



CITY OF RIVERSIDE

PUBLIC UTILITIES DEPARTMENT
WATER DIVISION

SPECIFICATION NO. 205

**FOR THE DESIGN AND INSTALLATION
OF POTABLE WATER DISTRIBUTION SYSTEMS**

March 2015

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**CITY OF RIVERSIDE - PUBLIC UTILITIES DEPARTMENT
WATER DIVISION**

**WATER DISTRIBUTION SYSTEM
SPECIFICATION NO. 205**

SPECIAL PROVISIONS

The following revisions and additions supplement, modify and take precedence over the “Standard Specifications for Public Works Construction” (Latest Edition and any adopted supplements) applying to private contracts for Public Improvement.
(Refer Subsection 2-5.1 of Part I)

PART 1 – GENERAL PROVISIONS

SECTION 1 - TERMS, DEFINITIONS, ABBREVIATIONS AND SYMBOLS

1-2 DEFINITIONS

Agency (City, Owner)-	-	The City of Riverside.
Base Course	-	The layers of a two or more course pavement placed between the surface course and the sub-grade.
Board	-	The Board of Public Utilities of the City of Riverside.
City	-	The City of Riverside.
Contractor	-	The Individual, Partnership, Corporation, Joint Venture, or other legal entity having a contract with the Developer to perform the work.
Developer	-	The Individual, Partnership, Corporation, Joint Venture, or other legal entity under a permit issued by the Agency.
Engineer	-	The Principal Engineer – Water Contract Administrator of the Public Utilities Department, Construction Division, or Engineer’s authorized representative.
House Connection Sewers	-	Sewer lateral.
Inspector	-	The representative of the Engineer who is assigned to

inspect conformance of the work in accordance with the Plans and Specifications.

- Open Graded A.C. - A thin layer of special asphalt concrete placed on a surface course or existing pavement to improve the surface conformation and friction factor. Open Graded A.C. shall conform to State of California Division of Highways Standard Specifications.
- Overlay - A supplemental surface course placed on an existing pavement to improve its surface conformation.
- Owner's Representative - The person or firm authorized by the Owner to represent it during the performance of the work by the Contractor.
- Private Engineer - The Registered Civil Engineer who prepared and signed the Plans.
- Roadbed - That portion of the street included between the outside lines of curbs or paving.
- Soils Engineer - The Soils Engineer as referred to in the Grading Ordinance.
- Standard Plans - Standard Detail Drawings of the Engineering Section of the Public Utilities Department, Water Division, of the City of Riverside, which drawings are also referred to as Standard Drawings.
- Surface Course - The top layer of pavement (exclusive of open graded A.C.), designed to provide structural values and a surface resistant to traffic abrasion.
- Traveled Way - That portion of the roadway reserved for the movement of vehicles for the general public, exclusive of shoulders and auxiliary lanes. Where traffic has been diverted or restricted to certain lanes, with the approval of the Traffic Engineer, these diversions or restricted lanes become the traveled way.
- Right-of-Way - Includes City of Riverside Public Right-of-Way and City of Riverside Public Easements.

1-3 ABBREVIATIONS

1-3.2 Common Usage

AV	Air Valve
B/B	Bell by Bell
BFV	Butterfly Valve
Bk	Back
BO	Blow Off
B/S	Bell by Spigot
C	Caulked
Cad	Cadmium
CC	Corporation Cock
CML&C	Cement-mortar lined and coated
Cplg	Coupling
CT	Compound Turbine
CTF	Cut to Fit
DIP	Ductile Iron Pipe
DIPRA	Ductile Iron Pipe Research Association
Elec	Electrical
EII	Elbow
F/B	Flange by Bell
F/F	Flange by Flange
Flg	Flange or Flanged
FPT	Female Pipe Thread
F/S	Flange by Spigot
G	Gas line or service
gpm	Gallons per minute
GV	Gate Valve
HPI	Horizontal Point of Intersection
IPF	Iron Pipe Female
IPM	Iron Pipe Male
IPT	Iron Pipe Thread
LD	Loop Detector
MHT	Male Hose Threads
ML&C	Mortar Lined and Coated
NPDES	National Pollutant Discharge Elimination System
NRS	Non-Rising Stem
OO	Out to Out
OSY	Outside Screw and Yoke
Perp	Perpendicular
ppm	Parts Per Million
PT	Pipe Threads
RWGV	Resilient Wedge Gate Valve
S	Sewer main or house lateral
St Lt	Street Light
SW	Sweat Weld

SWP	Standard Working Pressure
t	Thick
UG	Underground
VPI	Vertical Point of Intersection
w/	With
W	Water Main or Service
WO	Work Order

1-3.3 Institutions

AWWA	American Water Works Association
CDPH	California Department of Public Health
CRSI	Concrete Reinforcing Steel Institute
CWD	City Water Division
PWD	Public Works Department
SSPWC	Standard Specifications for Public Works Construction

All institution publications shall be the latest edition unless otherwise shown on the construction drawings, standard drawings, or these specifications.

1-3.4 Symbols

Symbols shown on Plans, Water Division Standard Drawings, and Public Works Department Standard Drawings also apply.

1-4 UNITS OF MEASURE

1-4.1 General

The U.S. Standard Measures, also called the U.S. Customary System, is used as the principal measurement system in these Special Provisions and shall be used for construction.

SECTION 2 - SCOPE AND CONTROL OF THE WORK

2-1 AWARD AND EXECUTION OF CONTRACT

2-1.1 Scope of The Project

The work to be done, in general, shall include furnishing all labor, materials, tools, equipment, and incidentals, unless otherwise specified, to construct the waterline complete in place in accordance with the Plans and Specifications.

2-1.1.1 Job Location

The project is located within the Right-of-Way of *****Insert Project Limits IE: Van Buren Boulevard, Cleveland Avenue , Gibson Street and Victoria Avenue** within the *****(verify jurisdiction, the City or County where the work will take place)**, City of Riverside as shown on Drawing D5-«WorkOrderNo».

2-1.1.2 Submission of Bids

All bids are to be submitted electronically. Electronic Bid System will close exactly at the time set forth in the Notice of Invitation to Bid. All Prospective Bidders submitting a bid must submit bid guarantee before Bid Event Time.

All applicable forms required to be completed per the bid documents, shall be uploaded on the electronic bidding system prior to the bid date and time. Subcontractors List shall be submitted electronically. Hard copies of pricing and subcontractor information will not be accepted as a viable bid.

2-1.1.3 Scope of Contract Purchase Order Award

The basis of award will be to the lowest responsive and responsible bidder for the total bid.

2-1.2 Examination of Work Site, Proposal Forms, Plans, and Specifications

The bidder is required to carefully examine the work site, proposal forms, plans and specifications for the work contemplated. The submission of a proposal shall be considered conclusive evidence that the bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality and quantities of work to be performed and materials to be furnished, and as to the requirements of all the Contract Documents.

2-1.2.1.1 Alternative Pipeline Material

The «PipeDia_1» *****potable/recycled/raw** water main is designed for the installation of *****Ductile Iron Pipe/Mortar Lined and Coated Steel/ Polyvinyl Chloride Pipe**. When the Contractor elects to use an alternative pipeline material, Contractor shall be responsible for

all additional and/or associated modifications to the alternative pipeline design. That work shall include, but not be limited to, pipe layout, fittings, connection material, valves, air valves, flange kits, blow-offs, joints, thrust restraints, special fittings, appurtenances and installation. These costs shall be reflected in Contractor's unit bid price for alternative pipeline material. No additional compensation will be allowed.

2-1.2.2 Contractor Customer Service Standards

The Contractor shall at all times represent the City in a professional, courteous, efficient and cost-effective manner, and will be required to comply with the requirements of the enclosed City of Riverside Contractor Customer Service Standards Acknowledgment, which is hereby made a part of these Special Provisions.

2-1.2.3 Interpretation of Plans and Other Contract Documents

If any person or entity contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of the plans, specifications, or other contract documents, or finds discrepancies in, or omissions from the plans and specifications or other contract documents, they may submit to the Engineer a written request for an interpretation or correction thereof, up to *****seven (7) business (2 days for contractor panel)** days prior to bid event. The person submitting the request will be responsible for its prompt delivery.

An interpretation or correction of the Contract Documents will be made only by Addendum duly issued by the Engineer. A copy of such Addendum will be mailed or delivered to each person or entity that has received a set of such documents. The Owner and the Engineer will not be responsible for any other explanation or interpretation of the documents.

2-1.3 Addenda

Any addenda issued during the time of bidding shall be acknowledged electronically using the "Bid Response/File Uploads" tab in ActiveBidder. ADDENDA SHALL BECOME AN INTEGRAL PART OF THE SPECIFICATIONS AND PLANS.

2-1.4 Proposal Information and Submittal

All prospective Bidders submitting a bid Package, must be registered on the City's Electronic Vendors List, and must also be listed on the "Electronic Prospective Bidders List" for this project. If the bidder is not listed on the Electronic Prospective Bidders List by subscribing to this bid on www.riversideca.gov/bids website, the bid package shall be declared non-responsive and will not be further considered.

2-1.4.1 Proposal Forms and Submittal

Pricing and subcontractor information must be submitted electronically via the City's bidding system. All required documents such as bid security shall be uploaded through the City's website prior to bid event date and time as instructed in the Notice Inviting Bids.

Please note that your proposal response is required to be uploaded as described in our documentation. Once your file(s) have been uploaded and the SUBMIT icon has been activated your submission is complete. At that point you will receive an email confirmation from “Active Bidder.com Notifications” thanking you for your participation and a submission timestamp.

2-1.5 Proposal Guaranty

Prior to the proposal submission deadline, bidders must upload via the City’s website a bidder's bond executed by a corporate surety admitted to engage in such business in the State of California, with an A rating, for an amount equal to at least ten percent of the amount of its proposal. No proposal shall be considered unless such proposal guaranty is received by the proposal submission deadline. Proposals submitted without a proposal guarantee shall be declared non-responsive and will not be further considered. The bidder shall have sole responsibility for the timely delivery of its proposal guarantee. If a bid bond will not be submitted, the City will accept a cashier's or certified check made payable to the City of Riverside—said check must be delivered to the Purchasing Services Manager (6th floor) at 3900 Main Street, Riverside CA 92522 prior to the submission deadline. Late checks will not be accepted.

2-1.6 Withdrawal of Proposals

Any proposal may be withdrawn prior to the hour and date set forth in the Notice Inviting Bids. The timely withdrawal of a proposal shall not prejudice the right of a bidder to file a revised proposal.

2-1.7 Disqualification of Bidders

More than one proposal from an individual, a firm or partnership, a corporation or an association under the same or different name will not be considered.

If there is a reason for believing that collusion exists among the bidders, none of the participants in such collusion will be considered in awarding the Contract. In order to comply with Public Contract Code Section 7106, the Contractor must certify to non-collusion when submitting his or her bid. The proposal contains this declaration, which must be completed and signed.

Proposals in which the prices obviously are unbalanced may be rejected. If the experience or financial background of the Contractor is inadequate or past performance has been unsatisfactory the proposal may be rejected. Qualifying experience shall be under current Contractor’s license and Company name.

2-1.7.1 Contractor's License

The work requires an ***A or C-34 C-12 license. Bidders must be properly licensed to

perform the work of the project at the time they submit a bid proposal in accordance with the provisions of Chapter 9 of Division 3 of the Business and Professions Code and the Rules and Procedures of the California State Contractor's License Board and in good standing with the Board. Proof of such license shall be provided as required by Business and Professions Code Section 7031.5. Failure to be so licensed shall result in rejection of the proposal as non-responsive.

2-1.8 Rejection of Proposals

Proposals may be rejected if they show any alterations of form. The City reserves the right to reject all proposals and shall not be liable for any expenses or costs incurred by bidders in preparing their proposals.

2-1.9 Award of Contract

The Contract, if awarded, will be to the Lowest Responsible Bidder. All Bidders will be compared to each other and to the Engineer's Estimate. The award of the Contract will be made by City of Riverside Board of Public Utilities at a scheduled meeting. Such award, if made, will be within *****sixty (60) calendar days [must agree with proposal page 1]** after the opening of the proposals.

For contracts under \$50,000, bids will not be submitted to the Board of Public Utilities and the award will be made informally by the Purchasing Services Manager.

2-1.9 Award of Purchase Order

The Purchase Order, if awarded, will be to the lowest responsive and responsible bidder whose proposal complies with all the requirements prescribed. Such award, if made, will be within **thirty (30)** days after the opening of the proposal.

Prior to the award of the Purchase Order, if requested, the Contractor shall submit to the City a financial statement and resume of previous work of a similar nature.

2-1.10 Execution of Contract Agreement

The Contract Agreement (a sample of which is attached to these Special Provisions) shall be signed by the successful bidder in duplicate counterparts and returned, together with the Contract Bonds and insurance, within *****seven (7)** calendar days from the date the City mails, or by other means delivers, the Contract Documents to the successful bidder. No Contract shall be binding upon the City until the Documents are fully executed by the Contractor and the City.

Failure to execute and return the Contract Agreement and acceptable bonds and insurance as provided herein within the above-specified time limit may be just cause for the City to rescind the award and forfeit the proposal guaranty.

2-1.11 Return of Proposal Guaranties

Within **ten (10) business days** after the award of the Contract, the City Clerk will return all the proposal guaranties accompanying the proposals which are not to be further considered in making the award. All other proposal guaranties will be held until the Contract Documents have been finally executed, after which all proposal guaranties, except those forfeited, will be returned to the respective bidders.

2-1.12 Bid Protest Procedures

Protestant may file a written protest with the City's Purchasing Services Manager no more than five (5) five calendar days following the posting of bid results on the City's website. The written protest must set forth, in detail, all grounds for the protest, including without limitation all facts, supporting documentation, legal authorities and arguments in support of the grounds for the protest. All factual contentions must be supported by competent, admissible and credible evidence. Any matters not set forth in the written protest shall be deemed waived. Any protest not conforming to this procedure shall be rejected as invalid.

The Purchasing Services Manager shall review the merits and timeliness of the protest and issue a written decision to the Protestant within seven (7) calendar days of receipt of the protest. The decision of the Purchasing Services Manager may be appealed to the Assistant City Manager/CFO.

The Protestant may appeal the decision of the Purchasing Services Manager to the Assistant City Manager/CFO by filing a letter of appeal within ten (10) calendar days of the date of the Purchasing Services Manager's decision. The letter of appeal should be addressed to the Assistant City Manager/CFO and shall set forth, in detail, all grounds for the appeal, including without limitation all facts, supporting documentation, legal authorities and arguments in support of the grounds for the appeal. All factual contentions must be supported by competent, admissible and credible evidence. Any matters not set forth in the letter of appeal shall be deemed waived. Any letter of appeal not conforming to this procedure shall be rejected as invalid.

The Assistant City Manager/CFO shall review the merits and timeliness of the letter of appeal and issue a written decision to the Protestant within 7 calendar days of receipt of the letter of appeal. The decision of the City Manager/CFO is final. However, this decision is reviewable under California Code of Civil Procedure Section 1094.5 et seq. The time in which judicial review of the decision must be sought shall be governed by California Code of Civil Procedure Section 1094.6 or as such section may be amended from time to time.

The Protestant may appeal the decision of the Assistant City Manager to the appropriate federal agency in accordance with its established appeal procedures when the subject project is federally funded.

2-2 ASSIGNMENT

2-2.1 Contractor Indebtedness

Indebtedness incurred for any cause in connection with this work must be paid by the Contractor and the City is hereby relieved at all times from any indebtedness or claim other than payments under terms of the Contract. The Contractor will indemnify and hold harmless the City and its officers and employees from any loss, demand, damages, claims or actions arising from or in connection with said indebtedness.

2-3 SUBCONTRACTS

There are no "Specialty Items" on this project.

*****2-3.2 Additional Responsibilities.** The following paragraph from **Section 2-3.2 Additional Responsibility** has been **DELETED** from the project specifications:

“The Contractor shall perform, with its own organization, Contract work amounting to at least 50 percent of the Contract Price except that any designated “Specialty Items” may be performed by subcontract and the amount of any such “Specialty Items” so performed may be deducted from the Contract Price before computing the amount required to be performed by the Contractor with its own organization. “Specialty Items” will be identified by the Agency in the Bid or Proposal. Where an entire item is subcontracted, the value of work subcontracted will be based on the Contract Unit Price. When a portion of an item is subcontracted, the value of work subcontracted will be based on the estimated percentage of the Contract Unit Price. This will be determined from information submitted by the Contractor, and subject to approval by the Engineer.

The deletion of Section 2-3.2 – Additional Responsibility from Specification No. «SpecNo» is specific to Bid No. «BidNo» and shall not constitute a waiver by City of its right to enforce this provision under the Contract Documents for any other project, unless otherwise specified in writing by the City.

2-3.3 Subcontractor Qualifications

The Subcontractors, if any, shall have a minimum of five years of continuous experience in the construction of *****potable/recycled/raw water transmission mains, ***and in Bore and Jack construction.** **the work involved.** The duration of the experience shall be counted in reverse chronological order, beginning from the date bids are opened for this project. Qualifying experience shall be under current contractor’s license and company name.

The prime contractor shall list the subcontractor’s business name, location, and California contractor license number.

2-3.4 Prompt Payment to Contractors

The prime Contractor shall pay each subcontractor under the prime contract for satisfactory performance of its contract no later than 10 days from the receipt of each payment the

prime contractor receives from the City. The prime contractor agrees further to return retainage payments to each subcontractor within 30 days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the City.

2-4 CONTRACT BONDS

Performance and Payment bonds are required. The amount of each Bond shall be 100 percent of the Contract Price. See Section 2-4 of the Standard Specifications for other details.

Listing of bonding companies in U.S. Department of Treasury Circular 570 is not required, but the corporate surety must be authorized to issue the bonds in the State of California with a policy holder's rating of A or higher and a Financial Class VII or larger. For information to bidders, attached to these Special Provisions are forms for Performance Bond and Payment Bond. These forms, in lieu of bonding company forms, must be used. The forms will be delivered to the Contractor with the Contract Agreement.

Each bond which is subscribed by an out-of-state bonding company shall contain the name, address and telephone number of an agent located in the State of California who is authorized to act for the bonding company.

For contracts under \$5,000 the posting of performance and payment bonds is not required.

2-5 PLANS AND SPECIFICATIONS

2-5.1 General

The work embraced herein shall be done in accordance with the provisions of the "Greenbook" STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (Latest Edition and all supplements), prepared by Public Works Standards, Inc. (Published by BNI Publications, Inc.), insofar as the same may apply, which specifications are hereinafter referred to as the Standard Specifications, and as provided herein.

Should any discrepancy or apparent error occur in Plans and Specifications, or should any work of others affect this work, the Contractor shall notify the Private Engineer at once. If the Contractor proceeds with the work affected without instructions from the Private Engineer, he/she shall correct any resultant damage or defect.

2-5.1.1 Standard Specifications

The work embraced herein shall be done in accordance with the provisions of the STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, ***2012 Edition, written by Public Works Standards, Inc., insofar as the same may apply, which specifications are hereinafter referred to as the Standard Specifications, and as modified herein.

Where reference is made to the “Standard Plans”, the City of Riverside, Public Works Department “Standard Drawings for Construction” and the City of Riverside Public Utilities Water Division “Standard Drawings” shall apply.

2-5.1.2 Errors or Discrepancies Noted by Contractor

It is the duty of the Contractor to promptly notify the City in writing of any design, materials, or specified method that the Contractor believes may prove defective or insufficient. If the Contractor believes that a defect or insufficiency exists in design, materials, or specified method and fails to promptly notify the City in writing of this belief, the Contractor waives any right to assert that defect or insufficiency in design, materials, or specified method at any later date in any legal or equitable proceeding against Owner, or in any subsequent arbitration or settlement conference between the Owner and the Contractor. The Engineer, on receipt of any such notice, will promptly investigate the circumstances and give appropriate instructions to the Contractor after acquiring approval of Owner. Until such instructions are given, any work done by the Contractor after Contractor comes to the belief that a defect or insufficiency exists in design, materials, or specified method which is directly or indirectly affected by such alleged defect or insufficiency in design, materials, or specified method will be at Contractor’s own risk and Contractor shall bear all cost arising therefrom.

If the Contractor, either before commencing work or in the course of the work, finds any discrepancy between the specifications and the plans or between either of them and the physical conditions at the site of the work or finds any error or omission in any of the plans or in any survey, Contractor shall promptly notify the Engineer of such discrepancy, error, or omission. If the Contractor observes that any plans or specifications are at variance with any applicable law, ordinance, regulation, order, or decree, Contractor shall promptly notify the Engineer in writing of such conflict. The Engineer, on receipt of any such notice, will promptly investigate the circumstances and give appropriate instructions to the Contractor after acquiring approval of Owner. Until such instructions are given, any work done by the Contractor after the discovery of such error, discrepancy, or conflict which is directly or indirectly affected by such error, discrepancy, or conflict will be at Contractor’s own risk and Contractor shall bear all cost arising therefrom.

2-5.2 Precedence of Contract Documents

The precedence of the contract documents shall be as follows:

- a. Agreement for Furnishing and Installing «Job_Title_2». Purchase Order for Furnishing and Installing «Job_Title_2».
- b. Permits from other agencies as may be required by law.
- c. Contract change orders.
- d. Addendum issued during the bidding process.

- e. Construction drawings including construction notes.
- f. Special Provisions including Standard Drawings.
- g. Standard Specifications.
- h. Reference Specifications.

In the event of any discrepancy between any drawing and the figures written thereon, the figures shall be taken as correct. Detailed drawings shall prevail over general drawings.

2-5.3 Shop Drawings and Submittals

Shop drawings need not be reproducible. A minimum of two copies shall be submitted to the Engineer for approval.

2-5.3.2 Shop Drawings

The City approved "Shop Drawings," showing fabrication, assembly, or other required details as specified by the "Materials Contractor" are hereby made a part of these Special Provisions by reference.

Submittals need not be reproducible. A minimum of two copies shall be submitted for approval. "Shop Drawings" will be required for the following:

- a. Pipe Fabrication Details and Layout Sheets.
 - ***(1) Mortar Lined and Coated Steel Pipe.
 - (2) Ductile Iron Pipe.
 - (3) Polyvinyl Chloride (PVC) Pipe.
 - b. Fittings, valves and all appurtenances.
 - c. Trench Shoring Details.
 - d. Asphalt Concrete Pavement.
 - e. Crushed Aggregate Base.
 - f. Concrete Vaults and Covers.
 - g. Paint Schedule.
 - h. Bore Pit Shoring Details and Steel Plating.
 - i. «Casing_Dia» Steel Casing Pipe.
-
- a. Asphalt Concrete Base Pavement Material (B-PG-64-10).
 - b. Asphalt Concrete Cap Material (C2-PG-64-10).
 - c. Class II Crushed Aggregate Base Material.
 - d. Type II Slurry.

2-5.3.3 Submittals

See Section 313 for "As Built" Drawings submittals.

2-5.4 Plans

Plans shall be submitted for approval by City, and shall bear the signature and seal of the Private Engineer, with expiration date. The project location, nature, size, extent, form and detail of its various features shall be shown on the Plans prepared by the Private Engineer.

***«JOB_TITLE_1»	
TITLE	SHEET NUMBER
Title Sheet, Index, Benchmark, Basis of Bearing, Legend, Location & Vicinity Map	D5-«WorkOrderNo»-1
Notes and Abbreviations	D5-«WorkOrderNo»-2
Pipeline Plan	D5-«WorkOrderNo»-3 & 4
Construction Details	D5-«WorkOrderNo»-5
Traffic Control Plan	D5-«WorkOrderNo»-6 thru 11

«JOB_TITLE_1»	
TITLE	SHEET NUMBER
Title and Index.	D5-«WorkOrderNo»-1
General Notes, Construction Notes, Signing and Striping General Notes, Typical Trench Repair Details and Notes.	D5-«WorkOrderNo»-2
Paving Plans.	D5-«WorkOrderNo»-3 thru 6

2-5.5 Certification

Written original letters of compliance from the manufacturer and/or supplier on valves, pipe or mechanical equipment shall be submitted to the City at the preconstruction conference. Maintenance manuals, parts list and related drawings shall be submitted prior to acceptance by City.

2-5.6 Publications

All manufacturers publications shall be the latest edition unless otherwise shown on the construction drawings, standard drawings, or these specifications.

2-5.7 Material List and Drawing

The Contractor shall submit to the Engineer, for the Engineer’s approval, an original list of

materials which the contractor proposes to install. The Contractor shall be responsible for any material purchased, labor performed, or delay to the work prior to such approval. The list shall be complete as to the name of the manufacturer, size and catalog number of unit; and shall be supplemented by such other data as may be required, including detailed scale drawings, and any non-standard special material, and shall show any proposed deviation from the Plans. The Contractor shall submit for approval when requested, sample articles of any materials proposed for use. All such data shall be submitted in duplicate for checking. After checking, correction and approval, not less than three complete sets shall be submitted to the Engineer.

The Contractor shall also furnish all literature and drawings which are received with the maintenance of that equipment.

2-6.1 Labor and Materials Provided by Others

Labor and materials for connecting to existing waterlines will be provided by City forces, unless otherwise shown.

2-7 SUBSURFACE DATA

The Contractor assumes all responsibility for the foreknowledge of the extent and nature of the soil properties in the construction zone before and during construction. It is the Bidder's responsibility to examine the site and perform any and all testing and evaluations necessary from which to draw conclusions regarding:

1. The ease or difficulty of excavation.
2. The presence, nature and extent of any rock.
3. The depth of groundwater.
4. The stability of excavations.
5. The suitability and quantity of excavation materials for the pipe bedding and backfill or sources for importing bedding and backfill materials.

***** 2-7.1 Soils Investigation.** A Soils Investigation prepared by LOR GEOTECHNICAL GROUP INC. dated May 29, 2007 for this project will be available for review at Riverside Public Utilities Department/Water Engineering, 3750 University Avenue, 3rd floor, Riverside, California. The Water Division will not fax, mail, e-mail, or transmit in any way, copies of all or part of the soils report.

This soils investigation is **not** part of the Contract Documents. The investigation is neither exhaustive nor conclusive; it is intended to be advisory only and is incorporated as a convenience to the Contractor. All soil boring data and sieve analysis results, field and laboratory test data, and compaction test data applies only to the locations of the test

borings as shown by the report. City does not guarantee the accuracy or completeness of the information contained in the report.

Contractor shall interpret the aforementioned data and results contained in the soils investigation and, if necessary, conduct additional subsurface exploration at Contractor's expense to verify said aforementioned data or to obtain similar data throughout the worksite.

If Contractor uses the information contained in the report in preparing his or her bid, Contractor must assume all risks resulting from conditions differing from those described therein. Information contained in the report shall not relieve the Contractor of the responsibility to perform the work for the amounts bid.

*****2-8.1 Rights of Entry.** ****[Use this section, if the project involves any work on a private property or within the property or jurisdiction of another agency, such as Caltrans, Riverside County Flood Control, Riverside or San Bernardino County, Metropolitan, Western, or Eastern Municipal Water District, various public and private utilities, etc., and for which the City and or/the Contractor would be required to comply with certain requirements prescribed by the property owner and/or the affected agency pursuant to an agreement, encroachment permit, right-of-entry permission, etc.. Describe what would be required of the Contractor, including payment of any fees, or insurance covering others and attach to these Special Provisions any related permits or documents, if appropriate. Delete the section in its entirety, if not needed.]****

2-9 SURVEYING

2-9.1 Permanent Survey Markers

The Contractor shall not disturb or destroy any existing monuments or benchmarks. If any survey monuments or benchmarks need to be removed and replaced, Contractor shall notify the Engineer prior to construction.

Before removing any monuments in preparation for construction, the City will set at least four ties for each monument to be removed and replaced, all at Contractor's expense. After construction, the City will replace each monument using the aforementioned ties and file a corner record for each replaced monument, all at Contractor's expense.

2-9.2 Survey Service

The Contractor shall provide a minimum four working days written notice of survey requirements to allow for scheduling and completion of survey staking. The Contractor shall bear the expense for the replacement of survey stakes, in case of their removal or destruction, at the rate set forth by the City of Riverside, Public Works Department—Survey.

For the welded steel water transmission pipelines, the City will provide construction staking at pipeline connections, grade breaks, at fittings, and at appurtenances (construction

staking will not be provided for water services).

2-9.4 Line and Grade

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, waterline shall be constructed so that actual waterline centerlines, measured at pipe joints, are within 0.1 foot of design centerlines.

2-9.4.1 Grade Sheets

All grade sheets will be issued by the Engineer at the Engineer's office at 3750 University Drive, 3rd Floor, Riverside, California. No grade sheet will be issued until the Contractor has obtained and paid for all necessary permits.

2-11 INSPECTION

A City Inspector will be required on the job site at all times as deemed necessary by the City. A 48 hour minimum notice is required when requesting inspection. The Contractor is also obligated to arrange inspection by other agencies as required by State or local laws. *All work carried out by the Contractor without the Inspector's knowledge will be required to be repeated at no cost to the City.* Inspection of the work shall not relieve the contractor of the obligation to fulfill all conditions of the contract.

2-11.1 Inspection Scheduling

Inspection will be provided based on regular eight hour working days, generally from 7:30 AM to 4:00 PM (including 30 minutes for lunch), Monday through Friday. When the Contractor's operations and the safety of the public require inspection beyond eight hours, or the Contractor requests inspection for other than regular City working days and the City agrees to same, the cost will be deducted from the Contractor's payment at the following rate:

Daily	(8 hours to 12 hours)	1.5 times Inspectors hourly rate plus overhead
Daily	(More than 12 hours)	2.0 times Inspectors hourly rate plus overhead
Saturday	(12 hours or less)	1.5 times Inspectors hourly rate plus overhead
Saturday	(More than 12 hours)	2.0 times Inspectors hourly rate plus overhead
Sunday		2.0 times Inspectors hourly rate plus overhead
Holidays		3.0 times Inspectors hourly rate plus overhead

The Contractor shall notify the Engineer not less than 48 hours in advance of inspection requirements.

