greater than 1" in depth, 3/8" coarse aggregate shall be added to the mortar to create a repair concrete. Vertical surfaces shall be formed. Horizontal surfaces, including slab overlays, shall be hand trolled and finished to match adjacent concrete.
  - d. Bonding agent and repair mortar/concrete shall be mixed and installed in strict accordance with the manufacturer's printed instructions.

F. Concrete shall not be placed in any old or new structure until all water entering the space to be filled with concrete has been properly cut off or has been diverted by pipes, or other means, and carried out of the forms, clear of the work. Concrete shall not be deposited underwater nor shall the Contractor allow still water to rise on any concrete until the concrete has attained its initial set. Water shall not be permitted to flow over the surface of any concrete in such a manner and at such velocity as to injure the surface finish of the concrete. Contractor shall provide pumping or other necessary dewatering operations for removing groundwater, if required, with methods subject to review by Owner.

G. Corrosion Protection

Pipe, conduit, dowels, and other ferrous items required to be embedded in concrete construction shall be so positioned and supported prior to placement of concrete that there will be a minimum of 2" clearance between said items and any part of the concrete reinforcement. Contractor shall not secure such items in position by wiring or welding them to the reinforcement.

H. Cleaning

Surfaces of all metalwork to be in contact with concrete shall be thoroughly cleaned of all dirt, grease, loose scale and rust, grout, mortar, and other foreign substances immediately before concrete is placed.

### 3.03 Handling, Transporting, and Placing

A. General

Placing of concrete shall conform to the applicable requirements of Section 5.3.2 of ACI 301 and the requirements of this Section.

B. Non-Conforming Work or Materials

Concrete which upon or before placing is found not to conform to the requirements specified herein shall be rejected and immediately removed from the work. Concrete which is not placed in accordance with these specifications, or which is of inferior quality, shall be removed and replaced by and at the expense of the Contractor.

C. Unauthorized Placement

Concrete shall not be placed except in the presence of duly authorized representative of the Owner. Contractor shall notify Owner at least 24 hours in advance of placement of any concrete.

D. Placement in Wall Forms

Concrete shall not be dropped through reinforcement steel or into any deep form, whether reinforcement is present or not, causing separation of the coarse aggregate from the mortar on account of repeatedly hitting rods or the sides of the form as it falls, nor shall concrete be placed in any form in such a manner as to leave accumulation of mortar on the form surfaces above the placed concrete. In such cases, some means such as the use of hoppers

and, if necessary, vertical ducts of canvas, rubber, or metal shall be used for placing concrete in the forms in a manner that it may reach the place of final deposit without separation. In no case shall the free fall of concrete exceed 4' below the ends of ducts, chutes, or buggies. Concrete shall be uniformly distributed during the process of depositing and in no case after depositing shall any portion be displaced in the forms more than 6' in horizontal direction. Concrete in forms shall be deposited in uniform horizontal layers not deeper than 2'; and Contractor shall take care to avoid inclined layers or inclined construction joints except where such are required for sloping members. Each layer shall be placed while the previous layer is still soft.

E. Placement in Slabs

Concrete placed in sloping slabs shall proceed uniformly from the bottom of the slab to the top, for the full width of the placement. As the work progresses, concrete shall be vibrated and carefully worked around the slab reinforcement, and the surface of the slab shall be screeded in an up-slope direction.

F. Temperature of Concrete

Temperatures of concrete when it is being placed shall be not more than 90°F nor less than 40°F in moderate weather, and not less than 50°F in weather during which the mean daily temperature drops below 40°F. Concrete ingredients shall not be heated to a temperature higher than that necessary to keep the temperature of the mixed concrete, as placed, from falling below the specified minimum temperature. If concrete is placed when the weather is such that the temperature of the concrete would exceed 90°F, Contractor shall employ effective means, such as precooling of aggregates and mixing water using ice or placing at night, as necessary to maintain the temperature of the concrete, as it is placed, below 90°F. Contractor shall be entitled to no additional compensation on account of the foregoing requirements.

G. Cold Weather Placement

Earth foundations shall be free from frost or ice when concrete is placed upon or against them. Fly ash concrete shall not be placed when the air temperature falls below 50°F.

### 3.04 Pumping of Concrete

A. General

If the pumped concrete does not produce satisfactory end results, Contractor shall discontinue the pumping operation and proceed with the placing of concrete using conventional methods.

B. Pumping Equipment

Pumping equipment must have 2 cylinders and be designed to operate with one cylinder only in case the other one is not functioning. In lieu of this requirement, Contractor may have a standby pump on the site during pumping.

C. The minimum diameter of hose (conduits) shall be 4".

- D. Contractor shall replace pumping equipment and hoses (conduits) that are not functioning properly.
- E. Contractor shall not use aluminum conduits for conveying the concrete.
- F. Proportioning  
Minimum compressive strength, cement content, and maximum size of aggregates shall be as specified in Part 2.07 herein.
- G. Gradation of coarse aggregates shall conform to ASTM C 33 and shall be as close to the middle range as possible.
- H. Gradation of fine aggregate shall conform to ASTM C 33, with 15 to 30 percent passing the number 50 screen and 5 to 10 percent passing the number 100 screen. The fineness modulus of sand used shall not be over 3.00.
- I. Water and slump requirements shall conform to Parts 2.01D3 and 2.07B herein for water and Part 2.08 herein for slump.
- J. Cement and admixtures shall conform to Part 2.01D herein.

### **3.05 Order of Placing Concrete**

The order of placing concrete in all parts of the work shall be acceptable to the Owner. In order to minimize the effects of shrinkage, the concrete shall be placed in units as bounded by construction joints shown. The placing of units shall be done by placing alternate units in a manner such that each unit placed shall have cured before the contiguous unit or units are placed, as follows:

#### **A. Foundations**

Foundation forms shall remain in place for a minimum of 48 hours after the end of a placement. Thereafter, forms may be removed and construction of adjacent formwork or wall formwork may commence. Concrete for foundation sections shall not be placed until a minimum of 7 days have elapsed from the end of the adjacent placement. Concrete for walls above foundations may be placed after a minimum of 72 hours have elapsed, provided the footings have attained at least 50% of their design strength as demonstrated by testing of concrete cylinders.

#### **B. Walls**

Concrete for walls may be placed on top of foundations as described in Part 3.05A herein. Concrete for subsequent wall placements located vertically above new walls may be placed after a minimum of 72 hours have elapsed, provided the walls have attained at least 50% of their design strength as demonstrated by testing of concrete cylinders. Concrete for wall sections shall not be placed until a minimum of 7 days have elapsed from the end of the adjacent placement.



C. Roof Slabs, Decks, and Walkways

Concrete for roof slabs, decks, and walkways may be placed on top of walls after a minimum of 72 hours have elapsed, provided slabs, decks, and walkways are supported by formwork. Concrete for slab, deck, and walkway sections shall not be placed until a minimum of 7 days have elapsed from the end of the adjacent placement.

**3.06 Tamping and Vibrating**

- A. As concrete is placed in the forms or in excavations, Contractor shall insure it is thoroughly settled and compacted, throughout the entire depth of the layer which is being consolidated, into a dense, homogeneous mass, filling all corners and angles, thoroughly embedding the reinforcement, eliminating rock pockets, and bringing only a slight excess of water to the exposed surface of concrete during placement. Vibrators shall be high speed power vibrators (8000 to 10,000 rpm) of an immersion type in sufficient number and with (at least one) standby units as required.
- B. Contractor shall take care in placing concrete around waterstops. Contractor shall carefully work concrete by rodding and vibrating to make sure that all air and rock pockets have been eliminated. Where flat-strip type waterstops are placed horizontally, the concrete shall be worked under the waterstops by hand, making sure that all air and rock pockets have been eliminated. Concrete surrounding the waterstops shall be given additional vibration, over and above that used for adjacent concrete placement to assure complete embedment of the waterstops in the concrete.
- C. Concrete in walls shall be internally vibrated and at the same time rammed, stirred, or worked with suitable appliances, tamping bars, shovels, or forked tools until it completely fills the forms or excavations and closes snugly against all surfaces. Subsequent layers of concrete shall not be placed until the layers previously placed have been worked thoroughly as specified. Vibrators shall be inserted vertically into the concrete and pulled out slowly, penetrating 1/3 of the layer depth of the layer previously placed. Vibrators shall be provided in sufficient numbers, with standby units as required, to accomplish the results herein specified within 15 minutes after concrete of the prescribed consistency is placed in the forms. The vibrating head shall be kept from contact with the surfaces of the forms. Care shall be taken not to vibrate concrete excessively or to work it in any manner that causes segregation of its constituents.

**3.07 Finishing Concrete Surfaces**

A. General

Surfaces shall be free from fins, bulges, ridges, offsets, honeycombing, or roughness of any kind, and shall present a finished, smooth, continuous hard surface. Allowable deviations from plumb or level and from the alignment, profiles, and dimensions shown are defined as tolerances and are specified in Parts 1.04F and 1.04G herein. These tolerances are to be distinguished from irregularities in finish as described herein. Aluminum finishing tools shall not be used.

B. Edges

All exposed edges of columns, beams, walls, roof slabs, elevated walkways, and foundations shall have a 3/4" chamfer, unless noted otherwise.

C. Formed Surfaces

Upon removal of forms, all surfaces shall be cured in accordance with Part 3.09 herein. After the curing period, all surfaces shall be sandblasted to expose air pocket voids and surface defects, and then repaired in accordance with Part 3.12 herein. After repairs are completed, surfaces shall be given an architectural finish in accordance with Part 3.08 herein.

D. Unformed Surfaces

After proper and adequate vibration and tamping, all unformed top surfaces of slabs, floors, walls, and curbs shall be brought to a uniform surface with suitable tools. The classes of finish specified for unformed concrete surfaces are designated and defined as follows:

1. Class "1". After the floated surface (as specified for Class "3") has hardened sufficiently to prevent excess of fine material from being drawn to the surface, steel troweling shall be performed with firm pressure such as will flatten the sandy texture of the floated surface and produce a dense, uniform surface free from blemishes, ripples, and trowel marks. The finish shall be smooth and free of all irregularities.
2. Class "2". Steel trowel finish (as specified for Class "1") without local depressions or high points. In addition, the surface shall be given a light hairbroom finish with brooming perpendicular to drainage unless otherwise shown. The resulting surface shall be rough enough to provide a nonskid finish.
3. Class "3". After sufficient stiffening of the screeded concrete, surfaces shall be float finished with wood or metal floats or with a finishing machine using float blades. Contractor shall not excessively float concrete surfaces while the concrete is plastic or dust concrete surfaces with dry cement and sand to absorb excess moisture. Floating shall be the minimum necessary to produce a surface that is free from screed marks and is uniform in texture. Surface irregularities shall not exceed 1/4". Joints and edges shall be tooled where shown or as determined by the Owner.
4. Class "4". Contractor shall provide sufficient leveling and screeding to produce an even, uniform surface with surface irregularities not to exceed 3/8". No further special finish is required.

Contractor shall finish unformed surfaces according to the following schedule unless otherwise shown or specified:

Unformed Surface Finish Schedule

<u>Area</u>	<u>Finish</u>
Grade slabs and foundations to be covered with concrete or fill material	Class "4"
Floors to be covered with grouted tile or topping grout	Class "3"
Slabs which are water bearing with slopes 10 percent and less	Class "1"
Sloping slabs which are water bearing with slopes greater than 10 percent	Class "2"
Slabs not water bearing	Class "2"
Slabs to be covered with built-up roofing	Class "3"
Interior slabs and floors to receive architectural finish/flooring	Class "3"

**3.08 Architectural Finish**

A. Smooth Sacked Finish

Contractor shall provide architectural finish for exposed to view concrete surfaces. Exposed concrete surfaces include the exterior of structures beginning 1' below grade, the tops of walls, and the interior of water holding structures from the floor to the top of the walls. Architectural finish shall also be provided for interior exposed to view concrete surfaces. All other incidental exposed to view concrete surfaces shall be provided with an architectural finish such as concrete stairways, concrete containment facilities around chemical storage tanks, elevated walkways, and the like. Architectural finish (i.e., smooth sacked finish) shall also be provided where shown.

B. Immediately after the forms have been stripped, the concrete surface shall be inspected by Owner and treated and cured in accordance with in Parts 3.09 and 3.12 herein.

C. After the concrete has cured at least 14 days, Contractor shall sandblast the surfaces and repair same in accordance with Part 3.12 herein. Thereafter, the surfaces shall be wetted, and a grout shall be applied with a brush. The grout shall be made by mixing one part Portland cement and one part of fine sand that will pass a No. 16 sieve with sufficient water to give it the consistency of thick paint. The cement used in said grout shall be 1/2 gray and 1/2 white Portland cement, as determined by the Owner. White Portland cement shall be Atlas white, or equal, furnished by the Contractor. The freshly applied grout shall be vigorously rubbed into the concrete surface with a wood float filling all small air holes. After all the surface grout had been removed with a steel trowel, the surface shall be allowed to dry and, when dry, shall be vigorously rubbed with burlap to remove completely all surface grout so that there is no visible paint-like film of grout on the concrete. The entire cleaning operation for any area shall be completed the day it is started, and grout shall not be left on the surface overnight.

D. Surface Overnight

Cleaning operations for any given day shall be terminated at panel joints. Contractor shall insure that the various operations be carefully timed to secure the desired effect which is a light-colored concrete surface of uniform color and texture without any appearance of a paint or grout film.

E. In the event that improper manipulation results in an inferior finish, Contractor shall rub such inferior areas with carborundum bricks.

F. Before beginning any of the final treatment on exposed surfaces, Contractor shall treat in a satisfactory manner a trial area of at least 200 square feet in some inconspicuous place selected by the Owner and shall preserve said trial area undisturbed until the completion of the job.

G. All architecturally-treated concrete surfaces shall conform to the accepted sample in texture, color, and quality. It shall be the Contractor's responsibility to maintain and protect the concrete finish.

**3.09 Curing and Dampproofing**

A. General

All concrete shall be cured for not less than 14 days after placing in accordance with the methods specified herein for the different parts of the work as follows:

<u>Surface to be Cured or Dampproofed</u>	<u>Method</u>
Unstripped forms	1
Wall sections with forms removed	4
Construction joints between footings and walls, and between floor slab and columns	2
Encasement concrete and thrust blocks	3
All concrete surfaces not specifically provided for elsewhere in this Part	4
Floor slabs on grade in hydraulic structures	5
Roof and slabs not on grade	6

B. Method 1

Wooden forms shall be wetted immediately after concrete has been placed and shall be kept wet with water until removed. If steel forms are used the exposed concrete surfaces shall be kept continuously wet until the forms are removed. If forms are removed within

14 days of placing the concrete, curing shall be continued in accordance with Method 4, Part 3.09E herein.

C. Method 2

The surface shall be covered with burlap mats which shall be kept wet with water for the duration of the curing period, until the concrete in the walls has been placed. No curing compound shall be applied to surfaces cured under Method 2.

D. Method 3

The surface shall be covered with moist earth not less than 4 hours, nor more than 24 hours, after the concrete is placed. Earthwork operations that may damage the concrete shall not begin until at least 7 days after placement of concrete.

E. Method 4

The surface shall be sprayed with a liquid curing compound.

1. Curing compound shall be applied in accordance with the manufacturer's printed instructions at a maximum coverage rate of 175 square feet per gallon and in such a manner as to cover the surface with a uniform film which will seal thoroughly. Two spray coats shall be applied, with the second coat sprayed at right angle direction from first coat.
2. Where the curing compound method is used, care shall be exercised to avoid damage to the seal during the curing period. Should the seal be damaged or broken before the expiration of the curing period, Contractor shall repair break immediately by the application of additional curing compound over the damaged portion.
3. Wherever curing compound may have been applied by mistake to surfaces against which concrete subsequently is to be placed and to which it is to adhere, said compound shall be entirely removed by wet sandblasting just prior to the placing of new concrete.
4. Where curing compound is specified, it shall be applied as soon as the concrete has hardened enough to prevent marring on unformed surfaces, and within 2 hours after removal of forms from contact with formed surfaces. Repairs required to be made to formed surfaces shall be made within the said 2-hour period; provided, however, that any such repairs which cannot be made within the said 2-hour period shall be delayed until after the curing compound has been applied. When repairs are to be made to an area on which curing compound has been applied, the area involved shall first be wet-sandblasted to remove the curing compound, following which repairs shall be made as specified herein.

F. Method 5

Immediately after the concrete has been screeded, it shall be treated with a liquid evaporation retardant. The retardant shall be used again after each work operation as necessary to prevent drying shrinkage cracks.

1. Immediately after each square foot of the concrete has been finished, it shall be given a coat of curing compound in accordance with Method 4, Part 3.09E herein. Not less than one hour nor more than 4 hours after the coat of curing compound has been applied, the surface shall be wetted with water delivered through a fog nozzle, and concrete-curing blankets shall be placed on the slabs. The curing blankets shall be polyethylene sheet, polyethylene-coated waterproof paper sheeting or polyethylene-coated burlap. The blankets shall be laid with the edges butted together and with the joints between strips sealed with 2" wide strips of sealing tape or with edges lapped not less than 3" and fastened together with a waterproof cement to form a continuous watertight joint.
2. Curing blankets shall be left in place during the 14 day curing period and shall not be removed until after concrete for adjacent work has been placed. Should the curing blankets become torn or otherwise ineffective, Contractor shall replace damaged sections. During the first 3 days of the curing period, Contractor shall not allow traffic of any nature or depositing, temporary or otherwise, of any materials on the curing blankets. During the remainder of the curing period, foot traffic and temporary depositing of materials that impose light pressure will be permitted only on top of plywood sheets 5/8" minimum thickness, laid over the curing blanket. Contractor shall add water under the curing blanket as often as necessary to maintain damp concrete surfaces at all times.