A City Inspector will be required on the job site when the Contractor is working or as

deemed necessary by the Engineer. The Contractor shall schedule inspection by other agencies as required by State or local laws. **All Work performed by the Contractor without the inspector's knowledge shall be repeated at no cost to the City.** This requirement shall apply to all phases of the Work.

***All work within the Union Pacific Railroad (UPRR) Right-of-Way, including survey work, will require the presence of a UPRR flagman. The Contractor shall comply with all UPRR requirements. The Contractor is responsible for scheduling the UPRR flagman. At least 10 days prior written notice is required for scheduling UPRR flagman. Any costs associated with the UPRR flagman shall be borne by the contractor.

***All work within the vicinity of the Kinder/Morgan pipeline will require inspection by that company. The Contractor is responsible for scheduling for the Kinder/Morgan inspector. At least 10 days prior written notice is required for the Kinder/Morgan inspector. Any costs associated with the Kinder/Morgan inspection shall be borne by the contractor.

*** 2-11.2 Pipe Interior Inspection

Inspection of the interior of the «PipeDia_1» pipeline shall be done by remote video camera after installation of 500 linear feet or less. The video camera and equipment shall be clean and shall be inspected by the City before it is used to inspect the water main. In addition, the camera shall be equipped with the necessary components to inspect and video 360 degrees of the pipe joints and all pipe connections. The contractor is responsible to clean the pipe thoroughly before the video inspection begins.

The Contractor shall give the Engineer a two (2) business day notice that video inspection will occur. Contractor shall provide a complete video inspection of all welded joints. Once the Engineer and Inspector are satisfied with the quality of welds and no corrections are needed then the Contractor can proceed to grout all joints. Contractor shall then video inspect the grouted joints. Once the Engineer and Inspector are satisfied with the quality of the grouted joints and no corrections are needed, then the Contractor can continue with construction. No additional compensation to the Contractor shall be provided for the video inspection process.

For pipe joint identification purposes, the video shall display pipe information, but it shall not be limited to, pipe station and type of issue. All issues with the lining and pipe shall be recorded. Contractor shall provide video inspection of each run on DVD to the Engineer. Contractor shall deliver to the City original copies of all the video records and data logs.

The Contractor is responsible to re-video, at no additional cost to the City, the water main at locations where deficiencies were identified and repairs were needed to comply with these specifications.

The interior of the pipe is considered a permitted confined space. In order for a person to enter or occupy the interior of the pipe, a confined space permit shall be obtained from OSHA.

SECTION 3 - CHANGES IN WORK

3-3 EXTRA WORK.

3-3.2 Payment

3-3.2.1 General

When the price for the extra work cannot be agreed upon, the City will pay for the extra work as provided in Subsection 3-3.2.2 and Subsection 3-3.2.3 as amended herein. The labor, materials and equipment used in the performance of such work shall be subject to the approval of the Engineer.

3-3.2.2 Basis for Establishing Costs

(a) **Labor.** The Contractor will be paid the cost of labor for the workers including foremen (when authorized by the Engineer) used in the actual and direct performance of the work. The cost of labor, whether the employer is the Contractor, subcontractor, or other forces, will be the sum of the following:

Actual Wages - The actual wages paid shall include any employer payments to or on behalf of the worker for health and welfare, pension, vacation, and similar purposes.

Labor Surcharge - To the actual wages, as defined above, will be added a labor surcharge set forth in the California Department of Transportation, Standard Specification, Section 9-1.03A(1b) "Labor Surcharge and Equipment Rental Rates" which is in effect on the date the work is performed.

(b) **Materials.** Only materials furnished by the Contractor and necessarily used in the performance of the work will be paid for. The cost of such material will be the cost to the purchaser, whether Contractor, subcontractor or other forces, from the supplier thereof as evidenced by supplier's invoice.

The City reserves the right to approve materials and sources of supply, or to supply materials to the Contractor if necessary for the progress of the work. No markup shall be applied to any material provided by the City.

(c) **Tool and Equipment Rental.** The Contractor will be paid for the use of equipment at the rental rates listed for such equipment in the Department of Transportation publication entitled "Labor Surcharge and Equipment Rental Rates" which is in effect on the date upon which the work is performed. These rental rates shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals. Move in and out or minimum charges, other than the hourly rate, shall not apply to equipment available from the work force already on the job site.

When owner-operated equipment is used to perform extra work to be paid for on a force account basis, the Contractor will be paid for the equipment and operator, as follows:

Payment for the equipment will be made at the rental rates listed for such equipment in the Department of Transportation publication entitled "Labor Surcharge and Equipment Rental Rates" which is in effect on the date upon which the work is performed.

Individual pieces of equipment or tools not listed in the Equipment Rental Rates and having a replacement value of \$200 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefore.

Payment for the cost of labor will be made at the rates paid by the Contractor to other workers operating similar equipment already on the project or, in the absence of such other workers, at the rates for such labor established by collective bargaining agreements for the type of workers and location of the work, whether or not the owner-operator is actually covered by such an agreement.

(d) Other Items. Not amended.

(e) Invoices. Not amended.

3-3.2.3 Markup

(a) **Work by Contractor.** A markup of 15 percent shall be added to the Contractor's costs for labor, materials, and equipment rentals, shall constitute the markup for all overhead and profits. In addition to this markup 1 percent shall be added to the Contractor's costs as compensation for bonding.

(b) **Work by Subcontractor.** When any of the extra work is performed by a Subcontractor, the markup established in 3-3.2.3(a) of these Special Provisions shall be applied to the Subcontractor's costs as determined under 3-3.2.2. **There will be no additional allowance for the Contractor's administrative cost, overhead and profit.**

3-3.3 Daily Reports by Contractor

The Contractor shall maintain Contractor's records in such a manner as to provide a clear distinction between the direct costs of extra work paid for on a force account basis and the costs of other operations.

From the above records, the Contractor shall furnish the Engineer completed daily extra work reports, on forms furnished by the City, for each day's extra work to be paid on a force account basis. The daily extra work reports shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the Contractor, subcontractor, or other forces. The daily extra work reports shall provide names or identifications and classifications of workers, the hourly rate of pay and hours worked, and also the size, type and identification number of equipment, and hours operated.

Material charges shall be substantiated by valid copies of vendor's invoices. Such invoices shall be submitted with the daily extra work reports, or if not available, they shall be submitted with subsequent daily extra work reports.

Said daily extra work reports shall be signed by the Contractor or the Contractor's authorized representative, and submitted to the Engineer within 48-hours of the date the work is performed.

The Engineer will compare Engineer's records with the completed daily extra work reports furnished by the Contractor and make any necessary adjustments. When these daily extra work reports are agreed upon and signed by both parties, said reports shall become the basis of payment for the work performed.

3-3.3.1 Daily Reports for Extra Work

The daily report specified in Section 3-3.3 of the Standard Specifications shall include only that work which is included in the contractor's claim for extra work.

3-4 Changed Conditions

Section 7104 of the Public Contract Code requires the following provisions for any project, which involves digging trenches or other excavations that extend deeper than four feet below the surface. These following provisions are hereby extended to apply to all public works projects:

a) The Contractor shall promptly, and before the following conditions are disturbed, notify the Engineer, in writing, of any:

1. Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, and that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of law;

2. Subsurface or latent physical conditions at the site differing from those indicated by information about the site made available to bidders prior to the deadline for submitting bids; and

3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.

b) In response to the Contractor's written notice, the Engineer shall promptly investigate the conditions, and if the Engineer finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the work shall issue a change order under the procedures described in the Contract.

c) In the event that a dispute arises between the Engineer and the Contractor, whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all work to be performed under the Contract. The 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.

3-5 Disputed Work

In any case where the Contractor believes extra compensation is due the Contractor for work or materials not clearly covered in the Contract, or not ordered by the Engineer as "extra work", the Contractor shall notify the Engineer in writing of the Contractor's intention to make claim for such extra compensation before the Contractor begins the work on which Contractor bases the claim. If such notification is not given, or the Engineer is not afforded proper facilities by the Contractor for keeping strict account of actual cost, then the Contractor shall be deemed to have waived the claims for such extra compensation. Such notice by the Contractor, and the fact that the Engineer has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the claim. The validity of the claim must be determined by the Engineer. If the Engineer determines that the claim is well founded, it shall be allowed and paid for as "extra work"; if the Engineer determines that the claim is not well founded, it shall be disallowed and not paid.

3-6 Unauthorized Work

Work done beyond the lines and grades shown on the Plans, work done in the absence or without the knowledge of the Engineer or any alleged extra work done without the City's written authorization, will be considered as unauthorized and at the expense of the Contractor and will not be measured or paid for by the City. The Contractor may be required to remove such unauthorized work at no expense to the City, as determined by the Engineer.

3-7 Notice of Potential Claim

The Contractor shall not be entitled to the payment of any additional compensation or extension of time unless the Contractor has given the Engineer a written Notice of Potential Claim as required herein. Compliance with this Section 3-7 shall not be a prerequisite as to matters within the scope of the protest provisions in Section 6-7, "Time of Completion," or the notice provisions in Section 3-4, "Changed Conditions," nor to any claim which is based on differences in measurements or errors of computation as to Contract quantities.

Contractor shall submit the written Notice of Potential Claim to the Engineer prior to the time that the Contractor performs the work giving rise to the potential claim for additional compensation and/or time.

Contractor's written Notice of Potential Claim shall be submitted on the appropriate form furnished by the City, and shall be certified with reference to the California False Claims Act, Government Code Sections 12650 - 12655. A copy of the Notice of Potential Claim form is contained in these Special Provisions. The notice shall set forth the justification for the additional compensation, as well as a breakdown of the estimated costs. Within fifteen (15) calendar days of completing the affected work, the Contractor shall submit substantiation of the Contractor's actual costs. Failure to do so shall be sufficient cause for denial of any claim subsequently filed on the basis of the Notice of Potential Claim.

The intention of this section is to bring differences between the parties to the attention of the Engineer as early as possible, in order to expedite resolution. Contractor waives its right to any additional compensation and/or extension of time for any claim not submitted in accordance with this section.

Upon request by City, Contractor shall make available for inspection and copying, any and all documents or records in Contractor's possession which pertain to the potential claim.

SECTION 4 - CONTROL OF MATERIALS

4-0 GENERAL

All affidavits of compliance and certifications referenced herein shall be addressed to the City of Riverside, identify the items supplied, and specify the project or plan number for which the material is being supplied.

4-1 MATERIALS AND WORKMANSHIP

4-1.1.1 Conformity with Contract Documents and Allowable Deviations

The work shall conform to the lines, grades, dimensions, tolerances, and material and equipment requirements shown on the plans or set forth in the specifications. Although measurement, sampling, and testing may be considered evidence as to such conformity, the Engineer shall be the sole judge as to whether the work or materials deviate from the plans and specifications, and his decision as to any allowable deviations therefrom shall be final.

If specific lines, grades, and dimensions are not shown on plans, those furnished by the Engineer shall govern.

4-1.1.2 Manufacturer's Instructions

All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier, or distributor, except as otherwise specifically provided in the Contract Documents.

4-1.1.3 Property Rights in Material

After the Contractor has the material attached or affixed to the work or the soil, and after RPU accepts the system, it shall become the property of the City.

4-1.4 Tests of Materials

The following conditions and materials will be tested by the City in addition to the required manufacturer or other test specified: Bituminous paving materials, base material and relative compaction. These tests shall be made by and at the expense of the City after requested by the Contractor in such number and at such locations as deemed necessary by the Engineer to ensure compliance with Specification. However, the cost of retesting any portion of the work which has failed the initial tests taken by the City shall be borne by the Contractor.

4-1.5 Certification

Written test certificates, maintenance manuals, parts list, and related drawings on the material listed in section 2-5.3 *shall be submitted for approval prior to installation*; other certificate requirements are set forth in Part 2 Construction Materials.

SECTION 5 - UTILITIES

5-1 LOCATION

Contractors shall use the one-call telephone number, 1-800-227-2600, of Underground Service Alert (USA) in order to have underground installations marked. The following is not inclusive: Pacific Bell, AT&T Distribution and Transmission Southern California Gas Company, Charter Communications, Kinder/Morgan Energy Partners, Southern California Edison Distribution and Transmission, City of Riverside Electric, and Water Divisions, as well as, City of Riverside Public Works Department, and Traffic Divisions, *****the City of Colton Engineering Department, the City of San Bernardino Development Services Department, The City of Riverside, nor the City of Colton, nor the City of San Bernardino** will not issue any construction permits involving excavation for underground facilities unless the applicant has been provided an inquiry identification number by USA.

5-2 PROTECTION

Sewer laterals which are accidentally broken while working on a trench shall be repaired by the Contractor at Contractor's expense. The Contractor shall immediately notify the CWD and the PWD of the damaged sewer laterals. Construction to be in accordance with City of Riverside Public Works Department Standard Drawing No. 554. The Contractor shall call Underground Service Alert (DIG ALERT) at 1-800-227-2600, two working days before proceeding with any excavation work.

5-4 RELOCATION

5-4.1 Utility Interferences

The Contractor shall adjust the pipeline grade as necessary (after approval by the Engineer) to clear all utilities or other interferences including, but not limited to, gas, telephone, underground electrical, water mains, and sewer services and storm drains.

The Contractor shall have the appropriate agencies locate their facilities prior to construction. All utility interferences shall be verified prior to actual construction by exposing the utility. It shall be the Contractor's responsibility to notify the Engineer of any utility conflicts which have been verified by exposing the utility.

5-4.2 Sewer Laterals

Sewer laterals which are broken during construction shall be repaired by the Contractor at Contractor's expense.

5-4.3 Payment for Sewer Lateral Relocation

As a stipulated unit price under Section 3-2.2.2 of the Standard Specification, where a sewer lateral is in direct conflict with the proposed permanent work, reimbursement for relocation shall be made at the following stipulated price: **\$30.00** per linear foot of relocated sewer.

SECTION 6 - PROSECUTION, PROGRESS AND ACCEPTANCE OF THE WORK

6-1 CONSTRUCTION SCHEDULE AND COMMENCEMENT OF WORK

The Contractor shall submit a construction schedule to the Engineer at the pre-construction meeting. During the construction the Contractor shall review and update the schedule weekly. Rescheduling any work under this Contract shall not be permitted to allow the Contractor the ability to accommodate another contract, even with the City.

The Contract time shall commence on the date specified in the Notice to Proceed; and Contractor shall start work thereafter. The project within *****seven (7) days** after the date of the Notice to Proceed.

The first order of work shall be the installation of the public notification signs. The signs shall be posted a minimum of one week prior to commencing construction operations on the street. A minimum of *****two (2) (number of signs shall agree with section 7-10.3)** notification signs are required. However, the Engineer may have the Contractor install additional notification signs at the Contractor's expense, if necessary. Placement of the notification signs shall be approved by the Engineer prior to installation of the signs by the Contractor. Posting and removal of all signs shall be at Contractor's expense.

6-1.1 Pre-construction Meeting

A pre-construction meeting shall be held at a time designated by the Engineer for this project.

The following information shall be provided at the meeting:

- a. Project construction schedule indicating major activities (including start/end dates) and production rates; equipment and hourly cost rates, and work force by job classification and hourly salary rates.
- b. State excavation permit.
- c. Location for survey layout.

- d. Materials delivery schedule (delivery to be coordinated with the City Inspector).
- e. Arrangements for utility coordination.
- f. Shoring plan and details, including design of steel plates for trenches exceeding 63-inches in width as required by Section 306-1 Open Trench Operations.
- g. Material Certifications.
- h. 24-hour telephone numbers and contact persons' names.
- i. Preconstruction photo and video record of the construction site (submitted on DVD).
- j. Evidence that an application(s) for a street opening permit and/or other encroachment permit(s) as necessary for the project have been submitted to the appropriate agencies.

The Engineer will submit minutes of the meeting to the Contractor for review prior to beginning the work contemplated under the Contract.

6-1.2 Biweekly Progress Meetings

Biweekly progress meetings shall be held at a time designated by the Engineer for the project at either the project site, or in the Public Utilities Building. During these meetings, Contractor shall provide the following information in writing, including, but not limited to: project schedule update, anticipated work for the following two weeks, construction related issues, and action items.

6-3 SUSPENSION OF WORK

Subsection 6-3.3 is added as follows:

6-3.3 Suspension of Work Due to a Stage III Smog Episode

No work shall be done on a day for which a Stage III smog episode is forecast as defined by the Air Quality Management District (AQMD). The Contractor will not be entitled to any delay damages for such a suspension, but an automatic time extension will be granted.

When the AQMD predicts that a Stage III episode level will be reached the following day, an announcement containing the specifics will generally be provided by 2:00 p.m. on the day the prediction is made.

6-7 TIME OF COMPLETION

6-7.1 General

Time is of the essence. This project is divided into ***three phases. The Contractor shall complete all work for Phase I, Phase II, and Phase III, in accordance with the plans and specifications, **within sixty (60) calendar days** after the commencement date specified in the Notice to Proceed as follows:

Phase I

Contractor – Submittal of shop drawings, pipe delivery to job site, Construction of waterline, bore and jack, and installation of appurtenances, including testing and disinfection, and base paving. 45 days

Phase II

Contractor – System Connection work and
City Forces – System Connection work 5 days

Phase III

Contractor – Completion of final pavement (including paving for City Forces Work), striping, traffic signal repair, and cleanup work. 10 days

The work phases of this project shall follow in sequence. The Time of Completion for the project shall be from the commencement date specified in the Notice to Proceed. These times include materials and pipe delivery to the job site and time to complete system connections.

The Contractor shall indicate on the project schedule the allotted time for pipe delivery.

Phase I

Contractor – Completion of all permanent pavement, traffic loop replacement, striping, and painting for Move-In No. 1. 21 calendar days

Phase II

City Forces – Completion of water main installation for Move-In No. 2. 45 calendar days

Phase III

Contractor – Completion of all permanent pavement, traffic loop replacement, striping, and painting for Move-In No. 2. 14 calendar days

The Contractor shall be advised that the time allotted for the City Forces to complete the water main installations is approximate. The actual duration of this work might be longer or shorter than shown. The Contractor shall begin work within seven (7) calendar days from the date the City notifies the Contractor to commence permanent paving on any street.

6-7.2 City Holidays

CITY HOLIDAYS WILL BE OBSERVED ON THE FOLLOWING DAYS:

January 1st.....	New Years Day
Third Monday in January.....	Martin Luther King Jr's Birthday
Third Monday in February	President's Day
Last Monday In May	Memorial Day
July 4th.....	Independence Day
First Monday in September	Labor Day
Second Monday in October.....	Columbus Day
November 11.....	Veteran's Day
Fourth Thursday in November	Thanksgiving Day
The day following Thanksgiving Day	
December 25.....	Christmas Day

If a holiday falls on a Saturday, it will be observed on the preceding Friday. If a holiday falls on a Sunday, it will be observed on the following Monday.

6-8 COMPLETION, ACCEPTANCE AND WARRANTY

The Work will be inspected by the Engineer for final acceptance upon receipt of the Contractor's written assertion that all Work has been completed.

When, in the judgment of the Engineer, all Work has been completed in accordance with the plans and specifications and is ready for final acceptance, the Engineer may accept the Work as complete. Upon acceptance of all the Work, the Engineer will notify the Board of Public Utilities, the City Clerk and the City Attorney of the completion thereof, giving the date when the Work was completed, and the City Clerk will file a Notice of Completion with the County Recorder. The date of the Engineer's acceptance of the Work will be the date when the Contractor is relieved from responsibility to protect and maintain the Work.

The third paragraph of Section 6-8 is amended in part as follows:

6-8.1 Guarantee of Work and Materials

The Contractor shall assure and guarantee the Work and all material against any and all defective work done or defective materials furnished, in the performance of the Contract, for a period of one year from the date the Notice of Completion is recorded.

6-8.2 One-Year Guarantee

The Contractor shall be responsible for and guarantee the maintenance of all workmanship and materials for a period of one year following the completion and final acceptance by the City. Any defective labor and materials furnished in the performance of the work shall be repaired or replaced immediately. The Engineer may elect to repair or replace the defective work by the use of City forces or any other methods, at the Contractor's expense,

if Public Safety is endangered.

6-9 LIQUIDATED DAMAGES

Section 6-9 of the Standard Specification RFP 1033 1239 is amended to provide that liquidated damages shall be in the amount of *****\$1,000.00 per calendar day in excess of the time specified for completion of the project.**

[be sure the same amount is used in the Sample Agreement]

Execution of the Contract Agreement under these specifications shall constitute agreement by the City and Contractor that **\$1,000.00 per calendar day for Phase I, Phase II, and Phase III** is the minimum value of the costs and actual damage caused by failure of the Contractor to complete the Work within the allotted time and that such sum is liquidated damages and shall not be construed as a penalty.

Additional liquidated damages shall be assessed in the amount of *****\$500** per calendar day *[be sure the same amount is used in the Sample Agreement]* for failure to comply with the State Permit for Storm Water Discharge Associated with Construction Activity during all phases of construction and for failure to complete, implement, or maintain the Storm Water Pollution Prevention Plan (SWPPP) within the periods specified in Section 7-8.6 of these Special Provisions.

Additional liquidated damages shall be assessed in the amount of *****\$500** per incident *[be sure the same amount is used in the Sample Agreement]* that the Contractor fails to install the Best Management Practices (BMP's) within 24 hours of notification as described in Section 7-8.6 of the Special Provisions.

Additional liquidated damages shall be assessed in the amount of *****\$500** per incident *[be sure the same amount is used in the Sample Agreement]* that the Contractor fails to provide traffic control in accordance with the plans and specifications.

Additional liquidated damages shall be assessed in the amount of *****\$500** per incident *[be sure the same amount is used in the Sample Agreement]* that the Contractor fails to follow the project working hours.

The Contractor will not be assessed liquidated damages for delay in completion of the project, when such delay is caused by the City.

SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR

7-1.1 Contractor's Responsibility for the Work

Until the acceptance of all the work, the Contractor shall have the responsible charge and care of the work and of the materials to be used therein (including materials for which Contractor has received partial payment) and shall bear the risk of injury, loss, 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.

The Contractor shall rebuild, repair, restore, and make good all injuries, losses, or damages to any portion of the work or the materials occasioned by any cause before its completion and acceptance and shall bear the expense thereof. Where necessary to protect the work or materials from damage, the Contractor shall, at Contractor's expense, provide suitable drainage and erect such temporary structures as are necessary to protect the work or materials from damage. The suspension of the work or the granting of an extension of time from any cause whatever shall not relieve the Contractor of the responsibility for the work and materials as herein specified.

In an emergency affecting the safety of life or property, including adjoining property, the Contractor, without special instructions or authorizations, shall act at Contractor's discretion to prevent such threatened loss or injury.

Notwithstanding the foregoing provisions of this article, the Contractor shall not be responsible for the cost of repairing or restoring damage to the work, which damage is determined to have been proximately caused by an Act of God, in excess of 5 percent of the contracted amount, provided that the work damaged is built in accordance with accepted and applicable building standards and the plans and specifications. For the purposes of this paragraph, "Acts of God" shall include only the following occurrences or conditions and effect: earthquakes in excess of a magnitude of 3.5 on the Richter Scale and tidal waves.

7-2 LABOR

7-2.1.1 General Contractor Staff

The Contractor and Contractor's employees shall comply with the included "City of Riverside Contractor Customer Service Standards Acknowledgment" which is hereby made a part of these Special Provisions. This form is included in part 13 of these special provisions.

7-2.2.1 Prevailing Wage/Certified Payrolls

A schedule of prevailing wage rates as published by the California Department of Industrial Relations for the types of work to be done under these Special Provisions is on file in the office of the City Clerk, City Hall, 3900 Main Street, Riverside, which schedule is open for inspection to any interested party on request. The Contractor and all subcontractors shall pay not less than these rates. The Contractor shall submit weekly certified payrolls of all workers employed on this project.

If the Contractor has not submitted satisfactory payrolls for the period during which the work included in the Contractor's payment request was performed, the City will retain an amount equal to 5 percent of the estimated value of the work performed (exclusive of Mobilization) from that payment. This retention shall not exceed \$10,000 nor be less than \$1,000. Retentions for failure to submit satisfactory payrolls shall be additional to all other

retentions provided for in the contract. The retention for failure to submit payrolls for any work period will be released for payment only after all the satisfactory payrolls for which the retention was made are submitted. Payment of the retention will be made on the next monthly payment due the contractor after the satisfactory payrolls are received by the City.

The possibility of wage increases is one of the elements to be considered by the Contractor in determining Contractor's bid. No additional compensations will be made for any increases in prevailing wage rates in excess of those set forth in the Contract. However, if the job is prolonged as a result of construction change order(s) or delayed by the City beyond the specified days in the Time of Completion, reimbursements may be made for increases in prevailing wage rates, but only for the working days beyond that stipulated in Section 6-7.

7-3 LIABILITY INSURANCE

The liability insurance shall be issued by an insurance company or companies authorized to transact liability insurance business in the State of California, shall cover comprehensive general and automobile liability for both bodily injury (including death) and property damage, and shall contain the following provisions:

1. Comprehensive General Liability Coverage
2. Premises - Operations Coverage
3. Independent Contractor
4. Underground Hazard Coverage
5. Coverage for owned and non-owned automobiles.
6. Manufacturers and Contractors liability.
7. Broad form property damage in any case where the Contractor has any property belonging to the City in Contractor's care, custody or control.
8. Owners and Contractors protective liability.
9. Blanket contractual liability.
10. Products and completed operations coverage.
11. Coverage for collapse, explosion, and excavation.
12. An endorsement containing the following provisions:
"Solely as respects work done by or on behalf of the named insured for the City of Riverside, it is agreed that the City of Riverside and its officers and employees are added as additional insureds under this policy. It is further agreed that the other insurance conditions of the policy are amended to conform herewith."

13. An endorsement or rider providing that in the event of expiration, material change, or proposed cancellation of such policy or policies for any reason whatsoever, the City shall be notified by registered or certified mail not less than 30 days before such expiration, material change or cancellation is effective.

7-3.1 Insurance Requirements

- a. Secure and Maintain Insurance. Prior to City's execution of the Agreement, Contractor shall secure, and shall thereafter maintain without lapse of coverage until completion of the Contract, such commercial general liability and automobile liability insurance as shall protect Contractor from claims for damages for personal injury, including accidental death, as well as from claims for property damage which may arise from or which may concern operations under the Contract, whether such operations be by or on behalf of Contractor, any Subcontractor or anyone directly or indirectly employed by, connected with or acting for or on behalf of any of them.
- b. Provide Certificates of Insurance. Prior to the City's execution of the Agreement, Contractor shall submit an original certificate of insurance to the City Attorney's Office verifying the General Commercial Liability and Automobile Liability insurance in the required limits with the required provisions as stated below.
- c. Provide Additional Insured Endorsement. Prior to the City's execution of the Agreement, Contractor shall submit an Additional Insured Endorsement to the City Attorney's Office. Contractor must use the attached Additional Insured Endorsement form provided by the City, or one that is substantially similar to and approved by the City Attorney [i.e ISO CG 2010 (11/85)].

7-3.2 Proper Insurance Company

All liability insurance shall be issued by an insurance company or companies authorized to transact liability insurance business in the State of California with a policy holder's rating of A and a Financial Class of VII or larger.

7-3.3 Coverage

Coverage shall be at least as broad as the following:

- a. Commercial General Liability. Insurance Services Office Commercial General Liability Coverage (occurrence Form CG 0001). This coverage shall include:
 - i. Manufacturers and Contractors liability,
 - ii. Broad form property damage in any case where the Contractor has any property belonging to the City in the Contractor's care, custody, or control,

- iii. Owners and Contractors' protective liability,
 - iv. Blanket contractual liability,
 - v. Products and completed operations coverage, and
 - vi. Coverage for collapse, explosion, and excavation.
- b. Automobile Liability. Insurance Services Office Automobile Liability Coverage (Form CA 0001), covering Symbol 1 (any auto). This coverage shall include:
- i. Coverage for owned, non-owned, and hired automobiles

7-3.4 Limits. The Contractor shall maintain limits no less than the following:

- a. Commercial General Liability. One million dollars (\$1,000,000) [Two million (\$2,000,000) when performing the work within Riverside County and Riverside County Flood Control and Water Conservation District] per occurrence and two million dollars (\$2,000,000) aggregate for bodily injury (including death), personal injury and property damage, unless otherwise authorized by the City's Risk Manager, or his designee.

If Commercial General Liability insurance or other form with a general aggregate limit or products-completed operations aggregate limit is used, either the general aggregate limit shall apply separately to the work (with the ISO CG 2503, or ISO CG 2504, or insurer's equivalent endorsement provided by the City) or the general aggregate limit and products-completed operations aggregate limit shall be twice the required occurrence limit.

- b. Automobile Liability. One million dollars (\$1,000,000) per occurrence for bodily injury (including death), and property damage for each accident/incident, unless otherwise authorized by the City's Risk Manager, or his designee.
- c. Professional Liability. Contractor shall ensure that any professional engineer(s) retained on its behalf to provide supplemental plans and engineering calculations required in conjunction with the Work, maintains professional liability insurance for the duration of the project. Such insurance shall be in the minimum amount of \$1,000,000 to protect City from claims resulting from the engineer(s) activities.
- d. No Limitation on Indemnification. These minimum amounts of coverage shall not constitute any limitation or cap on Contractor's indemnification obligation.
- e. Builder's Risk Insurance: Shall be written in the amount of the initial Contract Price, plus the value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising the total value for the entire Work at the Site on a replacement cost basis (including code upgrades) without optional deductibles or coinsurance provisions. The policy shall include coverage for fire, theft, extended coverage, vandalism and

malicious mischief. If the property insurance requires deductibles/self-insured retention, the Contractor shall pay such deductibles. The amount of such deductibles shall not exceed \$25,000.00.