G. Method 6

Concrete slabs shall be treated with an evaporation retardant as specified in Method 5. The concrete shall be kept continuously wet by the application of water for a minimum period of at least 14 consecutive days beginning immediately after the concrete has been placed or forms removed. Heavy curing mats shall be used as a curing medium to retain the moisture during the curing period. The curing medium shall be weighted or otherwise held in place to prevent being dislodged by wind or any other causes. Until the concrete surface is covered with the curing medium, the entire surface shall be kept damp by applying water using nozzles that atomize the flow so that the surface is not marred or washed. Curing blankets and concrete shall be kept continuously wet by the use of sprinklers or other means both during and after normal working hours. Immediately after the application of water has terminated at the end of the curing period, the curing medium shall be removed and curing compound immediately applied in accordance with Method 4, Part 3.09E herein. Contractor shall dispose of excess water from the curing operation to avoid damage to the work.

### 3.10 Protection

Contractor shall protect all concrete against injury until final acceptance by the Owner. Fresh concrete shall be protected from damage due to rain, hail, sleet, or snow. Contractor shall provide such protection while the concrete is still plastic and whenever such precipitation is imminent or occurring. Immediately following the first frost in the fall, Contractor shall be prepared to protect

all concrete against freezing. After the first frost, and until the mean daily temperature in the vicinity of the worksite falls below 40°F for more than one day, the concrete shall be maintained at a temperature not lower than 50°F for at least 72 hours after it is placed.

### **3.11 Curing in Cold Weather**

- A. Water curing of concrete may be reduced to 6 days during periods when the mean daily temperature in the vicinity of the worksite is less than 40°F; provided that, during the prescribed period of water curing, when temperatures are such that concrete surfaces may freeze, water curing shall be temporarily discontinued.
- B. Concrete cured by an application of curing compound will require no additional protection from freezing if the protection at 50°F for 72 hours is obtained by means of approved insulation in contact with the forms or concrete surfaces; otherwise, concrete shall be protected against freezing temperatures for 72 hours immediately following 72 hours of protection at 50°F. Concrete cured by water curing shall be protected against freezing temperatures for 3 days immediately following the 72 hours of protection at 50°F.
- C. Discontinuance of protection against freezing temperatures shall be such that the drop in temperature of any portion of the concrete will be gradual and will not exceed 40°F in 24 hours. In the spring, when the mean daily temperature rises above 40°F for more than 3 successive days, the specified 72 hour protection at a temperature not lower than 50°F may be discontinued for as long as the mean daily temperature remains above 40°F; provided, that the concrete shall be protected against freezing temperatures for not less than 48 hours after placement.
- D. Where artificial heat is employed, Contractor shall take special care to prevent the concrete from drying. Use of unvented heaters will be permitted only when unformed surfaces of concrete adjacent to the heaters are protected for the first 24 hours from an excessive carbon dioxide atmosphere by application of curing compound; provided, that the use of curing compound for such surfaces is otherwise permitted by these specifications.

### **3.12 Treatment of Surface Defects**

- A. As soon as forms are removed, all exposed surfaces shall be carefully examined by Owner and any irregularities shall be immediately rubbed or ground by the Contractor in a satisfactory manner in order to secure a smooth, uniform, and continuous surface. Contractor shall not plaster or coat surfaces to be smoothed. Concrete shall then be cured for the specified curing period in accordance with Part 3.09 herein. After the curing period, all surfaces shall be sandblasted to remove curing compound (if utilized), concrete paste film, and laitance, and to expose all air pocket voids and surface defects. Repairs shall not be made until after inspection by the Owner. Contractor shall not in any case perform extensive patching of honeycombed concrete. Concrete containing minor voids, holes, or similar depression defects with a maximum depth of 1/4" may be filled with the grout used for the architectural finish, or if below grade on the exterior, may be left unfilled. Concrete containing minor voids, holes, honeycombing, or similar depression defects deeper than 1/4" with a maximum depth of 3/4" and/or a maximum surface area of 2 square inches shall be repaired as specified in Part 3.12B. Concrete containing extensive voids, holes, honeycombing, or similar depression defects, shall be repaired utilizing a repair material specifically manufactured for such use (such as Sikatop 121) subject to approval by Owner,

or completely removed and replaced. All repairs and replacements herein specified shall be promptly executed by the Contractor at its own expense.

- B. Defective surfaces to be repaired as specified in Part 3.12A herein, shall be cut back from true line a minimum depth of 1/2" over the entire area. Edges shall not be feathered. Where chipping or cutting tools are not required in order to deepen the area properly, the surface shall be prepared for bonding by the removal of all laitance or soft material, and not less than 1/32" depth of the surface film from all hard portions, by means of an efficient sandblast. After cutting and sandblasting, the surface shall be wetted sufficiently in advance of applying cement mortar so that while the repair material is being applied, the surfaces under repair will remain moist, but not so wet as to overcome the suction upon which a good bond depends. The concrete shall then be patched as follows:

A bonding material such as acryl 60 shall be applied to the surface of the area to be repaired just prior to application of the repair mixture. The repair mixture shall consist of one part of Type II, low alkali, Portland cement to 3 parts concrete sand. Mix solution shall contain 1/3 bonder, such as acryl 60, to 2/3 water and added in quantities sufficient to allow placement but not cause hairchecking or slippage. Quantities prepared should be limited to that able to be completed within 30 minutes. Areas repaired shall be compacted with a wood ramming device and cured with the water/acryl 60 solution. Repair mixture shall be applied in maximum 1" lifts.

For exposed walls, the cement shall contain such a proportion of Atlas white Portland cement as is required to make the color of the patch match the color of the surrounding concrete.

- C. Holes left by tie-rod cones shall be reamed with suitable toothed reamers so as to leave the surfaces of the holes clean and rough. These holes then shall be repaired as described in Part 3.12B herein.
- D. All repairs shall be built up and shaped in such a manner that the completed work will conform to the requirements of Part 3.08 or 3.09 herein, as applicable, using approved methods which will not disturb the bond, cause sagging, or cause horizontal fractures.

### **3.13 Joint Sealant in Hydraulic Structures**

Joint sealant shall be placed in all horizontal and vertical joints of all cast-in-place walls exposed to water. Provide 1" wide x 1/2" deep formed groove for joint sealant. Sealant strip material and installation procedure shall be per Part 2.05 herein.

### **3.14 Installation of Epoxy Rebar Dowels and Anchor Bolts**

Epoxy rebar dowels and anchor bolts shall be bonded with the Hilti Hit-RE 500-SD System, or equal. Unless noted otherwise, rebar dowels shall be ASTM A615 Grade 60 steel and anchor bolts shall be 316 stainless steel threaded rod. Rebar dowels and anchor bolts shall be installed to the depths shown on the Drawings or equipment manufacturer's shop drawings. Prior to injecting epoxy, each drilled hole shall be cleaned out with a nylon brush. Contractor shall install dowels and anchor bolts in strict accordance with the manufacturer's printed instructions.



### 3.15 Backfilling Against Concrete Structures

All curing shall be in accordance with Part 3.09 herein.

#### A. Foundations

Minimum time to begin backfilling against foundations is 72 hours from completion of placement.

#### B. Walls

For non-hydraulic structures, backfilling may commence after 7 days and 75% of design strength have been reached, as demonstrated by testing of field cured concrete cylinders. Backfill height shall not exceed one half of wall height until wall has attained 100% of design strength. Hydraulic structures shall not be backfilled until after hydrostatic leak testing has been completed and accepted.

#### C. Shear Rings and Thrust Blocks

Shear rings and thrust blocks shall be cured 24 hours minimum prior to backfilling. No pipeline pressure testing shall be performed until 7 days after the last concrete placement.

### 3.16 Testing of Hydraulic Structures

#### A. General

Contractor shall water test all concrete tanks, hydraulic channels, sumps, basins, and other structures designed to contain water prior to backfilling. Testing shall be accomplished by filling the structure with water. Testing shall not be performed until roof is in place (if applicable) and all concrete has attained full design strength. Contractor shall provide the following:

1. All pumps, power, piping, and any other equipment required to fill tanks for testing.
2. Necessary provisions to dispose of test water after testing, including pumping if necessary. At completion of tests all temporary piping and connections shall be removed. Waste water shall be disposed of without creating a nuisance or damage to adjacent property.

#### B. Test Procedure

The structure shall be full to high water level at beginning of test. Contractor may elect to keep the tank full of water for as long as 48 hours prior to the test to allow for water absorption by the concrete. Test period shall be 5 consecutive 24 hour periods totaling 5 consecutive days. Liquid level shall be accurately measured at the beginning and end of test to determine amount of leakage. All visible leaks shall be marked for repair after draining. Permissible leakage from the structure shall not exceed 0.5 gpm per million gallon storage capacity in each 24 hour period over a period of 5 consecutive days after allowance is made for evaporation. If the leakage exceeds the permissible amount, the structure shall be emptied, leaks shall be repaired (in a manner acceptable to the Owner),

and the test rerun. Even if structure passes water loss test, all visible leakage shall be repaired and the test rerun to demonstrate all visible leakage has been repaired.

C. Leak Repair

All visible leaks shall be repaired from the structure interior utilizing epoxy injection. The hydraulic structure shall be drained, and a surface seal shall be applied to the area where leak commences; thereafter, the crack(s) and voids shall be injected with epoxy in accordance with the manufacturer's recommendations. After injection process is completed, the structure shall be refilled and checked for visible leakage. If structure continues to leak, this process shall be repeated until no visible leaks are present.

**3.17 Care and Repair of Concrete**

Contractor shall protect all concrete against injury or damage from excessive heat, lack of moisture, overstress, or any other cause until final acceptance of the Owner. Particular care shall be taken to prevent the drying of concrete and to avoid roughening or otherwise damaging the surface. Any concrete found to be damaged, or which may have been originally defective, or which becomes defective at any time prior to the final acceptance of the completed work, or which departs from the established line or grade, or which, for any other reason, fails to conform to the requirements of the Contract Documents, shall be satisfactorily repaired or removed and replaced with acceptable concrete at the Contractor's expense.

**END OF SECTION**

**SECTION 15020**  
**BASIC PIPELINE SPECIFICATIONS**

**PART 1 – GENERAL**

**1.01 Scope**

Contractor shall furnish all pipe, fittings, materials, equipment, and labor and perform all operations necessary to construct pipelines and appurtenances as specified by the Owner and as shown by the Drawings. Drawings shall consist of construction drawings, installation drawings, laying drawings, standard drawings, detailed drawings, layout drawings, fabrication drawings, shop drawings, and clarifying diagrams or sketches.

The Work shall consist of all traffic control (including furnishing and installing all barricades, signs, delineators, arrow boards, and flagmen); all utility location and verification (excavating, exposing, and verifying locations, depths, and dimensions of utility facilities); all pavement removal and disposal; all earthwork (including trenching, shoring, dewatering if required, blasting if required, bedding, backfilling, and compacting); furnishing and installing all pipe, fittings, appurtenances, and making all related connections; protecting in place or removing and replacing all existing utilities and public and private improvements; removing and replacing all asphalt and Portland cement concrete pavement; pavement striping and restriping as required; disinfecting and testing all pipelines; disposing of excess soil and rock material; and restoring all areas and improvements to pre-construction conditions.

Contractor shall, upon completion of pipeline construction and appurtenances required herein, initially operate all components of the Work installed or furnished and installed by him, and make any additional adjustments, corrections, repairs, replacements, and reconstructions necessary to provide the Owner with complete, correctly operating pipelines and appurtenances.

**1.02 Survey Monuments and Construction Stakes**

Contractor shall not disturb or destroy any existing monuments or bench marks. If any survey monuments or bench marks need to be removed and replaced, Contractor shall have all necessary services performed by a licensed land surveyor. If Contractor fails to comply, the Owner will have said services performed at Contractor's expense.

Before removing any monuments in preparation for construction, Contractor shall have a licensed land surveyor set at least four ties for each monument to be removed and replaced; after construction Contractor shall have the same registered civil engineer or licensed land surveyor replace each monument using the aforementioned ties and file a corner record for each replaced monument.

Unless specified otherwise, Contractor shall use construction stakes and cut sheets for pipeline construction and the Owner will use them for construction inspection. All construction stakes shall be set by a registered civil engineer or licensed land surveyor. The Owner must approve cut sheets before actual construction. Contractor shall protect all construction stakes set for construction and he shall restore any construction stakes destroyed or disturbed.

### **1.03 Traffic Control**

Contractor shall prepare, submit, and provide traffic control drawings for construction. Said traffic control drawings shall be approved by the Owner and agencies having jurisdiction over highways, thoroughfares, and streets prior to starting construction.

Traffic control requirements may be modified by the Owner or said agencies as conditions warrant. Throughout the Work, Contractor shall inspect traffic control equipment (signs, barricades, arrowboards, and delineators) and shall maintain same in accordance with said traffic control drawings.

All construction signing, lighting, and barricading shall comply with State of California, Department of Transportation "Manual of Uniform Traffic Control Devices" (MUTCD), latest edition.

### **1.04 Underground Utilities (Subsurface Installations)**

Where underground utility facilities (conductors or conduits for water, gas, sewer, telephone, electric power, cable television, or other utilities) are shown on construction drawings, Contractor shall assume that service facilities (services or laterals for water, gas, sewer, telephone, electric power, cable television, or other utilities) extend from each utility facility to each parcel or property whether or not service facilities are shown.

At least two working days but no more than fourteen calendar days before commencing any excavation on the Work, Contractor shall request Underground Service Alert and non-member companies or utilities to mark or otherwise indicate the locations of their subsurface facilities including, but not limited to, structures including vaults, main conductors or conduits, and service connections or facilities.

Contractor shall comply with applicable laws pertaining to subsurface installations, especially with respect to excavations and permits. Contractor shall specifically comply with applicable provisions of Sections 4215 through 4216.9 of the Government Code. Contractor shall take all actions necessary to maintain a valid inquiry identification number during the Work.

Unless directed otherwise, at least ten days in advance, or 1,000 feet minimum ahead of pipeline trenching, Contractor shall excavate, expose, and determine ("pothole") the exact locations, depths, and dimensions of each and every potential interference, including, but not limited to, all facilities shown specifically (depth and location) on construction drawings, or which have been marked by their respective owners.

Upon learning of the existence or location of any utility facility omitted from or shown incorrectly on construction drawings, or improperly marked or otherwise indicated, Contractor shall immediately notify the Owner, providing full details as to depth, location, size, and function. Contractor shall immediately notify utility having jurisdiction over facility.

Contractor shall not interrupt or disturb any utility facility without written permission from the Utility or written order from the Owner. Where protection is required to ensure integrity of utility facilities located as shown on construction drawings or visible to Contractor or marked or otherwise indicated as stated herein, Contractor shall, unless otherwise provided, furnish and place all necessary protection at his expense.

Contractor is advised that the Owner has no knowledge or information about trench backfill conditions of utility facilities adjacent to or parallel with pipeline being constructed pursuant to these Specifications; therefore, Contractor shall protect against adjacent or parallel trench backfill failure. If adjacent or parallel trench fails, Contractor shall, at his expense, remove and replace said backfill material in accordance with trench backfill requirements herein and remove and replace asphalt concrete pavement and any other improvements damaged in connection therewith.

## **1.05 Storage of Equipment and Materials**

Contractor shall not store equipment or materials on private or public property without written permission from property owner(s) approving such use.

Contractor shall not park equipment or store materials in public right-of-way except while performing Work. Contractor shall remove equipment from public right-of-way and place it in Contractor's storage or construction yard by the end of each work day. Contractor shall keep materials in Contractor's storage or construction yard until they are needed for the Work.

Storage site or construction yard shall be completely fenced prior to moving any equipment or materials onto site or into yard. Contractor shall control dust in construction yard at all times, from establishing construction yard through construction, and until all Work has been completed and Contractor has moved all equipment, materials, and fencing from site.

## **PART 2 – PRODUCTS**

### **2.01 Construction Materials**

Contractor shall furnish only approved materials as listed in the Owner's Standard Drawings or Approved Materials List. All materials shall be new and of the best quality for their intended use. All like materials shall be of one manufacture for any particular project.

Contractor shall, in addition to furnishing other data herein required, submit three signed and dated copies of the list of materials to be used in pipeline and appurtenance construction including but not limited to pipeline installations, pipeline valve installations, air valve installations, blowoff installations, manway installations, service installations, fire hydrant installations, and related appurtenances.

### **2.02 Bedding and Backfill**

#### **A. Sand Used for Bedding**

Bedding for pipe shall consist of plant manufactured clean sand having a sand equivalent of not less than 30.

#### **B. Backfill in Pipe Zone**

Backfill in pipe zone (up to 12" over pipe) shall consist of plant manufactured clean sand having a sand equivalent of not less than 30.

#### **C. Backfill Above Pipe Zone**

Backfill above pipe zone to bottom of asphalt shall be in accordance with Part 3.04C.

D. Backfill Completion

Where pavement is not required, trench backfill shall be brought to grade of existing surface and dressed to provide firm, stable, and even surface without ruts or irregularities. It shall conform with grades of existing surface. Where pavement is required, trench backfill shall be brought to subgrade for pavement structure. Pavement shall then be placed in accordance with paving requirements.

**2.03 Ductile Iron Pipe**

A. Scope

Ductile iron pipe and fittings shall conform with applicable provisions of AWWA C104, C105, C110, C111, C115, C150, C151, and C153, latest, as modified herein, by the Drawings, or by the Owner.

All ductile iron pipe shall be manufactured by organizations which have had not less than ten years successful experience in the manufacture of the type of pipe specified. The Owner shall approve manufacturer's product before its use.

B. Data to be Submitted by Contractor

Contractor shall furnish three copies of an Affidavit of Compliance in accordance with Section 51-5, AWWA C151, latest. Contractor shall also furnish certifications, three copies each, of the following:

1. Material Certification
  - a. Grade of iron (chemical requirements)
  - b. Flanges
  - c. Nuts and bolts
  - d. Flange gaskets
  - e. Rubber Gaskets
  
2. Manufacturing Certification
  - a. Hydrostatic Test Reports
  - b. Tensile Test Reports
  - c. Impact Test Reports

Unless specified otherwise, Contractor shall furnish detailed installation or laying drawings showing pipe, fittings, appurtenances, station, and elevation for each fitting, and each change in alignment or slope. Contractor shall submit the installation or laying drawings to the Owner for acceptance in all cases in time sufficient to allow review and acceptance as hereinafter specified and to accommodate the Contractor's construction schedule.

Installation or laying drawings shall be submitted in triplicate. Owner will return one (1) set of drawings to Contractor within fifteen (15) days marked either "Accepted", "Rejected", "Revise and Resubmit", "Submit Specified Item", or "Furnish as Corrected". In the last case, all revisions will be clearly shown on the returned set of drawings which

shall be considered the accepted drawings and only drawings or prints so corrected shall be used for installation. Contractor shall furnish Owner five (5) sets of all accepted drawings.

C. Pipe

All pipe shall be ductile iron and shall conform with AWWA C151 (ANSI A21.5, and applicable portions of ASTM A536, Grade 60-42-10), latest, as modified herein by the Drawings, or by the Owner.

1. Pipe, including standard, random, and special short lengths, shall be of the class specified on the Drawings and, unless specified otherwise, shall have push on joints. Minimum pipe wall thickness shall be as noted by the construction drawings or specified by the Owner; it shall not be less than noted by the standard drawings. Pipe wall thickness shall be increased if necessary to accommodate threads or grooves or if required for extremely shallow (less than 2.5 feet) or excessively deep (more than 14 feet) pipeline cover. 90 percent of all pipe of any specific class and size, excluding special short lengths, shall be furnished in standard lengths. The remaining 10 percent may be furnished in random lengths.
2. Standard lengths shall have nominal lengths of 18 feet up to 36 inches in diameter and 20 feet above 36 inches in diameter, plus or minus 1 inch. Random lengths of pipe may be up to 2 feet shorter than standard lengths. Special short lengths shall only be furnished where needed to accommodate specified fittings.
3. Pipe shall have an interior cement mortar lining in accordance with AWWA C104 (ANSI A21.4), latest, and the interior cement mortar lining shall not be asphalt seal coated. Said lining shall be full thickness throughout pipe except for bell which shall be cleaned and lightly sprayed or brushed with an asphaltic or bituminous coating in accordance with AWWA C151 (ANSI A21.51). The interior cement mortar lining shall be moisture cured for at least two days before shipment. To prevent moisture loss during the curing period, ends of pipe shall be kept closed with plastic caps or covers which shall remain in place until installation.

Steam curing may be substituted for moisture curing, providing one hour of steam curing is equivalent to six hours moisture curing and ambient vapor is maintained at relative humidity of 85 percent with temperature ranging between 110 degrees Fahrenheit and 150 degrees Fahrenheit for minimum steam curing period of six hours, after which exterior coating may be applied. The lining shall then be cured for another twelve hours before shipment. Other methods of curing the cement mortar lining may be used providing they are acceptable to the Owner.

Temperature and shrinkage cracks in cement mortar lining less than 1/16 inch in width or 24 inches in length need not be repaired. Cracks wider than 1/16 inch or longer than 24 inches shall be repaired unless it can be demonstrated to the satisfaction of the Owner that the cracks will heal autogenously under continuous soaking in water.

4. Pipe shall have an exterior asphaltic or bituminous coating in accordance with AWWA C151 (ANSI A21.51), latest.

5. All pipe shall be furnished with rubber gasketed push-on type joints unless mechanical joints or flanged joints are otherwise specified or permitted. Joint restraints may be required as specified by the Owner. All joints shall comply with AWWA C111 (ANSI A21.11), latest, as approved by the Owner.
6. Rubber gaskets shall conform to AWWA C111 (ANSI A21.11) latest.
7. Each pipe shall be marked with the weight, class, or nominal thickness and casting period. The manufacturers mark, year in which pipe was produced and the letters "DI" or "ductile" shall be cast or stamped on the pipe. All required markings shall be clear and legible and all cast marks shall be on or within 2 feet of bell ends.
8. Where restrained joints are required, they shall be accomplished with boltless restrained joint gaskets or components. Restrained joints shall be ductile iron in accordance with applicable provisions of AWWA C111 and C151 (ANSI A21.11 and A21.51, respectively), latest, except as to manufacturer's proprietary dimensions.

Each restrained joint for pipe 4 inches through 12 inches shall consist of a gasket system where stainless steel locking segments molded within the gasket provide restraint for pipe joints or fitting joints.

Each restrained joint for pipe 14 inches through 24 inches shall consist of a gasket system where stainless steel locking segments molded within the gasket provide restraint for pipe joints or fitting joints, or, alternatively, a boltless restrained push-on joint system where ductile iron locking segments inserted through slots in the bell face provide positive axial lock between the bell interior surface and the spigot retainer weldment or gripper ring.

Each restrained joint for pipe 27 inches and larger shall consist of a boltless restrained push-on joint system where ductile iron locking segments inserted through slots in the bell face provide positive axial lock between the bell interior surface and the spigot retainer weldment or gripper ring.

All restraining components must make full contact around the circumference of the pipe, even if it has deflected. Field cut kits shall be composed of full ring gripper rings with serrated edges and shall be compatible with the pipe joints and fitting joints.

D. Fittings

All fittings shall be ductile iron except where fabricated cement mortar lined and cement mortar coated welded steel pipe fittings are specifically permitted or specified. Fabricated cement mortar lined and cement mortar coated fittings shall be flanged and they shall conform with the cement mortar lined and cement mortar coated welded steel pipe fittings specified herein.

Ductile iron fittings shall conform with AWWA C110, C111, and C153 (ANSI A21.10, A21.11, and A21.53, respectively), latest. Unless specified otherwise, fittings shall be push-on joint and comply with AWWA C111 (ANSI A21.11).



Fittings shall have an asphaltic outside coating in accordance with AWWA C110 or C153 (ANSI A21.10 or A21.53), latest, and cement mortar lining in accordance with AWWA C104 (ANSI A21.4), latest. Fittings shall have standard lining thickness and shall be seal coated with asphaltic material or other approved material. The lining process must produce a dense, compacted lining that shall be bonded to the interior of the fitting and have a smooth surface.

Where restrained joints are required, they shall be accomplished with boltless restrained joint gaskets or components and shall comply with all requirements of Part 2.03C.8 herein. Restrained joint fittings shall be of same joint design as the restrained joint pipe. Restrained joints shall be ductile iron in accordance with applicable provisions of AWWA C110 and C153 (ANSI A21.10 and A21.53), latest, except as to manufacturer's proprietary dimensions.

E. Testing

All pipe, including standard, random, and special short lengths, furnished shall be tested in the United States in accordance with AWWA C151, latest.

F. Inspection

The Owner shall at all times have the right to inspect all Work and materials during the course of manufacture. Manufacturer shall furnish the Owner reasonable facility for obtaining such information as he may desire regarding the progress and manner of the Work and the character and quality of materials used.

G. Loading, Transporting, and Unloading

After the pipe has been tested in accordance with Part 2.03E above, it shall be loaded on rubber-tired vehicles, and adequately supported and chocked to prevent any damage during transportation, and delivered to the Work site. During loading, unloading, and stringing operations, pipe and fittings shall be moved with care to prevent damage thereto. Unloading shall be accomplished in a workmanlike manner as directed by the manufacturer. Under no circumstances are pipe and fittings to be dropped or bumped in handling.

H. Defective or Damaged Material

Pipe and fittings shall be carefully inspected for defects. Any pipe found to be defective in workmanship or materials or so damaged as to make repair and use impossible shall be rejected and removed from the Work site.

In the event that pipe is damaged, damaged portions may be removed, as approved by the Owner, and discarded. Remaining sound portions may be used with ductile iron fittings. Contractor shall be responsible for any and all damage to material and he shall stand the expense of repairing or replacing same. Contractor shall take proper precautions to assure that rubber gaskets are protected from oxidation or undue deterioration.

## 2.04 Welded Steel Pipe (Cement Mortar Lined and Cement Mortar Coated)

### A. Scope

All welded steel pipe shall conform with applicable provisions of AWWA C200, C205, C206, C207, and C208, latest, and applicable portions of AWWA Manual M11 "Steel Pipe-A Guide for Design and Installation", latest, as modified herein, by the Drawings, or by the Owner.

All welded steel pipe and fittings shall be manufactured by organizations with at least ten years successful experience in manufacturing, fabricating, lining, and coating the type of pipe specified. Owner shall approve manufacturer's methods, equipment, facilities, and operations before performance of any work and manufacturer's completed product before its use.

### B. Data to be Submitted by Contractor

Contractor shall furnish three copies of an affidavit of compliance in accordance with Section 1.12, AWWA C200, latest, and Section 1.7 AWWA C205, latest. Contractor shall also furnish certifications, three copies each, of the following:

1. Material Certification
  - a. Steel Skelp
  - b. Flanges
  - c. Nuts and Bolts
  - d. Flange Gaskets
  - e. Rubber Gaskets
  
2. Manufacturing Certification
  - a. Pipe Mill Reports
  - b. Production Weld Test Reports
  - c. Hydrostatic Test Reports
  - d. Outlet Reinforcement Calculations\*
  - e. Pipe Wall Thickness Calculations\*

\* If not shown by the Drawings.

Unless specified otherwise, Contractor shall furnish detailed layout and shop or fabrication drawings showing pipe, lining, coating, reinforcement, joints, fittings, appurtenances, and station and elevation for each fitting and outlet and for each pipe joint at each change in pipe class, alignment, or slope. Contractor shall submit detailed layout and shop or fabrication drawings to the Owner for acceptance in all cases in time sufficient to allow review and acceptance as hereinafter specified and to accommodate the Contractor's construction schedule.

Installation or laying drawings shall be submitted in triplicate. Owner will return one (1) set of drawings to Contractor within fifteen (15) days marked either "Accepted", "Rejected", "Revise and Resubmit", "Submit Specified Item", or "Furnish as Corrected". In the last case, all revisions will be clearly shown on the returned set of drawings which shall be considered the accepted drawings and only drawings or prints so corrected shall

be used for installation. Contractor shall furnish Owner five (5) sets of all accepted drawings.

Revisions shown on the shop drawings shall be considered changes necessary to meet the requirements of these Specifications and shall not be taken as the basis of claims for extra charges. Contractor shall accept such revisions or submit others for acceptance. When delays are caused by resubmissions of shop drawings, Contractor shall not be entitled to any damages or extensions of time for such delays.

The Owner's acceptance of detailed layout and shop or fabrication drawings shall apply only to general arrangement and general compliance and not to specific details and dimensions and their correctness and compatibility. Contractor shall correct any misfits due to any errors in the detailed shop or fabrication drawings. Any fabrication in advance of receipt of detailed layout and shop or fabrication drawings marked "Accepted" or "Furnish as Corrected" shall be at Contractor's risk. Contractor shall furnish the Owner five sets of all accepted layout and shop or fabrication drawings.

C. Pipe and Fittings

All pipe and fittings furnished shall conform with applicable provisions of AWWA C200, C205, C206, C207, and C208, latest, and applicable portions of AWWA Manual M11 "Steel Pipe-A Guide for Design and Installation", latest, as modified herein, by the Drawings, or by the Owner.

1. Pipe and fittings shall be Class 150 minimum. Minimum steel cylinder thickness shall be as noted by the construction drawings or specified by the Owner; it shall not be less than 10 gage or as noted by the standard drawings. All pipe and fittings shall be machine cement mortar lined and machine cement mortar coated.
2. Curved alignment by use of pulled joints will be permitted. Maximum pull permitted from normal closure on one side of joint shall not exceed 1/2 inch for 8 inch pipe or smaller, 3/4 inch for 10 inch through 21 inch pipe, and 1 inch for 24 inch pipe and larger. Maximum joint deflections shall not exceed manufacturer's recommendation or 3 degrees; the more restrictive or lesser deflection shall apply.
3. Where greater curvature is required, Contractor may use fabricated bends as specified by the construction drawings or ordered by the Owner. For the purpose of reducing angular deflections at pipe joints, Contractor may use pipe sections of less than standard length. Closing courses and short sections of pipe shall be fabricated and installed by Contractor as found necessary in the field.
4. All fittings shall be shop fabricated unless the construction drawings indicate that fittings may be field fabricated, Contractor describes methods of fabrication, and the Owner specifically approves field fabrication. All fittings shall be fabricated from individual pipe sections, welded together, and lined and coated as described hereafter.

## 5. Lining of Fittings

- a. The application of cement mortar lining to miters, angles, bends, reducers, and other special sections, the shape of which precludes application by the machine spinning process, shall be accomplished by mechanical placement, pneumatic placement, or hand application and finished to produce a smooth, dense surface.
- b. If the interior of the fitting has not been previously machine lined, wire-fabric reinforcement or ribbon-mesh reinforcement shall be applied to the interior of fittings larger than 24 inches and shall be secured at frequent intervals by tack welding to pipe, by clips or by wire. Repaired areas of machine applied linings at miters, pipe ends, outlets, and other cuts made in the lining for fabrication of the fittings need not be reinforced if the width of the repair area does not exceed 12 inches. Repairs for widths exceeding 6 inches shall be bonded to the steel and adjacent faces of the lining with an approved bonding agent.

Immediately after lining has been completed, pipe and fittings shall be water cured without being disturbed for at least one day before applying the exterior coating, if such a coating is specified. If cement mortar coating is not specified, the lining shall be kept moist for four days before shipment. In either case, the lining shall be cured for at least four days before shipment. To prevent moisture loss during the curing period, ends of the pipe sections shall be kept closed with plastic end caps or covers which will remain in place until time of installation. The date of lining and class of pipe shall be plainly marked on the inside of each fitting.

## 6. Coatings of Fittings

Mortar coating for pipe bends and other special sections not adaptable to the application of spiral-wire coating reinforcement shall be reinforced with wire fabric or ribbon mesh. The wire fabric or ribbon mesh shall be applied over the surface of the pipe to be coated, and may be held away from the pipe shell with self-furring mesh, furring clips, or an equivalent method. The application of the mortar coating shall be by mechanical or pneumatic means to the specified thickness, except that hand application may be substituted for all specials. After the outside coating has been applied, the pipe and fittings shall be kept continually moist by continuous spraying for at least four days. Provisions shall be made to protect the coating from erosion during sprinkling. The date of coating and class of pipe shall be plainly marked on the inside of each fitting.

## D. Pipe Joints

Unless specified otherwise, joints shall conform to the following types. Joints shall be as specified on the construction drawings or by the Owner. All joints shall be continuity bonded.

### 1. Rubber Gasket Joints

All rubber gasket joints shall conform with AWWA C200, latest.

2. Flanged Joints

All flanges 4 inches through 12 inches shall conform with AWWA C207, latest, Class E (ring) or ANSI B16.5 Class 150. All flanges larger than 12 inches shall conform with AWWA C207, latest, Class E (ring). All flange bolts shall be standard hex head machine and conform with ASTM A325. All flange nuts shall be heavy hex cold pressed semi-finished steel and conform with ASTM A194-2, 2H.

All flanges shall be fully welded to pipe on both faces, one pass minimum on the inside, and two passes minimum on the outside. Pipe linings shall extend to mating faces of flanges. Bolt threads shall be lubricated with an approved anti-seize compound. Flanges together with bolts and nuts, shall be, once installed, coated with an approved bitumastic material.

3. Swedged Lap Welded Joints

Bell ends shall be formed integrally with pipe cylinders, being swedged out by machine. Bell ends shall be designed and fabricated to withstand design pressure of class of pipe specified and to permit spigot ends (plain end) to enter belled ends approximately 1 inch with clearance of approximately 1/32 inch.

4. Banded Lap Welded Joints

Where lap welded joints are required and swedged lap welded joints cannot be fabricated, belled ends shall be formed by welding steel bands to outside circumferences of plain ends of pipe. Bell ends shall be designed and fabricated to withstand design pressure of class of pipe specified and to permit spigot ends (plain ends) to enter belled ends approximately 1 inch with a clearance of approximately 1/32 inch.

5. Sleeve Couplings

Where sleeve couplings are required, they shall conform with the construction drawings. Pipe coatings at pipe ends shall be held back 12 inches and pipe shall have weld seams ground flush within 12 inches from pipe ends, unless specified otherwise. For above ground applications, pipe ends and sleeve couplings shall be painted. For below ground applications, pipe ends and sleeve couplings shall be coated with an approved bitumastic material. An approved bitumastic coating shall be substituted for mortar coating within 12 inches of pipe ends. After joints have been coupled, sleeve couplings shall be coated with an approved bitumastic material.

6. Cut-to-Fit Joints

Where cut-to-fit joints are required, they shall conform with the standard drawings and the construction drawings. Pipe coatings at cut-to-fit joints shall be held back as required to permit construction of joints; pipe coatings shall thereafter be added in the field. Field applied pipe coatings shall match manufactured pipe coatings.

Contractor shall provide, at his expense, cut-to-fit joints, in addition to those specified, if necessary to accommodate his work and schedule.

7. Shop Testing of Joints and Joint Ends

Every pipe section, standard, or special, shall be hydrostatically tested after joint ends have been completely shop formed and attached in place by welding, as applicable, or dye check tested provided pipe cylinders had been previously hydrostatically tested.

E. Cement Mortar Lining and Cement Mortar Coating

1. General

Cement mortar lining and cement mortar coating shall conform with AWWA C205, latest.

2. Surface Preparation

Prior to lining and coating, pipe shall be cleaned of all loose mill scale, moisture, rust, sand, dust, oil, grease, and other deleterious or objectionable matter both inside and outside.

3. Cement Mortar Lining

a. Mortar

Mortar shall consist of one part Portland cement to three parts (by weight) clean, sharp sand. Unless specified otherwise, cement used for cement mortar shall conform with ASTM C-150, latest, Type II. Sand shall consist of clean, inert, sharp, durable material, maximum grain size being no more than one-half specified minimum lining thickness. Mortar shall be thoroughly mixed and made workable with clear, potable water. All cement mortar shall develop a minimum compressive strength of 2,600 psi minimum at seven days and 4,500 psi minimum at twenty-eight days.

b. Application and Treatment

Cement mortar shall be applied to interior surfaces of pipe with equipment specifically designed for that purpose. Said equipment shall have a retracting feed line that will provide uniform cement mortar distribution throughout pipe length. Pipe shall be slowly rotated in horizontal position while cement mortar is being applied. Each end shall be provided with suitable end dam during spinning operation to control lining thickness and provide square-finished lining end.