- 1) It is the City's policy that Builder's Risk Insurance is required, regardless of value, for all projects involving vertical construction.
- 2) For projects involving construction of underground facilities, Builder's Risk Insurance would be substituted with Installation Floater Insurance, regardless of project value.
- 3) For projects involving a combination of vertical and underground construction, Builder's Risk Insurance will be required, not Installation Floater Insurance.

Installation Floater Insurance. During the term of this contract, Contractor shall maintain in force, at its own expense, **Installation Floater** insurance covering contractor's labor, materials and equipment to be installed for completion of the work performed under this contract. Coverage shall be against all risks of direct physical loss including theft, but excluding earthquake and flood. The policy is to include The City of Riverside as *loss payee*. Coverage is to include materials while at the contractors yard location, in transit, at any temporary storage location, and while at the jobsite during installation. The limit of insurance shall be equal to the full amount of the contract.

The deductible shall not be more than \$10,000 per occurrence. Coverage shall be with a carrier that has an AM Best financial rating of A- VII or better.

7-3.5 Required Provisions

- a. Policies shall include premises/operations, products completed operations, independent contractors, owners and contractors' protection, explosion, collapse, underground hazard, broad form contractual, personal injury with employment exclusion deleted, and broad form property damage.
- b. The policy shall be endorsed to waive any right of subrogation against the City of Riverside, *****(verify jurisdiction, the City or County where the work will take place)**, and its Sub-consultants, employees, officers, agents and directors for work performed under this Contract.
- c. The policy shall specify that the insurance provided by Contractor will be considered primary and not contributory to any other insurance available to the City of Riverside, *****(verify jurisdiction, the City or County where the work will take place)**,.
- d. The policy shall include the following provision:

"Solely as respects WORK done by and on behalf of the named insured for the City of Riverside, it is agreed that the City of Riverside, *****(verify jurisdiction, the City or County where the work will take place)**, and their officers, employees and agents are added as additional insured under this policy."

- e. If policies are written on a claims made basis, the certificate should so specify and the policy must continue in force for one year after completion of the project. The retroactive date of the coverage must also be listed.
- f. (If applicable) This project involves work on facilities owned by the Riverside County Flood District. The Contractor shall add the Riverside County Flood Control and Water Conservation District and the County of Riverside as additional insured under this policy. The insurance requirements shall meet the requirements specified in the Agency's attached Encroachment Permit.
- g. (If applicable) This project includes work on facilities owned by the State of California Department of Transportation (Caltrans). The Contractor shall add the State of California as an additional insured under this policy. The insurance requirements shall meet the requirements specified in the attached Caltrans Encroachment Permit.

7-3.6 Expiration, Cancellation or Material Change

The policies shall not be canceled unless thirty (30) days prior written notification of intended expiration, cancellation or material change has been given to the City of Riverside by certified or registered mail.

7-3.7 Deductibles and Self-Insured Retentions

Any deductible or self-insured retention must be declared to and approved by the City of Riverside. The City reserves the right to either approve, reduce, or eliminate such deductibles or self-insured retentions.

7-4 WORKERS' COMPENSATION INSURANCE

The Contractor and all subcontractors shall insure (or be self-insured) under the applicable laws relating to workers' compensation insurance, all of their employees performing the work, in accordance with the "Workers' Compensation and Insurance Act", Division IV of the Labor Code of the State of California and any Acts amending thereof.

7-4.2 Insurance Requirements

- a. Secure and Maintain Insurance. Prior to City's execution of the Agreement, Contractor shall secure, and shall thereafter maintain without lapse of coverage until completion of the Contract such workers' compensation and/or employer's liability insurance.
- b. Provide Certificates of Insurance. Prior to the City's execution of the Agreement, Contractor shall submit an original certificate of insurance, or self-insurance, to the Public Utilities Water Engineer verifying that Workers' Compensation insurance is in effect in the required limits with the required provisions as stated below, or that Contractor is self-insured for such coverage.

If Contractor has no employees, a certified statement to that affect shall be submitted to the Public Utilities Water Engineer, acknowledging that if Contractor does employ any person a certificate of insurance shall be submitted as provided in this section.

- c. Workers' Compensation Certification. Contractor shall comply with Labor Code Section 1861 by signing and filing the Workers' Compensation Certification, contained in the Contract Documents, with the City Attorney.

7-4.3 Proper Insurance Company

All worker's compensation/employer's liability insurance shall be issued by an insurance company or companies authorized to transact insurance business in the State of California with a policy holder's rating of A or higher and a Financial Class VII or larger.

7-4.4 Limits

Statutory limits are required for Workers' Compensation. Employer's Liability shall be no less than one million dollars (\$1,000,000).

7-4.5 Required Provisions

- a. The policy shall be endorsed to waive any right of subrogation against the City, and its Subconsultants, employees, officers, agents and directors for work performed under this Contract.

7-4.6 Expiration, Cancellation or Material Change

The policy shall not be canceled unless ten (10) days prior written notification of intended expiration, cancellation or material change has been given to the City of Riverside by certified or registered mail.

7-5 PERMITS

No work shall be started within the street right-of-way or on City property until the Contractor has obtained the necessary permits. The Contractor shall obtain and pay for all permits and fees and give all notices necessary and incident to the due and lawful prosecution of the work and to the preservation of the public health and safety. Fees will not be collected on those permits obtained from the City of Riverside Public Works Department.

The Contractor shall have a permit for excavation from the Division of Industrial Safety as provided for in Labor Code Section 6500. A copy of this permit shall be kept at the job site.

Excavations with depth greater than 7.4 feet are subject to OSHA excavation permit

requirements. The Contractor shall obtain the permit, at his own expense, with no additional cost to the City.

7-5.1 Local Licenses

The Contractor shall obtain at Contractor's expense all licenses necessitated by Contractor's operations. Prior to starting any work, the Contractor shall be required to have a City of Riverside Business Tax Registration valid for the life of the contract. Contractor's subcontractors shall also have registrations valid for the time they are engaged in the work.

7-5.3 National Pollutant Discharge Elimination System (NPDES) Permit

Federal regulations control storm water discharges from construction sites into storm drains and surface waters. The requirements are outlined in the National Pollutant Discharge Elimination System (NPDES) permit held by the Riverside County Flood Control District to which the City is a co-permittee. *****(verify jurisdiction, the City or County where the work will take place)** The regulations require a Storm Water Pollution Prevention Plan (SWPPP) for projects that include clearing, grading and excavation of over one (1) acre to obtain an NPDES permit. Refer to Section 7-8.6 "Water Pollution Control" for the NPDES permit requirements.

Contractor shall obtain and pay for NPDES Permit under the Linear Underground Project General Permit from the State Water Resource Control Board.

7-6 THE CONTRACTOR'S REPRESENTATIVE

The superintendent is required to attend the Preconstruction Conference.

The Engineer may suspend the Work, at no cost to the City, if a superintendent is not present during construction.

7-8 PROJECT SITE MAINTENANCE

7-8.1 Hauling Loose Materials, Cleanup and Dust Control

The generation of dust shall be controlled as required by the Air Quality Management District. Grading activities shall cease during periods of high winds (greater than 30 MPH). Trucks hauling soil, dirt, sand or other emissive materials shall have their loads covered with a tarp or other protective cover as determined by the Engineer.

7-8.6 Water Pollution Control

7-8.6.1 General Requirements

- a. If the total project area is less than one (1) acre, then the Contractor shall follow and implement the Best Management Practices (BMPs) required by the attachment to

these Special Provisions titled " Best Management Practices for Typical Construction Activities". The Contractor's cost of implementing the required BMP's for all project activities shall be included with other items of work.

Contractor shall provide copies of certification that the superintendent or foreman has attended a Stormwater Pollution Prevention course within the last 12 months. Any work requiring the placement of BMP's shall not begin until this certification is provided to the Engineer.

For project areas less than one acre, as defined by the applicable regulations, only Section 7-8.6.6 will be required.

- b. If the total project area is more than one (1) acre then the Contractor will comply with the requirements of the State Permit for Storm Water Discharges Associated with Construction Activity (State Storm Water Construction Permit) during all phases of construction. A copy of the permit is available at www.swrcb.ca.gov/rwqcb8.

The Contractor is responsible for preparing and implementing the Storm Water Pollution Prevention Plan (SWPPP) and monitoring plan as required by the State Storm Water Construction Permit for all phases of project construction. The SWPPP must be prepared by a licensed engineer. The SWPPP and monitoring plan must be approved by the Engineer, per section 7-8.6.2, before commencement of any construction activity. Both the SWPPP and the monitoring program shall be implemented by the Contractor throughout the duration of the construction project. The Contractor shall be responsible for conducting the required monitoring inspections and shall file copies of the inspections and all other reports, certifications or records as required by the SWPPP with the Public Works Department.

The SWPPP shall be kept at the construction site and be made available to the public and/or Regional Board staff upon request for review. The Contractor shall be responsible for all costs and for any liability imposed by law as a result of the Contractor's failure to comply with the requirements of the State Storm Water Construction Permit. The SWPPP shall be the Contractor's sole responsibility.

Contractor shall provide copies of certification that the superintendent or foreman has attended a Stormwater Pollution Prevention course within the last 12 months. Any work requiring the placement of BMP's shall not begin until this certification is provided to the Engineer.

The Engineer may order the suspension of construction operations if the Contractor fails to comply with the requirements of this section. Time extensions will not be allowed for any suspension of work as a result of the Contractor's noncompliance with the State Storm Water Construction Permit or SWPPP.

The Contractor shall, at reasonable times, allow authorized agents of the

California Regional Water Quality Control Board-Santa Ana Region and USEPA, upon the presentation of credentials to:

1. Enter upon the construction site and the Contractor's facilities pertinent to the work;
2. Have access to and copy any records required to be kept as specified in the State Storm Water Construction Permit;
3. Inspect the construction site, including any off-site staging areas or material storage areas, and related soil stabilization practices and sediment control Best Management Practices (BMPs); and
4. Sample or monitor for the purpose of ensuring compliance with the State Storm Water Construction Permit.

The Contractor shall notify the Engineer immediately upon request from regulatory agencies to enter, inspect, sample, monitor or otherwise access the project site or the Contractor's records.

7-8.6.2 Storm Water Pollution Prevention Plan Preparation and Approval

****(verify jurisdiction, the City or County where the work will take place)* At the pre-construction meeting, the Contractor shall submit three (3) copies of the SWPPP to the Engineer for review and approval. The Contractor shall allow ****ten (10)* working days for the Engineer to review the SWPPP. If revisions are required as determined by the Engineer, the Contractor shall revise and resubmit the SWPPP within five (5) working days of receipt of the Engineers comments and shall allow ****five (5)* working days for the Engineer to review the revisions. **The Contractor shall submit three (3) copies of the approved SWPPP to the Engineer prior to the start of construction.**

The objectives of the SWPPP shall be to identify all pollution sources including sediment associated with Contractor's construction activities that may adversely affect the quality of storm water discharges; to identify all non-storm water discharges; to identify, construct, implement and maintain water pollution control best management practices (BMPs), to reduce to the maximum extent practicable pollutants in both storm water discharges and authorized non-storm water discharges from the construction site during construction and to develop a maintenance schedule for BMPs after construction is completed under this contract.

The SWPPP shall incorporate BMPs in each of the following categories:

Soil stabilization practices;
Sediment control practices;
Sediment tracking control practices;
Wind erosion control practices; and
Non-storm water management and waste management and disposal control practices.

The SWPPP shall include the following items as described in the State Storm Water Construction permit:

1. Title Page;
2. Certification Approval;
3. Table of Contents;
4. Source Identification;
5. Storm Water and Non-Storm Water Pollution Control Drawings;
6. Erosion Control;
7. Stabilization;
8. Sediment Control;
9. Non-Storm Water Management;
10. Waste Management and Disposal;
11. Maintenance, Inspection, and Repair Program;
12. Training;
13. List of Contractors and Subcontractors;
14. Post-Construction Storm Water Management;
15. Current Inventory of BMP related materials;
16. Mobilization Plan for BMP deployment
17. A copy of the Notice of Intent (NOI) form submitted by the City for this project;
18. A copy of the Waste Discharge Identification (WDID) number or proof of mailing of the NOI;
19. A copy of the General Permit;
20. A copy of other applicable Plans/Permits, if any;
21. Construction Site Inspection Checklist;
22. Pre/Post Storm Inspection Checklist;
23. Inspection Log;
24. A copy of the Amendments, if any;
25. Amendment Certification and Approval, if any;
26. Amendment Log;
27. Annual Compliance Certification;
28. BMPs Consideration Checklist; and
29. SWPPP Checklist

7-8.6.3 Storm Water Pollution Prevention Plan Amendments

The Contractor shall prepare amendments to the SWPPP, both graphically and in narrative form, whenever there is a change in Contractor's construction activities or operations which may result in the discharge of pollutants to surface waters, ground waters, municipal storm drain systems, or as deemed necessary by the Engineer. The Contractor shall also amend the SWPPP if it is in violation of any condition of the State Storm Water Construction Permit, or has not effectively achieved the objective of reducing pollutants in storm water discharges. Amendments shall show additional BMPs, revised Contractor's construction activities or operations, including those in areas not shown in the initially approved SWPPP, which is required on the project to effectively control water pollution.

Amendments to the SWPPP shall be submitted for review and approval by the Engineer in the same manner specified for the initial approval of the SWPPP. The Contractor shall date and attach all approved amendments to the SWPPP. Upon approval of the amendments, the Contractor shall implement the additional BMPs, revised construction activities or operations. The Contractor may be ordered to stop all work until these amendments are submitted, approved by the Engineer, and the additional BMPs are implemented. No extension of contract time will be granted for this process of amending the SWPPP.

7-8.6.4 Annual Compliance Certification

The Contractor shall certify annually that construction activities are in compliance with the requirements of the State Storm Water Construction Permit and the approved SWPPP. This certification shall be based upon the site inspections required in the SWPPP. **The certification must be completed by July 1 of each year.**

7-8.6.5 Non-Compliance Reporting

If the project is in non-compliance at any time, the Contractor shall make a written report to the Engineer within two (2) calendar days of the identification of non-compliance activities. The Contractor shall immediately implement corrective measures following discovery of non-compliance. The Contractor shall amend the SWPPP and monitoring program accordingly (per Section 7-8.6.3) to incorporate additional BMPs, the implementation schedule, and any additional monitoring needed.

7-8.6.6 Inspections and Reporting

The Contractor shall regularly inspect the construction site for BMPs identified in the SWPPP to ensure the proper implementation and functioning of BMPs.

The Contractor shall identify corrective actions and time frames to address any damaged BMPs or reinstate any BMPs that have been discontinued.

At a minimum, the Contractor shall inspect the construction site as follows:

1. Prior to a forecast storm;
2. After any precipitation which causes runoff capable of carrying sediment from the construction site;
3. At 24 hour intervals during extended precipitation events; and
4. At regular intervals of once every two (2) weeks.

The Contractor shall submit one copy of each site inspection record to the Engineer.

7-8.6.7 Payment (Projects less than one (1) acre)

Contractor's cost of implementing the required BMP's for all project activities shall be included with other items of work.

Any BMP required to protect storm water quality shall be installed within 24 hours of the time Contractor is notified by the Engineer or regulatory agencies to install such BMP's. Each 24 hour period elapsed without installation of the required BMPs by the Contractor will be considered an incident. Failure of the Contractor to meet the 24 hour period for

installing the required BMPs may cause damages to the City and the Contractor shall be assessed additional liquidated damages as described in Section 6-9 of these Special Provisions.

7-8.6.8 Payment (Projects more than one (1) acre)

***(if area is greater than 1 acre, 3,000 linear feet, include a bid line item for SWPPP)

The contract item price pays for the storm water and non-storm water control work; and it includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in developing, preparing, obtaining approval of, revising and amending the SWPPP, and installing, constructing, maintaining, removing and disposing of BMPs as shown in the SWPPP, as specified in the State Storm Water Construction Permit and these Detailed Specifications, and as directed by the Engineer. Payment during the contract period shall be made as follows:

- a. 25% (less retention) of the Contract item shall be paid on the first monthly progress payment.
- b. The remainder (less retention) shall be paid in equal payment amounts based upon the length of the contract.

Failure to comply with the Permit, or failure to complete, implement or maintain the SWPPP within the time periods specified in Section 7.8.6 of these Special Provisions shall be subject to additional liquidated damages assessed to the Contractor as described in Section 6-9 of these Special Provisions.

Any BMP required to protect storm water quality shall be installed within 24 hours of the time Contractor is notified by the Engineer or regulatory agencies to install such BMP's. Each 24 hour period elapsed without installation of the required BMP's by the Contractor will be considered an incident. Failure of the Contractor to meet the 24 hour period for installing the required BMP's may cause damages to the City and the Contractor shall be assessed additional liquidated damages as described in Section 6-9 of these Special Provisions.

7-8.7 Drainage Control

Special attention is directed to possible flood hazards, and/or nuisance water such as irrigation and other runoff. The Contractor is responsible for the control of storm and nuisance water reaching the Work, from whatever source. The Contractor shall be responsible for all injuries or damages to persons or property, on or off the right-of-way, resulting from the interruption or diversions of such storm and nuisance water by Contractor's operations. The Contractor shall make good such injuries or damages, at no cost to the City, prior to completion and acceptance of the Work. This also applies to proper control and disposal of all construction water including water used for flushing and cleaning the pipelines.

The Contractor shall investigate the possibility of groundwater interference prior to submitting Contractor's bid, and shall assume all costs and liabilities incurred should a groundwater problem arise.

7-8.7.1 Erosion Control

Erosion control measures shall be taken by the Contractor to contain excavated materials. Excavated materials shall not be allowed to enter storm drains, sewers or private property. The cost of said control shall be included in the original bid.

7-10 PUBLIC CONVENIENCE AND SAFETY

The Contractor shall comply with all regulations and requirements of the City of Riverside Public Works Department, the Director of Public Works, and shall obtain written approval from the City Traffic Engineer for variances from the traffic provisions of this section.

7-10.1 Traffic and Access

***(verify jurisdiction, the City or County where the work will take place) The Contractor shall comply with all regulations and requirements of the City of Riverside Public Works Department, the Director of Public Works, and shall obtain written approval from the City of Riverside Traffic Engineer for variances from the traffic provision of this section. In general, the following traffic and access control measures shall be required unless otherwise specified by the Engineer or on the Plans.

No reduction of the traveled way width or work shall be permitted between the following hours:

- a. No work or reduction of the traveled way shall be permitted prior to **7:30 a.m.** nor continue after **4:00 p.m.** as defined by the Public Works Department. ***(verify jurisdiction, the City or County where the work will take place)
- b. A minimum of two 12-foot lanes (one for each direction of travel) shall be maintained at all times. When such lanes are not possible during working hours, the Contractor shall provide and maintain one lane for through traffic with a minimum of two flagmen.
- c. The Contractor shall avoid extending the project on Friday or before a holiday if the work will restrict traffic flow on the weekends or holidays.
- d. Construction signs, barricades, and their applications shall conform to the State of California Business, Transportation and Housing Agency, Department of Transportation "Uniform Sign Chart" most current date and the California "Manual on Uniform Traffic Control Devices (MUTCD)" most current date.
- e. Prior to the construction operations, the Contractor shall notify the Police, Sheriff and Fire Departments, providing the expected starting date, completion date, and the name and telephone number of a responsible person who may be contacted at any hour in the event of a condition requiring immediate correction. ***(verify jurisdiction, the City or County where the work will take place)
- f. The Contractor shall provide access from public streets to adjacent property owner driveways. The Contractor shall cooperate with the property owners to minimize the disruption of their daily operations.
- g. The Contractor shall provide at least two construction advisory letters to all affected residences and businesses adjacent to the work site. The first letter shall be delivered seven calendars before the project begins. The second notice shall be delivered a

minimum of 48-hours prior to construction on each street section. The letter shall indicate the duration of the proposed construction and also state if alternative parking arrangements shall be necessary. Prior to dispensing the advisory letter the Contractor shall submit a copy of the letter to the Engineer for approval.

- h. "Temporary No Parking Signs" shall be posted at least 72-hours, but no more than 96-hours, in advance of the work. The signs shall read "Temporary No Parking, Tow-Away, CVC 22654 (d)". The signs shall be placed no more than 100 feet apart on each side of the street and at shorter intervals if conditions warrant. The Contractor shall provide the signs and shall be responsible for adding the dates and hours of closure to the signs. All signs shall be removed within 24-hours after the effective date. If the date of closure is changed, the Contractor will be responsible for posting the signs in accordance with the above requirements.
- i. Trenches shall be backfilled to a suitable driving surface or covered with steel plating (HS-20 truck loading) during non-working hours.
- j. All work within *****IE: Van Buren Boulevard, Victoria Avenue and the work on Cleveland Avenue between Van Buren Boulevard and the first driveway of the church (located on the corner of Van Buren Boulevard and Cleveland Avenue)** shall be performed during nighttime hours. **See Traffic Control Plans.**
- k. The work within *****IE: Cleveland Avenue and Van Buren Boulevard** shall be the first order of work.

7-10.2 Storage of Equipment and Materials in Public Streets

*****(verify jurisdiction, the City or County where the work will take place)** Storage of equipment or materials within the public right-of-way shall not be allowed.

The Contractor shall assume full responsibility for any damage caused by stockpiling of materials and shall repair same at Contractor's expense.

The Contractor shall also be responsible for providing traffic control as required to protect the public from hazards caused by stockpiling within the right-of-way.

7-10.3 Street Closures, Detours, Barricades

For convenience to the Contractor to comply with the other provisions of this section:

Refer to Section 10-1, Telephone, in these special provisions. The Contractor is not relieved of the responsibility of notifying the various departments and agencies, even if their telephone numbers may be changed without notice.

The CONTRACTOR shall provide and maintain all signs, barricades, pedestals, flashers, delineators and other necessary facilities for the protection of the motoring public within the limits of the construction area and all its approaches, including advanced signing and barricades. CONTRACTOR shall also post proper signs to notify the public regarding the conditions of the roadway, all in accordance with the provisions of the Vehicle Code and Parts 4 and 6 of the California Manual on Uniform Traffic Control Devices (CA MUTCD) latest edition and supplements. Both Manuals may be downloaded from the Department of Transportation State of California Website.

Portable delineators shall be spaced as necessary for proper delineation of the travel way. The maximum spacing between delineators should be approximately 30 feet unless otherwise shown on plan.

If the traffic cones or portable delineators are damaged, displaced or are not in an upright position, from any cause, said cones or portable delineators shall immediately be replaced or restored to their original location in an upright position, by the CONTRACTOR.

The CONTRACTOR shall furnish such flagmen as are necessary to give adequate warning to traffic or to the public of any dangerous conditions to be encountered. Flagmen, while on duty and assigned to give warning to the public of any dangerous conditions to be encountered, shall perform their duties and shall be provided with the necessary equipment in accordance with the current "Instructions to Flagmen" of the Department of Transportation. The equipment shall be furnished and kept clean and in good repair by the CONTRACTOR, at Contractor's expense.

A minimum of two (2) public notification signs shall be posted at each project site. If necessary, additional notification signs may be required as determined by the Engineer. Posting and removal of all signs shall be at Contractor's expense. Signs shall be posted a minimum of one week prior to commencement of construction. The Engineer shall approve sign locations.

Concrete Barrier Railing shall be placed at the locations shown on the plans and as directed by the ENGINEER, and shall conform to these Special Provisions.

- a. Railing shall conform to CALTRANS STANDARD PLANS T3, "Temporary Railing (Type K)," to the details shown on the plans, and to the following requirements:
- b. Concrete shall conform to the provisions in Section 201-1, "Portland Cement Concrete," of the STANDARD SPECIFICATIONS.
- c. Concrete shall contain not less than 470 pounds of cement per cubic yard. Load tickets and a Certificate of Compliance will not be required.
- d. Steel bars to receive rods at ends of panels shall conform to ASTM Designation: A-36.
- e. Exposed surfaces shall be cured by the water method, the forms-in-place method, or the pigmented curing compound method. The pigmented curing compound shall be Type 2 conforming to the provisions in Section 201-4, "Concrete Curing Compound," of the STANDARD SPECIFICATIONS. If other than the pigmented curing compound is used, exposed surfaces shall be coated with a white color paint designed for use on exterior masonry (State Specification 721-80-11).
- f. All other materials shall be commercial quality, suitable for the purpose for which they are used.

Temporary Crash Cushion Module shall consist of furnishing, installing, and maintaining sand filled temporary crash cushion modules in groupings or arrays at each location shown on the plans, as specified in these special provisions or where designated by the Engineer. The grouping or array of sand filled modules shall form a complete sand filled temporary crash cushion in conformance with the details shown on the plans and these special provisions.

- a. Temporary crash cushions shall be secured in place prior to commencing work for which the temporary crash cushions are required.
- b. Whenever the work or the Contractor's operations establishes a fixed obstacle, the exposed fixed obstacle shall be protected with a sand filled temporary crash cushion. The sand filled temporary crash cushion shall be in place prior to opening the lanes adjacent to the fixed obstacle to public traffic.
- c. Sand filled temporary crash cushions shall be maintained in place at each location, including times when work is not actively in progress. Sand filled temporary crash cushions may be removed during a work period for access to the work provided that the exposed fixed obstacle is 15 feet or more from a lane carrying public traffic and the temporary crash cushion is reset to protect the obstacle prior to the end of the work period in which the fixed obstacle was exposed.
- d. When no longer required, as determined by the Engineer, sand filled temporary crash cushions shall be removed from the site of the work.
- e. Sand filled temporary crash cushion modules shall be one of the following, or equal, and be manufactured after March 31, 1997:
 - (1) Energite III and Fitch Inertial Modules, manufactured by Energy Absorption Systems, Inc., 35 East Wacker Drive, Suite 1100, Chicago, IL 60601:
 - 1.1. Northern California: Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828, telephone (800) 884-8274, FAX (916) 387-9734
 - 1.2. Southern California: Traffic Control Service, Inc., 1818 E. Orangethorpe, Fullerton, CA 92831-5324, telephone (800) 222-8274, FAX (714) 526-9501
 - (2) TrafFix Sand Barrels, manufactured by TrafFix Devices, Inc., 220 Calle Pintoresco, San Clemente, CA 92672, telephone (949) 361-5663, FAX (949) 361-9205

- 2.1. Northern California: United Rentals, Inc., 1533 Berger Drive, San Jose, CA 95112, telephone (408) 287-4303, FAX (408) 287-1929
 - 2.2. Southern California: Statewide Safety & Sign, Inc., P.O. Box 1440, Pismo Beach, CA 93448, telephone (800) 559-7080, FAX (805) 929-5786
- (3) CrashGard Model CC-48 Sand Barrels, manufactured by Plastic Safety Systems, Inc., 2444 Baldwin Road, Cleveland, OH 44104:
- 3.1. Northern California:
 - 3.1.1. Capitol Barricade Safety & Sign, 6329 Elvas Ave, Sacramento, CA 95819, telephone (888) 868-5021, FAX (916) 451-5388
 - 3.1.2. Sierra Safety, Inc., 9093 Old State Highway, New Castle, CA 95658, telephone (916) 663-2026, FAX (916) 663-1858
 - 3.2. Southern California: Hi Way Safety Inc., 13310 5th Street, Chino, CA 91710, telephone (909) 591-1781, FAX (909) 627-0999
- a. Modules contained in each temporary crash cushion shall be of the same type at each location. The color of the modules shall be the standard yellow color, as furnished by the vendor, with black lids. The modules shall exhibit good workmanship free from structural flaws and objectionable surface defects. The modules need not be new. Good used undamaged modules conforming to color and quality of the types specified herein may be utilized. If used Fitch modules requiring a seal are furnished, the top edge of the seal shall be securely fastened to the wall of the module by a continuous strip of heavy duty tape.
 - b. Modules shall be filled with sand in conformance with the manufacturer's directions, and to the sand capacity in pounds for each module shown on the plans. Sand for filling the modules shall be clean washed concrete sand of commercial quality. At the time of placing in the modules, the sand shall contain not more than 7 percent water as determined by California Test 226.
 - c. Modules damaged due to the Contractor's operations shall be repaired immediately by the Contractor at the Contractor's expense. Modules damaged beyond repair, as determined by the Engineer, due to the Contractor's operations shall be removed and replaced by the Contractor at the Contractor's expense.
 - d. Temporary crash cushion modules may be placed on movable pallets or frames. Comply with dimensions shown on the plans. The pallets or frames

shall provide a full bearing base beneath the modules. The modules and supporting pallets or frames shall not be moved by sliding or skidding along the pavement or bridge deck.