Following application of mortar, pipe shall be rotated at sufficient speed to compact lining mortar. Said speed shall be maintained until all excess water has been forced to lining surface. During the spinning operation, surplus water shall be expelled from pipe by blower or other suitable means. Peripheral speed and spinning time shall be sufficient to obtain

dense, well compacted lining with smooth surface free from defects. Minimum lining thickness shall be as shown by the standard drawings.

Immediately after lining has been completed, pipe shall be water cured without being disturbed for at least one day. Moisture loss shall be prevented during the curing period.

4. Cement Mortar Coating

a. Mortar

Mortar shall consist of one part Portland cement to three parts (by weight) clean, sharp sand. Materials for cement mortar coating shall be the same as materials for cement mortar lining. All cement mortar shall develop a minimum compressive strength of 2,600 psi minimum at seven days and 4,500 psi minimum at twenty-eight days.

b. Application and Treatment

After pipe interior has been lined, cement mortar shall be applied to outside of pipe through fixed nozzles to form an even, dense, and tightly adhering coating. During coating operation, pipe shall be rotated and moved beneath said fixed nozzles to obtain uniform coating free from defects. Minimum coating thickness shall be as shown by the standard drawings.

Cement mortar coating shall be reinforced with spirally wound steel (reinforcing) wire embedded midway within coating. Reinforcing wire shall be bright basic wire comprised of low carbon, open hearth steel, unannealed after the last draw, with an approximate ultimate tensile strength of 80,000 psi. Said wire shall be No. 14 gage minimum and it shall be placed at a pitch of 1-1/2 inch maximum in the middle third of the coating.

Immediately after coating has been completed, each end of each section shall be cleansed to bare metal and cement mortar shall be troweled and shaped suitable for joint being used. All exposed bare metal shall be cleaned and coated and painted for protection against corrosion. Completed pipe shall then be water cured for at least four days without being disturbed.

F. Manufacturing Inspection

The Owner shall at all times have the right to inspect Work and materials during the course of manufacture. Manufacturer shall furnish the Owner reasonable facility for obtaining such information as it may desire regarding progress and manner of work and character and quality of materials used.

G. Loading, Transporting, and Unloading Pipe and Fittings

After pipe and fittings have been manufactured as set forth above, they shall be braced at the plant with wooden struts of adequate size to protect against excessive deflection. Each set of struts (two struts minimum to a set) shall be nailed together at right angles as a unit. Wooden wedges may be used to accomplish proper tight fit for the struts. Bracing shall be located 1 foot in from each end of each pipe section for pipe 24 inches and smaller, and additionally at midpoint for pipe 30 inches and larger.

After the struts have been installed, pipe shall be loaded on rubber-tired vehicles, adequately supported and choked to prevent damage during transportation, and delivered to Work site. All bracing shall remain in place until each pipe section has been bedded and backfilled to at least 1 foot above the top of the pipe for pipe 24 inches and larger.

Plastic end caps or covers shall be placed over the ends of pipe following installation of braces to prevent moisture loss during loading, transporting, unloading, and installing; they shall remain in place until installation. If the plastic and caps or covers are damaged (perforated), they shall be replaced immediately.

During loading, unloading, and stringing operations, pipe and fittings shall be moved with care to prevent damage thereto. They shall be moved with nylon chokers or straps of sufficient width, placed at third points (one-third length of pipe from each end), to prevent damage to exterior coating, and they shall be handled in such manner to prevent damage to interior lining. Steel slings shall not be used.

Unloading shall be accomplished in a workmanlike manner by Contractor and every precaution shall be taken to prevent damage to pipe and fittings. Under no circumstances are pipe sections to be dropped or bumped in handling. Any pipe section that becomes damaged shall be repaired if possible and, if not possible in the opinion of the Owner, it shall be replaced with an undamaged pipe section. When strung, pipe shall be adequately supported and choked to avoid movement until it is installed. It shall also be placed to avoid damage during construction.

## **PART 3 – EXECUTION**

### **3.01 General**

A. Pipelines and Appurtenances

Pipelines and appurtenances shall be constructed in accordance with these Specifications and the Drawings and as specified by the Owner.

B. Valves and Appurtenances

Pipeline valves at pipeline intersections shall be connected directly to pipeline intersection fittings (cross or tee) and, unless specified otherwise, all mainline or side outlet valves shall be located 3 feet minimum from any curb face. Pipeline valves shall not be placed under curb or gutter or in parkway unless approved by the Owner.



All appurtenances, including but not limited to air valve installations, blowoff installations, and related facilities, such as fire hydrants, fire services, and water services, shall not be installed within 3 feet of curb returns, curb depressions, and driveway approaches, or in inaccessible locations or locations where interferences may restrict facility operation, unless permitted otherwise by the Owner.

Unless specified otherwise, air valve installations shall be constructed at all pipeline high spots and blowoff installations shall be constructed at all pipeline low spots. Contractor shall construct, at his expense, air valve installations and blowoff installations in addition to those specified, if necessary to accommodate his work and schedule.

C. Pipeline Length

All pipeline lengths noted by the construction drawings or otherwise specified or referenced shall mean net horizontal constructed lengths and said lengths shall extend through all fittings and appurtenances including bends, outlets, tees, flanges, and valves. Contractor shall provide all pipe necessary to accommodate any vertical alignment of the pipeline and said pipe shall be represented by the net horizontal constructed length.

D. Pipeline Alignment

All pipelines shall be constructed with no basic variation in horizontal alignment as shown by the Drawings or as specified by the Owner. Pipelines shall be constructed parallel with centerlines of streets or rights-of-way and appurtenances shall be constructed perpendicular thereto unless the construction drawings specify otherwise. Pipelines may be constructed by the use of pulled joints, short joints, bevels, bends, and elbows, provided pipelines are constructed as specified.

In all non-critical areas and subject to the Owner's approval, pipelines may be constructed at variance with vertical alignment as shown by the construction drawings by the use of pulled joints, short joints, bevels, bends, and elbows provided pipelines are constructed as specified at pipeline connections and underground interferences, and where pipeline cover is limited. The Owner will not approve any variation in vertical alignment until it has determined that proposed alignment is proper and modifications are in order. The costs provided in the bidding schedule for base pipeline installation shall include any costs associated with adjusting the pipeline vertical alignment up to 1 foot upwards or downwards.

E. Pipeline Tolerances

With regard to vertical alignment, pipelines shall be constructed so that actual flow line elevations, measured at pipe joints, are within 0.1 foot of design flow line elevations. Pipelines, when installed, shall have continuous slope upgrade or downgrade, corresponding with design slope, without any high spots.

With regard to horizontal alignment, pipelines shall be constructed so that actual pipeline centerlines, measured at pipe joints, are within 0.1 foot of design pipeline centerlines. Pipelines, when installed, shall closely follow specified horizontal alignment.

Pipeline construction shall conform with construction drawings and layout, shop, fabrication, installation, or laying drawings (design drawings which show flow line elevations and pipeline centerlines) in accordance with the above specified tolerances. Contractor shall make or assist the Owner in making all necessary measurements, as determined by the Owner, to confirm or verify compliance with construction tolerances.

F. Pipeline Cover

Pipeline cover as shown by the construction drawings is hereby defined as design cover over pipeline. If field conditions determined during construction staking show that pipe grade changes are required to provide design cover, Contractor shall, at his expense, make required changes in pipeline grade and construct pipeline accordingly.

Pipeline cover from top of pipe to ground surface over pipeline shall not be less than 36 inches. Where future ground surface elevation over pipeline has been established and where actual ground surface is greater, pipeline cover shall be referenced to future (established) ground surface elevation, not actual ground surface elevation.

### 3.02 Trench Excavation

A. General

Unless specified otherwise, pipelines and appurtenances shall be installed in open trench excavations to the depth and in the direction specified by the construction drawings. Excavation for trenches shall include removal of all material of any nature as required for installation of pipe, fittings, or appurtenances and shall include blasting, either sloping or shoring, and all necessary dewatering, if any, all at Contractor's expense.

Contractor is advised that unsuitable earth may be encountered during trenching operations. Where such material is encountered, Contractor shall, at his expense, remove such material, discard it at legal disposal site(s), and thereafter replace it with approved backfill material.

B. Excavation Safety Drawings

Before excavating any earth or soil to a depth of five (5) feet or more, Contractor shall, pursuant to Labor Code Section 6705, submit to the Owner detailed drawings (hereafter referred to as excavation safety drawings) showing design of shoring, bracing, sloping, or other provisions to be made for worker, individual, or property protection. Said excavation safety drawings shall comply with OSHA Construction Safety Orders (Cal/OSHA or Federal OSHA, whichever is applicable at time of construction) and shall be prepared and certified by a registered civil or structural engineer, engaged by Contractor at his expense, who shall affix his signature and seal to each sheet of said excavation safety drawings. Contractor shall not excavate until the Owner has received and acknowledged properly certified excavation safety drawings. Contractor shall comply with all other applicable requirements of Labor Code Section 6705 and, as therein provided, no requirements of that Section shall be construed to impose tort liability on Owner or Owner's representatives, including Owner's Engineer.

C. Trench and Bell Hole Sloping or Shoring

Trenches and bell holes shall be adequately sloped or shored so that earth will not slide or settle into trench, so that all existing improvements and utilities (above and below ground) will be fully protected from damage, and so that workers and individuals are protected from injury. At minimum, Contractor shall keep toe of trench spoil at least 5 feet from top of trench. Contractor shall assume full responsibility for all damages caused by inadequate sloping or shoring. Contractor shall make all necessary repairs or perform all reconstruction at his expense and he shall bear all other expenses resulting from such damages.

D. Trench Length, Width, and Depth

Unless specified otherwise, trenches shall be excavated not more than 1,000 feet in advance of pipe laying and open trenches shall be properly barricaded and signed as required for individual and property protection. Trenches shall not be excavated or left open nights, weekends, or holidays.

Unless specified otherwise, all pipeline trenches within pipe zone shall, wherever possible, have vertical sides and minimum widths as specified on the standard drawings, however, trenches shall be sloped or shored as required for worker, individual, and property protection.

Whenever maximum allowable trench width, as shown by the Drawings, is exceeded for any reason, the Owner may, at its discretion, require Contractor, at his expense, to cradle pipe (Class B Portland cement concrete) or to provide higher class bedding to support pipe as required to limit load on pipe to allowable supporting strength. The Owner shall approve method of support prior to its use.

Trenches shall be excavated to depths specified by or shown on construction drawings or as otherwise directed by the Owner. If trench excavation is carried below grade without direction or permission, Contractor shall, at his expense, refill trench to proper grade with moist clean sand, sand and gravel, or other suitable material as approved by the Owner, tamped in place to 90 percent relative compaction minimum. Excess excavated material shall be incorporated in backfill or discarded at legal disposal site(s) by Contractor at his expense.

E. Excavated Materials

All material excavated from trench shall be placed for minimum obstruction to traffic (automobile and pedestrian). Gutters shall be kept clear and other provisions shall be made for street or road drainage. Excess excavated material, including material rejected by the Owner for use as backfill, shall be discarded at legal disposal site(s) by Contractor at his expense.

If pipe, fittings, or appurtenances belonging to the Owner are uncovered or removed during excavation, they shall be salvaged and deposited as directed by the Owner. If the Owner determines that certain materials need not be salvaged, said materials shall be discarded at legal disposal site(s) by Contractor at his expense.

F. Blasting

Blasting for excavation will be permitted only with approval of the Owner and only after proper precautions have been taken for protection of persons and property, provided Contractor has secured all necessary permits. Blasting shall be limited to specific periods as approved by the Owner. Any damage caused by blasting shall be repaired by Contractor at his expense. Contractor's blasting methods and procedures shall conform with State and local laws and County and municipal ordinances. Contractor shall post signs warning radio equipment operators that blasting operations are in progress and advising that radio transmissions are prohibited during blasting operations.

**3.03 Trench Bedding**

A. General

Trenches shall have flat bottoms conforming with grades to which pipe is to be laid. Trench bottoms shall be uniform and provide firm and uniform bearing for installed pipeline.

Pipe shall be laid on 4" or 6" bedding sand so that pipe barrel bears evenly on trench bottom. Bell holes shall be excavated in trench bottom and sides as necessary to permit satisfactory construction and inspection of pipe joints.

B. Unsuitable Soil

Where unstable soil consisting of loose, soft, spongy, or organic earth is encountered, it shall be removed from trench bottom to depth determined in field by the Owner and trench shall be refilled to proper grade with moist clean sand, sand and gravel, or other suitable material as approved by the Owner, tamped in place to 90 percent relative compaction minimum. Trench bottom shall be graded flat and prepared to provide firm and uniform bearing for pipe.

Where unyielding soil consisting of rock, rocky earth, or cemented earth is encountered, it shall be removed from trench bottom to at least 9 inches below grade and trench shall be refilled to proper grade with moist clean sand, sand and gravel, or other suitable material as approved by the Owner, tamped in place to 90 percent relative compaction minimum. Trench bottom shall be graded flat and prepared to provide firm and uniform bearing for pipe.

Unless specified otherwise, Contractor shall, at his expense, remove unsuitable soil, replace it with suitable soil, and discard unsuitable soil at legal disposal site(s). Contractor shall not deposit or store unsuitable soil on private or public property without written permission of property owner(s) and without applicable governmental permits pertaining to earthwork, including compaction, and the environment.

**3.04 Trench Backfill**

A. General

In addition to meeting backfill requirements specified herein, Contractor shall also comply with backfill requirements established through permits issued by jurisdictions (State, County, City) having control over rights-of-way in which construction is taking place.

Whenever the separate requirements conflict with one another, the more stringent shall apply. Backfill shall not commence without prior approval of the Owner.

Backfill material shall be either select excavated material, screened or washed if necessary, or commercially processed material. Backfill material shall meet separate specific requirements for backfill within pipe zone and backfill above pipe zone. Backfill material meeting pipe zone requirements may be used for above pipe zone backfill material but not the reverse.

After sheeting, shoring, or shields have been removed, all backfill material including pipe zone backfill material shall be compacted to 90 percent relative compaction minimum except that the upper 12 inches of backfill material shall be compacted to 95 percent relative compaction minimum, as verified by field compaction tests. Relative compaction shall be based on maximum dry density determined in accordance with ASTM D-1557, latest. The Owner will specify where (number and location) compaction tests are to be taken.

Unless specified otherwise, the Owner will have all necessary compaction tests performed by soils engineer of its choosing. Contractor shall notify the Owner and Inspector when any segment of backfill has been compacted and is ready for compaction testing and the Owner will then have such tests performed. The results shall be provided to the Inspector.

Unless determined otherwise, compaction tests will be taken along the pipeline in the trench bottom, in the pipe zone, above the pipe zone, and at ground surface or subgrade at 250 foot intervals maximum and along all service runs and fire hydrant runs. Contractor shall furnish all equipment (including shoring), labor, and materials needed for compaction testing. Compaction testing shall be completed and accepted by the Owner prior to hydrostatic and leakage testing of pipelines and appurtenances.

Within highways, thoroughfares, and streets, Contractor shall, at the end of each work day and by 5:00 PM, unless permitted otherwise, completely backfill trenches with material sufficiently compacted to support traffic. Contractor shall then place 2 inch minimum thickness temporary asphalt concrete pavement over trench; it shall be compacted, rolled smooth with a steel wheeled pavement roller and placed flush with adjacent pavement. Contractor shall maintain and repair backfilled and paved areas to prevent potholes or pavement failures. Highways, thoroughfares, and streets shall be completely open to traffic at night (after 5:00 PM), on weekends, on holidays, and whenever Contractor is not actively working in specific area.

Contractor shall not excavate trenches or install pipe in highways, thoroughfares, and streets on weekends and holidays. Holidays include union holidays, Owner holidays, and County and municipal holidays. Contractor shall not leave any excavation open overnight or on weekends or holidays.

**B. Backfill Within Pipe Zone**

Unless specified otherwise, plant manufactured sand with an SE of 30 or greater shall be used in the pipe zone.

Initial backfilling shall be performed as soon as possible after pipe has been laid. Loose, moist backfill material shall be placed in trench simultaneously on each side of pipe to a

depth not greater than pipe centerline (springline) or 12 inches (loose measurement), whichever is less, and it shall then be tamped under pipe so that all voids are eliminated and material is compacted to 90 percent relative compaction minimum.

Subsequent backfilling shall be performed immediately following initial backfilling. Loose, moist backfill material shall continue to be placed in trench simultaneously on each side of pipe in lifts not exceeding 12 inches in thickness (loose measurement), with each lift being tamped, until the pipe has been covered by at least 12 inches of well compacted material. Alternatively, backfill material may be densified by water settlement until the pipe has been covered by at least 12 inches of well densified material. Backfilled material shall be tamped or settled to 90 percent relative compaction minimum.

Regardless of compaction or densification technique, care in backfilling shall be exercised to avoid any damage to pipe, fittings, and appurtenances, to avoid any damage to persons or property, and to achieve relative compaction of backfilled material of at least 90 percent minimum.

C. Backfill Above Pipe Zone

Backfill material shall consist of moist clean loose earth, sand, gravel, or rock free of clay and silt as well as brush, roots, and organic substances. From the top of selected backfill in the pipe zone to within 1 foot of ground surface or pavement subgrade, backfill material shall be free of material exceeding 8 inches in greatest dimension. It shall also be compacted to 90 percent relative compaction minimum. Within 1 foot of ground surface or pavement subgrade, backfill material shall be free of material exceeding 2 inches in greatest dimension and it shall be compacted to 95 percent relative compaction minimum. Rocks shall be mixed with suitable soil to eliminate voids; they shall not be nested. Backfill material shall be well graded.