- e. A Type R or P marker panel shall be attached to the front of the crash, when the closest point of the crash cushion array is within 12 feet of the traveled way. The marker panel, when required, shall be firmly fastened to the crash cushion with commercial quality hardware or by other methods determined by the Engineer.
- f. At the completion of the project, temporary crash cushion modules, sand filling, pallets or frames, and marker panels shall become the property of the Contractor and shall be removed from the site of the work. Temporary crash cushion modules shall not be installed in the permanent work.
- g. Temporary crash cushion modules will be measured by the unit as determined from the actual count of modules used in the work or ordered by the Engineer at each location. Temporary crash cushion modules placed in conformance with Section 7-1.09, "Public Safety," of the State of California Department of Transportation Standard Specifications, latest edition, and modules placed in excess of the number specified or shown will not be measured nor paid for.
- h. Modules damaged beyond repair by public traffic, when ordered by the Engineer, shall be removed and replaced immediately by the Contractor. Modules replaced due to damage by public traffic will be measured and paid for as temporary crash cushion module.
- i. Portable Changeable Message Sign work includes furnishing, placing, operating, maintaining and removing portable changeable message signs.
- j. Comply with Section 12-3.12 "Portable Changeable Message Signs," of the State of California Department of Transportation Standard Specifications, latest edition.
- k. **Useable shoulder area:** Paved or unpaved contiguous surface adjacent to the traveled way with:
 - l. Sufficient weight bearing capacity to support portable changeable message sign
 - m. Slope not greater than 6:1 (horizontal : vertical)
 - n. Upon request, submit a Certificate of Compliance for each portable changeable message sign under Section 6-1.07, "Certificates of Compliance," of the State of California Department of Transportation Standard Specifications, latest edition.

- o. The CONTRACTOR shall comply with the manufacturer's operating instructions for portable changeable message sign.
- p. The CONTRACTOR shall only display the message ordered by the Engineer.
- q. The text of the message displayed on portable changeable message sign must not scroll, or travel horizontally or vertically across the face of the message panel.
- r. The CONTRACTOR shall continuously repeat the entire message in no more than 2 phases of at least 3 seconds per phase.
- s. If useable shoulder area is at least 15 feet wide, the displayed message on portable changeable message sign must be minimum 18-inch character height. If useable shoulder area is less than 15 feet wide, you may use a smaller message panel with minimum 12-inch character height to prevent encroachment in the traveled way.
- t. The CONTRACTOR shall start displaying the message on portable changeable message sign two weeks prior to start of construction.
- u. The CONTRACTOR shall place one portable changeable message sign for each direction of traffic in advance of the work area on major arterial highways as designated by the ENGINEER and as shown on the plans.
- v. The CONTRACTOR shall place portable changeable message sign as far from the traveled way as practicable where it is legible to traffic and does not encroach on the traveled way. Place portable changeable sign before or at the crest of vertical roadway curvature where it is visible to approaching traffic. Avoid placing portable changeable message sign within or immediately after horizontal roadway curvature. Where possible, place portable changeable message sign behind guardrail or temporary railing (Type K). Except where placed behind guardrail or temporary railing (Type K) use traffic control for shoulder closure to delineate portable changeable message sign.
- w. The CONTRACTOR shall remove portable changeable message sign when not in use.

7-10.3.1 Payment

Payment for erection, maintenance and removal of public notification signs shall be included in the pipe unit price.

Payment for traffic cones, portable delineators, type II barricades, type III barricades, flaggers, temporary crash cushion module, portable changeable message signs and all other construction signs shall be measured and paid for under TRAFFIC CONTROL including furnishing all labor, tools, equipment and materials necessary to do the work shall

be considered as included in the CONTRACT LUMP SUM price paid and no additional compensation will be allowed therefor.

Full compensation for conforming to the requirements of CONCRETE BARRIER RAILING including furnishing all labor, tools, equipment, and materials necessary for accomplishing the work complete and in place shall be considered as included in the CONTRACT unit price bid per linear foot of pipe installed and no additional compensation will be allowed therefor.

7-10.4.1.1 Excavations Below Four (4) Feet

If any work required by this contract includes digging trenches or other excavations that extend deeper than four (4) feet below the surface, the Contractor shall promptly, and before the following conditions are disturbed, notify the Owner in writing of any:

- 1) Material that the Contractor believes may be hazardous waste, as defined in Section 25117 of the Health and Safety Code, is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law;
- 2) Subsurface or latent physical conditions at the site differing from those indicated;
- 3) Unknown physical conditions at the site of any unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract.

Nothing in this section is intended to relieve the Contractor of the responsibility to carefully examine the Contract Documents and the site where the work is to be performed in accordance with Section 2-1.2 of these Special Provisions; to become familiar with all local conditions and federal, state, and local laws, ordinances, rules, and regulations that may affect the performance of any work; to study all surveys and investigation reports about subsurface and latent physical conditions pertaining to the jobsite; to perform such additional surveys and investigations as the Contractor deems necessary to complete the work at his or her bid price; and to correlate the results of all such data with the requirements of the Contract Documents.

If the Owner determines that hazardous waste exists and that conditions exist which the Contractor could not discover through the investigations required by the preceding paragraph, the Owner shall notify the Contractor and the Contractor may request a change order in accordance with the Contract Documents. Nothing in this section shall relieve the Contractor of the obligation to pay all fees and costs associated with removal and cleanup of any hazardous waste used at, or brought to, the jobsite by the Contractor. Nor shall this section relieve the Contractor of responsibility for site conditions discoverable by any investigation required by the preceding paragraph.

In the event that a dispute arises between the Owner and the Contractor involving hazardous waste and whether site conditions differ materially from those the Contractor could or should have discovered by the investigations required by this contract, the Contractor shall not be excused from the scheduled completion date provided in the Contract Documents and shall proceed with all work in the manner and in the time required by the Contract Documents.

7-10.4.2 Use of Explosives

Blasting permits shall be obtained from the Fire Department or other local agencies if outside City limits.

7-10.4.5 Public Safety During Non-Working Hours

Notwithstanding the Contractor's primary responsibility for safety on the job site when the Contractor is not present, the Engineer at Engineer's option after attempting to contact the Contractor may direct City Forces to perform any functions Engineer may deem necessary to ensure public safety at or in the vicinity of the job site. If such procedure is implemented, the Contractor will bear all expenses incurred by the City.

In all cases the judgment of the Engineer shall be final in determining whether or not an unsafe situation exists.

7-10.4.6 Public Notification of Construction

The construction schedule required under Section 6-1 of these Special Provisions shall allow ample "on-street" parking for affected people, within a reasonable distance from their homes and businesses. Requests for changes to the schedule shall be submitted by the Contractor to the Engineer at least 48 hours prior to the scheduled operation to be changed.

The Contractor shall provide the construction advisory letters, subject to the approval of the Engineer, to all affected residences and businesses adjacent to the work site as required in these specifications prior to construction on each street. The letter shall indicate the duration of the proposed construction and also state if alternate parking arrangements will be necessary.

"Temporary No Parking Signs" shall be posted at least 72 hours, but no more than 96 hours, in advance of the work. These signs shall read "Temporary No Parking Tow-Away CVC 22654 (d)". The signs shall be placed no more than 100 feet apart on each side of the street and at shorter intervals if conditions warrant. The Contractor shall provide the signs and will be responsible for adding the dates and hours of closure to the signs. All signs shall be removed within 24 hours after the effective date. If the date of closure is changed, the Contractor will be responsible for reposting the signs in accordance with the above requirements.

7-10.5 Storage of Equipment and Materials on Private Property

The Contractor may, at Contractor's own expense, maintain and operate a work and storage area outside the public right-of-way. In such case, the Contractor shall submit to the Engineer **written authorization** from the owners of the subject property prior to occupation. Occupation of the site without written authorization shall be grounds for immediate suspension of work. Location of the site shall be approved by the City. Condition and operation of yard shall conform to these specifications. The Contractor shall assume full responsibility for all damage to the site resulting from Contractor's operations and shall repair and/or replace same, at Contractor's own expense, to the satisfaction of the owner of the subject property.

7-15 UNSAFE WORKING CONDITIONS

If the Engineer or Engineer's representative is of the opinion that an unsafe working condition exists, the Engineer shall immediately notify the Contractor and the appropriate agency for a determination. If in the opinion of the Engineer the unsafe working condition is not corrected immediately and satisfactorily, a written **Notice to Stop Work** will be given to the Contractor. Work will not commence until the unsafe condition has been corrected. No time extensions to the contract shall be made for work stoppage due to unsafe working conditions.

7-16 WRITTEN COMMUNICATIONS

Contractor's written communications, including letters, field memoranda, requests for substitution (RFS) and requests for information (RFI) shall be written in a clear and concise manner. In particular, RFSs and RFIs shall clearly describe the condition or issue of concern, the cause of the condition or issue and the proposed solution or specific question being posed to the Engineer. Contractor shall not be entitled to any delays or additional compensation as a result of issues that in the Engineer's opinion originated with, or were exacerbated by, poor written communications by the Contractor.

SECTION 8 - FACILITIES FOR AGENCY PERSONNEL

8-1 GENERAL

Facilities for City personnel will not be required.

SECTION 9 - MEASUREMENT AND PAYMENT

9-1.1 GENERAL

Delete the second sentence of the first paragraph of the Standard Specifications.

9-3 PAYMENT

9-3.1.1 Payment

Payment for the Various items of the Bid Sheets, as further specified herein shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of work specified and shown on the drawings, including all appurtenances thereto, and including all costs of compliance with the regulations of public agencies having jurisdiction, including Safety and Health requirements of the California Division of Industrial Safety and the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). No separate payment will be made for any item that is not specifically set forth in the Bid Sheet(s), and all costs therefore shall be included in the price named in the Bid Sheet(s) for the various listed items of work. The City of Riverside payment process is through an electronic transfer process. Contractors or Suppliers must be set up for this payment process in order to be compensated for materials and or services.

9-3.1.2 Basis of Payment for Water Distribution/Transmission Mains.

1) Pipelines

Payment for pipelines shall be based upon the amounts bid and the net horizontal constructed lengths, as determined by the survey data upon which the Construction Drawings are based. Said net horizontal constructed length shall extend through such appurtenances as valves, tees, crosses, reducers, horizontal bends, and flanges.

The amounts bid by Contractor for furnishing pipe and fittings shall include all costs for all materials, equipment, and labor unless separate bid items are included in the bid sheets. Said amounts shall include, but not be limited to, pipe materials (including fittings), delivery, unloading and stringing.

The amounts bid by Contractor for installing pipe and fittings shall include all costs for all materials, equipment, and labor, unless separate bid items are included in the bid sheets. Said amounts shall include, but not be limited to, public notification signs, utility location and verification (excavating, exposing, and verifying top, bottom, and side of utility facilities), removal of macadam, relocation of existing utilities as required for construction, all asphalt and concrete pavement removal and disposal and replacement, trenching, excavating and exporting unsuitable material, Steel plating, bedding (including imported selected material), furnishing and installing all pipe, vertical and horizontal bends, appurtenances including polyethylene encasement, thrust blocks, joint restraints, pipe supports, backfilling (including imported select material or select native material), hauling excess excavated material off-site and disposing of same, compacting, furnishing and installing temporary asphalt concrete pavement, testing, disinfecting, protecting in place or removing and replacing all existing utilities, and public and private

improvements (including berms, curbs, gutters, sidewalks, cross-gutters, spandrels, medians, driveways, landscaping, landscaping materials, irrigation systems, fencing, walls, mail boxes, power poles, poles, signs, guard rails, traffic signal loops, detectors, conduits, and conductors), removing and disposing of existing waterlines where specified, removing and disposing of all temporary asphalt pavement, abandonment of existing facilities, pavement (traffic) striping and restriping, and restoring all areas and improvements to pre-existing improvements, trench dewatering and rock excavation all in accordance with the Contract Documents.

2) Pipeline Appurtenances

Payment for pipeline appurtenances shall be based upon the amount bid and the appurtenances constructed. The amounts bid by Contractor shall include all costs for all materials, equipment, and labor unless separate bid items are included in the bid sheets. Said amounts shall include, but not be limited to, furnishing and installing appurtenances; vertical and horizontal bends, all asphalt and concrete pavement removal and disposal, trenching, excavating and exporting unsuitable material, trench shoring, Steel plating, backfilling (including imported select material or select native material), hauling excess excavated material off-site and disposing of same, compacting, furnishing and installing temporary asphalt concrete pavement, protecting in place or removing and replacing all utilities and public and private improvements; removing and disposing of or constructing around abandoned facilities; and asphalt concrete pavement and concrete removal and replacement; all in accordance with the Contract Documents.

3) Connection Material to be Furnished and installed by Contractor

Payment for connections shall be based upon the amount bid and the connection constructed. The amounts bid by Contractor shall include all costs for all materials, equipment, and labor unless separate bid items are included in the bid sheets. Said amounts shall include, but not be limited to, furnishing, delivering, and unloading materials and construction for connection work; all asphalt and concrete pavement removal and disposal, trenching, excavating and exporting unsuitable material, trench shoring, steel plating, K-Rails, backfilling (including imported select material or select native material), hauling excess excavated material off-site and disposing of same, compacting, furnishing and installing base material and temporary asphalt concrete pavement, steel plating, protecting in place or removing and replacing all utilities and public and private improvements, removing and disposing of or constructing around abandoned facilities, and asphalt concrete pavement and concrete removal and replacement, provide traffic control, all in accordance with the Contract Documents.

4) *****Boring and Jacking**

Payment for boring and jacking shall be based upon the amount bid and the net

horizontal constructed length, as determined by the survey data upon which the construction drawings are based.

The amount bid by Contractor shall include, but not be limited to, excavation and backfill of bore pit and receiving pit; furnishing and installing temporary K-rail barriers and 6-foot high fencing, hauling material offsite and hauling material back onsite if necessary, shoring of bore pit and receiving pit, boring and jacking casing pipe, installing water main, pumping grout into voids outside casing, installing «PipeDia_1» pipeline inside «Casing_Dia» casing pipe, filling annular space with blown sand, sealing ends of casing pipe with brick and cement mortar, asphalt concrete pavement removal and replacement, bore and receiving pit dewatering, and protecting in place or removing and replacing all existing utilities and public and private improvements all in accordance with the Contract Documents.

5) Pavement

Payment for asphalt concrete pavement shall be based upon the amount bid and the measured quantities of the work performed.

Quantities of work set forth in the bidding sheets shall represent all of the work to be performed in accordance with the Contract unless errors are found in the basic surveying as represented by the Construction Drawings, in the Construction Drawings themselves, or in the quantities set forth in the bidding sheets. All changes in work shall be covered by change order and amounts for said changes in work, either additions or deletions, shall be based on the amounts bid for the quantities of work specified.

Contractor shall verify, to Contractor's own satisfaction, the quantities of work shown on the bidding sheets. If Contractor finds the quantities to be in error, he or she shall immediately notify the Engineer so that if changes in quantities are found necessary, an addendum may be issued to all bidders.

Reference is made to Section 7-9 "Protection and Restoration of Existing Improvements" of the Standard Specifications.

9-3.1.3 Bid Items

The prices bid shall include any amount for applicable California sales or use tax, County or City taxes.

9-3.2.1 Partial and Final Payments

The 5 percent retention in Section 9-3.2 will not be reduced during the Contract. The Contractor shall submit for approval a request for payment by Bid Item.

The following percentages of unit price items will be paid for work completed:

- 1) Mobilization, Demobilization, cleaning, grubbing and clean up:
 - (a) Actual Start of Work..... 50%
 - (b) Completion of all Work..... 50%

- 2) Trench shoring and bracing:
 - (a) Will be based on the percentage of pipe installed.

- 3) Pipe Furnished:
 - (a) Pipe and fittings delivered to jobsite and material invoice shall be furnished by Contractor 100%

- 4) Pipe Installed:
 - (a) Pipe and Fittings installed in excavated trench with bedding, and back-filled materials 55%
 - (b) Trench back-fill material passing compaction test 25%
 - (c) Bearing, Thrust and Anchor blocks poured 10%
 - (d) Completed pressure test and disinfected 10%

- 5) Appurtenances:
 - (a) Installed..... 90%
 - (b) Completed pressure test and disinfected..... 10%

- 6) Connection Materials and Appurtenances Furnished and installed by Contractor:
 - (a) Materials delivered to jobsite..... 80%
 - (b) Materials installed 20%

- 7) ***Bore and Jack Casing Pipe:
 - (a) Bore and Receiving Pits excavated and casing pipe bored and jacked 75%
 - (b) Water Transmission Main placed in casing pipe, blown sand installed, and ends of the casing pipe sealed..... 15%

- 8) Paving:
 - (c) Completed pressure test and pipeline disinfected 10%
 - (a) Permanent base paving installed 100%
 - (b) Permanent overlay paving installed 100%
 - (c) Temporary paving installed 100%
- 9) Traffic Control:
 - (a) Will be based on the percentage of pipe installed.

The following percentages of unit price items will be paid for work completed:

- 1) Mobilization, Demobilization, cleaning, grubbing and clean up:
 - (a) Actual Start of Work..... 50%
 - (b) Completion of all Work 50%
- 2) Paving:
 - (a) Permanent base paving installed..... 100%
 - (b) Permanent paving cap installed..... 100%
 - (c) Crack Seal and Type 2 Slurry installed..... 100%
 - (d) Striping, and painting completed 100%
- 3) Traffic Loop Replacement:
 - (a) Traffic loops replaced and functional..... 100%
- 4) Traffic Control:
 - (a) Actual Start of Work..... 50%
 - (b) Completion of all Work 50%

9-3.4 Mobilization

9-3.4.1 Payment

Payment for mobilization includes cost for preparing and maintaining the construction schedule and any required updates; cost for the construction advisory letter submittal;

erection, maintenance and removal of the public notification signs required under Section 7-10.4.6 of these Special Provisions.

9-3.5 Progress Payment

Progress payment requests shall be processed in accordance with the provisions of Public Contract Code section 20104.50 which is summarized as follows:

- a. Contractor shall submit a complete progress application for each progress payment consisting of the following documents: Invoice, Schedule of Values, Certified Payroll Records, Material Invoices, and Schedule Updates.
- b. Upon its receipt of Contractor's written payment request, the Engineer shall review it as soon as practicable to determine whether it is a proper payment request and forward it to the City for payment. If the Engineer determines that it is not a proper request suitable for payment, the Engineer shall return it to the Contractor as soon as practicable, but not later than seven days after its receipt, together with a document setting forth in writing the reasons why it is not proper.
- c. If the City fails to make a progress payment within 30 days after it receives an undisputed and properly submitted payment request from the Contractor, the City shall pay interest on the correct amount thereof at the legal rate set forth in subdivision (a) of Section 685.010 of the Code of Civil Procedure.
- d. The number of days available to the City to make a payment without incurring an interest obligation thereon shall be reduced by the number of days by which City exceeds the seven day return requirement of (a) above for return of an improper request.
- e. A "progress payment" includes all payments due under the contract, except that portion of the final payment which is designated as retention earnings, and a payment request shall be considered properly executed if funds are available for payment thereof and payment is not delayed due to an audit inquiry by City's financial officer.
- f. The City's method of payment will be either Electronic Funds Transfer (EFT) or E-Payables through Bank of America. Therefore, the Vendor or Contractor shall be responsible to accept payments by this method.

9-3.6 Retention Payment

The City's payment to the Contractor of the retention amounts withheld from progress payments made during the performance of the work, and the Contractor's disbursement thereof to Contractor's subcontractors, shall be subject to the requirements of Public Contract Code Section 7107, the Stop Notice withholding laws of the State of California and the other provisions of the Contract. City's payment obligations under Section 7107 are summarized herein; by executing the Contract Agreement, Contractor will be confirming knowledge of and responsibility for disbursement of the retention payment to

Contractor's subcontractors.

- a. Within 60 days after the date of completion of work, City shall pay the undisputed and unencumbered portion of the retention amount to Contractor. If City disputes any portion of the amount Contractor demands, City will withhold from its payment an amount not exceeding 150 percent of the disputed amount.
- b. If City fails to pay the undisputed and unencumbered portion of the retention amount due Contractor within sixty days after the date of completion of work, City shall pay Contractor a charge of 2 percent per month on the amount improperly withheld in lieu of any other interest amount otherwise payable by operation of law. In any lawsuit brought for collection of amount alleged to be wrongfully withheld by City, the prevailing party shall be entitled to attorney's fees and costs.
- c. "Completion" for purpose of this Section means any of the following events:
 - 1) Occupation, beneficial use, and enjoyment of the work by City, excluding testing, start-up and commissioning activities, accompanied by Contractor's cessation of labor thereon;
 - 2) Acceptance of the Work by City;
 - 3) Contractor's cessation of labor for a continuous period of 100 days or more due to factors beyond Contractor's control; or
 - 4) Contractor's cessation of labor for a continuous period of 30 days or more if and after City records a notice of cessation of Work or Notice of Completion.

9-3.7 Rock Payment

Where rock is encountered, it shall be removed below grade, and trench backfilled with suitable material to provide a compacted earth cushion per City Standard (CWD-040-1&2). All rock removal shall be the responsibility of the Contractor and any expenses associated with rock removal shall be deemed as included as part of the bid price.

SECTION 10 - TELEPHONE

10-1 TELEPHONE

The Contractor shall maintain a telephone where the Contractor or Contractor's responsible agent may be reached at all hours during the day or night for emergencies. The number will be given to the Engineer, Inspector, Police, Sheriff, Street Maintenance Division, Public Works Department Engineer, and any other necessary parties. For convenience to the Contractor in complying with the other provisions of this section, the following telephone numbers are listed:

CITY OF RIVERSIDE

Electric	(951) 826-5489
Fire Department	(951) 826-5321
Police Department	(951) 826-5700
Street Light Repair	(951) 351-6005
Street Superintendent	(951) 351-6127
Traffic Engineering Division	(951) 826-5366
Traffic Signal Maintenance	(951) 351-6096
Water	(951) 826-5285
Water Division – Cross Connection	(951) 351-6320
Utility Operation Center – Customer Service Division	(951) 351-6223

OTHER AGENCIES

Alvord Schools (for bus lines)	(951) 351-9325
American Medical Response	
Ambulance Service	(909) 684-5520
California Highway Patrol	(909) 637-8000
County of Riverside (Transportation Dept.)	(951) 955-6790
Mining and Tunneling Unit	(909) 637-8000
Pac Bell (Emergency)	1-800-421-2568
RTA	(951) 684-0850
Riverside Schools	(951) 788-7134 (for bus lines)
Southern California Edison (Emergency)	1-800-611-1911
Southern California Gas Company (Emergency)	1-800-427-2200
Special Services Transportation	(951) 687-8080 (for bus lines)
AT&T (Emergency)	1-800-288-2020
Underground Service Alert (USA)	1-800-227-2600

PART 2 - CONSTRUCTION MATERIALS

All as provided in Part 2 of the Standard Specifications for Public Works Construction, except as modified herein.

Material lists may be modified from time to time by addendum insertions.

200.01 GENERAL

All material shall comply with the Standard Specifications for Public Works Construction (Greenbook), latest adopted edition, with Amendments, except as modified herein.

200.02 MATERIAL AFFIDAVITS AND CERTIFICATIONS

All pipe, fittings, valves and appurtenances shall be supplied with the manufacturer's affidavit of compliance or certification of compliance stating that the furnished material has been sampled, tested and inspected in accordance with the reference requirements and that the results thereof comply with the requirements of the specifications. Certifications shall be wet signed originals and addressed to the City of Riverside and shall identify the item supplied, specify the project and plan number for which the material is being supplied.

SECTION 200 – ROCK MATERIALS

200-2 UNTREATED BASE MATERIALS

In lieu of crushed aggregate base, the Contractor may use, at Contractor's option, crushed miscellaneous base as per Section 200-2.4 of the Standard Specifications, or processed miscellaneous base as per Section 200-2.5 of the Standard Specifications, or Pulverized Miscellaneous Base as per Section 200-2.8, or Class 2 aggregate base as per Section 26-1.02A of the State Standard Specifications.

When the Plans specify aggregate subbase, the material used shall be select subbase as specified in Section 200-2.6 of the Standard Specification.

200-2.1 General

Crushed slag base is deleted as an option to crushed aggregate base.

SECTION 201 - CONCRETE, MORTAR, AND RELATED MATERIALS

201-1.1.2 Concrete Used

Concrete used for this project shall be in accordance with the City of Riverside, Public

Works Department, Standard Plans, and the Standards Specifications. Concrete for thrust blocks shall be Class 450-C-2000, Type II Cement. Concrete for curb, gutter, sidewalk, and driveway replacement shall be Class 560-C-3250, Type II Cement.

201-1.1.3 Concrete Specified by Compressive Strength

Mix designs with more than 45% of fine and coarse aggregate shall not be permitted.

201-1.2.1.1 Materials

Prepackaged cement-aggregate mix shall not be allowed.

201-1.4.4 Hand Mixing

Hand mixed concrete shall not be allowed.

201-5 CEMENT MORTAR

201-5.1 General

Hand mixed mortar shall not be allowed. Cement mortar shall be used within 45 minutes after mixing with water.

SECTION 203 - BITUMINOUS MATERIALS

203-5 EMULSION AGGREGATE SLURRY.

203-5.2 Material

Additive used with the Emulsion Aggregate Slurry to decrease curing time shall be Aluminum Sulfate.

203-5.3 Composition and Grading

The grading of the combined aggregate and the percentage of emulsified asphalt shall conform to the requirements for Type II Slurry.

203-6 ASPHALT CONCRETE

Where dense graded asphalt is being constructed in two layers or more, the Asphalt Concrete pavement for the base course shall be B-PG-64-10. When dense graded asphalt is being constructed in a single layer and for a finishing course or Asphalt Concrete overlay, the Asphalt Concrete pavement shall be C2-PG-64-10.

The asphalt pavement used for the construction of speed humps shall be D2-PG-64-10.

203-6.1.1 Asphalt Types for Various Uses. The materials listed below shall be used. Blast furnace or steel slag is not acceptable as an aggregate in asphalt concrete.

TYPE	USE
B-PG-64-10	Base course for streets
C2-PG-64-10	Base course for trench resurfacing
C2-PG-64-10	Surface course for streets and trenches
D2-PG-70-10	Type 1 asphalt concrete berm
D2-PG-64-10	Overlay less than 1-inch thick

203-6.6 Mixing

Automatic batch mixing is required.

203-7 RECYCLED ASPHALT CONCRETE - HOT MIXED.

203-7.1 General

The use of Recycled Asphalt Concrete (RAC) or Reclaimed Asphalt Pavement (RAP) greater than 15% of the mix shall not be permitted.

203-11 ASPHALT RUBBER HOT MIX (ARHM) WET PROCESS.

203-11.2.3 Crumb Rubber Modifier (CRM)

The Contractor shall certify that all crumb rubber used in the project is derived from California used and waste tires.

203-11.3 Composition and Grading

The Contractor shall use ARHM-GG-C, conforming to the requirements of Table 203-11.3 (A) of the Standard Specifications.

SECTION 207 - PIPE

The following Sections shall be used in the construction of the water main and appurtenances.

All affidavits of compliance and certifications referenced herein shall be addressed to the City of Riverside, identifying the item supplied, and specifying the project or plan number for which the material is being supplied. Wet signed originals are required.

Written Certification from the pipe manufacturer indicating that all supplied pipe materials have been manufactured, sampled, and tested according to these Specifications, must be submitted by the Contractor and approved by the Engineer prior to construction.

The manufacturer shall also supply copies of the certified physical test results, identifiable to the class and size of pipe, shift period, the date of test, and the purchase order number.

Pipe furnished for this Contract shall be in accordance with the Standard Specifications unless otherwise specified herein.

The pipe manufacturer shall submit shop drawings covering all pipe manufacturing specifications and fabrication details, along with a layout sheet showing the physical placement of each piece of pipe for City approval before starting the manufacturing of pipe. The layout sheet shall include the invert elevation at the end of section of pipe (only required when the construction drawings include a pipeline profile).

The pipe manufacturer shall provide pipe specials and fitting drawings showing all pertinent details and dimensions of elbows, reducers, connections, outlets, tees, crosses, bulkheads, closures and their required items.

The Engineer / the inspector or his designee shall reserve the right to reject pipe on his own discretion. The Contractor shall schedule inspection of pipe delivery 48 hours minimum in advance.

207-9 DUCTILE IRON PIPE AND FITTINGS

207-9.1 General

These Specifications apply to Ductile Iron Pipe (DIP) for water distribution. All Ductile Iron Pipe shall be of the class shown on the plans and in accordance with ANSI A21.51/AWWA C151 and shall be cast, tested, cleaned, cement lined, coated, tested and certified at a single manufacturing facility with all manufacturing units contiguous to one another.

Ductile Iron Pipe installed shall be pressure class *****350**.

All DIP used for below ground installations shall be the push-on or the mechanical joint type and encased in a polyethylene sleeve and cement lined as specified herein, unless otherwise indicated on the Plans or in these Specifications.

207-9.2.1.1 Certification by Manufacturer

The manufacturer shall submit a wet signed original sworn statement that the pipe furnished has been sampled, tested and inspected in accordance with these Specifications and that the results thereof comply with the requirements of this Specification.

207-9.2.2 Pipe Joints

Ductile Iron Pipe and fittings shall have one of the following joint types as shown on the Plans or Standard Drawings. Unless otherwise specified, all DIP shall have restrained joints.

- 1) Mechanical joint ANSI A21.11/AWWA C111; ROMAGRIP Ring and MegaLug are acceptable to use for 14" & greater.
- 2) Rubber gasket push-on joint – ANSI A21.11/AWWA C111
- 3) Flanged joint - ANSI A21.10/AWWA C110
- 4) Restrained joint - ANSI A21.10/AWWA C110.
 - a. "Field-LOK 350" Gaskets, for use with "Tyton" joint pipe only, manufactured by U.S. Pipe and Foundry Company.
 - b. "Sure Stop 350" Gaskets, manufactured by McWane Ductile, for use with "Tyton" joint pipe only, manufactured by Pacific States Cast Iron Pipe Company.
 - c. "Fast-Grip" Gaskets, for use with "Fastite" joint pipe only, manufactured by American Cast Iron Pipe Company.
 - d. "Grip Ring", as manufactured by Romac Industries, Inc., for use with Mechanical Joint Pipe and/or Fittings.
 - e. "Megalug Series 1100", as manufactured by EBAA Iron, for use with Mechanical Joint Pipe and/or Fittings.
 - f. "RomaGrip", as manufactured by Romac Industries, for use with Mechanical Joint Pipe and/or Fittings.