Backfill material shall be placed in lifts not exceeding 12 inches in thickness (loose measurement) and each lift shall be compacted to 90 percent relative compaction minimum by hand tampers, pneumatic tampers, or mechanical compactors except that the upper 12 inches of backfill shall be compacted with mechanical compactors or compaction equipment, excluding stompers, to 95 percent relative compaction. Alternatively, and except for the upper 12 inches of backfill, sandy, granular soils may be densified by water settlement. Trench to be backfilled by water settlement shall be diked at suitable intervals not exceeding 100 feet. Impounded water shall be of sufficient depth so that earth pushed or shoveled into trench will at all times fall into water, becoming completely saturated. If necessary, jetting may augment flooding. Backfill densified by water settlement shall be densified to 90 percent relative compaction minimum. Contractor shall use mechanical compactors or compaction equipment, excluding stompers, to achieve required compaction if required densification is not achieved by water settlement.

### **3.05 Ductile Iron Pipe Installation**

Pipe manufacturer, fitting manufacturer, and material supplier, in addition to the Owner and the Owner's representative, shall have access to the Work during installation. Contractor shall use assistance provided by either manufacturer or supplier where required for proper installation of pipe, fittings, or materials; however, Contractor shall limit role of either manufacturer or supplier to advisory service.

All pipe shall be laid true to line and grade and at the locations shown by the construction drawings or as specified. Pipe shall be installed in accordance with applicable provisions of AWWA C600, latest, applicable provisions of Ductile Iron Pipe Research Association "Guide for the Installation of Ductile Iron Pipe", latest, and manufacturer's directions. Bell ends shall be placed uphill unless otherwise permitted.

After pipe has been set in trench, exterior of spigot and interior of bell shall be thoroughly cleaned. Lubricant recommended by pipe manufacturer and as approved by the Owner shall be applied to rubber gasket. Lubricant shall be water soluble, nontoxic, shall impart no objectionable taste or odor to the water, shall have no deteriorating effects on the rubber gaskets, and shall not support growth of bacteria. Excess lubricant shall be removed. Pipe ends shall be aligned, and spigot shall be pulled into bell with come-along devices, or hoists with chains and slings, unless permitted otherwise. If either the pry bar or the backhoe bucket method is permitted, a timber header shall be placed between the pipe and the pry bar or backhoe bucket before the spigot is pushed into bell.

Curved alignment by use of pulled joints will be permitted. Maximum joint deflection shall be per manufacturer's recommendation. For purposes of reducing angular deflections at pipe joints, Contractor may install pipe sections of less than standard length.

Whenever cutting of pipe is required, it shall be done with a special cutting tool specifically made for cutting and machining ductile iron pipe. Cut ends and rough edges shall be ground smooth and beveled for push-on joints.

Whenever specified, pipe shall be encased with 8 mil (0.2 mm) thick minimum polyethylene tube lapped 1 foot minimum, and valves and fittings shall be wrapped with polyethylene tube or with polyethylene sheets lapped 1 foot minimum. Polyethylene tube and polyethylene sheets shall be secured in place with suitable adhesive tape. All polyethylene tube and polyethylene sheet encasements shall be installed in accordance with AWWA C105, latest.

As Work progresses, a pipe cleaning tool as approved by the Owner shall be drawn through pipe to remove dirt, rocks, or other foreign material. At the end of each day's work, all openings in the pipeline shall be plugged with watertight expandable plugs or approved equal.

### **3.06 Welded Steel Pipe**

#### **A. Pipe Installation**

Pipe manufacturer, fitting manufacturer, and material supplier, in addition to the Owner and the Owner's representative, shall have access to the Work during installation. Contractor shall use assistance provided by either manufacturer or supplier where required for proper installation of pipe, fittings, or materials; however, Contractor shall limit role of either manufacturer or supplier to advisory service.

Contractor shall not move pipe using dozer blades, backhoe buckets, or the like (sharp metal surfaces). Contractor shall use nylon chokers or straps, not steel slings, in moving, placing, or setting pipe. Nylon chokers or straps shall be placed at third points (one-third length of pipe from each end).

All out-of-round pipe shall be rejected and removed from the Work site immediately. Rejected pipe shall be replaced immediately. Contractor shall not use hammers, bars, wrenches, or other tools to modify pipe ends to accommodate installation.

All pipe ends shall be secured with plastic covers. Said plastic covers shall be left in place until pipe is prepared for installation. If any plastic covers are damaged or destroyed before pipe has been installed, they shall be immediately replaced.

All pipe and fittings shall be laid true to line and grade and at the locations shown by the construction drawings or as specified. Pipe and fittings shall be installed in accordance with applicable sections of AWWA Manual M11 "Steel Pipe-A Guide for Design and Installation". Bell ends shall be placed uphill unless otherwise permitted.

All flanges shall be fully welded to pipe on both faces, one pass minimum on the inside and two passes minimum on the outside. Pipe linings shall extend to mating faces of flanges and pipe coatings shall extend to backs of flanges, tapered as necessary for installation of bolts and nuts. All exposed steel shall be field coated with an approved bitumastic material.

Special care shall be taken to avoid damaging lining or coating during lowering of pipe into trench and making of field joints. Unless specified otherwise, field joints shall be bell and spigot rubber gasket joints, continuity bonded (two evenly spaced bonding clips per joint minimum). Flanged joints, welded joints, and mechanical joints may be required for particular applications.

After pipe has been set in trench, exterior of spigot and interior of bell shall be thoroughly cleaned. Lubricant as recommended by pipe manufacturer and as approved by the Owner shall be applied to rubber gasket, and said gasket shall then be snapped into place and excess lubricant removed. Lubricant shall be water soluble, nontoxic, shall impart no objectionable taste or odor to water, shall have no deteriorating effects on the rubber gaskets, and shall not support the growth of bacteria.

Before inserting spigots into bells, to make joints, bells shall be hand mortared with quick setting non-shrink commercial grout mixed with an approved bonding agent. Once spigots have been inserted into bells, joints shall be gauged to ensure that gaskets have been properly seated.

For pipe 24 inches and larger, Contractor shall relieve (equalize) gaskets before laying to prevent gaskets from being tight on one side of pipe and slack on the other side, and adversely affecting seal. Contractor shall lift gaskets with a round blunt tool (like the shaft of a screwdriver) and roll it around the circumference of the spigot end at least once and preferably twice.

For pipe less than 24 inches in diameter, sufficient quantities of moist cement mortar shall be placed on interior joining ends of pipe to completely fill space between respective mortar linings. Moist mortar shall be placed only after respective mortar linings have been properly wetted. Moist mortar shall not be placed against dry mortar linings. Excess mortar shall be removed by drawing an approved pipe cleaning tool through the pipe after joints have been made (pipe sections have been joined). For fully welded joints, pipe sections shall be pulled together and restrained with come-along devices, or hoists with chains and slings, and mortar shall be allowed to set for twenty minutes before welding joint. Once joint has been pulled closed and cleaning tool has been drawn through pipe sections, pipe alignment shall not be adjusted, nor shall pipe be bounced or hammered. Come-along devices, or hoists with chains and slings, shall be removed only after joint has been fully welded.



For pipe 24 inches in diameter and larger, cement mortar shall be placed on interior joining ends from inside pipe after it has been set. Moist mortar shall be applied only after mortar linings have been properly wetted. Moist mortar shall not be placed against dry mortar linings. Excess mortar and debris shall be removed by hand or by other means acceptable to and approved by the Owner.

For cement mortar coated pipe, joint exteriors shall be coated with cement mortar utilizing a joint diaper. Said diaper shall be furnished by pipe manufacturer and shall be centered over joint and securely fastened to pipe. Cement mortar joint mix consisting of one part Portland cement to two parts (by weight) clean, sharp sand, shall contain just enough water to allow mix to be poured into diaper and flow around circumference of joint. Said mix shall be allowed to set prior to backfilling around joint.

Joints shall be completed to provide continuous interior lining and exterior coating. Field lining and coating must equal or exceed shop lining and coating when completed with respect to strength, uniformity, and density and there shall be no voids between lining or coating and steel cylinder.

If cement mortar lining has to be removed, Contractor shall scribe, chisel, and remove the lining using appropriate tools. If cement mortar coating has to be removed, Contractor shall first scribe, then saw cut said coating 3/4 of its thickness, and then remove coating using a chisel driven by a hammer, chipping gun, or other suitable tool. Impact shall be applied parallel with pipe barrel, not perpendicular thereto.

At the end of each day's work, all openings in the pipeline shall be plugged with watertight, expandable plugs or approved equal. Said plugs shall be secured in place so that they cannot be removed by children or animals.

**B. Field Welding**

Whenever field welding is required, Contractor shall attach welding machine ground to pipe only with clamps or other means acceptable to the Owner unless an alternative means is specified.

Unless specified otherwise, field welded or thrust restrained joints shall consist of flanged joints or fully welded joints. All flanges shall be fully welded to pipe on both faces, one pass minimum on the inside and two passes minimum on the outside. Welded joints shall be made with pipe having ends belled for welding, or alternatively, ends belled for rubber gasket joints, provided pipe manufacturer furnished filler rods of proper diameter, length, and curvature are installed in accordance with pipe manufacturer's recommendations, as approved by Owner. Belled ends shall not be deformed to accomplish fully welded joints. Full welds for all joints shall be accomplished with two welding passes (beads) minimum.

C. Field Cement Mortar Lining and Cement Mortar Coating

Whenever field cement mortar lining and cement mortar coating is permitted by the Owner for either repair or fabrication, Contractor shall comply with the following procedures:

1. Cement Mortar Lining

- a. Contractor shall square the edge of the remaining lining, leaving no feather edge, and shall clean metal surfaces with a stiff wire brush.
- b. Contractor shall apply approved bonding agent to both steel area and edges of adjacent lining. Cement mortar shall then be applied to the area being patched and worked and finished with a trowel until smooth. Contractor shall brush on approved curing compound over the surface of the patch to prevent rapid evaporation of moisture. Otherwise, Contractor shall keep the patched mortar moist by covering it with wet burlap. The pipe shall not be moved until the cement mortar achieves its initial set, not less than three hours.
- c. Cement mortar shall consist of not less than one part cement to three parts sand, thoroughly mixed before any water addition. Cement mortar may be approved commercial, packaged dry mortar mix. Cement mortar shall be mixed separately for each area to be patched. Quantity of water shall be just sufficient so that when mortar is firmly compressed into a ball, it will hold its shape without slump.

2. Cement Mortar Coating

- a. Exterior coating which requires removal around the complete circumference of the pipe shall be repaired by:
  1. Removing the coating by chipping with a hammer or chisel, squaring the edges to accept repair patch.
  2. Wrapping the area with 2 x 4 x 14 GA self-furring wire mesh or an approved stucco netting and guniting the area being patched.  

or

Wrapping the mesh as above and hand troweling mortar onto the area being patched.
3. Applying an approved curing compound to the patched area.
4. Avoiding movement and protecting the pipe until the cement mortar achieves its initial set, not less than three hours.

- b. Exterior coating that does not extend around the entire circumference of the pipe shall be repaired by:
  - 1. Removing the coating by chipping with a hammer and chisel, squaring the edges to accept repair patch.
  - 2. Applying by brush an approved bonding agent to both the steel area and the edges of the remaining coating.
  - 3. Applying cement mortar to the area being patched and thoroughly compacting it, with finished patch mounding up above and overlapping (at least 1 inch on all sides) the surrounding coating.
  - 4. Applying an approved curing compound to the patched area. If the repair patch is made on pipe in the ditch, it shall be covered with wet burlap, heavy cloth, or similar material, and dirt shall be placed around and over the patched area by hand before proceeding with placing backfill material.
- c. The cement mortar mix proportions shall be the same as for lining repair.
- d. If the area to be patched exceeds over half of the pipe circumference, 2 x 4 x 14 GA self-furring wire mesh or an approved stucco netting shall be attached to the pipe prior to the application of the cement mortar.

3. Installation of Repaired Pipe

After the repaired area has achieved initial set, not less than six hours, the pipe section can be installed, providing the patched area of the coating is backfilled with water saturated or wetted soil.

### 3.07 Services

A. Service Taps

Service taps shall be on line with meter boxes which shall be perpendicular to mains. Service and other taps shall be made not closer than 12 inches to a bell, coupling, joint, fitting, or other service. Service taps will be permitted only where complete services are to be installed. Under no circumstances will Contractor be allowed to tap existing mains which are in service. Contractor shall tap existing mains only when said mains are out of service and only when specifically permitted by the Owner.

1. Ductile Iron Pipe Mains

Service outlets on mains shall be accomplished with double strap bronze service saddles with iron pipe threads.

2. Welded Steel Pipe Mains

Service taps shall be made with couplings welded to the pipe, either during pipe fabrication or field construction, as shown by the standard drawings. Tapping shall

be accomplished with a shell cutter. Care shall be exercised to minimize damage to linings and coatings. Damaged linings and coatings shall be repaired or replaced.

3. Testing and Disinfection

Service taps used for testing and disinfection shall comply with service tap requirements for ductile iron or welded steel pipe, whichever is applicable. Unless specified otherwise, they shall be made at top of pipe. Once testing and disinfection have been completed, they shall be plugged. Plug threads shall be wrapped with Teflon tape and plugged tap shall then be coated with approved bitumastic material.

B. Services Extensions

In addition to a service tap, each service shall include a corporation stop, service pipe, a meter stop, a meter box, and all other materials specified by the standard drawings. Unless specified otherwise, service piping shall be continuous from corporation stop to meter stop; it shall not be spliced.

C. Meter Boxes

Meter boxes shall be equal to and interchangeable with those shown on the standard drawings and shall be installed as shown on the standard drawings. They shall be set true to line and grade and shall be flush with concrete curbs and sidewalks.

Meter boxes shall be installed whenever services are installed, even prior to construction of street improvements including concrete curbs and sidewalks. Meter boxes shall be brought to grade upon construction of concrete curbs and sidewalks.

D. Meter Installation

Except as otherwise indicated on the construction drawings or as specified by the Owner, all meters shall be installed by the Owner following application for service in accordance with the Owner's regulations governing water service and any amendments thereto.

**3.08 Field Hydrostatic Test and Leakage Test**

A. Hydrostatic Test

Upon completion of pipeline construction and at least seven days after last concrete thrust device has been placed, pipelines and appurtenances constituting the Work shall be filled with water for twenty-four hours minimum. During filling, Contractor shall see that all air valves are open and operating. After pipelines have been completely filled, they shall be allowed to stand for twelve hours minimum under slight pressure for sufficient time to permit all air to escape. During that same period, Contractor shall examine all fittings, flanges, handholes, and connections for leaks. If any leaks are found, they shall be eliminated.

Test pressures shall be 225 psi and maintained for four hours minimum. Test sections will be selected which give, as nearly as possible, constant pressure throughout section being tested. Normally test pressures will be measured at lowest elevations.

B. Leakage Test

After pressure test has been satisfactorily completed, pipelines and appurtenances shall be tested for leakage at pressure equal to the pressure class of pipe. Contractor shall test pipelines and appurtenances in test sections as designated by the Owner and required pressures shall be maintained for two hours minimum during which time leakage shall be accurately measured.

Measured leakage shall not exceed the limits set by the following formula unless otherwise specified by the construction drawings.

$$L = \frac{ND(P)^{1/2}}{5000}$$

L is the allowable leakage in gallons per hour for section of pipeline being tested; N is the number of joints (rubber gasket, flanged, or mechanical joints, not swedged or banded lap welded joints) where leakage could occur in the section of pipeline being tested; D is the nominal diameter (inches) of the pipeline being tested; and P is the weighted average test pressure (psi gauge) within the section of pipeline being tested during the leakage test.

C. General Requirements

1. Required test pressures shall be applied by pump connected to pipeline sections being tested. The Owner will approve pump connections to pipeline before testing begins. As part of the Work, and unless specified otherwise, Contractor shall install, at his expense, top outlets (service taps) required for testing.

Contractor shall provide calibrated meters for measurement of leakage, and all pumps, piping, fittings, bulkheads, plugs, valves, gages, power equipment, and manpower necessary for conducting all tests required, all at his expense. Contractor shall furnish the Owner three copies of all records of all tests performed.

2. Unless specified otherwise, Contractor shall test against test plates for pipelines 12 inches and smaller. Contractor shall not remove said test plates until pipelines have been tested, disinfected, and accepted by the Owner.
3. Contractor, at his expense, shall locate and repair leaks or other defects which may develop or become apparent during test. Contractor shall excavate, including removal of backfill already placed, and make all repairs necessary for required water tightness, and then replace all excavated material, after which Contractor shall retest repaired pipeline section. Pipeline sections shall be repeatedly repaired and tested until they meet requirements set forth herein.
4. Pipe manufacturer and fitting manufacturer shall have free access to the Work during testing. Any improper act on the part of Contractor which the pipe and fitting manufacturer may observe shall be reported to the Owner. Pipe and fitting manufacturer shall be free to observe and verify all tests.

5. After completed pipeline and appurtenances or test sections have successfully met test requirements to the satisfaction of the Owner, the entire pipeline or each test section shall be filled or shall remain filled with water until completion of the Work, unless otherwise ordered by the Owner.

### **3.09 Conductor Casings and Carrier Pipes**

Wherever required, conductor casings shall be installed. Said casings shall be comprised of either welded steel pipe or reinforced concrete pipe, as specified. Conductor casings shall be bored and jacked into place unless open trench installations are permitted; conductor casings shall not be sluiced or jetted into place. Conductor casings shall be bored and jacked into place from one direction only.

Conductor casings shall be installed to the lines, grades, and depths specified. Unless specified otherwise, Contractor will be permitted a tolerance from horizontal alignment and from vertical alignment of 0.5 percent of conductor length but no more than 1 foot maximum regardless of conductor length.

Unless specified otherwise, methods and equipment used shall be as selected by Contractor and as approved by the Owner. Said approval shall not relieve Contractor of any responsibility with regard to conductor casing construction. Conductor casings shall have minimum inside diameters at least 12 inches larger than maximum outside diameters of carrier pipes.

Prior to any boring and jacking operations, Contractor shall submit to the Owner a construction plan consisting of a schedule of operations, details of methods of construction, types of equipment to be used, details of boring and jacking pit including lengths, widths and depths, and shoring and bracing. Said construction plan shall be approved as to sufficiency by the Owner before any construction is commenced.

Boring and receiving pits shall be shored in accordance with OSHA standards. A 6 foot high chain link fence shall be erected around said pits and said pits shall be protected with Type K barriers. Barriers shall be placed to direct traffic around the pits.