"Gripper Gaskets" by the Gripper Gasket Company are not permitted.

Any restrained joint gasket must be inspected, by the City Inspector, before use.

207-9.2.3 Fittings

This section covers all fittings required for closures, bends, tees, crosses, reducers, plugs, caps, blowoffs, fire hydrant buries, and connections to mainline valves shown on the Plans. All fittings shall be restrained mechanical joint.

All fittings shall have a minimum pressure rating of 250 psi and shall be manufactured per ANSI A21.10/AWWA C110 and/or ANSI A21.11/AWWA C111. Ductile Iron compact fittings shall have a minimum pressure rating of 350 psi and shall be manufactured per ANSI A21.53/AWWA C153.

207-9.2.4 Lining and Coating

Ductile Iron Pipe and fittings shall be lined with cement mortar per ANSI A21.4/AWWA C104. The coating shall be a bituminous coating with a minimum thickness of one (1) mil.

207-9.2.5 Inspection and Certification

The manufacturer shall submit a sworn statement that the pipe furnished has been sampled, tested and inspected in accordance with these Specifications and that the results

thereof comply with the requirements of this Specification.

207-9.4 Inspection and Testing

Inspection in the plant shall be by the manufacturer. Copies of all test reports shall be submitted to the Engineer. If pipe is manufactured outside of the continental United States, then Engineer shall be sent to manufacturing facility and witness all pipe being manufactured for required project in compliance with this specification and allowable AWWA sections, all at the Manufacturer's and Contractor's cost. Under no circumstances shall exceptions be allowed.

207-9.5 Approved Pipe Manufacturers

- a. McWayne Ductile
- b. United States Pipe and Foundry Company
- c. American Cast Iron Pipe Company

207-9.6 Approved Fittings Manufacturers.

- a. Star
- b. Sigma/Nappco
- c. Tyler/Union
- d. SIP Industries

207-10 STEEL PIPE

207-10.2.1.1 General

The Grade of steel used, for the steel cylinders, with thickness less than 0.230-inches, shall be per ASTM A1011, SS Grade 36 (formerly ASTM A570). For thickness greater than or equal to 0.230-inches, shall be per ASTM A1018, SS Grade 36 (formerly ASTM A907), as referenced in AWWA C200, Standard for Steel Water Pipe.

This section applies to cement-mortar lined and coated steel pipe for water distribution mains. All CML&C steel pipe used on a project shall be manufactured under one roof, by one company. This provision is to confine the manufacturing process of the pipe and pipe specials to one manufacturer. For welded steel pipe, this will include the milling of steel plate or coil into the pipe cylinder, lining and coating operations, the fabrication of fittings and pressure testing. Welded steel pipe may be manufactured by a Water Division approved subcontractor of the pipe supplier, with the supplier providing for fabrication of all fittings and appurtenances. However, the supplier shall provide the quality control inspection of the pipe manufacturing process.

Pipe supplied by the Contractor shall be engineered and designed by the pipe manufacturer. This shall include all engineering calculations called for in the applicable A.W.W.A. or ASTM standards and any other calculations required to design the pipe in accordance with sound engineering practices. The pipe manufacturer shall submit shop

drawings covering all pipe manufacturing specifications and fabrication details.

Inspection within the plant shall be provided by the manufacturer. Testing to insure compliance with the requirements shall be made in accordance with A.N.S.I./A.W.W.A. C-200 and C-205 within the Continental United States at the last point of loading on rubber tired vehicles before delivery to the job site.

207-10.2.1.2 Bonding Jumpers

Bonding jumpers are required at all pipe joints. Bonding jumpers shall be the type as indicated in the Standard Drawing CWD-924 and shall be sized to limit the resistance of the jumpers divided by the resistance of the cylinder to a maximum of 0.30 ohm to a minimum of 0.10 ohm. Bonding jumpers will be required for steel pipe unless indicated otherwise on the plans or in these Specifications. Bonding jumpers are not required for ductile iron pipe.

207-10.2.1.3 Fabricated Steel Pipe. Fabricated steel pipe shall consist of straight butt seam or spiral butt seam electrical welded steel cylinders, shop fabricated from plates or sheets, manufactured and tested in accordance with A.W.W.A. C-200 and Federal Specification SS-P-385a. In addition, for water pipe 6-inches and larger, ASTM A-570, Grade 36, as referenced in A.W.W.A. C-200, shall be used.

207-10.2.1.4 Bonding Jumpers. Bonding jumpers are required at all pipe joints. Bonding jumpers shall be the type as indicated in the Standard Drawing CWD-924 and shall be sized to limit the resistance of the jumpers divided by the resistance of the cylinder to a maximum of 0.30 ohm to a minimum of 0.10 ohm. Bonding jumpers will be required for steel pipe unless indicated otherwise on the plans or in these Specifications. Bonding jumpers are not required for ductile iron pipe.

207-10.4.2.1 Cement Mortar Lining and Coating. All steel pipe furnished shall be cement mortar lined and coated in accordance with AWWA C205 and Sub-section 207-10 except that Table 1, AWWA C205 is revised as follows:

Pipe Diameter (inches) *Pipe ID	Lining		Coating	
	Thickness (inches)	Tolerance (inches)	Thickness (inches)	Tolerance (in.) (No minus tolerance)
4 thru 12	5/16	±1/16	3/4	+1/4
14 thru 18	3/8	±1/16	3/4	+1/4
20 and Larger	1/2	±1/16	3/4	+1/4

*Pipe ID shall be greater than the nominal size specified in the plan; and Pipe ID shall be measured from the inside face of lining to inside face of lining.

Type II Cement shall be used for the lining and Type II cement shall be used for the

coating.

The pipe manufacturer shall provide internal bracing for all pipe sizes 10-inches and larger. Bracing shall remain in the pipe until installation, bedding, and backfill materials operations have been completed. Ten-inch thru 36-inch pipe shall be braced with 4pt, 2 places 12-inches from each end. Bracing to be 2" x 4" with wedges.

These bracing requirements shall be considered as a minimum. The Contractor shall provide additional internal bracing and take the necessary precautions as required to ensure that the pipe will not deflect more than 2 percent.

207-10.4.2.2 Approved Pipe and Fittings Manufacturers.

- a) Ameron International
- b) Northwest Pipe and Casting Company
- c) Kelly Pipe Company
- d) West Coast Pipe Linings Inc.
- e) Southland Pipe Corp.
- f) Imperial Pipe Services, LLC

207-10.4.7 Liquid Epoxy Lining and Coating

207-10.4.7.1 General

All aboveground piping shall be Liquid Epoxy lined and coated, 8 mils minimum, manufactured and installed in accordance with the latest version of AWWA C210. Liquid Epoxy used for the Interior lining and Exterior coating of Steel Water Pipelines shall be Devoe Bar-Rust 233H, or city approved equal.

207-25 MISCELLANEOUS PIPE

207-25.1 General

These Specifications apply to miscellaneous piping used for appurtenant construction and water services. All miscellaneous piping shall conform to these Specifications unless shown otherwise on the Plans or Standard Drawings.

207-25.1.1 Copper Tubing or Pipe

Copper tubing or pipe used for service connections, air valves or blow-offs shall be Type "K" soft copper conforming to ASTM B-88. Hard drawn copper shall be used for air valve and blow-off risers. When wrought copper solder type fittings are shown on the Plans or Standard Drawings the joints shall be soldered using a lead free, tin based alloy solder meeting Federal requirements for lead free solders mandated by the Federal Safe Drinking Water Act, with a flux specifically designed for the solder alloy. Use J. W. Harris Co., Stay Safe 50, Stay Safe Bridget, or City approved equal.

1" Copper- no sweat fittings are permitted.

2" Copper – full 20 foot lengths are to be used keeping solder couplings to a minimum.

207-25.2 Red Brass Pipe

Red brass pipe used for service connections, air valves or blow-offs shall conform to ASTM B-43.

207-25.3 Steel Pipe

Steel pipe used in 4 inch and larger fire or domestic services and guard posts shall conform to ASTM A-120, Schedule 40.

207-25.4 Galvanized Steel Pipe

Galvanized Steel Pipe used as 2-inch service bypasses shall conform to ASTM A-120, Schedule 40.

207-25.5 Gate Box Material

The respective minimum thicknesses of steel pipe used for 8-inch and 10-inch gate boxes shall be 12 Gauge Pipe and shall be seamless steel, conforming with the requirements of ANSI/AWWA C-200. Material shall be factory dipped in Trumble Asphalt Dip, or an approved equal.

207-30 POLYVINYL CHLORIDE (PVC) WATER PIPE AND FITTINGS

207-30.1 General

These Specifications apply to Polyvinyl Chloride (PVC) Pipe for water distribution. All PVC Pipe shall be twenty (20) foot laying lengths and have cast iron outside diameters (C.I.O.D.'s). PVC pipe shall conform to the latest revision of AWWA Standard C-900 unless otherwise specified herein.

The PVC Pipe shall be Pressure Class 200.

Each piece of C-900 PVC pipe shall be hydro-statically proof-tested at four (4) times its rated class pressure for a minimum duration of five (5) seconds. Integral bells shall be tested with the pipe.

Outlets 2 inches and smaller shall be standard full circle bronze saddles designed specifically for C.I.O.D. PVC pipe. No single or double strap saddles are allowed.

Outlets in C-900 PVC pipe larger than two (2") inches shall be accomplished through the use of ductile iron fittings.

207-30.1.1 Pipe Joints

Unless otherwise specified or shown, all joints of PVC pipe shall be with elastomeric gasket bell ends. Solvent welded joints will not be allowed. The bell ends shall be an integral thickened bell. The minimum wall thickness of the bell, at any point, between the ring groove and the pipe barrel shall conform to the dimension ratio requirements of C-900 AWWA Standard.

The pipe manufacturer shall furnish all elastomeric gaskets. The gaskets shall be manufactured to conform to the requirements of ASTM F-477.

The Contractor shall submit test results showing the physical properties of the materials used in the manufacture of the rubber gaskets, if requested. All rubber gaskets furnished under this specification shall be subject to inspection and/or test. Any gasket found to be unsatisfactory shall be immediately replaced by the Contractor, at no expense.

207-30.1.2 Fittings

This section covers all fittings required for closures, bends, tees, crosses, reducers, plugs, caps, blowoffs, and connections to mainline valves shown on the Plans.

All fittings shall have a minimum pressure rating of 250 psi and shall be manufactured per ANSI A21.10/AWWA C110 and/or ANSI A21.11/AWWA C111. Ductile Iron compact fittings shall have a minimum pressure rating of 350 psi and shall be manufactured per ANSI A21.53/AWWA C153.

207-30.1.3 Inspection and Certification

The manufacturer shall submit a sworn statement that the pipe furnished has been sampled, tested and inspected in accordance with these Specifications and that the results thereof comply with the requirements of this Specification.

207-30.1.4 Inspection and Testing

Inspection in the plant shall be by the manufacturer. Copies of all test reports shall be submitted to the Engineer.

207-30.1.5 Approved Fittings Manufacturers

- a. Star
- b. Sigma/Nappco
- c. Tyler/Union
- d. SIP Industries

SECTION 210 - PAINT AND PROTECTIVE COATINGS

210-1.5 Paint Systems/ Painting Schedule

Painting Schedule: All paint and protective coatings shall be holiday free. The following paint schedule shall apply to Water Division facilities:

No.	Application	Primer	Paint
1	Gate Box Caps & Rims	1 coat, Red, Rust-Oleum, Dunn/Devoe	2 coats of Rust-Oleum, Dunn/Devoe, Safety Blue or City Approved
2	Air Valves	1 coat, Red, Rust-Oleum, Dunn/Devoe	2 coats of Rust/Oleum, Dunn/Devoe, Forest Green or City Approved
3	Fire Hydrants	1 coat, Red, Rust-Oleum, Dunn/Devoe	2 coats of Rust-Oleum, Dunn/Devoe, Safety Yellow or City Approved
4	Blowoff Hydrants	1 coat, Red, Rust-Oleum, Dunn/Devoe	2 coats of Rust-Oleum, Dunn/Devoe, Safety Yellow/Safety Blue
5	Air Valve Guard Posts	1 coat, Red, Rust-Oleum, Dunn/Devoe	2 coats of Rust-Oleum, Dunn/Devoe, Forest Green
6	Hydrant Guard Posts	1 coat, Red, Rust-Oleum, Dunn/Devoe	2 coats of Rust-Oleum, Dunn/Devoe, Safety Yellow
7	Locating Guard Posts	1 coat, Red, Rust-Oleum, Dunn/Devoe	2 coats of Rust-Oleum, Dunn/Devoe, Safety Yellow
8	Steel Vault Lid	1 coat, Red, Rust-Oleum, Dunn/Devoe	2 coats of Rust-Oleum, Dunn/Devoe, Soft Grey
9	Above Grade Piping	1 coat, Red, Rust-Oleum, Dunn/Devoe	2 coats of Rust-Oleum, Dunn/Devoe, San Tan
10	Curb Markings	1 coat, Red, Rust-Oleum, Dunn/Devoe	2 coats of Rust-Oleum, Dunn/Devoe, Safety Blue

- a. All paint and protective coatings shall be holiday free.
- b. All paint and protective coatings shall comply with the California/South Coast Air Quality Management District (SCAQMD) VOC (Volatile Organic Compound) regulations.
- c. All paint and protective coatings, with the exception of red primer, shall be high performance, acrylic based paint systems.
- d. A minimum thickness of 5 mils, as determined by the engineer, shall be attained after the final paint coat has dried.
- e. Spray paint and spray primer shall not be permitted, except for temporary marking paint.
- f. Red colored primer can be substituted with equivalent grey colored primer.
- g. All substitutions for paint and protective coatings listed above shall be reviewed and approved by the engineer.
- h. Marking paint shall not be permitted for permanent paint or primer coating applications.
- i. Suppliers

a. Dunn Edwards, Riverside – (951) 784-1758

- b. Vista Paint, Riverside – (951) 689-2501
- c. Glidden Professional, Riverside – (951) 274-7888

SECTION 250 - VALVING, APPURTENANCES AND MISCELLANEOUS MATERIALS

250-1 NUTS AND BOLTS.

Where nuts and bolts are to be furnished for fastening flanged joints, they shall be hexagonal head machine bolts and hexagonal nuts. Steel Standard ASTM A-307 Grade B; dimensions of bolts and nuts, ANSI B-18.2.1; threads of bolts and nuts, ANSI B1.1 coarse thread series, Class 2A fit on bolts and Class 2B fit on the nuts; nuts and bolts shall be cadmium plated conforming to ASTM A-165, type TS; electroplated zinc per ASTM B-633, SC 1; or hot-dip galvanized per ASTM A-153, Class C. Minimum bolt lengths shall be the sum of the mating flange thickness, the gasket, and the depth of the nut plus 1/8" before torquing.

Break-off bolts shall comply with Steel Standard ASTM A-307 Grade A, and have a hole drilled in the shank with the dimensions of 11/32-inch (for 5/8-inch bolts) and 13/32-inch (for 3/4-inch bolts) and 2 3/8-inch deep and shall be supplied filled with silicone.

250-1.1 Check Valves. Check valves 2 1/2-inch and larger shall conform to the following:

1. Valves shall be of a swing type with grooved ends complying with A.W.W.A. C-508. Valve bodies for valves up to 4-inches shall be bronze. Valve bodies for valves 6-inches to 12-inches shall be ductile iron.
2. Valves shall be designed for a working pressure of 175 psi.
3. The valves shall be supplied with an external lever arm, external spring, and a no-flow micro switch.
4. Check valves shall be operable in both the vertical and horizontal positions.
5. The disc arm, pin, and spring material shall be constructed of stainless steel in conformance with ASTM A276, Type 316. The valve seat shall be bronze.

Check valves made by Victaulic, Series 317 C-040 (060) have been approved by the Water Division.

250-2 GASKETS. Where gaskets are to be furnished, they shall be 1/8" minimum thickness, micro finish, full face, red rubber material style 50 by "Garlock Rubber Technologies"; TRIPAC Red Rubber Style AB-619; or City approved equal.

250-3 INSULATION GASKETS. Unless otherwise specified, insulation gaskets shall conform to the following:

1. The insulation gasket shall fit between the class of flanges as specified, with a pressure rating equal to, or greater than, the flange pressure rating.
2. Insulation gaskets shall be full pattern, fabric-reinforced phenolic, neoprene face phenolic, 1/8-inch thick.
3. The gaskets shall have the following assembly minimum physical characteristics:

- a. Compression strength24,000 psi
- b. Dielectric strength 500 V/Mil
- c. Operating temperatureup to 175° F
- d. Water absorption..... 1.6%

4. A one-piece Acetal Resin sleeve and Washer shall be used in combination with a single phenolic washer on each bolt. A steel washer designed to be used with the insulating washer shall be used, one each side of the flange bolts.

a. One-piece sleeve washer shall have the following physical characteristics:

- 1. Sleeve thickness 1/32-inch
- 2. Washer thickness 5/32-inch
- 3. Dielectric strength 1200 V/Mil
- 4. Operating temperature.....up to 175° F
- 5. Water absorption 0.22% Max.

b. Single phenolic washers shall have the following physical characteristics:

- 1. Thickness 1/8-inch
- 2. Dielectric strength 500 V/Mil
- 3. Compressive strength.....26,000 psi
- 4. Operating temperature.....up to 300° F
- 5. Water absorption 1% Max.

c. Flange Insulation kits shall be:

- 1. PSI Products, Inc., Burbank, California
- 2. Central Plastics Company, Shawnee, Oklahoma
- 3. CALPICO Inc., San Francisco, California

250-4 BUTTERFLY VALVES

Butterfly valves shall conform to the latest revision of AWWA C504 and the following:

- 1. Butterfly valves and operators shall be class 150B, constructed for direct burial and have flanged ends.
- 2. Butterfly valves shall be furnished with operators of the traveling nut or worm gear type, self-locking in any position, and sealed (with gaskets), and lubricated to withstand a submersion in water to 10 psi. The valve shall open by counter-clockwise rotation of a 2-inch square AWWA operating nut.
- 3. The operator shall be capable of meeting the torque requirements for opening and closing the valve against:
 - a. 150 psi upstream and 0 psi downstream pressure.

- b. Maximum inlet-outlet velocity of 12 feet per second, normal velocity of 6 feet per second, and shall be provided with AWWA stops capable of absorbing up to 300 foot-pounds of input torque without damage to the valve or operator.
4. Butterfly valves shall have Buna N seat bonded or mechanically retained without use of metal retainers or other devices located in the flow stream, to the body and have a disc seating edge of ni-chrome or stainless steel. All internal mountings or working parts shall be stainless steel. All internal nuts and bolts, excepting the operating nut shall be of stainless steel. Butterfly valves shall have the shaft V-type self-adjusting packing. The shaft shall not be exposed between the valve body and the operator.
5. The use of a stop or lug cast integrally with or mechanically secured to the body for the purpose of limiting disc travel by means of direct contact or interference with the valve disc in either the open or closed position and which utilizes a ferrous metal bearing surface in direct rubbing contact with an opposing ferrous metal surface, will not be acceptable.
6. Butterfly valves shall be furnished with records of tests specified in AWWA C504, Section 2.3 and Section 5. Butterfly valve seats shall be tested and certified for a 150 psi working pressure. The certificate shall be attached to the Butterfly valve. All valves shall be furnished with certified drawings and parts list of the valve and operator. An affidavit of compliance to AWWA C504 shall be furnished for all valves. Five sets of the above information shall be furnished to the City.
7. Butterfly valves shall have their internal and external surfaces epoxy coated, except flange faces and stainless steel and rubber surfaces, with a minimum of 8 mils of "Ameron" Amercoat 370 epoxy coating, Holiday Free, or City approved equal. "Ameron" Amercoat 370 epoxy coating shall be applied at the manufacturer's plant or approved manufacturer's representative's plant in accordance with the manufacturer's application specifications.

250-4.1.1 Approved Manufacturers

- a. Pratt - Groundhog, Triton XR-70
- b. Mueller – Lineseal III
- c. DeZurik Model BAW or City approved Equal

250-4.1.2 16" and 8" BFV Motor Operator

Operator mounted on the 16" butterfly valve shall be AUMA SG Norm ¼ turn series actuator mounted per Contract Plans and Specifications. Actuator shall be NEMA4X/6 enclosure, 120 volt, single phase, 60 cycle, with double torque switch, open and close limit switch, hand wheel, continuous reading mechanical dial indicator, and space heaters. Operator mounted on the 8" butterfly valve shall be AUMA SG Norm ¼ series with all the features outlined for the 16" BFV. Opening and closing speeds shall be set at 30 seconds. Conduit openings shall be sealed with duct putty to prevent entrance of moisture.

250-5 GATE VALVES

250-5.1 2-inch to 3-inch Gate Valves

Unless otherwise specified, gate valves 2-inch through 3-inch shall conform to ANSI/NSF 61, and the following:

- a. Gate valves shall be rated 250 psi max working pressure, iron body with 10 mils epoxy coating interior and exterior, Triple O-ring seal, non-rising stem, iron wedge and threaded ends.
- b. Gate valves used in corp stop, 2-inch blowoff or corp stop shall have a 2-inch square cast iron operator nut.
- c. Iron gate valves shall be:
 1. Mueller Co. A-2360

250-5.2 Resilient Seat Gate Valves

250-5.2.1 General

This section of the Specification covers resilient-seated gate valves for use in the water distribution system.

Resilient-seated gate valves shall conform to the latest revision of AWWA C509 or C515 and the following:

1. Resilient-seated gate valves shall be iron bodied with all stainless steel internal mountings and working parts. Valve stems shall be cold rolled stainless steel 430F with minimum yield strength of 40,000 psi.
2. Resilient-seated gate valves shall have non-rising stems, "O"-ring sealed with two "O"-rings above the thrust collar, with a 2-inch square operating nut, opening counter-clockwise, and shall be designed for 200 psi water working pressure.
3. Resilient-seated gate valves shall have sizes and type of valve ends as shown on the plans or Standard Drawings.
4. Resilient-seated gate valve suppliers shall furnish the City with an affidavit of compliance to AWWA C509 or C515.
5. Resilient-seated gate valves shall have their internal and external surface epoxy coated, Holiday Free, except stainless steel and rubber surface with epoxy applied by the manufacturer of the valve.

250-5.2.2 Resilient Seat Gate Valves – Tapping

Tapping gate valves shall conform to all requirements of Subsection 250-5.2.1 and the following:

1. Tapping valves shall have a Class 125; ANSI B16.1 flanged inlet and an outlet as shown on the construction plans.

2. Tapping valves shall be compatible with the tapping sleeve and the tapping machine utilized for wet tapping the water main.

250-5.2.3 Approved Manufacturers

- (1) American Flow Control Series 2500
- (2) Clow Series 6100
- (3) AVK Series 25
- (4) Mueller Model- 2360 or 2362
- (5) M & H Style 4067 NRS

250-5.3 Tapping Sleeves

- a. Tapping sleeves shall be:
 1. Ductile Iron body construction, with mechanical type joints on both sleeve ends, and a class 125 ANSI B16.1 flanged outlet.
 2. ASTM A-276, type 304 or 304L stainless steel body construction, with full circumference gasket, and flange outlets meeting the requirements of Section 250-9. Flanges materials may include ASTM A-276, type 304 or 304L stainless steel.
- b. Sleeves shall be compatible with the tapping gate valves.
- c. Sleeves shall be designed for a working pressure of 200 psi and be supplied with a 1/2" or 3/4" IPF coupling or tap and corporation stop for pressure testing sleeve.

250-5.3.1 Approved Manufacturers

Stainless Steel Sleeve

1. Smith-Blair 662 and 663
2. Romac SST or Romac FTS 420
3. Powerseal 3490-AS

Mechanical Type Joint

1. Mueller-Mechanical Joint Tapping Sleeve
2. Clow-Mechanical Joint Tapping Sleeve
3. American Flow Control - Mechanical Joint Tapping Sleeve

250-5.4 Abandoning Existing Valves

All existing valves shall be abandoned by Contractor unless otherwise noted on the plans. After pipelines have been tested and disinfected by Contractor, and accepted by City, and after City has completed all service connections and waterline connections, Contractor shall remove valve cans a minimum of 12" below finish grade, remove operating nut extensions, and fill valve cans with concrete. Thereafter, Contractor shall sawcut existing asphalt concrete pavement (2' square section) or concrete (at construction joints) around existing valve boxes, remove said asphalt concrete pavement or concrete and dispose of same at a legal disposal site, and place concrete or asphalt concrete pavement over abandoned valve boxes. Valve box caps and extensions shall be returned to the City.

250-6 VALVE BOX CAPS.

Where valve box caps are to be furnished; the valve box caps shall be composed of 8-inch or 10-inch valve boxes and shall consist of a cap of cast iron with the cap marked CWD with the City of Riverside pattern. The cap shall be supplied with two coats of paint thereon and one coat primer. See painting schedule, Section 210-1.5. Cap shall be manufactured by South Bay Foundry, San Diego, CA, or City approved equal.

250-7 AIR VALVES.

Unless otherwise specified, air valves, 2-inch and larger, shall conform to the following:

1. Air valves shall have their internal body casting epoxy coated with a minimum of 12 mils of "Ameron" Amercoat 370 epoxy coating, Holiday Free, or City approved equal. The "Ameron" Amercoat 370 epoxy coating shall be applied at the manufacturer's plant or approved manufacturer's representative's plant, in accordance with the manufacturer's application specifications.
2. Air valves shall be: *****Crispin, 2-inch - UL20.1-Universal Air Release Valve.**
Crispin, 4-inch – UL41.1-Universal Air Release Valve.
Crispin, 6-inch – C61-Combination Air Valve.
Crispin, 8-inch – C81-Combination Air Valve.
A.R.I., 2-INCH THRU 10-INCH – D-060-C HF.
A.R.I., 2-INCH – D-040 (interior use only).
Crispin 2-inch Model DL20 - Deep well air valve

250-7.1 Abandoning Existing Air Valves

See Abandoning Existing Valves (Section 250-5.4).

- a. All existing air valves shall be abandoned by Contractor unless otherwise noted on the plans. After pipelines have been tested and disinfected by Contractor, and accepted by City, Contractor shall remove air valves and piping a minimum of 12" below finish grade and fill void and piping with concrete. Thereafter, Contractor shall saw cut existing concrete at construction joints around abandoned air valves, remove said concrete and dispose of same at a legal disposal site, and place concrete over abandoned air valve. If existing air valves are located in an area

without concrete, Contractor shall remove and replace, in kind, the area around abandoned air valves.

- b. Contractor shall restore landscaping and existing improvements around abandoned fire hydrants.
- c. Air Valves shall be delivered to the City of Riverside, Utilities Operation Center. Call the Water Superintendent at (951) 351-6384.

250-8 CHECK VALVES

Unless otherwise specified, check valves 2-1/2" and larger shall conform to the following:

- a. Check valves shall be swing type, iron bodied with flanged ends fitted with outside spring and lever.
- b. Check valves shall be designed for 150 psi working pressure and a 300 psi test pressure.
- c. Check valves shall be used in both vertical and horizontal position.
- d. Check valves shall be fully bronze mounted and have a stainless steel hinge pin. The disc shall be rubber faced with a bronze seat ring.
- e. Check valves 2-inches through 12-inches shall be furnished with conventional packing.
- f. Approved Manufacturers
 - 1. Mueller Model A-2602-6-02

250-9 PRESSURE RELIEF VALVE

The 6-inch pressure relief valve shall have a one piece stainless steel body and be pilot operated. Supply pilot controls with valve opening speed control, isolation valves, and check valves. Supply .

250-10 FLOW METER

250-10.1 Electromagnetic Flow Meter

Electromagnetic flow meter shall be designed for a 150 psi working pressure, have stainless steel epoxy coated body with flanged ends.

Flow meter shall be 16-inch meter, McCrometer Ultra Mag Model UM06 with signal converter, or City approved equal. Converter shall operate with flow meter per Section ***911-7.5.

250-10.1.1 Flow Meter Signal Converter

Flow meter signal converter shall be provided and mounted inside the control cabinet or mounted on unistrut with painted steel mounting back near the control cabinet for operation with electromagnetic flow meter. Converter shall be pulsed dc coil excitation type with auto zeroing. The converter shall indicate direction of flow, flow rate, and totalization of flow

volume. A pulse for the totalizer should be made available and connected to the RTU for SCADA monitoring. Totalizer, at the converter, shall be electronically resettable. The signal converter configuration parameters shall be lockout protected, but can be changed with the front panel keypad, or with a 9-pin RS232 serial interface port. Converter shall be compatible with external telemetry equipment, rate of flow and total volume display, Hart protocol compatible, and 4-20 mA output.

250-11 BRASS AND BRONZE ITEMS

Brass and bronze items cover corporation stops, angle ball meter valves, meter couplings and service fittings. All material used in the manufacture of this equipment shall be copper base alloy complying with ANSI/NSF 61 and AWWA C800. All compression fittings shall be pack joint type connection for use with tubing.

250-11.1 Service Fittings

All angle ball meter valves and corporation stops shall be constructed of the following: Heavy cast bronze body, double Buna-N rubber O-rings in stem, molded Buna-N rubber seat, supplied with quarter turn stem and lockwing.

250-11.1.1 Approved Manufacturers and Models

<u>ITEM</u>	<u>FORD</u>	<u>JONES</u>	<u>A.Y. McDONALD</u>	<u>MUELLER</u>	<u>CAMBRIDGE BRASS</u>
1" Ball Corp. MIPT X MIPT	FB500-4	E-1943	73131B	B-20013	301-M4M4
1" Couplings FIPT X Pack Joint for CTS	C14-44G	E-2607	74754Q	P-15451	
2" Ball Corp. MIPT x MIPT	FB-500-7	E-1943	73131B	B-2969	301-M7M7
2" Corp. Stop CC x IPT	FB-400-7	E-1944	73128B		
1" Angle Ball Meter Stop	BA43- 444W	E-1963W	74602BQ	B-24258	210-H4T4
2" Angle Ball Meter Stop	BFA13- 777W-NL	E-1974W	74604B		210-F7MF7
2" Angle Ball (FIPT X FIPT)	BA11- 777W-NL				

2" Coupling (MIPT x Comp.)	C84-77	E-2605		H-15428	117-H7M7
1" x 3/4" Meter Adaptor	A34	E-128-H			440-N4R2
1" Meter Coupling	C38-44- 2-625	E-134	74620	H-10891	417-T4M4
3/4" Meter Coupling	C38-23- 2-5	E-134	74620	H-10891	417-T3M3

250-11.2 Service Saddles (Service Clamps)

Saddles shall be all bronze double strap type, with neoprene seal ring gasket.

250-11.2.1 Approved Manufacturers and Models

1. Mueller Cat. No. BR 2 B 0474 IP, BR 2 B 0684 IP, BR 2 B 0899 IP, BR 2 B 1104 IP, BR 2 B 1314 IP
2. Smith-Blair Cat. No. 323-0510 thru 323-1426
3. R.H. Baker Cat. No. 183-413 TAP thru 183-1426 TAP
4. Jones Cat. No. E-979
5. McDonald No. 3826
6. Ford - 202B
7. Cambridge Cat. No. 810

250-11.3 Water Sampler Fittings

All angle ball meter valves and corporation stops shall be constructed of the following: Heavy cast bronze body, double Buna-N rubber O-rings in stem, molded Buna-N rubber seat and supplied with lockwing.

250-11.3.1 Approved Manufacturers and Models

<u>ITEM</u>	<u>FORD</u>	<u>JONES</u>
1" Corp. Stop IPT x Compression	1"-F-1100	1"-E-3403
1" Corp. Stop IPT x IPT	1"-F-500	1"-E-41
1" Angle Ball Meter Stop	BA43-444W	1"-E-1963W
1" x 3/4" Meter Adaptor	A34	1" x 1-1/4", E-128-H

250-12 FLANGES

Unless otherwise specified, flanges shall conform to the following:

1. All steel flange sizes 4-inch through ***20-inch shall be Class "D" and shall comply with AWWA C207, Section 1. All ductile iron flanges shall conform with the requirements of AWWA C115.
2. Steel flange sizes 4-inch through ***20-inch shall be furnished in the slip-on welding type.
3. Flanges shall be faced smooth or may have a serrated finish of approximately 32 serrations per inch, approximately 1/64-inch deep. Serrations may be spiral or concentric.
4. Plate or blind flanges shall have all flange faces machined flat and shall be center drilled and tapped, 1-inch IPT, 4-inch through 10-inch; 2-inch IPT 12-inch and larger; and furnished with a standard square head pipe plug.
5. Final machining on the contact faces of all flanges shall be done prior to being welded to the full length adjacent steel-plate section. Flange faces shall be checked with a straight edge and shall be perpendicular to the pipeline. All warped flanges will be returned to the pipe company for adjustment. The Contractor is responsible for all additional expenses and delays.
6. For 1-1/2 inch and 2-inch water service installations, a 2-inch brass screw meter flange shall be used, conforming with Section 4.4 of AWWA C701.

250-13 FIRE HYDRANTS/BLOWOFF ASSEMBLIES

Unless otherwise specified, fire hydrants and blowoff hydrants shall conform to the latest revision of AWWA C503 and the following:

1. Hydrants shall have 6-inch flanged inlet connection with 6-3/4 inch holes drilled on a 9-3/8 inch bolt circle.
2. Hydrants shall have outlet nozzles of the quantity and size specified with National Standard Hose Thread.
3. Hydrants shall be furnished with 1-3/4 inch pentagon spanner nuts on operator stems and nozzle caps. Nozzle caps shall be constructed of cast iron.
4. Hydrants from Clow Corporation shall be supplied with Type B carrier valves. Valve rubber shall be 5/8-inch thick for 2-1/2 inch outlets and 3/4-inch thick for 4-inch outlets.
5. Hydrant valves shall be slow opening.
6. Hydrant stems shall have "O" ring packing and be constructed of ASTM B-62 (85% copper, 5% tin, 5% lead, 5% zinc).
7. Hydrants shall be painted per AWWA C503. Exterior color shall be fire hydrant yellow.
8. Hydrant supplier shall furnish an affidavit of compliance to AWWA C503.

9. Hydrant (1 - 2-1/2" and 1 - 4" Outlets), Super Hydrant (2 - 2-1/2" and 1 - 4" Outlets)

250-13.1 Approved Manufacturers and Models

- a. Regular Hydrant:

CLOW CORP., Corona, California, 900 Series, Model 950.

AMERICAN AVK CO., Fresno, California, Model 2472

- b. Super Hydrant:

CLOW CORP., Corona, California, 900 Series, Model 960

AMERICAN AVK CO., Fresno, California, Model 2492

250-13.2 Abandoning Existing Fire Hydrants

- a. All existing fire hydrants shall be abandoned by Contractor unless otherwise noted on the plans. After pipelines have been tested and disinfected by Contractor, and accepted by City, Contractor shall remove fire hydrants and fire hydrant burys a minimum of 12" below finish grade and fill fire hydrant burys with concrete. Thereafter, Contractor shall sawcut existing concrete at construction joints around abandoned fire hydrant burys, remove said concrete and dispose of same at a legal disposal site, and place concrete over abandoned fire hydrant burys. If existing fire hydrants are located in an area without concrete, Contractor shall remove and replace in kind area around abandoned fire hydrant burys.
- b. Contractor shall restore landscaping and existing improvements around abandoned fire hydrants.
- c. Contractor shall notify City Fire Department of the location of the fire hydrants that are out of service.
- d. Hydrants to be delivered to the City of Riverside, Utilities Operation Center. Call the Water Maintenance Superintendent at (951) 351-6384.

250-13.3 Abandoning Existing Blowoffs

See Abandoning Existing Fire Hydrants (Section 250-10.2) and Abandoning Existing Valves (Section 250-5.4).

250-14 BOLTED, SLEEVE-TYPE COUPLINGS

Unless otherwise specified bolted, sleeve-type couplings shall conform to the latest revision of AWWA C219.

250-14.1 Flexible Couplings

- a. Each coupling shall consist of one steel middle ring, two steel followers, gaskets, and sufficient numbers of steel bolts to compress the gasket without distorting the followers.
- b. The thickness of the middle ring shall be such that the stress in the steel shall not exceed 50 percent of the yield point when subjected to the hydrostatic test pressure of the pipe line. The middle ring thickness shall not be less than the thickness of the pipe jointed.
- c. Middle rings shall be cold expanded a minimum of 1 percent increase in diameter to test the weld and the size to the proper dimension.
- d. The middle rings shall be coated with "Ameron" Amercoat 370 epoxy coating, Holiday Free, or City approved coating to a minimum dry film thickness of 10 mils. Follower rings shall be coated with a compatible shop coat for field coating.
- e. Bolts shall be 5/8-inch diameter carriage bolts with hexagon nuts. Steel bolts shall have a minimum yield strength of 40,000 psi.
- f. Gaskets shall be composed of a crude or synthetic rubber base suitable for use in potable water supply systems.

250-14.1.1 Approved Manufacturers and Models

1. Baker Series 200
2. Dresser Style 38
3. Smith-Blair 411 and 441
4. Romac Style 501
5. Ford Style FC1 and FC2

250-14.2 Flanged Coupling Adapters

- a. Each adapter shall consist of an adapter flange body, follower flange, wedge gasket, and sufficient bolts to compress the gasket without distorting the follower.
- b. Adapter flange and follower shall be constructed of steel or ductile iron. Ductile iron adapters shall meet or exceed ASTM A536, grade 65-45-12. The flange bolt dimensions shall meet AWWA C207 for a Class "D" flange.
- c. Gasket shall be composed of a rubber base meeting, or exceeding, ASTM D2000 3 BA 715 and suitable for use in potable water supply systems.
- d. Nuts and bolts shall conform with requirements of AWWA C111, and the above flexible coupling requirements listed in 250-11.1.
- e. Adapter flange and follower shall be painted with a factory applied shop coat.

250-14.2.1 Approved Manufacturers and Models

1. Baker Series 601
2. Smith-Blair 912, 913, and 914
3. Style FFCA
4. Romac FCA 501

250-15 METER BOXES

Pre-cast concrete meter boxes shall be provided for 5/8-inch through 2-inch water meters. Meter boxes shall be furnished with a Polymer concrete cover and lid, except where cast iron or steel traffic covers are specified. Where meter boxes are to be placed within a landscaped area, plastic boxes shall be used.

250-15.1 Approved Manufacturers and Models

Meter boxes provided shall be one of the following models. Many other manufacturers are readily available. Any substitution must be approved by the Engineer and shall be of the same size and description as those specified below:

a. 1" Services (3/4" or 1" Meters):

<u>Manufacturer</u>	<u>Model</u>
Armorcast	A6000485 (Polymer Concrete Box & Cover)
J & R Concrete Products	P-W4½ Series (Fiberglass Box W/Polymer Concrete Ring & 2 pc. Polymer Concrete Cover)

b. 2" Services (1 ½" or 2" Meters):

<u>Manufacturer</u>	<u>Model</u>
J & R Concrete Products	P-W5½ Series (Fiberglass Box W/Polymer Concrete Ring & 2 pc. Polymer Concrete Cover)

250-15.2 Terminal Housing Boxes

Meter boxes shall be provided for test lead terminal housing and water quality sampling station. The size shall be the same as for a 3/4-inch meter to 1-inch meter but shall be furnished with a cast iron traffic cover.

250-15.3 Approved Manufacturers and Models

Terminal housing boxes provided shall be one of the following models. Many other manufacturers are readily available. Any substitution must be approved by the Engineer and shall be of the same size and description as those specified below:

<u>Manufacturer</u>	<u>Model</u>
Armorcast	A6000485 (Polymer Concrete Box)
J & R Concrete Products	P-W4½ Series (Fiberglass Box W/Polymer Concrete Ring)

250-16 JOINT LUBRICANT

Joint lubricant used on ductile iron and steel pipe joints shall be nontoxic, shall not support the growth of bacteria, and shall have no deteriorating effects on the gasket material. All in

accordance with ANSI/AWWA C111/A21.11, Section 4.5.4, and shall be compliant with NSF/ANSI Standard 61-G.

250-17 POLYETHYLENE ENCASEMENT

Polyethylene encasement shall have a minimum thickness of 8 mil and conform with Section 4.1 of AWWA C105/ANSI A21.5.

PART 3 - CONSTRUCTION METHODS

All as provided in Part 3 of Standard Specifications for Public Works Construction except as modified herein.

SECTION 300 - EARTHWORK

300-1 CLEARING AND GRUBBING

300-1.1 General

The following work is included under clearing and grubbing:

- a. Mobilization in accordance with Section 9-3.4 of the Standard Specifications.
- b. Maintaining dust control at all times, by watering during the entire time of the project, whether extended or not, including developing a water supply and furnishing and placing all water for all work done in the contract, including water used for extra work.
- c. Site Clean-up.

SECTION 301 – TREATED SOILS, SUBGRADE PREPARATION AND PLACEMENT OF BASE MATERIALS

301-1 SUBGRADE PREPARATION

301-1.3 Relative Compaction

Where asphalt concrete is used as a base material and over 0.50 of a foot in depth, the subgrade shall be compacted to 95 percent relative compaction.

301-2 UNTREATED BASE

301-2.1 General

Untreated base shall be constructed of material conforming to 200-2. All base material shall be compacted to 95 percent relative compaction.

SECTION 302 – ROADWAY SURFACING

302-4 EMULSION AGGREGATE SLURRY

302-4.3.2.1 Spreading at Joints

The joint between the edge of pavement and the concrete gutter shall be sealed with slurry seal. The slurry may overlap the concrete gutter edge no more than one (1) inch. The edges of the slurry shall be maintained in a neat and uniform line.

302-4.4.1 Cleanup of Tools

The Contractor shall not allow any liquids used for cleanup of tools and equipment (such as diesel or solvents) to spill on the pavement, curbs, gutter, parkways, or other improved areas.

302-4.5 Payment

Payment for Emulsion Aggregate Slurry shall be made per square foot of applied slurry seal. This payment shall be full compensation for all labor, tools, equipment, materials, additives, and traffic control to place the slurry as described in these special Provisions and within the limits shown on the plans.

302-5 ASPHALT CONCRETE PAVEMENT

302-5.4 Tack Coat

A tack coat is required on all cut pavement edges and on overlay surfaces.

302-5.5 Distribution and Spreading

A Prime Coat is not required where the thickness of Asphalt Concrete is more than 5-inches. The Contractor shall lay Asphalt Concrete in multiple courses, each of no more than 4-inches thick, where the overall asphalt thickness is more than 5-inches thick.

The Contractor shall overlay the roadway in accordance with the City of Riverside, Public Works Department Standard Drawing 453. Where asphalt grinding is required, the contractor shall overlay that area on the same day. The thickness of the grind and overlay shall be 0.125-foot minimum. *****(verify jurisdiction, the City or County where the work will take place)**

Payment for all materials, labor, tools, equipment and apparatus required for the complete installation of the overlay, by whatever method, shall be included in the price per linear foot bid, regardless of the overlay width, and no additional compensation will be allowed.

302-9 ASPHALT RUBBER HOT MIX (ARHM)

302-9.1.1 Pavement Preparation

Pavement preparation shall consist of the following:

1. Seven days prior to the crack routing operation, all cracks containing weed or grass shall be treated with a contact herbicide such as Dupont Chemicals, "OUST XP" or City approved equal and to the manufacturer's recommendation.
2. Prior to the application of any sealant, all cracks shall be completely cleaned of deleterious material using a blower or an air compressor. All wedged-in materials that are not readily removed by air shall be removed by gouging or plowing. In addition, the street surface shall be completely cleaned of all pavement preparation debris by a power-driven street sweeper or other suitable means at the end of each workday.
3. All cracks greater than 1/2" in width shall be routed to a depth of 3/4" to 1".
4. All cracks less than 1" in width shall be cleaned no more than 24 hours before the start of resurfacing work.
5. All cracks greater than 1" in width shall be filled with F-PG-64-10 asphalt concrete. This treatment method shall be called "Crack Repair" on the Plans and the Proposal Forms.
6. After cleaning and routing but prior to the application of any sealant, all cracks shall be treated with a selective pre-emergent herbicide such as ACME Industrial Products Barrier 50W Dichlobenil Herbicide or City approved equal and to the manufacturer's recommendation.
7. Performing traffic control for the pavement preparation work.

8. All "alligator" cracked areas of the pavement shall be removed to a depth specified by the Engineer and replaced with DGAC. Replacement DGAC shall be described as "Asphalt Concrete - Pavement Preparation" on the Plans and in these Special Provisions.

302-9.1.2 Asphalt-Rubber Subcontracting and Supervision

All work relating to construction of the Asphalt Rubber Chip Seal surfacing, including the asphalt-rubber blending, application, placement of cover aggregate, traffic control, and sweeping, shall be performed in such a manner as to maintain quality control, limit public inconvenience and maximize public safety. Application of the hot asphalt-rubber mixture shall be considered to be a part of material supply.

The subcontractor or prime Contractor, whichever performs the above described work, shall employ and provide to the project a qualified supervisor, highly experienced and fully knowledgeable in all aspects of asphalt-rubber construction. This supervisor shall be in direct control of all of the above described work, and shall be available at the project site on a continuous basis for consultation and to respond to directives from the Engineer during this work. If the Contractor fails to comply within a two-hour period with the directives of the Engineer related to the above described work, all costs incurred by the City to perform the work covered by such directives will be deducted from the Contract payment. Difficulty of the Engineer in coordinating work under such a directive, due to unavailability of the supervisor at the project site as required above, shall be adequate reason for the City to perform the work of the directive. The time to comply with directives delivered verbally and outside of a working day will be extended to 4 hours.

302-9.3.1 Methods of Distribution and Spreading

A paving machine that picks up the asphalt concrete material from a windrow then spreads the material to a specified thickness may be used. However, the Engineer may require the Contractor to use a paving machine which accepts the asphalt concrete material directly from the delivery truck, at no additional cost to the City, if the temperature of the asphalt concrete in the windrow cannot be maintained above the lower temperature limit specified in Section 302-5.5 of the Standard Specifications, or if the windrow blocks access to any driveway or side street for more than fifteen prior to the paving machine spreading the asphalt concrete material. The Engineer reserves the right to suspend delivery of AC to the jobsite to ensure the AC placement operations are completed and the full traveled way is opened to traffic prior to the time limits specified in Subsection 7-10.1 of these Special Provisions.

302-9.7 Pavement Preparation

Pavement preparation shall consist of the following:

1. Seven days prior to the crack routing operation, all cracks containing weed or grass shall be treated with a contact herbicide such as Dupont Chemicals, "Oust XP" or City approved equal and to the manufacturer's recommendation.

2. Prior to the application of any sealant, all cracks shall be completely cleaned of deleterious material using a blower or any air compressor. All wedged-in materials that are not readily removed by air shall be removed by gouging or plowing. In addition, the street surface shall be completely cleaned of all pavement preparation debris by a power-driven street sweeper or any suitable means at the end of each workday.

3. All cracks greater than 1/2" in width shall be routed to a depth of 3/4" to 1".

4a. All cracks less than 1" in width shall be cleaned no more than 24 hours before the start of resurfacing work.

4b. All cracks greater than 1" in width shall be filled with F-PG-64-10 asphalt concrete. This treatment method shall be called "Crack Repair" on the Plans and the Proposal Forms.

5. After cleaning and routing but prior to the application of any sealant, all cracks shall be treated with a selective pre-emergent herbicide such as ACME Industrial PRODUCTS Barrier 50W Dichlobenil Herbicide or City approved equal and to the manufacturer's recommendation.

6. Performing traffic control for the pavement preparation work.

7. All "alligator" cracked areas of the pavement shall be removed to a depth specified by the Engineer and replaced by DGAC. Replacement DGAC shall be described as "Asphalt Concrete- Pavement Preparation" on the Plans and in these Special Provisions.

302-9.8 Measurement and Payment

Payment for ARHM shall be made at the Contract unit price per ton.

Payment for "Crack Fill" and "Crack Repair" shall be at the Contract unit price and shall include full compensation for all labor, materials, tools, equipment and incidentals required for crack treatment.

SECTION 306 - UNDERGROUND CONDUIT CONSTRUCTION

306-1 OPEN TRENCH OPERATIONS

306-1.1 Trench Excavation

306-1.1.1 General

Unless otherwise specified in these Specifications, excavation shall include the removal of all materials of whatever nature encountered, including rock and all obstructions of any

nature that would interfere with the proper execution and completion of the Work.

Payment for excavation shall be included in the installation cost of the pipe for the items involved, regardless of trench width, adjustment to pipeline horizontal and vertical alignment or realignment, and no additional compensation will be allowed.

306-1.1.3 Maximum and Minimum Width of Trench

For water pipelines, the minimum width of trench shall be the pipe O.D. plus 12 inches. The maximum trench width shall be the pipe O.D. plus 36-inches. Width shall be measured at the top of the pipe.

306-1.1.3.1 Trench Cave-In

Where the maximum trench width is exceeded and the trench sides are caving-in, the Engineer may, require the Contractor to use concrete or other means of special bedding for vertical distance of not less than one-half the pipe outside diameter.

306-1.1.3.2 Minimum Cover and Clearance

Unless otherwise shown on the plan, the minimum depth of cover listed below shall be provided between the top of the main and the undisturbed subgrade or finished grade, whichever provides the greater cover.

	<u>Sub-Grade</u>	<u>Finished Grade</u>
(1) 6" & 8" diameter	2' - 0"	3' - 0"
10" & 12" diameter	3' - 0"	4' - 0"

(2) Cover between top of the valve stem and the subgrade surface at the time of construction shall be 6-inches.

A minimum vertical clearance of 12 inches shall be maintained between all foreign structures or utilities unless shown on the Plans and approved by the Engineer.

306-1.1.5 Removal and Replacement of Surface Improvements

The cost of removal and replacement of existing improvements interfering with the Contractor's operations shall be included in the price bid for the item involved unless otherwise specified.

306-1.1.6 Bracing Excavations (Trench Shoring)

306-1.1.6.1 General

The lump sum bid for shoring, bracing, or trench sloping, shall be full compensation for designing, providing, installing, maintaining, relocating, and removing any shoring or trench

sloping system in accordance with applicable State and Local Safety requirements and in compliance with Section 6500 and 6707 of the Labor Code, which reads substantially as follows:

Whenever the City issues a call for bids for the construction of a pipeline, sewer, sewage disposal system, boring and jacking pits, or similar trenches or open excavations, which are five feet or deeper, such call, shall specify that each bid is submitted in response thereto shall contain as a bid item, adequate sheeting, shoring, and bracing or equivalent method for the protection of life or limb which shall conform to applicable safety orders. Nothing in this section shall be construed or impose tort liability on the body awarding the contract or any of its employees.

Constructor shall hire a Registered Civil Engineer in the State of California to design the trench shoring for this project.

306-1.1.7 Trench Dewatering

Prior to submitting Contractor's bid, it shall be the Contractor's responsibility to determine the extent of the groundwater. The Contractor shall be responsible for removal of such groundwater per section 7-8.6.2.

Where groundwater or soft, spongy, unstable material is encountered and the native material does not afford a solid foundation for pipe sub-grade, the trench shall suitably be dewatered and a firm, stable base shall be constructed for the pipe by excavating any unsuitable material to twenty four inches minimum depth below sub-grade base, or if required a stable base shall be constructed by placing a City approved rock bedding upon which the sub-grade can be prepared. If the necessity for such additional bedding material is required for control of groundwater, the Contractor shall bear the expense of the additional excavation and bedding.

All costs involved in the removal of groundwater shall be included in the contract lump sum price, and no separate compensation will be allowed.

306-1.1.8 Steel Plate Bridging

When allowed and if, at the end of the working day, open trench backfilling operations have not been properly completed, steel plate bridging shall be required to make the entire roadway section safe and available to pedestrians and the travelling public. The maximum length of steel plate bridging allowed over an open trench for the entire project is 50 feet unless the Contractor obtains prior written approval of the Engineer. Placement of steel plate bridging shall be approved by the Engineer.

The steel plate bridging installation shall conform to the following:

1. For speeds more than 45 mph: The pavement shall be cold planed to a depth equal to the thickness of the plate and to a width and length equal to the dimensions of the plate.

2. For speeds 45 mph or less: Approach plate(s) and ending plate (if longitudinal placement) shall be attached to the roadway by a minimum of 2 dowels pre-drilled into the corners of the plate and drilled 2 inches into the pavement. Subsequent plates are butted to each other. Fine grade asphalt concrete shall be compacted to form ramps, maximum slope 8.5% with a minimum 12 inch taper to cover all edges of the steel plate. When steel plates are removed, the dowel holes in the pavement shall be backfilled with either graded fines of asphalt concrete mix, concrete slurry, or an equivalent slurry satisfactory to the Engineer.

The Contractor shall be responsible for maintenance of the steel plates, shoring, and asphalt concrete ramps.

Unless a prior permission is obtained, steel plate bridging should not exceed 4 consecutive working days in any given week. Backfilling of excavations shall be covered with a minimum 3 inch temporary layer of cold asphalt concrete.

The following table shows the minimum thickness of steel plate bridging required for a given trench width:

<u>Trench Width</u>	<u>Minimum Plate Thickness</u>
10"	1/2"
23"	3/4"
31"	7/8"
41"	1"
63"	1 1/4"

For spans greater than 63", a structural design shall be prepared by a California registered Civil Engineer.

Steel plate bridging shall be steel designed for HS20-44 truck loading per the State Bridge Design Specifications Manual. The Contractor shall maintain on the steel plate a non-skid surface having a minimum coefficient of friction equivalent to 0.35 as determined by California Test Method 342. If a different test method is used, the Contractor may utilize standard test plates with known coefficients of friction to correlate skid resistance results to California Test Method 342. These test plates are available from Caltrans District Materials Engineer.

A Rough Road sign (W33), with black lettering on an orange background, may be used in advance of steel plate bridging. This sign is to be used along with other required construction signing.

306-1.2 INSTALLATION OF PIPE

306-1.2.1 Bedding

Bedding Material as defined in the Standard Specifications shall include the following:

1. The Contractor shall import sand bedding material and place the sand bedding material in accordance with CWD-040-1 & 2. The bedding material shall have a "sand equivalent" 30 or greater upon approval of the inspector or designee.
2. Where unstable soil consisting of loose, soft, spongy, or organic earth is encountered, it shall be removed from trench bottom to depth determined in the field by the Engineer and trench shall be refilled to proper grade with imported sand bedding material, tamped in place to 90% relative compaction minimum. Said imported bedding material shall have a sand equivalent 30 or greater. Trench bottom shall be graded flat and prepared to provide firm and uniform bearing for pipe.
3. 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 imported sand bedding material, tamped in place to 90% relative compaction minimum. Said imported bedding material shall have a sand equivalent greater than 30. Trench bottom shall be graded flat and prepared to provide firm and uniform bearing for pipe.
4. Bell holes shall be dug from the bedding such that the pipe barrel when first laid, shall uniformly bear on the bedding material. The bedding material shall be compacted to 90% of relative density by hand or mechanical tamping method.
5. Initial backfilling shall be performed as soon as possible after pipe has been laid. Loose, moist bedding 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% relative compaction minimum.
6. 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. Backfill material shall be tamped or settled to 90% relative compaction minimum.
7. 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% minimum.
 - a. At the close of the construction day, the pipe end shall be closed with a watertight, rodent-proof plug and backfilled.
 - b. In the inspection of the water mains, no more than 300 feet of pipe shall be laid without being inspected.
 - c. The Sand Bedding Material is suitable for water jetting.

Trench backfill material, above the pipe bedding material zone, shall not be placed until the compaction of the pipe bedding material zone complies with the specified compaction as shown on the Plans and Specifications.

Ductile iron pipe and CML&C steel pipe shall be placed on a 4-inch minimum layer of evenly graded sand bedding. Sand bedding is defined as import material free of rocks and other debris, and having a sand equivalent of 30 or greater.

In rocky ground the bedding shall be extended to 6 inches below the pipe.

306-1.2.2.1 Systems Connections (General)

The Water Division will make all system connections to the existing mains, unless otherwise shown on the plans.

The Contractor shall verify the station, offset, depth, pipe diameter, and material of the existing connection point prior to laying the last 100 feet toward the station. The Contractor shall make the necessary cut-to-fits, and shall adjust the line and grade as necessary. After the chlorination, and pressure and bacteriological tests have passed inspection, but prior to final paving, the system connection closures will be made by the City of Riverside Field Forces unless specified otherwise on the plans. **If City Forces have to make corrections to the line or grade to make the system connections then all labor and materials shall be charged to the Contractor to perform work.** Valves shall be operated by City of Riverside field forces only.

Payment for Contractor installed system connections materials shall be at the bid item unit price. The system connection bid item includes all materials and appurtenances required for the complete closure installation, including but not limited to cut-to-fit fabrication closure pipe, fittings, outlets, valves, and flange insulation kits.

306-1.2.2.2 Sanitary Precautions

The Contractor shall take necessary precautions to protect the pipe interior, fittings, and valves from contamination. Fabricated pipe will be delivered to the work site with temporary end seals. The Contractor shall leave these seals in place until the pipe is ready for use to minimize the entrance of dirt or foreign material.

When pipe laying is not in progress, or at the end of the days work, all openings in the pipeline shall be closed with watertight, rodent-proof plugs. The Contractor shall have an emergency plug at the pipe heading at all times during pipe laying for use in case of an accidental break of an adjacent or crossing facility. Should water, mud, or any other matter enter the pipe, the pipe shall be thoroughly cleaned and swabbed as necessary with a 5 percent hypochlorite disinfecting solution. Contaminated material may have additional bacteriological samples taken at the Inspector's discretion. All exterior joints of the pipe laid in the trench shall be completed before the work day is stopped.

No contaminated material or material capable of supporting prolific growth of micro-organisms shall be used for sealing or lubricating joints. Packing material shall be handled in such a manner as to avoid contamination. Packing material for ductile iron

pipe shall conform to AWWA C-600. Materials such as jute or hemp shall not be used.

The lubricant used in the installation of sealing gaskets shall be suitable for use in potable water. The lubricant shall be delivered in closed containers and shall be kept clean.

306-1.2.2.3 Construction Water

*****(verify jurisdiction, the City or County where the work will take place)** Water required for the initial filling, pressure testing, leakage testing, flushing, and chlorination, may be obtained from an existing City main or fire hydrant by use of a City meter and an Approved Backflow Prevention Device.

The Contractor shall not operate any gate valve on any existing main. All water must be measured through a meter which can be checked out from the City's Utilities Operation Center (UOC) located at 2911 Adams Street.

All construction equipment involving the filling, pumping, spraying and carrying of water, etc., shall be under cross-connection control regulations, of the City Water Division and shall be checked by the Cross-Connection Technician prior to using the equipment on the job site, (Phone 951-351-6320). An approved backflow device shall be used while filling, flushing or chlorinating the mains. Valves at the system connections shall not be opened to supply water for any purpose until all testing is accepted by the Engineer.

NOTE: The Contractor shall pay all rental and deposit fees for the use of fire hydrant meters or backflow devices. Before the "fire hydrant meters" and "backflow devices" are obtained, all rental deposits and water charges shall be paid by the Contractor, to the City's Utility Operation Center, Customer Service Division, located at 3025 Madison Street, Riverside, CA., (Phone 951-351-6223).