Prior to constructing pits, Contractor shall excavate both sides of each crossing to determine exact locations of facilities to be crossed (horizontal and vertical). Contractor shall adjust casing locations to accommodate crossings based on Contractor's field measurements.

Contractor shall schedule his operation to prevent pits from being open on weekends or holidays. Contractor shall provide traffic control around the pits in accordance with Contractor's approved traffic control drawings.

Contractor shall take all necessary precautions to prevent subsidence of or lifting of existing roadbeds, roadways, and pavements during or following installation of conductor casings. Material excavated during boring and jacking operations shall be removed carefully so as to avoid caving. Voids created during boring and jacking shall be grouted with an approved grout from within the casing once the casing has been installed. Couplings shall be welded to steel casing to permit grouting. Following grouting, threaded plugs shall be inserted into said couplings.

After conductor casing has been constructed, carrier pipe shall be equipped with approved wood, plastic, or steel casing insulators of uniform size and spacing and then installed in conductor casing in accordance with aforementioned construction plan as approved by the Owner. Annulus between conductor casing and carrier pipe shall be filled with sand and the ends shall be capped with plastic or steel end seals or plugged with brick and mortar. Weepholes shall be placed in the bottoms of the end seals or brick and mortar plugs.

Contractor shall backfill boring and jacking pits with material specified for pipeline backfill. Said backfill material shall be compacted to the relative compaction specified which shall be not less than 90%. Contractor shall remove conductor casing and carrier pipe remnants, shoring materials, asphalt, concrete and all other Work-related debris. Contractor shall restore paved surfaces.

### **3.10 Miscellaneous Requirements**

#### **A. Connections to Existing Watermains**

The Owner will make all connections to existing watermains except where otherwise specified. Where a gate valve is required but not specified, the Owner will install gate valve but will not guarantee it against field hydrostatic and leakage test.

To safeguard against failure of the Owner's valve, Contractor shall install a test plate for the aforementioned test and, after satisfactory test, remove said test plate and replace it with a 1/8 inch thick minimum ring gasket. The use of any other test appurtenances shall be as approved by the Owner.

#### **B. Field Painting**

Contractor shall field paint all aboveground, bare, or exposed piping and appurtenances in accordance with the applicable specifications and drawings.

**END OF SECTION**

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**SECTION 15101**  
**GATE VALVES**

**PART 1 - GENERAL**

**1.01 Description**

- A. General: This section specifies gate valves.
- B. Type: Valves shall be of the iron-body, bronze-mounted, resilient-seated solid-wedge or dual disc type.

**1.02 References**

This section references the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of listed documents, the requirements of this section shall prevail.

ANSI B16	Cast Iron Pipe Flanges and Flanged Fittings
ASTM A126	Gray Iron Castings for Valves, Flanges and Pipe Fittings
AWWA C509	Resilient-Seated Gate Valves for Water and Sewage Systems
AWWA C515	Resilient-Wedge, epoxy coated, Flanged ends

**1.03 Quality Assurance**

Gate valves 3 inches and larger in size up to and including 12-inches shall be dual disc or resilient-seated and shall comply with AWWA C500 and AWWA C509, including applicable hydrostatic testing. Gate valves smaller than 3 inches shall be dual disc or solid wedge and shall comply with Fed. Spec. WW-V-54 Class A. Gate valves over 12-inches are not acceptable.

**1.04 Submittals**

Products data sheets shall be submitted in accordance with Section 01300.

**PART 2 - PRODUCTS**

**2.01 Materials**

Materials of construction shall be as follows:

<u>Components</u>	<u>Material</u>
Body	Cast iron, ASTM A126, Class B
Wedge:	
4 inches and smaller	Bronze
4 inches thru 12-inch	Cast iron, ASTM A126, Class B

Components	Material
Mounting	Bronze
Stem	Bronze, AWWA C500, Section 3.12
Seat rings	Bronze, Grade A, AWWA C500, Section 3.8

## 2.02 Construction

- A. General: Exposed gate valves shall be rising stem type. Buried or submerged gate valves shall be of the nonrising stem type. Rising stem valves shall be provided with a stem collar stuffing box and packing gland with teflon braid packing. Nonrising stem valves shall be provided with O-ring stem seals. The body shall be provided with screwed-on seat rings.
- B. End Connections: Gate valves in buried pipelines 4-inches and larger shall be flanged. Gate valve end connections in exposed pipelines shall be flanged or threaded as specified. Threaded ends shall not be provided on gate valves with end connections larger than 4 inches. End flanges shall be integral with the gate valve body and be faced and drilled in accordance with ANSI B16.1.
- C. Manual Operators: Unless specified otherwise, valves less than 6-inch size shall be provided with handwheels, and valves 6- inches and larger shall be provided with geared operators.

## 2.03 Manufacturers

Manufacturer of gate valves shall be as listed on the Approved Materials List.

## PART 3 - EXECUTION

### 3.01 Installation

Gate valves shall be installed in accordance with the manufacturers' recommendations, and in the closed position.

**END OF SECTION**

**SECTION 15103**  
**BUTTERFLY VALVES**

**PART 1 - GENERAL**

**1.01 Description**

- A. General: This section specifies butterfly valves for flow shutoff and flow throttling service.
- B. Type: Valves shall be rubber seated and stub or through shaft type, with flanged or mechanical pipe couplings.

**1.02 Quality Assurance**

Valves shall be provided at the locations and shall be of the sizes shown on the Plans. The valves shall be designed for the operating and testing pressure of the associated pipeline as specified. Buried valves shall be provided with AWWA operating nut.

**1.03 References**

This section references the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

ASTM A276	Specification for Stainless and Resisting Steel Bars and Shapes
AWWA C504	Standard for Rubber-Seated Butterfly Valves

**1.04 Submittals**

Submittals shall comply with all requirements of Section 01300.

**PART 2 - PRODUCTS**

**2.01 Materials**

Unless otherwise specified, materials for components shall be as follows:

<u>Component</u>	<u>Material</u>
Shafts	ASTM Type 304 or 316 stainless steel
Discs	Ductile iron or alloy cast iron
Disc seating edge	ASTM A276, Type 304
Seats	Synthetic rubber

<u>Component</u>	<u>Material</u>
Bodies	Ductile iron or alloy cast iron, epoxy lined and coated
Bearings	Reinforced TFE or Nylon
Thrust bearings	ASTM A276, Type 304
Pins and interior threaded parts	ASTM A276, Type 304

## **2.02 Design**

- A. Valves shall be the short-body type, designed in accordance with AWWA C504. Valves and valve components shall, as a minimum, conform to Class 150B.
- B. Valve ends shall be flanged. Valve shafts shall be turned, ground, and polished. Valves shall have factory-set thrust bearings.
- C. Seats shall be retained in the valve body by mechanical means without retaining rings, screws, segments or hardware of any kind in the flow stream. Seats shall be a full 360-degree without interruption and have a plurality of grooves mating with the spherical edge of the disc. The seats shall be designed to permit angular misposition of the disc by as much as one degree off center without leaking.

## **2.03 Operators**

Valve operator shall be level and traveling nut or worm gear type. Unless otherwise shown or specified, the operator shall be provided with manual actuation mechanism. Buried valve operators shall be designed for submerged service and shall have no external moving parts except the operator input shaft, which shall be Type 316 stainless steel and enclosed in a valve box extension tube.

## **2.04 Manufacturers**

Manufacturer of butterfly valves shall be as listed on the Approved Materials List.

# **PART 3 - EXECUTION**

## **3.01 Installation**

- A. Exposed butterfly valves shall be installed to permit removal of the valve assembly without dismantling the valve or operator.
- B. Installation shall be in accordance with the manufacturer's printed instructions.

**END OF SECTION**

**SECTION 15130**  
**AIR RELEASE AND VACUUM VALVES**

**PART 1 - GENERAL**

**1.01 Description**

The work of this section includes providing combination air release and vacuum valves as indicated, complete and operable, including accessories and drain connections in accordance with the Plans and the Agency Standard Drawings.

**1.02 Quality Assurance**

Valves shall be provided at the locations and shall be of the sizes shown. The valves shall be designed for the operating and testing pressure of the associated pipeline as specified.

**1.03 References**

This section references the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

ASTM A536                      Standard Specifications for Ductile Iron Castings

AWWA C512                      Air Release, Air/Vacuum, and Combination Air Valves for Waterworks Service

**1.04 Submittals**

The following shall be submitted in accordance with Section 01300:

- A.     Manufacturer's catalog data.
- B.     Manufacturer's detailed drawings showing dimensions, materials, size, and weight.
- C.     Manufacturer's installation and operation instructions.
- D.     Manufacturer's certification that products comply with the indicated requirements.
- E.     Manufacturer's maintenance procedures.

**PART 2 - PRODUCTS**

**2.01 General**

- A.     Air and Vacuum relief valves shall be hydrotested in conjunction with the connecting pipelines.
- B.     Combination air/vacuum assemblies shall be furnished and installed by the Contractor at the locations shown on the Plans, or as required by Owner.
- C.     The tap of an air and vacuum valve assembly on buried pipelines shall be no closer than 18-inches to the valve, coupling, joint or fitting.

## **2.02 Air and Vacuum Valves**

- A. Air and vacuum valves shall be capable of venting sufficient quantities of air as determined by the manufacturer's approved sizing methods, while pipelines are being filled and allowing air to re-enter while pipelines are being drained.
- B. Air and vacuum valves shall be of the size indicated, with flanged or screwed ends to match the piping
- C. Bodies shall be of high-strength cast iron or ductile iron.
- D. The float, seat, and all moving parts shall be constructed of Type 316 stainless steel.
- E. Seat washers and gaskets shall be of material insuring water tightness with a minimum of maintenance.
- F. Valves shall be designed for minimum 250 psi working pressure, unless otherwise indicated.

## **2.03 Air Release Valves**

- A. Air release valves shall vent accumulating air while system is in service and under pressure and be of the size indicated and shall meet the same general requirements as specified for air and vacuum valves except that the vacuum feature will not be required.
- B. Air release valves shall have the same general requirements as specified for air and vacuum valves.

## **2.04 Combination Air Valves**

- A. Combination air valves shall combine the characteristics of air and vacuum valves and air release valves by exhausting accumulated air in systems under pressure and releasing or re-admitting sufficient quantities of air, as determined by the manufacturer's approved sizing methods, while system is being filled or drained, respectively.
- B. Combination air valves shall have the same general requirements as specified for air and vacuum valves.

## **2.05 Manufacturers**

Manufacturer of air release and air vacuum shall be as listed on the Approved Materials List.

# **PART 3 - EXECUTION**

## **3.01 Installation**

- A. All valves shall be installed in accordance with the Agency Standard Drawings and the manufacturer's printed recommendations.

- B. Air release and vacuum valves shall be installed at high points in piping systems and where indicated.
- C. Combination air/vacuum assemblies shall connect to underground pipes no closer than 18-inches from a bell, coupling, joint or fitting.
- D. Air/vacuum assemblies and valve box assemblies shall be field painted according to Agency Standards.

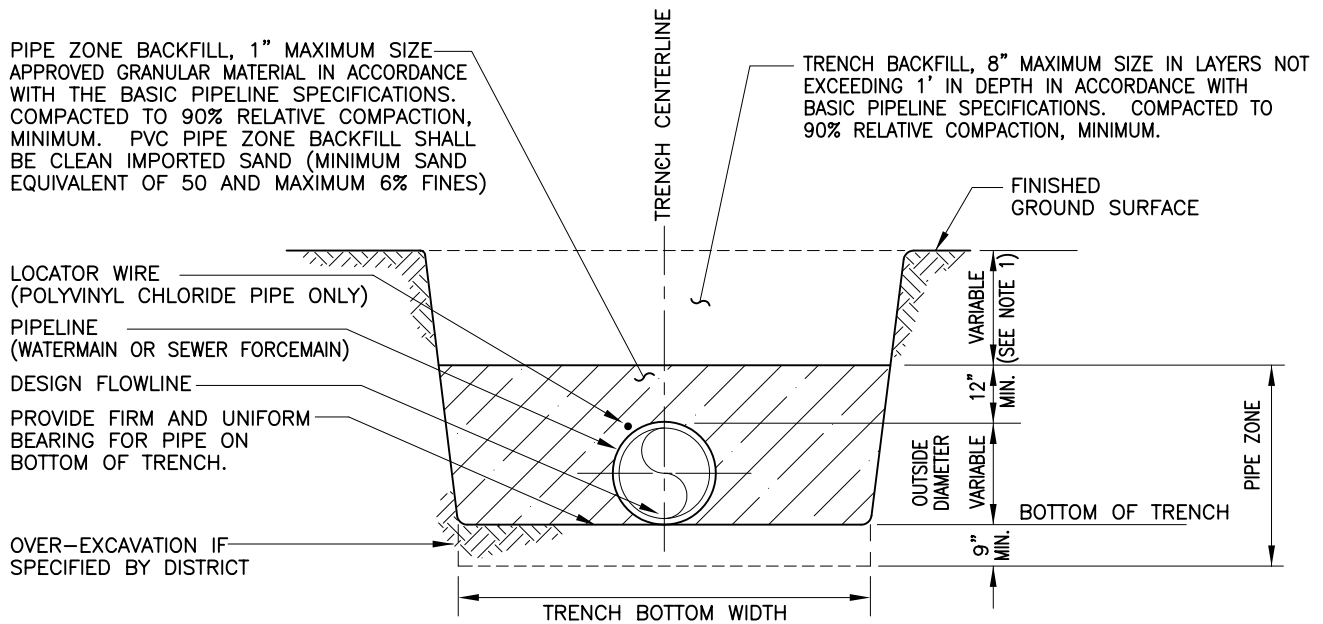
**END OF SECTION**

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## **DRAWINGS**

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PIPE DIAMETER (INCHES)	TRENCH BOTTOM WIDTH	
	MINIMUM (FEET)	MAXIMUM (FEET)
12 OR LESS	2.0	2.5
16	2.5	3.5

**NOTES:**

- 1) PIPELINE (WATERMAIN OR SEWER FORCEMAIN) COVER SHALL BE 42" MINIMUM UNLESS SPECIFIED OTHERWISE.
- 2) TRENCH SIDES SHALL BE SLOPED OR SHORED IN ACCORDANCE WITH CAL OSHA CONSTRUCTION SAFETY ORDERS FOR TRENCH DEPTHS 5' AND GREATER.
- 3) ALL EXISTING PAVEMENT SHALL BE SAWCUT PRIOR TO TRENCHING, AND WHERE TRENCH SIDES SLUFF AND PAVEMENT BREAKS AWAY, IT SHALL BE SAWCUT AGAIN PRIOR TO PERMANENT PAVEMENT REPAIR.
- 4) WHENEVER EXISTING CURBS ARE BEING USED FOR GRADE CONTROL, PIPELINES SHALL BE LAID ON PROJECTED CONTINUOUS SLOPES THROUGH LOCALIZED HILLS, HUMPS, AND MOUNDS SUCH AS STREET INTERSECTIONS AND CHANNEL BERMS. PIPELINE GRADES SHALL BE SELECTED TO MAINTAIN MINIMUM COVER WITH CONTINUOUS PIPELINE SLOPE. PIPELINE TRENCH DEPTHS SHALL BE INCREASED TO ACCOMPLISH SAME AND PIPELINE COVER SHALL BE INCREASED ACCORDINGLY.
- 5) FOR WATERMAINS, WHENEVER EXISTING UTILITY FACILITIES, EXCEPT SEWERS, ARE ENCOUNTERED, WATERMAIN SHALL CLEAR THEM BY 12" MINIMUM, BOTH HORIZONTALLY AND VERTICALLY. WATERMAINS SHALL CLEAR SEWERS IN ACCORDANCE WITH STANDARD DRAWING W1010. FOR SEWER FORCEMAINS, WHENEVER EXISTING UTILITY FACILITIES, EXCEPT WATERMAINS, ARE ENCOUNTERED, SEWER FORCEMAINS SHALL CLEAR THEM BY 12" MINIMUM, BOTH HORIZONTALLY AND VERTICALLY. SEWER FORCEMAINS SHALL CLEAR WATERMAINS IN ACCORDANCE WITH STANDARD DRAWING S2020. SPECIFIED CLEARANCES OR SEPARATIONS SHALL NOT BE REDUCED UNLESS ORDERED OR PERMITTED BY DISTRICT. PIPELINES (WATERMAINS AND SEWER FORCEMAINS) SHALL NOT BE IN CONTACT WITH OR REST AGAINST OTHER UTILITY FACILITIES.
- 6) WHERE BOTTOM OF EXCAVATION IS IN ROCK WHICH CANNOT BE EXCAVATED TO PROVIDE UNIFORM BEARING FOR THE PIPE, TRENCH SHALL BE OVER-EXCAVATED 9" MINIMUM AND REFILLED WITH SELECT EXCAVATED MATERIAL OR IMPORTED BACKFILL MATERIAL COMPACTED TO 90% MINIMUM RELATIVE COMPACTION.
- 7) LOCATOR WIRE FOR POLYVINYL CHLORIDE PIPE SHALL BE INSULATED 14 GAUGE COPPER WIRE. IT SHALL BE CONTINUOUS ALONG THE PIPELINE, LOOPED AROUND THE PIPE AT EACH JOINT, AND LOOPED INTO VALVE BOXES WITHIN 12" OF THE SURFACE AND WITH 3' OF SLACK.