306-1.2.2.4 Pipe Installation

1. Loading, Transporting, and Unloading
After the pipe has been tested, it shall be loaded on rubber-tired vehicles, and adequately supported and checked 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.
2. 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 Engineer, and discarded. 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.

3. Installation

Pipe manufacturer, fitting manufacturer, and material supplier, in addition to the City's representative(s), 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.

4. Ductile Iron Pipe

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 Engineer 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 80% of the manufacturer's recommended joint deflection. 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.

As Work progresses, a pipe cleaning tool as approved by the Engineer 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.

5. Cement Mortar Lined and Coated Welded Steel Pipe

- a. Pipe and fittings shall be laid to the lines and grades shown on the contract drawings except as amended and supplemented by the manufacturer's tabulated layout drawings as approved by the Engineer.
- b. Prior to assembling the pipe joints, thoroughly clean the bell and spigot

groove surfaces and rubber gasket, the initial 2-inches of the bell entry. The spigot groove and the rubber gasket shall be lubricated with a soft, vegetable soap compound. The gasket shall be positioned in the spigot groove so that the rubber is distributed uniformly around the circumference.

- c. The position of the gasket shall be checked with a thin metal feeler gauge, around the entire circumference. If the gasket is out of position, then the pipe shall be withdrawn and the gasket checked to see that it is not cut or damaged, the pipe shall then be relaid and the gasket rechecked for position.
- d. Pipe shall be joined together to provide the proper space between abutting pipe ends. To maintain the laying length shown on the contract drawings, the joint space width may be varied to compensate for the pipe length and field installation tolerances.
- e. Inside joint recesses shall be filled with stiff cement mortar consisting of 1 part cement to 1-1/2 parts sand utilizing hand holes per City of Riverside Standard Drawing CWD-220. For pipe diameters 21-inches and smaller an accessory such as a specially designed rubber ball wrapped in burlap shall be used to screed off excess mortar leaving a smooth and continuous surface between pipe sections as it is pulled through the pipe.
- f. Exterior joint spaces shall be filled with cement mortar consisting of 1 part cement to 2 parts of sand. The mortar shall be poured into the opening of a polyethylene foam grout band which is centered over the pipe joint and is snugly strapped in the exterior wall. The mortar grout shall completely fill the outside annular space between pipe ends and around the complete circumference. After the spaces have been filled, the opening shall be closed and the mortar allowed to set before bedding and backfilling at the joint. The pipeline field test shall be planned so that no pipe section is hydrostatically tested to less than 150 psi.

6. Polyvinyl Chloride Pipe

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 C900, latest, and manufacturer's directions. Bell ends shall be placed uphill unless otherwise permitted.

PVC pipe shall be installed within one year of its manufacturer's date. Pipe older than one year shall not be brought to the construction site.

Pipe shall be properly crated and packaged in a manner acceptable to the manufacturer. Pipe shall be loaded on trucks and securely strapped to the truck bed to prevent movement and distortion. Straps must be wide fabric web type.

Chains or cables shall not be utilized. During loading and unloading operations the

pipe shall be moved with slings whose webbing is no less than four (4) inches in width. Unloading shall be accomplished in a workmanlike manner and pipe shall not be dropped or damaged.

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 Engineer 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.

Curved alignment by use of pulled joints will be permitted. Maximum joint deflection shall be 80% of the manufacturer's recommended joint deflection. 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 PVC Pipe.

As Work progresses, a pipe cleaning tool as approved by the Engineer 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.

306-1.2.4.1 Field Jointing of Mortar Lined and Coated Steel Pipe

Mortar lined and coated steel pipe and fittings shall be joined in accordance with the manufacturer's installation manual and AWWA M11. Bonding jumpers or flange insulation is required.

1. Adjustment Pipe.

The Contractor shall provide necessary cut-to-fits to place all valves, elbows, or outlets on the design station.

2. Joint Deflection.

The Contractor may deflect the joints to "pull through" the vertical angle points as shown on the plans. The Contractor shall limit deflection of the joint to 80 percent of that listed by the manufacturer.

306-1.2.6 Field Jointing of (Ductile) Iron Pipe

Ductile iron pipe and fittings shall be joined in accordance with the manufacturer's installation manual and AWWA C-600 unless otherwise indicated herein.

1. Adjustment Pipe

The Contractor shall provide necessary cut-to-fits to place all valves, elbows, or outlets on the design station. All cut ends and rough edges shall be ground smooth and for push-on type joints, the cut end shall be beveled slightly.

2. Joint Deflection

The Contractor may deflect the joints to "pull through" the vertical angle points or horizontal curves shown on the plans. The Contractor shall limit deflection of the joint to 80% of that listed by the manufacturer.

3. Polyethylene Encasement

All Ductile Iron Pipe shall be wrapped with 8 mil minimum thickness polyethylene encasement per Section 4.1 of the latest edition of AWWA C-105/ANSI A21.5. The Contractor shall use Method A, B, or C as shown in DIPRA manual for installing the polyethylene tube or sheet from DIPRA manual.

306-1.2.6.1 Flanged Joints (General)

In assembling a flanged joint, the Contractor shall align the flanges and draw up the flange bolts evenly so that no portion of the assembly will become prestressed.

All nut and bolt threads shall be lubricated with oil and graphite or "No-Ox-Id-Grease" prior to installation.

Flange joints shall be coated with Koppers #50 bitumastic or City approved equal after assembly.

Flange joints shall be wrapped with two layers of 8 mil polyethylene and shall be secured to the pipe and valve with 2-inch wide polyethylene adhesive tape, Scotchwrap #50, or City approved equal.

306-1.2.14 Welded Joints and Split Butt-Straps

All welding carried out by the Contractor shall be governed by AWWA C206, Field Welding of Steel Water Pipe, and as noted below.

a) General

1. Field welding of steel pipes and fittings shall conform to requirements of AWWA C206. Field welding of ductile and cast iron pipe or fittings is prohibited.
2. All welding shall be done by an unvarying arc-welding process which excludes the atmosphere during the process of deposition and while the metal is in a molten state. The size and type of electrode used, and the current and voltage required,

shall in all cases be subjected to the approval of the Engineer. The type of wire and flux to be used for automatic processes shall also be subject to the approval of the Engineer.

3. Rusted or otherwise damaged electrodes shall not be used, and violation of this provision shall be sufficient cause for rejection of the work. Used flux from automatic welders shall be sifted free of fines and coarse pieces and shall have all mill scale removed before reusing.
4. All welds shall be of uniform composition, neat, smooth, full strength, ductile, and shall be made with a technique which will ensure uniform distribution of load throughout the welded section with a minimum tendency to produce eccentric stress or distortion in the weld or in the metal adjacent thereto.

b) Quality of Welds

1. There shall be no greater evidence of oxidation in the metal of the weld than in the metal of the unwelded plate. All welded joints shall be of a type that will produce complete fusion of the plates and shall be free from unsound metal, pinholes, and cracks.
2. The finish of welded joints shall be reasonably smooth and free from grooves, depressions, burrs, and other irregularities, and there shall be no valley or undercut in the center or edges of any weld.
3. All back chipping on both automatic and hand welding, whether for repairs or preparation of the groove for the original weld, shall be subject to inspection before being filled with weld metal. All butt welds shall be back chipped with a round-nosed tool to sound metal and inspected before welding the reverse side.

c) Field Joints

1. Field joints shall be of the weld bell and spigot type. Welded joints shall conform to the details shown on the drawings for welded field joints or for butt-strap joints where required for closure.
2. At all welded lap or butt-strap field joints, the outside weld or welds, as the case may be, shall be made with at least one (1) downhand pass and one (1) uphand pass. Fitting of butt straps shall be done with angle- bar clips and bolts pulled tight; provided that such angle-bar clips shall be removed to the satisfaction of the Engineer upon completion of welding. The use of chains and jacks to pull up straps will not be permitted.

d) Hand Welding

1. In all hand welding, the metal shall be deposited in successive layers so that there will be at least as many passes or beads in the completed weld as indicated in the following table:

Plate Thicknesses
(inches)

Fillet Weld,
Minimum Number of Passes

3/16	1
1/4	2
5/16	3
3/8	3
13/32	3
7/16	4
15/32	4
1/2	4

More than 1/2 1 for each 1/8 inch and any remaining fraction thereof

2. For all hand butt welds and other hand welds where possible, except plain 90-degree fillet welds, the plate edges shall be so prepared that there will be sufficient angle in the welding groove to prevent side arcing of the electrode and to permit penetration at the deepest point of the groove. All such welds shall be back chipped with a round-nosed tool to clean metal on the reverse side from the side of deepest penetration before any welding is done on said reverse side. Each hand pass and each back chipped welding groove shall be subject to inspection before the ensuing pass is made. Each hand pass shall be the full width of the weld.

3. For all hand welds, not more than 1/8" of metal shall be deposited in each pass. Each pass except the final one, whether in butt or fillet welds, shall be ground and/or chipped to remove dirt, slag, or flux before the succeeding bead is applied. Each pass shall be thoroughly fused into the plates at each side of the welding groove or fillet and shall not be permitted to pile up in the center of the weld. Undercutting along the side will not be permitted.

e) Defects

All porosity and cracks, trapped welding flux, or other defects in the welds shall be completely chipped out in a manner which will permit proper and complete repair by welding. Defective welds shall in general be repaired by hand welding; provided that the repair of defects in automatic welds shall be made on automatic welding machines where, in the Engineer's opinion, the defect is so extensive as to make a hand repair undesirable.

f) Contractor's Equipment

The Contractor's equipment for all welding and flame cutting shall be designed and maintained in such condition, at all times, as to permit qualified welding operators to obtain the requirements prescribed in these specifications. In all welding by an automatic process, both the rate of deposition of weld metal and the rate of travel of the electrode shall be automatically controlled. The submerged arc process shall be used for automatic welding.

g) Welders

1. Welding shall be done by skilled welders who have had adequate experience in the method and materials to be used. All welding operators shall be qualified under the standard qualification procedure of the latest edition of the ASME Boiler and Pressure Vessel Code, Section IX, Welding Qualifications. Any welder or welding operator performing work under this contract shall have been qualified for the process involved within the past three (3) years.
2. The Contractor, when required by the Engineer, shall conduct tests of the welders to determine their ability to produce welds that are in compliance with these specifications. Tests shall be made in accordance with the above-named qualification procedure using machines and electrodes similar to those that are to be used on the work and in the presence of the Engineer, who shall determine the quality of the work done. In lieu of tests conducted in the presence of the Engineer, the City may require that welders be qualified under the ASME qualification procedure by a testing agency approved by the City. The specimens shall be welded in the same position in which the welder is qualifying to work, and the same number of passes shall be used.
3. The City may call for additional test plates as the work progresses and may demand the removal of any welder from the work under the contract whose work on the pipe is not satisfactory, regardless of the quality of the test welds. The Contractor shall furnish all materials and bear all expense of qualifying welders.
4. The sequence of welding and all welding procedures shall be subject to approval by the Engineer.

Field Weld joints shall have the exterior joint recess grouted; split butt-straps shall be coated with a stiff Class "C" mortar in accordance with the Standard Specification and reinforced with expandable metal lath or two layers of 2" x 4" x 13 gauge weld mesh.

306-1.2.6.2 Flexible Couplings (All Pipe)

Flexible coupling joints shall be used only when shown on the Plans or Standard Drawings. Flexible coupling joints shall be installed in accordance with the manufacturer's recommendations.

When indicated on the Plans or Standard Drawings, special anchoring devices shall be provided to prevent joint failure.

Couplings shall be coated with Super Tank Solution, Koppers #50 bitumastic or a City approved equal coating and wrapped with 2 layers of 8 mil polyethylene. The polyethylene shall be secured to the pipe with 2 inch Scotchrap No. 50 or City approved equal polyethylene adhesive tape.

306-1.3 BACKFILL AND DENSIFICATION

306-1.3.1 General

The backfill material as defined in the Standard Specifications shall include the following:

1. The Backfill Zone shall be considered as the volume between the top of the bedding zone to the bottom of the paving base material.
2. The excavated material is not suitable to be used within the pipe zone nor in the pipe bedding zone unless the excavated material is blended with imported coarse grain sandy soil to meet the project specifications. The excavated material is suitable to be used as backfill material in the pipe trench zone provided it is free from organic matter and other deleterious materials.
3. 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 for the bedding material to within 1 foot of ground surface or pavement subgrade, backfill material shall be free of material exceeding 3 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.
4. 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.
5. Internal pipe bracing or strutting shall not be removed until the backfill material is compacted to the specified requirement. If the backfill material is densified with water, the bracing shall not be removed until the backfill material has settled and dried.

306-1.3.2 Mechanically Compacted Backfill

At the discretion of the Contractor, impact type pavement breakers (stompers) will be permitted over CML&C steel and ductile iron pipe. Damaged mains or appurtenances will be replaced at the Contractor's expense.

306-1.3.3.1 Floatation of Pipe

The Contractor shall at all times protect the pipe against floatation due to water entering the trench from any source, and shall assume full responsibility for any damage due to this

cause, and shall at his own expense, restore and replace the pipe to its specified condition and grade. Flooding will not be permitted.

The Contractor shall provide for drainage of the trench when jetting the bedding or backfill.

306-1.3.3.2 Compacting

The native backfill material is not suitable for water jetting.

306-1.4 Testing Pipelines

See Part 7 of this Specification. Testing and disinfection of Water Mains and Appurtenances.

306-1.5 TRENCH RESURFACING

*** (verify jurisdiction, the City or County where the work will take place) Compaction and trench resurfacing in the public street right-of-way is performed under the jurisdiction of the City Public Works Department. The Contractor must meet all requirements of that department as it relates to this portion of the Work. Final payment for trench resurfacing items will not be made until acceptance is received from the Public Works Director or his authorized representative.

306-1.5.1.1 Temporary Resurfacing

Temporary resurfacing, 3-inches deep (minimum), will be required at the following locations:

- a) All paved trench areas.
- b) Payment shall be the bid item price per linear feet of temporary resurfacing material placed on the trench and shall include full compensation for furnishing, placing, maintaining, removing, and disposing of such temporary materials as specified in these Specifications.
- c) Temporary pavement shall be maintained in a smooth cohesive condition, flush with the existing pavement, until replaced by permanent pavement. Any voids, ripples, breaks, etc., shall be repaired before the end of the work day.

306-1.5.2.1 Permanent Resurfacing

*** (verify jurisdiction, the City or County where the work will take place). Permanent resurfacing shall consist of placing the asphalt concrete pavement material in accordance with the City of Riverside, Public Works Department, Standard drawing 453, and these Specifications.

***The Contractor is hereby notified that the City of Riverside water construction crews will be working in the project area to complete the pipeline installation work. The water mains

and services generally will be installed completely along one street at a time. The City of Riverside desires to minimize disruptions to motorists by completing permanent trench resurfacing work as quickly as practicable after the new water facilities are placed into service. The Contractor shall anticipate multiple move-ins to complete permanent paving for the newly installed water pipelines as needed to coincide with the pipeline completion schedule. The Contractor shall begin permanent paving work for move-ins subsequent to the initial Notice to Proceed within seven (7) calendar days from the date the City notifies the Contractor to commence permanent paving on any street. Compensation for multiple move-ins shall be included in the unit bid price for "Mobilization". No additional compensation will be made.

Measurement of payment for permanent asphalt concrete pavement and crushed aggregate base shall be at the unit price indicated in the bid item and shall include pavement for all system connections and fire hydrant, blow-off, air valve and service laterals and all related costs for providing, placing and compacting the asphalt concrete pavement and crushed aggregate base, including all materials and labor necessary to complete the work.

The Contractor shall adjust all water facilities to finished grade, clean the inside of the valve boxes, clean pavement off the valve lid, prime and paint per CWD-515.

Re-striping of the streets shall be done by the Contractor per City standards. If the bid schedule does not include a specific bid item for striping, striping shall be included in the pipe unit price.

306-1.5.3 Sanitary Sewer Clearance

Broken or damaged sanitary sewer laterals shall be immediately repaired or remodeled per PWD Standard Drawing Nos. 554-1 and 2. Stipulated prices apply only for laterals requiring remodeling. The Contractor shall support and backfill the sanitary sewer lateral at said locations.

***(Remove if not applicable)

306-2 JACKING OPERATIONS

306-2.1 General

The Water Division will provide a grade point for establishing the casing pipe elevation for the Contractor and layout the jacking pit with hubs. The Contractor shall submit for approval, a drawing of the jacking pit, showing the pit dimensions and the shoring plan and steel plate design, if necessary.

The Contractor shall provide the necessary traffic control equipment in compliance with Section 7-10 of these specifications.

- a. The ends of the casing pipe shall be sealed with brick and mortar. The void area

- between the carrier pipe and the casing pipe shall be filled with sand slurry.
- b. The end of the casing pipe shall be square cut by mechanical methods.
 - c. The City Surveyor will check the grade and the alignment of the casing pipe.
 - d. All casing pipe length shall be equal to the auger length.

Jacking pits left open overnight require the approval of the Engineer. Any and all additional cost for approval and requirements shall be at the expense of the Contractor.

The Contractor's representative in charge of the jacking operations shall have a minimum of two years field experience and shall be on the job site at all times when jacking work is in progress.

The Contractor shall call the Senior Engineer of the State of California, Division of Occupational Safety and Health, Mining and Tunneling Unit, (909) 383-6782, to setup a pre-job conference at the job sites.

The Contractor shall have the City Inspector, the Jacking Subcontractor, the State of California Mining and Tunneling Inspector, ***** (verify jurisdiction, the City or County where the work will take place)** IE: a City of San Bernardino Development Services Department Representative and a Union Pacific Railroad Company Representative at the pre-job conference.

The Jacking Contractor shall POST, at the job sites, the letter from the State of California, Mining and Tunneling Engineer, dated *****November 4, 2002**. A copy of the letter can be obtained from the City Inspector.

306-2.3 Jacking Steel Casing

The Contractor shall be responsible for all cutting and welding of the casing pipe for the project. The lengths of the casing pipe shall be in even multiples of ten feet, unless otherwise specified by the boring contractor and approved by the Engineer. This does not apply to field cut sections. The casing pipe can be used pipe if it meets the same specification as new pipe and approved by the Engineer.

306-2.5 Tolerances

Jacking tolerances shall be between 1 percent right and 1 percent left from the survey line and shall be between 1 percent up and 1 percent down from the theoretical grade.

306-2.6 Payment

Payment shall be the Bid Item Price per linear foot of casing pipe installed and shall include but not be limited to the following: all labor, shoring, steel plating, materials, tools, equipment, and incidentals and no additional compensation will be allowed.

306-9 APPURTENANT PIPELINE STRUCTURES AND INSTALLATION

306-9.1 General

The Contractor shall furnish all transportation, materials, equipment, and labor to complete the excavations, backfill materials, street repairs and other earthwork incidental to the construction of appurtenant structures and appurtenances, and any work necessary or incidental to provide a complete and operating water main as contemplated in the plans and these Specifications.

306-9.1 Flange Insulation and Test Lead Installation

- a. No less than 2 snug fitting alignment pins shall be used in aligning the flanges for the insulating joints. These pins shall remain in place until the bolts have been installed in all the remaining holes and have been drawn up tightly.
- b. The City shall make electric tests after the installation to ensure that the insulating sections are effective.
- c. The #4 stranded copper test leads shall be attached to steel pipe with Cadweld HA-3 connection, CAHAA-IL W/F33, standard charge; and to Ductile Iron Pipe with Cadweld HB connection, CAHBA-IL, XF-19 charge.
- d. Mix and firmly apply epoxy putty to provide a watertight seal at least 1/4-inch thick over weld and bare wire. Overlay wire insulation by 1/2-inch.
- e. Upon completion of the project and prior to placing the trench pavement, the Contractor, at his own expense, shall hire a qualified testing firm to test the continuity of all bonds. Tests shall be conducted between test stations and the measured resistance shall not exceed the theoretical resistance by more than 130%. All test data shall be submitted to the Engineer for review and approval. Contractor, at his own expense, shall repair all bonds that fail the continuity test and shall retest those sections for continuity.

306-9.3 Valve Installations

- a. The Contractor shall install the valves at the locations shown on the Plans and Standard Drawings. The Plans shall indicate the station, size and type of all mainline valves. The Standard Drawings shall indicate such information for appurtenant installations.
- b. Valves shall be installed in a level position with the operating stem vertical except where shown otherwise on the Plans.
- c. After installation of the mainline pipe is completed, the Contractor shall apply one coat of Koppers #50, or City approved equal, bitumastic coating to damaged areas of buried valves and shall wrap the entire valve with two layers of 8 mil polyethylene and seal all seams with 2-inch wide #50 Scotchwrap tape.
- d. Valves shall be stabilized and supported separately from the pipeline as shown on the Plans or on the Standard Drawings. Mainline valves shall be considered as a dead end for thrust block sizing.
- e. Mainline and appurtenant valves shall be tested for leak-proof tightness after the main line has been pressure tested, at the test pressure.
- f. "Valve Location Ties" shall be made by City Forces either in accordance with Section 306-9.8 in these Special Provisions or as a white 4" x 4" witness post set at the

- property line.
- g. The Contractor shall install valve boxes at all valve locations except where shown otherwise on the Plans. All valves shall be installed in conformance with Appendix A of AWWA C-500.
 - h. Butterfly valves shall be installed with the valve operator on the “up station”, right side of the valve.

306-9.4 Valve Box Installations

- a. The Contractor shall install valve box cap and rim, and valve operator extensions of the type indicated in the Standard Drawings at each valve location shown on the Plans.
- b. Operator extensions and sleeves shall be centered and set plumb over the valve operator nut.
- c. Shaft extension is required where the distance between the finished ground surface to the valve operator nut is greater than 3.5 feet.
- d. Extensions shall be fitted with an AWWA 2-inch square operating nut and a tapered socket end for the valve operating nut. The extension shaft shall extend from the valve nut to within 18-inches of the finished ground surface.
- e. Operator extension shaft, nut, socket and centering guide shall be painted with one coat of primer after fabrication.
- f. The valve box caps shall be set flush to 1/4" above the finished pavement surface.
- g. Where valve box or Manhole installations are not within paved areas, a 6-inch thick concrete pad, 520-A-2500, 24-inches greater in diameter shall be formed around the appurtenance.
- h. The valve box cap shall be painted per paint schedule, Section 310-1.1.1.
- i. Valve box caps shall fit securely in the slip sleeves, to prevent displacement due to traffic loads.

306-9.4.1 Valve Box Adjustments

Valve boxes within an area to be paved will be set to the finished pavement grade by the Contractor after paving of the street. Repaving required as the result of adjusting the valve boxes to grade shall be the responsibility of the Contractor.

306-9.5 BLOW-OFF INSTALLATIONS

- a. The piping between the outlet valve and the pumper riser shall be at a continuous downgrade of not less than 1/4-inch per foot.
- b. Where blowoff manholes are placed in sidewalk areas, the sidewalk shall be saw-cut and removed to the nearest score line. The manhole cover and rim shall be set to sidewalk grade and the sidewalk replaced.
- c. Where blowoff manholes are placed in unpaved areas, the cover and rim shall be set flush with the existing edge of pavement or as directed by the Engineer.
- d. The manhole cover and rim shall be Alhambra Foundry A-1252, diamond thread finish and lettered CWD.
- e. The manhole cover and rim shall be painted per paint schedule, Section 310-1.1.1.

- f. The blind and mating flange shall be painted with two (2) coats of primer paint.

306-9.5.1 Temporary Blow off Installations

1. Temporary blow-offs may be used for pressure testing, flushing and disinfecting the main. City Forces will remove the temporary blow-off when making the tie-in to the existing City System. Temporary blow-off installation materials will be returned to the Contractor at the job site.
2. Should the Contractor use a concrete thrust block, Contractor shall provide a suitable separation material (such as tar paper or wood blocking) so that Contractor may remove the thrust block without disturbing the end cap. The Contractor shall remove any temporary concrete thrust block prior to system connection by City.

306-9.6 AIR VALVE INSTALLATIONS

- a. The Contractor shall install air valve installations at the locations shown on the Plans or at high points in the main as directed by the Engineer in accordance with Standard Drawings.
- b. The Plans shall indicate the outlet station, size, direction and location of the air valve assembly.
- c. The piping between the outlet valve and the elbow on the air valve riser shall be at a continuous up grade of ¼-inch per foot.
- d. On 2-inch air valves, all joints shall be sweat welded per Section 207-25.1.1, unless shown as a screwed fitting. The riser shall be hard drawn copper.
- e. The long axis of the air valve shall be set parallel to the street.
- f. The air valve and exposed riser shall be painted per Section 310. Air valves shall have their internal body casting epoxy coated with a minimum of 12 mils. holiday free City approved epoxy. Epoxy shall be applied at the manufacturer's plant or approved manufacturer's representative's plant in accordance with the manufacturer's application specification.
- g. The number and position of guard posts will be shown on the Plans.

306-9.7 Terminal Housing Installations

- a. The Contractor shall install terminal housing boxes at the locations shown on the Standard Drawings.
- b. All terminal housing boxes located in the sidewalk or paved areas shall be set flush with the existing surface.

306-9.8 Concrete for Thrust, Anchor, and Bearing Blocks

- a. Concrete thrust blocks and anchors shall be poured at the locations and with the dimensions shown on the Plans or Standard Drawings.
- b. Sandbags may be used to form thrust blocks or anchors unless otherwise specified.
- c. Concrete shall be placed such that bell ends of fittings shall be available for repairs. Concrete placed over joints shall be removed.
- d. Structural steel exposed directly to the soil shall be coated with Koppers #50

bitumastic coating, or a City approved equal, prior to pouring the thrust blocks.

306-9.9 CURB MARKINGS

"Location ties" for valves and blow-offs shall be marked by the Contractor with a 2" x 1/2" wide "+" using blue marking paint on the **top** of the closest curb from two (2) locations. One edge of the "+" in the direction of the tie shall be elongated 1" with the distance from tie to curb face shown in 2-inch high lettering. One set of the Plans shall be marked with the locations and dimensions and submitted to the Engineer upon completion of the Work. "Location Ties" shall be installed by City Forces.

306-9.9.1 Abandoning Curb Markers

After the existing water valves have been abandoned, the Contractor shall remove existing painted "Location Ties" to the satisfaction of the City. All stray markings shall be removed by Contractor.

306-10 Protective Coating

All ferrous metal fittings and joints (valves, couplings, flanges, etc.) in contact with the soil shall be coated with one coat of Koppers #50 bitumastic after assembly to the main-line pipe and shall be wrapped with two layers of 8 mil polyethylene which shall be secured to the pipe with two-inch wide Scotchwrap #50 or City approved equal.

306-9.11 WATER AND FIRE SERVICE WET TAP VALVE INSTALLATIONS

1. Valves shall be installed in conformance with Section 306-9.3.
2. Tapping tee and valve shall be disinfected per Section 700-5. \
3. Contractor shall pressure test the tapping sleeve and gate valve per Section 700-2, prior to tapping main.
4. Contractor or subcontractor shall have a State of California Class A, C-34, or C-61 (Water Main Drilling) contractor's license and shall submit to the Engineer for approval, a minimum of three references from prior potable water wet tapping projects.

306-9.12 SERVICE INSTALLATIONS

1. The Contractor shall install water or fire services at the locations shown on the Plans in accordance with Standard Drawings.
2. The Plans shall indicate the water service station, size, direction and location of the meter box.
3. The Contractor shall place the service connection to the mainline within 18 inches of the desired location, and spaced a minimum of 2 feet on center.
4. The Contractor may open cut or "shoot-in" service laterals for copper services.
5. Splicing of copper tubing is not allowed, except where 2-inch copper services exceed 20 feet in length and then only the minimum number of joints. Two inch copper splices shall be made using a solder coupling.

6. Saddles shall be used for all service connections of 2-inches or less.
7. Where meter boxes are located in sidewalk areas, a meter spacer and meter coupling shall be installed and a sleeve of sufficient diameter shall be laid beyond the sidewalk prior to sidewalk installation.
8. Due to a change in the Driveway (D/W) Approach Standard 302 by the PW department to conform with ADA requirements, the placement of the meter boxes are revised as follows:

Where the meter box falls with a D/W approach and the sidewalk being installed is curb sidewalk, (this is Type Curb-I typical section), the front of the meter box needs to be placed 3 feet from the back of the curb. This will allow the box to fit in the flat sidewalk area of the D/W. The service run and angle ball meter stop will need to be set back accordingly. Ultimately, the Public Works inspector will need to make final acceptance of these installations.

306-9.13 PRECAST VAULT, MANHOLE & METER BOX INSTALLATIONS

1. The Contractor shall install precast vaults, manholes and meter boxes at the locations shown on the Plans or Standard Drawings.
2. The Plans or Standard Drawing shall indicate the station, location and size of the installation.
3. Cement for vault and manhole footings shall be Type II. Concrete shall be 480-B-2000, and poured against undisturbed or well compacted soil to the dimensions shown on the Plans or Standard Drawings.
4. All vaults and meter boxes located in sidewalk or paved areas shall be set flush with the existing surface.

306-9.14 CONNECTIONS TO EXISTING MAINS

The Water Division will make all wet-tap connections to existing mains (except large services installed by contractor) and make closures thereto unless otherwise shown on the Plans.

The Contractor shall verify the station, offset, and depth of the existing connection prior to laying the last 100 feet toward that station.

The Contractor shall make necessary cut-to-fit, adjusting line and grade as necessary.