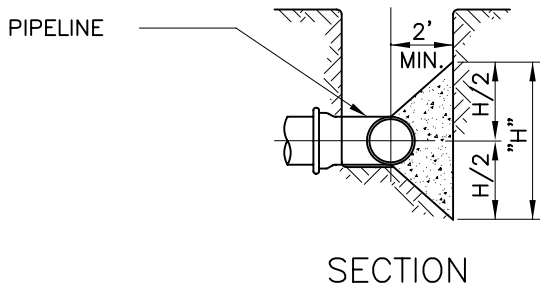
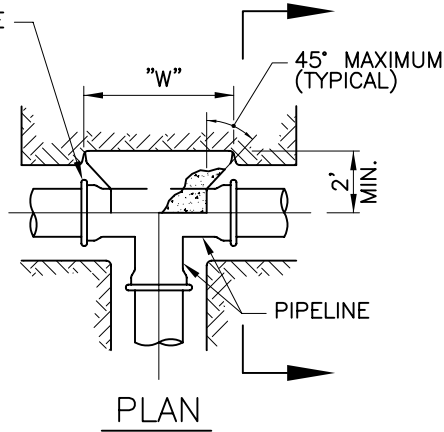
APPROVED:  
 ASSISTANT GENERAL MANAGER/  
 DISTRICT ENGINEER  
 DATE: JANUARY 2005

RUBIDOUX COMMUNITY SERVICES DISTRICT  
 PIPELINE TRENCH

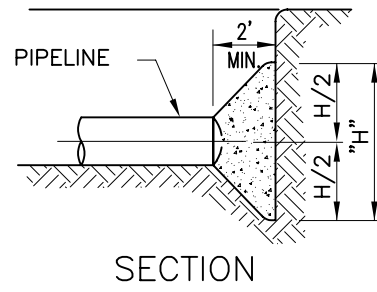
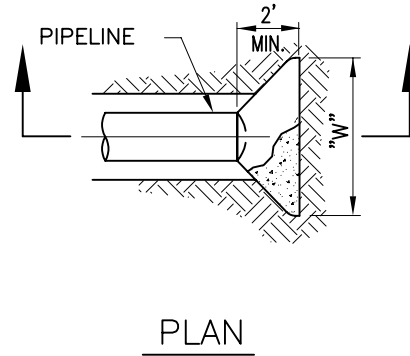
STANDARD DRAWING

G20

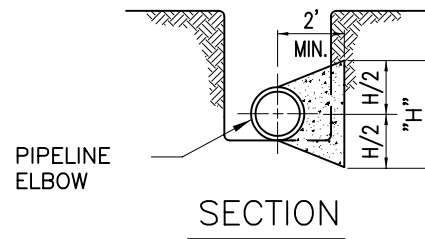
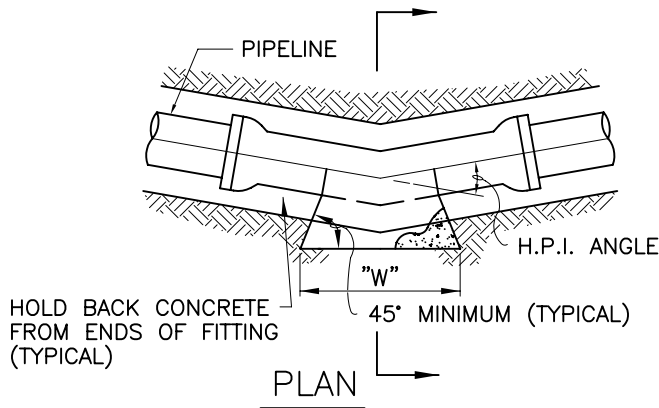
HOLD BACK CONCRETE FROM FITTING END (TYPICAL)



TEE THRUST PROTECTION



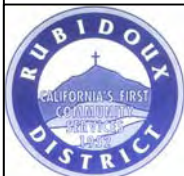
END THRUST PROTECTION



HORIZONTAL BEND THRUST PROTECTION

NOTES:

- 1) THRUST BLOCK SIZES SHOWN ARE MINIMUM AND ARE BASED ON A HORIZONTAL BEARING CAPACITY OF 1500 PSF. CONTRACTOR SHALL RETAIN A REGISTERED GEOTECHNICAL ENGINEER TO DETERMINE ALLOWABLE HORIZONTAL BEARING CAPACITY. IF SAID CAPACITY IS LESS THAN 1500 PSF, THE CONTRACTOR SHALL FURNISH CONCRETE THRUST BLOCKS OF THE APPROPRIATE SIZE.
- 2) BLOCK CONCRETE SHALL BE CLASS C IN ACCORDANCE WITH BASIC CONCRETE SPECIFICATIONS.
- 3) BLOCKS SHALL BE FORMED WITH TRIMMED EARTH, SAND BAGS, OR LUMBER TO ACHIEVE REQUIRED CONFIGURATION. ALL LUMBER SHALL BE REMOVED PRIOR TO BACKFILLING.
- 4) BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH OR REPLACED EARTH HAVING 95% RELATIVE COMPACTION, MINIMUM.
- 5) BACKFILL AROUND AND OVER BLOCKS SHALL BE COMPACTED TO 95% RELATIVE COMPACTION, MINIMUM.
- 6) COMPACTED EARTH SHALL EXTEND TO DEPTH AND WIDTH (W) OF BLOCK AND TO DISTANCE W/2 BEFORE AND PAST BLOCK.
- 7) UNDER CERTAIN CIRCUMSTANCES, FULLY WELDED JOINTS FOR WELDED STEEL PIPE, FLANGED JOINTS OR RESTRAINED JOINTS FOR DUCTILE IRON PIPE, OR RESTRAINED JOINTS FOR POLYVINYL CHLORIDE PIPE MAY BE USED IN LIEU OF THRUST BLOCKS. SAID APPLICATION SHALL BE APPROVED BY DISTRICT.

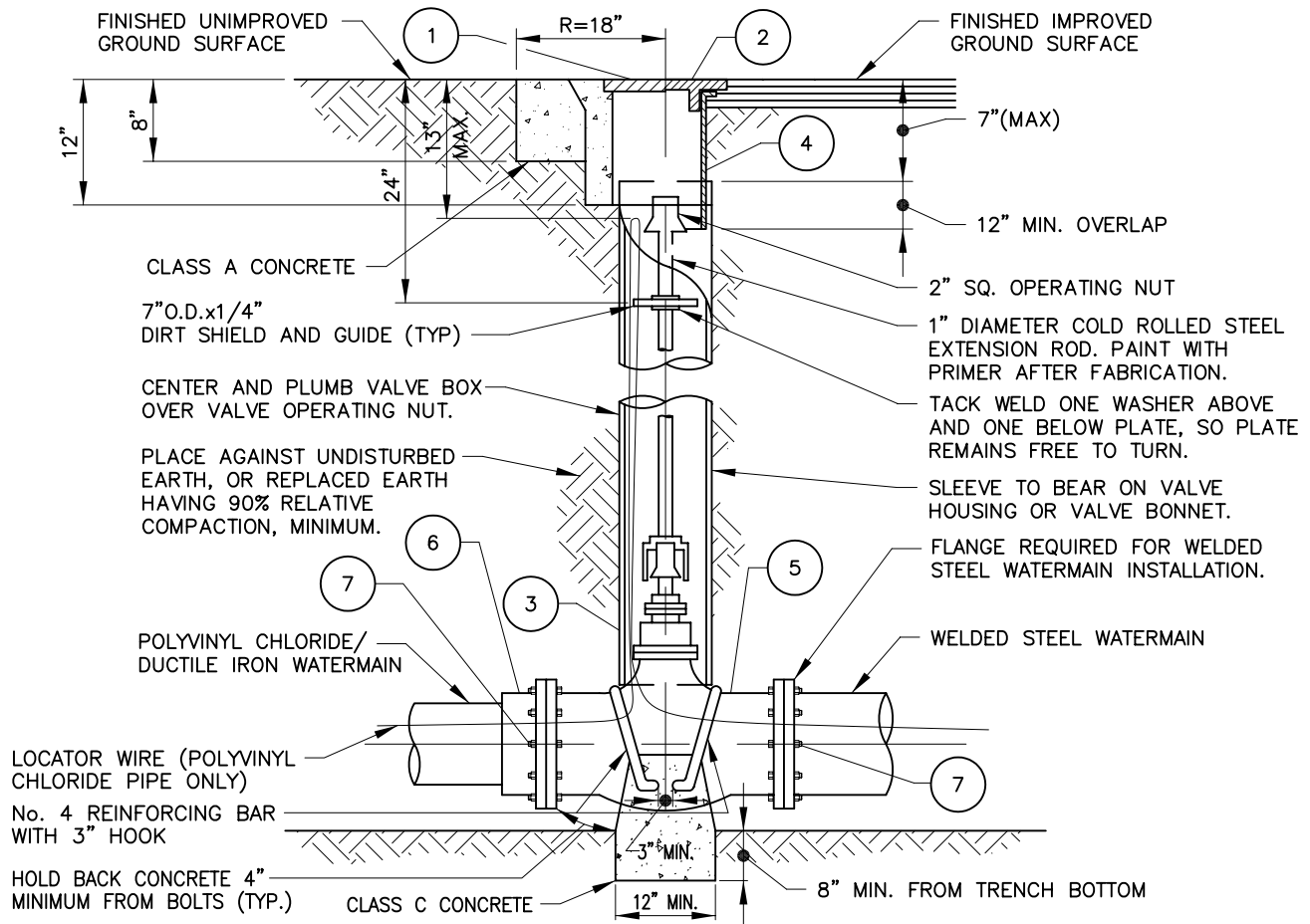


APPROVED:  
 ASSISTANT GENERAL MANAGER/  
 DISTRICT ENGINEER  
 DATE: JANUARY 2005

RUBIDOUX COMMUNITY SERVICES DISTRICT  
 CONCRETE THRUST PROTECTION

STANDARD DRAWING

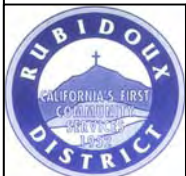
G40  
 SHEET 1 OF 2



ITEM	DESCRIPTION
1	TRAFFIC BOX COVER FOR UNIMPROVED SURFACE (TRIANGULAR COVER WITH FRAME) – COVER MARKED "RCSD".
2	TRAFFIC BOX COVER FOR IMPROVED SURFACE (CIRCULAR COVER WITHOUT FRAME) – COVER MARKED "RCSD".
3	VALVE BOX EXTENSION, 8" I.D. SDR 35 POLYVINYL CHLORIDE PIPE.
4	18 GAUGE x 18" LONG GALVANIZED STEEL SLEEVE WITH 1-1/2" OVERLAP AND 1/2" LIP (FLARE) ON ONE END.
5	GATE VALVE SHALL HAVE FLANGED DUCTILE IRON OR CAST IRON BODY WITH RESILIENT SEAT. VALVE STEM SHALL BE NONRISING WITH 2" SQUARE OPERATING NUT AND SHALL TURN COUNTER-CLOCKWISE TO OPEN. VALVE SHALL HAVE "O" RING SEALS AND NON-SHOCK COLD WATER WORKING PRESSURE OF 200 P.S.I..
6	FLANGE BY TYTON JOINT ADAPTER REQUIRED FOR POLYVINYL CHLORIDE OR DUCTILE IRON WATERMAIN.
7	BOLTS SHALL BE STANDARD HEX HEAD MACHINE PER ASTM A325. NUTS SHALL BE HEAVY HEX COLD-PRESSED SEMI-FINISHED STEEL PER ASTM A194-2, 2H. THREADS SHALL BE LUBRICATED WITH AN APPROVED ANTI-SEIZE COMPOUND. ALL EXPOSED STEEL SHALL BE FIELD COATED WITH AN APPROVED BITUMASTIC.

**NOTES:**

- EXTENSION ROD REQUIRED WHENEVER TOP OF VALVE IS 3' OR MORE BELOW FINISHED GROUND SURFACE. REQUIRED LENGTH FOR EXTENSION ROD SHALL BE DETERMINED BY FIELD MEASUREMENT. EXTENSION ROD OPERATOR NUT SHALL BE 18" BELOW FINISHED GRADE. EXTENSION ROD SHALL BE SECURED TO VALVE OPERATING NUT BY WELDING A BEAD ON THE INSIDE OF THREE WALLS OF THE EXTENSION NUT CAP.
- CHISEL 1-1/2" MINIMUM "V" ON ADJACENT CURB FACE WITH APPROXIMATE DISTANCE TO VALVE BOX, 2 LOCATIONS.
- AIR VALVE VALVE BOX COVERS SHALL BE PAINTED TAN, FIRE HYDRANT VALVE BOX COVERS SHALL BE PAINTED YELLOW; ALL OTHER VALVE BOX COVERS SHALL BE PAINTED BLUE, ALL IN ACCORDANCE WITH BASIC PAINTING SPECIFICATIONS.
- LOCATOR WIRE FOR POLYVINYL CHLORIDE PIPE SHALL BE INSULATED 14 GAUGE COPPER WIRE. IT SHALL BE CONTINUOUS ALONG THE PIPELINE, LOOPED AROUND THE PIPE AT EACH JOINT, AND LOOPED INTO VALVE BOXES WITHIN 13" OF THE SURFACE AND WITH 3' OF SLACK.

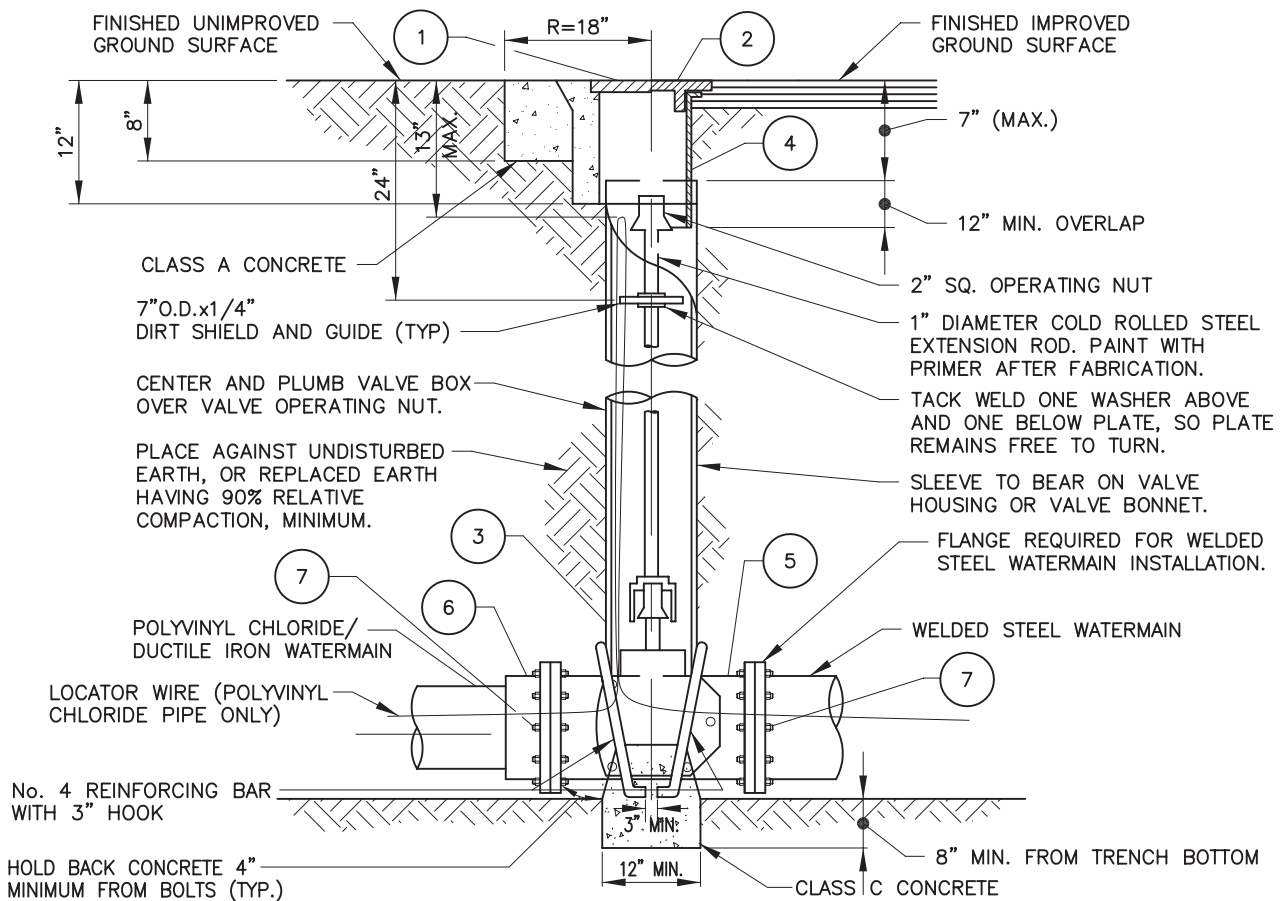


APPROVED:  
 ASSISTANT GENERAL MANAGER/  
 DISTRICT ENGINEER  
 DATE: JANUARY 2005

RUBIDOUX COMMUNITY SERVICES DISTRICT  
 GATE VALVE INSTALLATION

STANDARD DRAWING

W1020



ITEM	DESCRIPTION
1	TRAFFIC BOX COVER FOR UNIMPROVED SURFACE (TRIANGULAR COVER WITH FRAME) – COVER MARKED "RCSD".
2	TRAFFIC BOX COVER FOR IMPROVED SURFACE (CIRCULAR COVER WITHOUT FRAME) – COVER MARKED "RCSD".
3	VALVE BOX EXTENSION, 8" I.D. SDR 35 POLYVINYL CHLORIDE PIPE.
4	18 GAUGE x 18" LONG GALVANIZED STEEL SLEEVE WITH 1-1/2" OVERLAP AND 1/2" LIP (FLARE) ON ONE END.
5	FLANGED BUTTERFLY VALVE, SHORT BODY. VALVE STEM SHALL TURN COUNTER-CLOCKWISE TO OPEN. VALVE OPERATORS SHALL BE PLACED ON STREET OR EASEMENT CENTERLINE SIDE OF VALVE.
6	FLANGE BY TYTON JOINT ADAPTER REQUIRED FOR POLYVINYL CHLORIDE OR DUCTILE IRON WATERMAIN.
7	BOLTS SHALL BE STANDARD HEX HEAD MACHINE PER ASTM A325. NUTS SHALL BE HEAVY HEX COLD-PRESSED SEMI-FINISHED STEEL PER ASTM A194-2, 2H. THREADS SHALL BE LUBRICATED WITH AN APPROVED ANTI-SEIZE COMPOUND. ALL EXPOSED STEEL SHALL BE FIELD COATED WITH AN APPROVED BITUMASTIC.

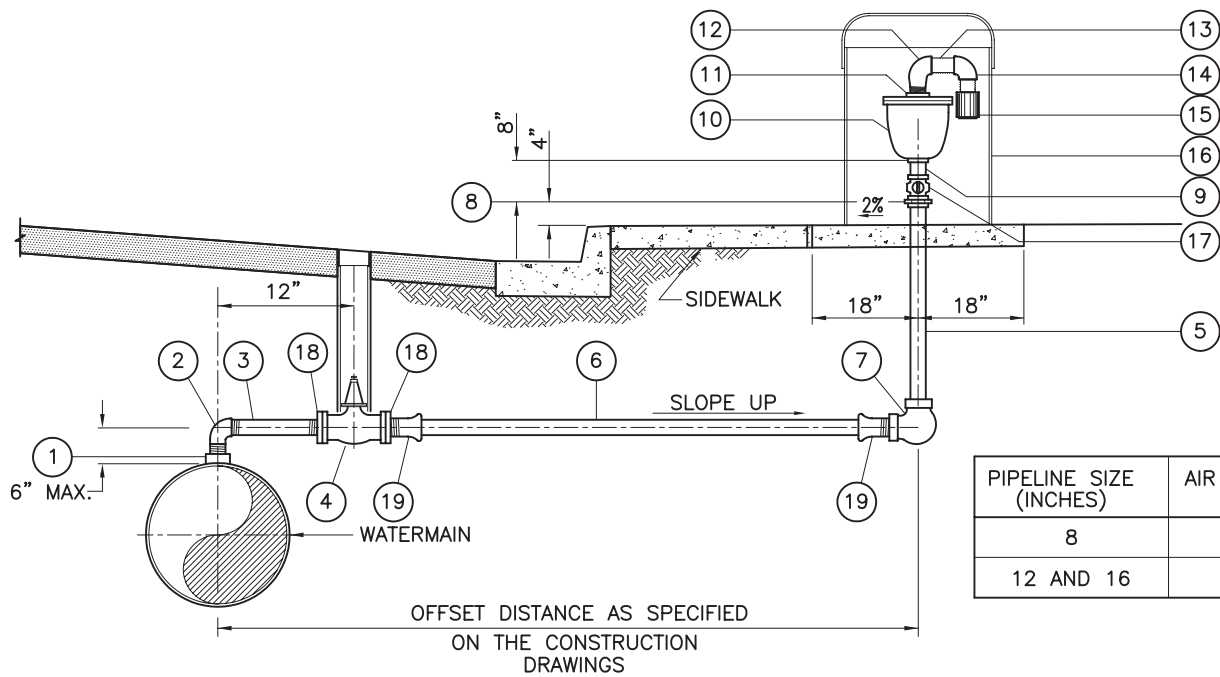
**NOTES:**

- EXTENSION ROD REQUIRED WHENEVER TOP OF VALVE IS 3' OR MORE BELOW FINISHED GROUND SURFACE. REQUIRED LENGTH FOR EXTENSION ROD SHALL BE DETERMINED BY FIELD MEASUREMENT. EXTENSION ROD OPERATOR NUT SHALL BE 18" BELOW FINISHED GRADE. EXTENSION ROD SHALL BE SECURED TO VALVE OPERATING NUT BY WELDING A BEAD ON THE INSIDE OF THREE WALLS OF THE EXTENSION NUT CAP.
- CHISEL 1-1/2" MINIMUM "V" ON ADJACENT CURB FACE WITH APPROXIMATE DISTANCE TO VALVE BOX, 2 LOCATIONS.
- VALVE BOX COVERS SHALL BE PAINTED BLUE, IN ACCORDANCE WITH THE BASIC PAINTING SPECIFICATIONS.
- LOCATOR WIRE FOR POLYVINYL CHLORIDE PIPE SHALL BE INSULATED 14 GAUGE COPPER WIRE. IT SHALL BE CONTINUOUS ALONG THE PIPELINE, LOOPED AROUND THE PIPE AT EACH JOINT, AND LOOPED INTO VALVE BOXES WITHIN 13" OF THE SURFACE AND WITH 3' OF SLACK.



APPROVED:  
 ASSISTANT GENERAL MANAGER/  
 DISTRICT ENGINEER  
 DATE: JANUARY 2005

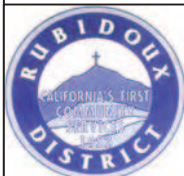
RUBIDOUX COMMUNITY SERVICES DISTRICT  
 BUTTERFLY VALVE INSTALLATION  
 STANDARD DRAWING W1030



ITEM	NO. REQ'D.	DESCRIPTION
1	1	2" TOP OUTLET PER STANDARD DRAWING W1090.
2	1	2" BRASS 90° STREET ELL.
3	1	2" BRASS NIPPLE.
4	1	2" FLANGED GATE VALVE INSTALLATION PER STANDARD DRAWING W1020.
5	1	2" BRONZE RISER (MALE IPT BOTH ENDS).
6	VARIES	2" TYPE "K" SOFT COPPER TUBING (WITHOUT INLINE COUPLINGS).
7	1	2" STANDARD WEIGHT BRONZE ELL.
8	1	2" STANDARD WEIGHT BRONZE UNION.
9	1	2"x 1" BRONZE BELL REDUCER AND 1" CLOSE NIPPLE (FOR 1" AIR VALVE ONLY).
10	1	COMBINATION AIR RELEASE AND VACUUM VALVE, SIZE AS SPECIFIED.
11	1	1" STANDARD WEIGHT GALVANIZED STEEL CLOSE NIPPLE AND 1"x2" STANDARD WEIGHT GALVANIZED STEEL INCREASER (FOR 1" AIR VALVE ONLY).
12	1	2" STANDARD WEIGHT GALVANIZED STEEL 90° STREET ELL.
13	1	2" STANDARD WEIGHT GALVANIZED STEEL NIPPLE.
14	1	2" STANDARD WEIGHT GALVANIZED STEEL 90° ELL.
15	1	2" AIR VALVE SCREEN.
16	1	AIR VALVE COVER AND CONCRETE PAD PER STANDARD DRAWING W1080.
17	1	2" CORPORATION STOP (MALE IPT BOTH ENDS).
18	2	2" THREADED FLANGE.
19	2	2" MALE IPT x COPPER TUBING COMPRESSION JOINT ADAPTER.

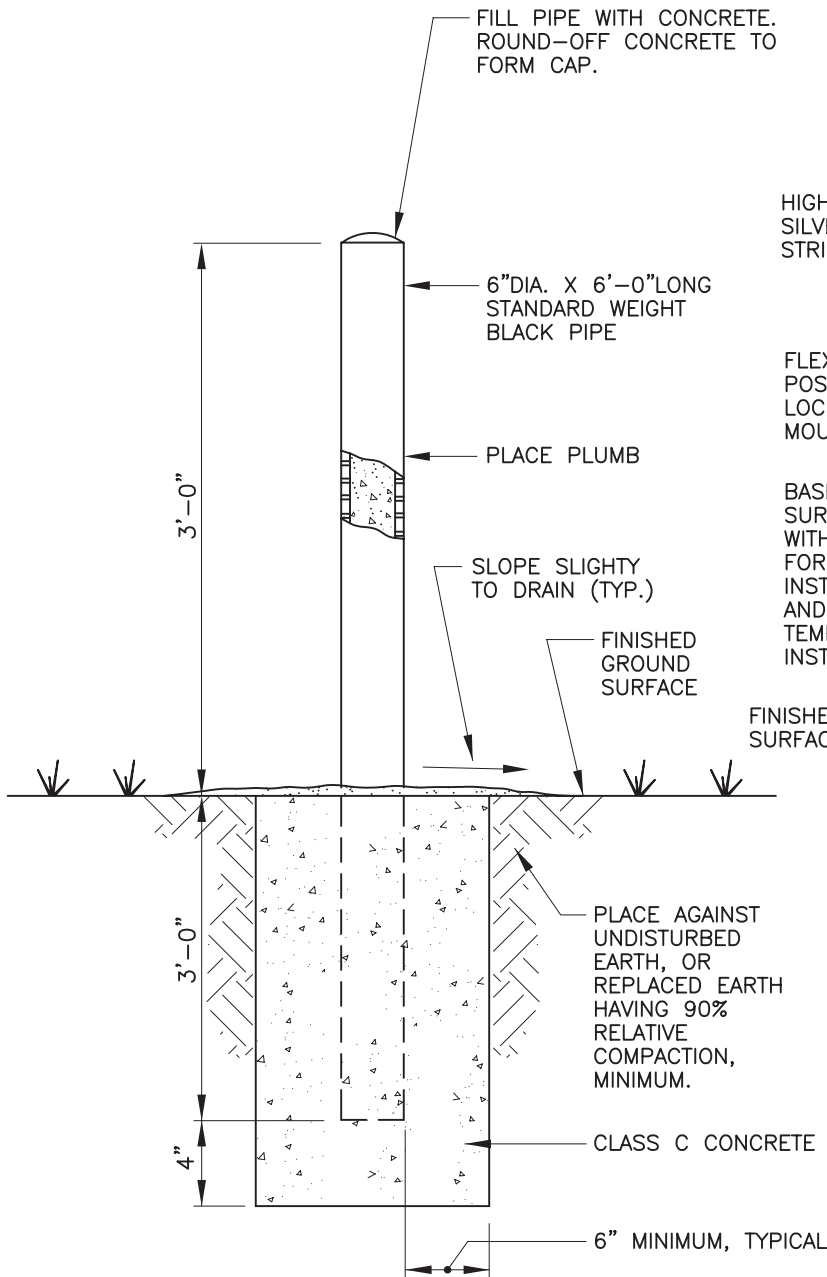
**NOTES:**

- 1) EXPOSED PIPING, AIR VALVE, AND AIR VALVE COVER SHALL BE PAINTED TAN IN ACCORDANCE WITH BASIC PAINTING SPECIFICATIONS.
- 2) PIPE THREADS SHALL BE CLEAN, SHARP, AND SEALED WITH APPROVED JOINT COMPOUND.
- 3) PIPE SHALL BE WRAPPED WITH BITUMASTIC TAPE (20 MIL THICK, 60% LAPPED).
- 4) IF NO CURB EXISTS, AIR VALVE SHALL BE INSTALLED 2' FROM PROPERTY LINE OR AS DIRECTED BY DISTRICT.

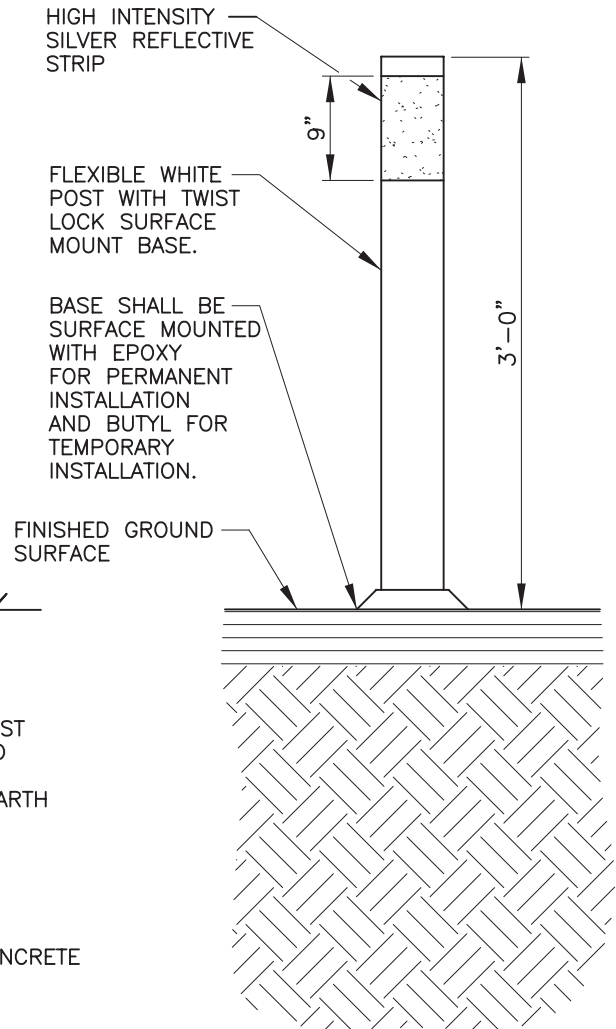


APPROVED:  
 ASSISTANT GENERAL MANAGER/  
 DISTRICT ENGINEER  
 DATE: JANUARY 2005

RUBIDOUX COMMUNITY SERVICES DISTRICT  
 1" OR 2"  
 AIR VALVE INSTALLATION  
 STANDARD DRAWING W1070



**GUARD POST**



**FLEXIBLE DELINEATOR**

**NOTES:**

- 1) GUARD POST SHALL BE PAINTED YELLOW IN ACCORDANCE WITH THE BASIC PAINTING SPECIFICATIONS.
- 2) GUARD POST AND FLEXIBLE DELINEATOR SHALL BE LOCATED AS SPECIFIED BY DISTRICT.



APPROVED:  
ASSISTANT GENERAL MANAGER/  
DISTRICT ENGINEER

DATE: JANUARY 2005

RUBIDOUX COMMUNITY SERVICES DISTRICT  
GUARD POST / FLEXIBLE  
DELINEATOR INSTALLATION

STANDARD DRAWING

W1160



**APPENDIX A**

**APPROVED MANUFACTURED MATERIALS**

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## SECTION VII LIST OF APPROVED MANUFACTURED MATERIALS

### A. GENERAL

The Rubidoux Community Services District maintains a list of Approved Manufactured Materials for both water and sewer system improvements. Only those indicated on the most current list have been approved for use within the District. It is the sole responsibility of the user to assure that the product proposed for use is currently approved. The District may require installation of a different product in special circumstances.

Manufacturers may request approval by (1) making a formal written request for approval, (2) providing detailed drawings and technical information on their product, and (3) providing a non-returnable sample of the product for District use. Documentation of use by other local water purveyors (with phone numbers and contact names) will assist the District in evaluating such requests. The District will evaluate the product and make a determination within 90 days. If determined as being suitable for District use, the product will be placed on this approved Manufactured Materials list. Inventory of spare parts is a consideration. All products shall always comply with District Standard Specifications.

### B. LIST OF APPROVED MANUFACTURED MATERIALS

#### 1. Pipe

- a. PVC Pipe (AWWA C-900)  
*JM Pipe, PW Pipe, VinylTech*
- b. Ductile Iron Pipe (AWWA C-151)  
*Pacific States, Tyler Pipe, Union Foundry, U.S. Pipe*
- c. Welded Steel Pipe (AWWA C-200)  
*Ameron, Kelly Pipe, Northwest, West Coast Pipe Linings*
- d. Vitrified Clay Sewer Pipe  
*Pacific Clay Products, Mission Clay Products, Gladding McBean*

#### 2. Valves, Fire Hydrants and Related Products

- a. Butterfly Valves  
*Pratt, DeZurik*
- b. Gate Valves  
*American AVK, American Flow Control, Clow, Mueller*
- c. Air Valves  
*APCO (143C or 145C), Crispin (UL10 or UL20), Val-Matic (201C or 202C)*

- d. Eccentric Plug Valves (Force Mains)  
*Clow, DeZurik, Val-Matic*
  - e. Fire Hydrants  
*AVK (24-150-40-000 or 24-150-50-000), Jones (J-4040D or J-4060D), Clow (850 or 860)*
  - f. Fire Hydrant Break-off Check  
*Long Beach (LB-400), Clow (#40)*
  - g. Traffic Box Valve Cover (Stamped RCSD)  
*Unimproved: Brooks (4TT), Southbay Foundry (SBTT)  
Improved: Southbay Foundry*
  - h. Valve Box Extension  
*Brooks*
  - i. Gaskets, Ring Flange (Non-Asbestos)  
*Garlock, Klinger*
  - j. Nuts and Bolts (5/8" to 1-1/2" diameter U.S. only A325)  
*Nucore, Rosenberg*
  - k. Air Valve Screen  
*Cebe Products, Knox (M16-8)*
  - l. Reduced Pressure Backflow Devices  
*Any device approved by USC Cross-Connection Foundation and California Department of Health Services Office of Drinking Water (Latest List)*
  - m. Double Detector Check Assemblies  
*Febco (806YD), Watts (709DCDA), Hersey, Ames*
3. Water Service Materials
- a. Service Saddle (double strap, bronze 1pt)  
*Ford (S91 or 202B), Jones (J-979 or J-996), Mueller (H-13483 or H-16116)*
  - b. Corporation Stops  
*Ford (FB1100-7-G), Jones (J-1957-SG), Mueller (H-25028 or H-15023)*
  - c. Type K Soft Copper Tubing  
*Cerro, Halsead, Mueller, or Streamline*

- d. 1" Angle Meter Stops  
*Ford (KV43-444W-G), Jones (J-4201-SG), Mueller (H-14258)*
- e. 2" Angle Meter Stops  
*Ford (Ball Valve, BFA13-777W), Jones (Ball Valve, J-1974-W), Mueller (Ball Valve, B-24286)*
- f. Meter Boxes (with concrete base plate and polymer cover with quick read port)  
*Armorcast, J&R, or Brooks*
- g. Linesetters (5/8 x 3/4", 3/4", or 1")  
*Ford (LSVBG-95040-016), Jones (J05CCTSFIPAMV04AH)*

4. Miscellaneous Materials

- a. Flange Coupling Adapters  
*Tyler, U.S. Pipe, Smith-Blair, or Romac*
- b. Connector Couplings (with Stainless Steel nuts and bolts and epoxy coated, interior and exterior, 12 mils min)  
*Romac (501), Baker*
- c. Standard Galvanized Pipe  
*Frontier 1, Stockton, Union Steel*
- d. Pipe Tape Wrap  
*Protecto Wrap (200A)*
- e. Sample Stations  
*John C. Kupferle Foundry (Model No. 88 Eclipse)*
- f. Manhole Frame and Covers  
*Southbay Foundry, Alhambra Foundry, Neenah*
- g. Grease Interceptors/Sand Oil Separators  
*Pyramid Precast, Nottingham, Jensen*