After the chlorination and pressure tests have passed inspection, but prior to final paving, the system connection closures will be made by the City of Riverside Field Forces unless specified otherwise on the plans. **If City Forces have to make corrections to the line or grade to make the system connections then all labor and materials to perform the work shall be charged to the Contractor.**

306-10 PROTECTIVE COATING

All ferrous metal fittings and joints (valves, couplings, flanges, etc.) in contact with the soil shall be coated with one coat of Koppers #50 bitumastic after assembly to the main-line pipe and shall be wrapped with two layers of 8 mil polyethylene which shall be secured to the pipe with two-inch wide Scotchwrap #50 or City approved equal.

306-11 FIRE HYDRANT INSTALLATIONS

1. The Contractor shall install fire hydrants at the locations shown on the Plans in accordance with Standard Drawings.
2. The Plans shall indicate the outlet station, type, direction and location of the fire hydrant assembly.
3. The lateral between the outlet valve and the Fire Hydrant bury shall be a continuous run of all ductile iron pipe with approved joints.
4. The Contractor shall use non-breakaway flanged spools to adjust the Fire Hydrant to proper grade.
5. Fire Hydrant shall be painted per Section 310.
6. The bolts used to attach the Fire Hydrant to bury shall be counterbore knock off bolt type. Bolts shall be installed with threads pointing up and pack the counter bore with no-oxide grease, silicon, or approved equal.
7. The number and position of guard posts will be shown on the plans.
8. Warf Head hydrants shall be installed only with the approval of the Engineer.
9. Contractor shall install hydrant markers in conformance with State of California, Department of Transportation State Standard Specifications, Section 85, and Standard Drawing No. C.W.D.-700.

SECTION 307 - STREET LIGHTING AND TRAFFIC SIGNALS

307-4 TRAFFIC SIGNAL CONSTRUCTION

307-4.1.1 General

Modifying traffic signals and payment therefore shall conform to the provisions in Section 86 "Signals, Lighting and Electrical Systems," of the State of California, Department of Transportation (DOT), Standard Specifications and these Special Provisions.

307-4.5.1 Wiring

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

Conductors for each inductive detector loop shall be Type 2.

If a "C" shaped compression connector is used for splicing, the conductors shall also be soldered.

Splices shall be insulated by "Method B" as shown in the Standard Plans.

Notice shall be given, 24 hours in advance, to the City of Riverside *****(verify jurisdiction, the City or County where the work will take place)** prior to any splicing. All final splicing shall be done in the presence of the Engineer or the Engineer's representative.

307-4.9 Vehicle Detectors.

307-4.9.1.1 General

Detectors shall conform to the provisions in Section 86-5. "Detectors," of the State DOT Standard Specifications and these Special Provisions. **Detector loop configuration shall be type E.**

307-4.9.3.1 Inductive Loops

Inductive detector loop slots in asphalt shall be cut deep enough to have a minimum cover of one inch over the top conductor.

Slots must be wide enough to place insulated wire without the use of force to insert. Water shall be used to clean out slots.

In lieu of terminating the detector loop conduit stub-outs as indicated in the Standard Plans, said stub-outs shall terminate at the edge of the gutter; depth shall be below the bottom of the gutter. The lead-in saw cuts shall accommodate this depth providing a smooth transition to the conduit stub-out.

Potholes for detector loop stub-outs shall be capped with asphalt over silica sand. **Hot-melt rubberized asphalt sealant shall be used for detector loop installation. No exceptions.**

It shall be the responsibility of the Contractor to lay out and mark the pavement surface for all detector loop installations. Loop layout(s) shall be approved by the Traffic Engineer 48 hours prior to saw cutting.

Loop lead-in cable and loop wire leads shall be marked to identify the area and/or lane of detection served, as directed by the Traffic Engineer.

Payment for replacement of distributed traffic signs, traffic loops, all labor, materials, tools, equipment, and incidentals shall be included for the item involved and no additional compensation will be allowed.

SECTION 310 - PAINTING

310-1 General

Refer to Section 210-1.5 for description of color designation and approved manufacturers.

310-1.1.1 Painting Schedule

<u>Item</u>	<u>Color (1)</u>	<u>No. of Coats</u>
Gate Box Caps and Rims	Red (primer)	1
	Blue	2
Air Valves	Red (primer)	1
	Green	2
Guard Posts	Red (primer)	1
	Yellow w/ Blue Top	2
Fire Hydrants	Red (primer)	1
	Yellow	2
Curb Markings	Blue	1

310-5.6 Painting Traffic Striping, Pavement Markings and Curb Markings

*** (verify jurisdiction, the City or County where the work will take place)

310-5.6.1 General

Striping and pavement markings for temporary detours and pavement restoration, shall conform to the provision of Sections 210, "Paint and Protective Coatings" and 310-5.6 "Painting Traffic Striping, Pavement Markings, and Curb Markings" Pavement Markings and Curb Markings" of the Standard Specifications and these special provisions. Striping and marking shall be under the direction of the City of Riverside Public Works, Construction Inspector, phone (951) 826-5889.

Thermoplastic paint shall be utilized for permanent pavement striping and markings. All permanent striping shall be in place within 48 hours from the completion of asphalt overlay and or rubberized emulsion-aggregate slurry application.

The thermoplastic material shall be applied by extrusion method in a single uniform layer. Stencils shall be used when applying thermoplastic material for pavement markings. The pavement surface to which thermoplastic material is applied shall be completely coated by the material and the voids of the pavement surface shall be filled.

The thermoplastic material for traffic stripes shall be applied at a minimum thickness of 0.060-inch. Thermoplastic material for pavement markings shall be applied at a thickness of 0.100-inch to 0.150 inch. Glass beads shall be applied immediately to the surface of the molten thermoplastic material at a rate of not less than 8 pounds per 100 square feet. The amount of glass beads applied shall be measured by stabbing the glass bead tanks with a calibrated rod.

The Contractor shall provide for temporary or permanent striping on the same day the street is paved or resurfaced. Under no circumstances shall the traveled way be without lane delineation.

Permanent and/or temporary striping shall be placed on the pavement surface within 48 hours after notification by the Engineer. Pursuant to this requirement, the Contractor's attention is directed to Section 7-10.4.5, "Public Safety During Non-Working Hours" of these Special Provisions.

As an option, reflective adhesive tape may be utilized for temporary striping as directed by the Engineer. For dashed four (4) inch lane lines a minimum three (3) foot strip of tape shall be placed at twelve (12) foot intervals (gaps) regardless of the posted speed for the zone requiring temporary striping. Temporary striping shall also include the designation (paint or type) of crosswalks at signalized intersections.

The Contractor shall remove all reflective adhesive tape applied to the pavement surface as directed by the Engineer.

Temporary striping shall also include the designation (paint or tape) of crosswalks at signalized intersections. Implementation shall be as directed by the Engineer.

If the job is suspended because of weather or for any other reason, the Contractor shall be responsible for applying temporary striping as specified herein, and to maintain (repaint/retape) the temporary striping as directed by the Engineer. Said Section 7-10.4.5 of the Special Provisions will apply.

In addition to the requirements of Section 310-5.6.8 "Application of Paint" for bituminous seal coats, the Contractor shall apply two coats of paint to any new pavement surface. There shall be a minimum of 2 days between applications. This requirement shall not apply when painting over existing paint and/or existing untreated pavement surface. The two (2) applications requirement applies to permanent striping and pavement markings. "Cat Tracking" (premarking) for permanent and temporary striping shall consist of placing spots of paint not more than 3 inches in width and not more than 5 feet apart along the line established. Paint for "cat tracks" shall be the same as that used for the traffic stripe for which it is placed. If painting is scheduled on the same day as "Cat Tracking", the spray can method may be used in lieu of the requirements specified herein.

The Contractor is responsible for a straight layout of the striping with smooth, long radius curves with no abrupt radius changes. Connecting curves shall be an appropriate radius to provide for smooth traffic flow at prevailing speeds. All transitions shall be approved by the

Public Works Inspector prior to painting. Angle points and off-sets in the striping will not be allowed.

Striping details not shown on the plans or specified in Sec. 310-5.6.4 shall be done in conformance with the Traffic Manual as published by Caltrans.

All paint premarking ("cat tracking") for permanent striping is subject to the approval of the Public Works inspector prior to painting. The rope used for premarking shall have a minimum length of 500 feet of continuous fabrication, or longer if needed for smooth layout.

Drips, overspray or improper markings shall be immediately removed from the pavement surface by blast cleaning or methods approved by the Public Works Inspector at the Contractor's expense.

The lengths of the gaps and individual stripes that form broken traffic stripes shall not deviate more than 3 inches from the lengths shown on the plans.

The lengths of the gaps and individual stripes shall be of such uniformity throughout the entire length of each broken traffic stripe that a "suitable" striping machine will be able to repeat the pattern and superimpose additional coats of paint upon the traffic stripe being painted.

Where the traffic stripe is of such a nature, either due to configuration or location, as to render the striping machine unsuitable for use, traffic paint and glass spheres may be applied by other approved methods and equipment. The Public Works inspector will determine if the striping machine is unsuitable for a particular use.

All stencils and templates shall conform in configuration and size to the State of California, Department of Transportation "Legends."

The Public Works Inspector has the discretion to require random testing and sampling of the items covered herein. 10 percent, or greater, failure of samples of items shall be cause for rejection.

SECTION 312 - PAVEMENT MARKER PLACEMENT AND REMOVAL

312-1.1 Placement of Reflective Markers

Contractor shall be required to furnish and install Type I two-way blue reflective markers as shown on the Public Utilities Department Standard Drawing C.W.D. - 700.

312-3.1 Traffic Stripe and Pavement Marker Removal

Temporary construction zone traffic stripes and pavement markings shall be removed as directed by the Engineer.

Removal of traffic striping shall be accomplished through the method of wet "sandblasting" or other approved methods. The sandblasting operation shall be continued until all of the stripes, markers, debris or other materials are removed to the satisfaction of the Engineer. When sandblasting within 10 feet of a lane occupied by public traffic, the residue, including dust, shall be removed immediately after contact between the sand and the surface being treated. Striping equipment shall meet all applicable standards of the United States Environmental Protection Agency and the Riverside County Air Pollution Control District.

Areas of traffic striping removal shall be **feathered** so as not to leave a distinct shape of the removed painted item. Measurement of the double yellow centerline shall be 0.667 square foot per linear foot.

Beach sand containing salt or excessive amounts of silt will not be allowed.

The development of a water supply and all water required for the traffic striping work and its application shall be by a method approved by the Engineer. All equipment used for the application of water shall be equipped with a positive means of shutoff. If the Contractor elects to use water from the City water system, Contractor shall make arrangements with the Public Utilities Department of the City and pay for all water used.

SECTION 313 "AS BUILT" DRAWINGS

After construction has been completed and before pressure testing and flushing can commence, "As-Built" drawings shall be submitted by the Contractor showing pipe size, material, class and/or pipe thickness, the actual locations (invert elevations) and stations of all valves, tees, special fittings, and stationing of all water service laterals and their run length. . The Contractor shall show and note any deviations from the original plans on the "As-Built" drawings.

After construction has been completed, the Contractor shall show and note any deviations from the original plans on the "As-Built" drawings.

"As-Built" drawings shall be prepared on a clean print and shall be legibly marked in red ink.

PART 4

SECTION 400 - ALTERNATIVE ROCK PRODUCTS, ASPHALT CONCRETE, PORTLAND CEMENT CONCRETE AND UNTREATED BASE MATERIAL

400-2.3 Disintegrated Granite

400-2.3.1 General

Disintegrated granite (DG) base will only be allowed if the existing base on either side of the trench has previously been built using disintegrated granite. The minimum R-value of DG shall be 73.

PART 5

SECTION 500 - PIPELINE SYSTEM REHABILITATION

(DELETED)

PART 7 - TESTING & DISINFECTION OF WATER MAINS & APPURTENANCES

700-1 GENERAL

All water mains and appurtenances shall be tested for pressure and leakage, shall be disinfected, and bacteriological tests accepted by the City of Riverside Public Utilities prior to utilizing the water mains and appurtenances for domestic use.

Testing and disinfection of water mains and appurtenances shall be in accordance with the applicable AWWA Standards except as herein modified.

All testing and disinfection shall be made in the presence of the Engineer. The Contractor shall notify the Engineer not less than forty eight (48) hours in advance of the actual time of testing and/or disinfection so that the Engineer may observe the procedure.

When the pressure test, leakage test, chlorination or bacteriological and plate count tests fail to meet the requirement of the Specifications, the Contractor shall make necessary repairs, replacements or repetition of procedures to conform to the specified requirements at Contractor's own expense.

Adequate backflow protection and proper metering of all potable water shall be provided by the Contractor and approved by the City of Riverside Public Utilities prior to commencement of any procedure(s) hereinafter.

700-2 PRESSURE TEST

All water mains and appurtenances shall be tested as described herein. The pressure test shall not be performed until the following conditions have been met:

- 1) All blowoffs, air valves, services, hydrants, and other appertances have been installed and adjusted to final grade and location;
- 2) The backfill material shall have been compacted to the required compaction through the 90 percent compaction zone as shown on CWD-040- 1 & 2.
- 3) All concrete anchor and thrust blocks shall have cured for a minimum of three (3) days.
- 4) Base materials with the exception of the final surface course of asphalt concrete, may be placed prior to the pressure test.
- 5) "As-built" drawings and all affidavits and certificates of compliance have been submitted to the Inspector.

The pressure test shall be maintained on the test section not less than two (2) hours. The Contractor may at Contractor's convenience conduct a preliminary pressure test at any time prior to the City's pressure test. The results of the preliminary test will not be considered by the City.

The test pressure shall be 200 psi as measured at the lowest elevation of the water main under test.

The length of water main footage to be tested at one time shall be determined by the Engineer or his designee.

Each section of the water main to be tested shall be slowly filled with water from the nearest source by a means approved by the Engineer. The pipelines shall be filled with water and placed under a slight pressure for at least twenty-four (24) hours before the pressure test.

All air shall be vented from high spots in the water main, fire hydrants and services before making a pressure test. If hydrants or other outlets are not available, taps shall be made at the high points to expel the air by the Contractor at Contractor's expense. The locations shall be reviewed and approved by RPU Inspector prior to installation. These taps shall be capped by the Contractor after testing.

The pressure test shall be applied by means of a pump connected to the pipeline in a manner approved by the Engineer. The pump, pipe connections, bulkheads, pressure gages and other equipment, labor and materials required to perform the test shall be furnished by the Contractor, at no additional cost to the City.

The Engineer may check the test pressure by installing City pressure gages in place of the Contractor's gage. In case of a difference in pressure readings between gages, the City's gage reading shall govern.

All appurtenant facilities shall be tested at the same pressure and for the same duration as the mainline pipe.

All valves shall be tested for leak-proof tightness after the mainline pressure test with the test pressure on one side of the valve and atmospheric pressure on the other side.

Wet tap valve sleeves shall be hydrostatically pressure tested for a period of 1 hour at a test pressure of 200 psi. During and at the end of test, a solution of soapy water shall be applied at all joints to test for leakage. No pressure loss or leakage will be permitted.

700-3 LEAKAGE TEST

All water mains and appurtenances shall be tested as described herein.

The test pressure applied to the water main for the leakage test shall be maintained as constant as possible for not less than two (2) hours. The leakage test shall be held concurrently with the pressure test. For C-900 PVC pipe (Class 150), the test pressure shall be 225 psi and the test duration shall be four (4) hours.

The lengths of fire hydrant, blowoff, or air valve laterals and service lines are not included in the overall length of pipe in determining the allowable leakage. All welded sections of steel pipe mains are also excluded from the calculated allowable leakage.

All noticeable leaks shall be stopped regardless of the results of the test. Defective pipe, fittings, valves, and other appurtenances discovered during the test shall be removed and replaced. Repair clamps of any kind or type are not allowed. The Engineer is to be notified of any repair work performed. The test shall be repeated until satisfactory results are obtained. All gaskets to be used only once.

The allowable leakage volume shall not exceed the following:

- (1) Non-welded steel joints
15 gal/in. dia./mile/24 hours
- (2) Ductile Iron Pipe and CML&C Steel Pipe
15 gal/in. dia./mile/24 hours
- (3) Welded Joints – no allowable.

It is the Contractor's responsibility for locating leaks and restoring the bedding and pipe zone material in accordance with the Standard Plans and these Specifications. Damage to pipe bedding and backfill resulting from leaks discovered during the pressure leakage test need to be restored in compliance with the specification. Any retesting shall be at Contractor's expense.

The pump, pipe connection, measuring devices, gages and all other equipment, labor and materials necessary for performing the leakage test shall be furnished by Contractor. The Engineer may, however, use City's measuring device in place of Contractor's equipment. In case of a difference in the measured leakage rate between the measuring devices, the City's measured leakage shall govern.

700-4 FLUSHING

The new mains shall be cleaned and flushed prior to chlorination. The flushing velocity to be obtained for pipes 12 inches and smaller in diameter shall not be less than 2.5 feet per second. The Contractor shall make necessary arrangements to attain the minimum velocity. The Contractor shall take due precaution in providing for adequate drainage from the site. The minimum volume of water to be flushed, at required velocity, shall be not less than the 1.5 times the volume of the pipe line from the point of filling to the point of blow-off. The Contractor should verify that proposed hydrants to be used have adequate pressure to perform his flushing operation. If necessary, the Contractor shall use a pump to acquire adequate pressure for his flushing operation, all in his expense. The following table is a guide only:

REQUIRED OPENINGS TO FLUSH PIPELINES
(40 psi Residual Pressure)

	Flow Required to	Orifice	Hydrant	
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Pipe Size	Produce 2.5 ft/sec	Diameter	Number	Outlet Diameter
INCHES	GPM	INCHES		INCHES
4	100	15/16	1	2-1/2
6	220	1-3/8	1	2-1/2
8	390	1-7/8	1	2-1/2
12	880	2-13/16	1	4-0
16	1570	3-3/4	1	4-0

If, in the opinion of the Engineer, dirt enters the pipe, the interior of the pipe shall be cleaned and swabbed as necessary with five percent hypochlorite disinfecting solution.

It is the responsibility of the Contractor to dispose of the flushed water or the chlorinated water from the project area. The Contractor is responsible for any damage as a result of flushing operations.

The flushed water shall have a residual chlorine content not to exceed 0.10 mg/l prior to discharging into the storm drain system. The flushing operation shall be in accordance with the California Regional Water Quality Control Board requirements.

The Contractor shall provide adequate drainage from the site.

The Contractor is hereby informed that hydrant meters and backflow devices rented from the City have the following limitations:

- 2-inch backflow devices:..... 160 gpm
- 2-inch fire hydrant meter:..... 200 gpm

There will no longer be separate meter/ and or Backflow devices available for rental use. New units are integrated combo units.

700-5 CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SANTA ANA REGIONAL PERMIT

Contractor shall channel (using sandbags or other means) flushing flow. Contractor shall protect all property from flooding and other damage during flushing operations. Contractor shall post "flooding ahead" signs in streets as required and as directed by Engineer. Because of demand on existing water system, the Engineer may require Contractor to flush the pipeline over several days, in the evenings, weekends, or holidays, at Contractor's expense.

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, at his expense, obtain a discharge permit from the California Regional Water Quality Control Board, Santa Ana Region (Regional Board) for discharge of water from trench dewatering, line flushing, and testing operations. A copy of said discharge permit shall be provided to the City. Contractor shall comply with conditions therein and perform the monitoring required. If the Regional Board determines that a discharge permit is not required for said work, then the Contractor shall comply with any and all applicable criteria and conditions established by the Regional Board, including compliance with the requirements of the General Water Discharge Requirements for Discharges to Surface Waters which pose an insignificant De Minimus threat to water quality (Order No. 98-67).

Order No. 98-67 includes submittal of a Notice of Intent and a waste discharge report to the Regional Board. In addition, Template Monitoring and Reporting Program No. 98-67, appended to Order No. 98-67, includes the following monitoring and reporting requirements:

1. Estimate and report daily discharge flow, collect samples of each discharge and have them analyzed for the 8 parameters listed on Pages 2 and 3 of the Template Monitoring and Reporting Program No. 98-67. All samples shall be representative of the waste discharge under conditions of peak load.

All sample collection, sample preservation, and analyses shall be performed in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants" promulgated by the U.S. Environmental Protection Agency (40 CFR 136). All sample analyses shall be performed by an analytical laboratory certified by the California Department of Health Services to perform such analyses.

2. Report any discharge which is in violation of the discharge specifications (Order No. 98-67) to the Regional Board, Santa Ana Region within 24 hours.
3. Notify the Regional Board 5 days before commencing any discharge.
4. Prepare monthly monitoring reports for submittal to the Regional Board. The reports shall include:
 - a. Results from all analyses for the previous month.
 - b. Daily flow data.
 - c. A report detailing Contractor's compliance or noncompliance with Order No. 98-67 and the discharge authorization letter.

700-6 DISINFECTION

All newly laid water mains and appurtenances shall be disinfected in accordance with AWWA C-651, Disinfecting Water Mains, except as modified herein.

Contractor must use one of the RPU approved companies who are licensed to perform

chlorination (Mattchlor, Inc; Southwest Chlorination, Inc; Aqua Backflow; Spencor Inc; Morr-is Tested; Peirce Chlorine). Should the contractor choose to use a different company, of equal qualifications, contractor shall obtain prior approval from the Engineer.

Chlorine used for disinfection must be a liquid chlorine solution by directly feeding hypo (sodium hypochlorite less than or equal 15%; typically 12.5%) or by mixing Cal-hypo (calcium hypochlorite 65-70%) granular or tablets into a liquid solution by pre-dissolving or using a feeder. Either product sodium hypo or calcium hypo shall be NSF 61 approved for potable water use. Tablets inserted (glued) inside each pipe length shall not be used. Safe handling practices contained in A.W.W.A. Manual M-20 shall be followed by the Contractor. The chlorine solution shall be applied by the continuous feed method as outlined in Sub-section 5.2 of AWWA C-651-05 except as may be modified by the Engineer. Contractor must keep Material Safety Data Sheet (MSDS) onsite.

The chlorine solution shall be applied at the beginning of the water main to be disinfected through a corporation stop installed for this purpose, through curb stop or through any other opening as may be allowed or required by the Engineer. Fire hydrants and air valves shall not be used for this purpose. However, an air valve riser pipe with the air valve removed may be an appropriate chlorine solution feed point.

Water used to convey the chlorine solution throughout the water main shall be obtained from the existing distribution system. The rate of flow shall be so controlled that water will flow slowly into the undisinfected main during the application of chlorine. The end of the main being chlorinated shall be kept open and running during the application of chlorine and until the desired chlorine concentration is reached, after which each curb stop, fire hydrant, air valve line or any other connection to the water main shall be individually opened and flushed with the chlorine solution. After the water main and all appurtenances thereto have been loaded with chlorine to the proper concentration, the water source, chlorine feeder and all other openings to the water main shall be closed.

The initial minimum concentration shall not be less than fifty (50) milligrams per liter (Mg/L) of chlorine, but not greater than 150 (Mg/L). The chlorine solution shall remain in the water main for not less than twenty-four (24) hours after which the treated water through the length of the main shall contain not less than twenty-five (25) Mg/L of chlorine. The chlorine content of the water shall be tested by the Engineer and if found to be less than twenty-five (25) Mg/L after twenty-four (24) hours contact, the water main and appurtenances shall be rechlorinated and held for another minimum twenty-four (24) hour period.

No chlorination shall be started unless it can be completed by 2 p.m. on a Thursday. During the period of chlorination, all main line valves and blow-off valves shall be operated to insure that the discs and seats are fully open to chlorinated water. Air valves, when removed, shall be chlorinated separately under the direction of the Engineer.

Upon approval of the chlorine residual at twenty-four (24) hours by the Engineer, the chlorine solution shall be flushed from the water main through each service, fire hydrant and blow-off. Flushing shall continue until the chlorine residual is not more than five-tenths (0.5) Mg/L as determined by the Engineer using a digital instrument. In no case shall a

chlorine solution of over five-tenths (0.5) Mg/L be held in the main or appurtenances for more than five (5) days from the initial injection to the final flushing. It is the responsibility of the Contractor to dispose of the chlorinated water from the project area.

The chlorinated water shall have a residual chlorine content not to exceed 0.10 Mg/L prior to discharging into the storm drain system. The flushing operation shall be in accordance with the California Regional Water Quality Control Board requirements.

The Contractor has two options for disposing of the chlorinated water from the project site.

Option 1. The Contractor can treat the chlorinated water with chemicals. This treatment shall neutralize any chlorine residual from the water. After treatment the dechlorinated water can be discharged into the street storm drain system.

Option 2. The Contractor shall dispose of the chlorinated water at a State of California approved treatment disposal plant.

The Contractor is responsible for any damage as a result of the disinfection operation and shall provide adequate drainage from the project site.

The Contractor is hereby informed that hydrant meters and backflow devices rented from the City have the following limitations:

- 2-inch backflow devices:..... 160 gpm
- 2-inch fire hydrant meter:..... 200 gpm

700-7 BACTERIOLOGICAL TESTS

A twenty-four (24) hour period between the final flushing and the taking of bacteriological samples is required. No flushing or any movement of water in pipe is allowed during sampling phase. Following the 24 hour period, the Contractor shall have a representative or employee of California Department of Public Health (CDPH) certified laboratory take water samples for bacteriological tests. All sampling shall be done in the presence of the Inspector. Contractor shall notify the Engineer 48 hours in advance of sampling procedures.

Samples will be taken in the field by a laboratory technician and transported to the laboratory for testing. Such tests shall meet DPH requirements for drinking water standards. The number and location of such samples will be as directed by the Engineer; however, a minimum of one bacteriological test sample per 500 feet of main and a minimum of 2 samples per day, per test section, are required. The sample locations may be increased to 200 foot intervals, if the contractor fails to take adequate precautions to keep the pipe clean, or as otherwise deemed necessary by the engineer. The Contractor shall install sample points, as needed to meet the spacing requirements, in accordance with standard plan CWD-432, at no additional cost to the city. **One set of samples is required for two consecutive days, 24-hours apart. All samples, each day, must**

indicate ten tubes negative and have a standard plate count of less than 200. Failure of any sample will require complete retesting, under these procedures, for two consecutive days. Testing laboratory shall fax results to Public Utilities, Water Division at (951) 826-2498 immediately, once results are known. If a sample test fails any of the one or two day tests, then the Contractor is directed to contact the Water Division immediately. It is very important that all test results be submitted in writing to the Water Inspector as soon as available.

Here is the list of the qualified companies who are licensed and approved by RPU to perform sampling: E.S. Babcock & Sons, Inc.; Western Analytical Laboratories, Inc., Associated Laboratories; Clinical Laboratories; Microbac Laboratories, Inc.; and Truesdail Laboratories, Inc.; If contractor wants to use a different company which is equal will need to get approval from RPU before using the company.

All laboratory testing shall be at the Contractor's expense. Original report of the test results shall be given directly to the Engineer. Emailing the results to the Engineer is preferable. It is the responsibility of the Contractor to accomplish this task. System connections cannot be scheduled until this report is submitted to the Engineer. All results must be submitted to RPU Engineer or his designee no later than three calendar days of sample date or risk resampling all samples.

Upon successful completion of bacteriological testing, the pipeline will be accepted for use in the City potable water system; however, standard policy is to accept the water mains for use upon the City giving written Notice of Final Acceptance.

700-8 CONTRACTOR'S RESPONSIBILITY FOR TESTING AND DISINFECTION

It is the sole responsibility of Contractor to construct a water main which passes the pressure and leakage test and to complete the disinfection of the water main. The fact that City provides inspection during the construction and testing of the water facilities and receives laboratory testing results does not relieve Contractor's responsibility in this regard.

It's the responsibility of Contractor to prevent the consumption of water for any and all uses from undisinfected mains whether by their workmen, subcontractors or any other person who may come in contact with the water from the undisinfected main.

Contractor shall indemnify and save the City harmless from any suits, claims, or actions brought by any person or persons for, or on account of, any sickness or death sustained or arising out of the consumption of water from the main until final acceptance by the City.

Water required for the initial filling, pressure testing, leakage testing, flushing and chlorination, may be obtained from an existing City of Riverside main or fire hydrant by use of a City of Riverside Water Division meter and an Approved Backflow Prevention Device.

All water must be measured through a City of Riverside Water Division meter. The Contractor may use Contractor's own Approved Backflow Prevention Device, however, it shall be approved by the City of Riverside, Backflow Program Specialist before use. The

operation of any valve on any existing main shall be performed by the utility owner.

700-9 System Connections to Existing City Water Lines

Under no circumstances shall a connection be made, permanent or otherwise, between any existing water main, hydrant or other source to any unapproved contractor installed water main regardless of size.

No permanent connection between any Contractor installed water main and existing water mains shall be made by the Contractor, except for wet tapped water services larger than 2 inches and fire services. All wet taps require full time City inspection.

Wet tapped connections with mechanical joint tapping sleeves shall be cleaned and disinfected in accordance with AWWA C-651, Sections 9 and 10. The Work shall include treating trench with a hypochlorite solution, as deemed necessary by the Engineer; thoroughly cleaning the main to be tapped, and the interiors of the sleeve and tapping gate; and swabbing the tapping sleeve interior with a 1 percent hypochlorite solution.

Water required for the initial filling, pressure testing, leakage testing, flushing and chlorination may be obtained from an existing City main or fire hydrant by use of a City hydrant backflow meter device.

All water must be measured through a City **hydrant meter backflow device**. If in a case where greater volume is required, the Contractor may use his own Approved Backflow Prevention Device of larger size, **however, the Contractor shall provide to the City of Riverside water inspector, a certificate of approval from the City of Riverside Backflow Program Specialist before use**. The Contractor shall not operate any gate valve on any existing main.

The Contractor shall pay all rental and deposit fees for hydrant backflow meter devices checked out from the City plus charges for water used.

