

**CITY OF SOUTH GATE  
PUBLIC WORKS DEPARTMENT  
ENGINEERING DIVISION**

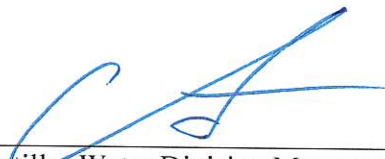


**CONTRACT DOCUMENTS AND SPECIFICATIONS FOR**

**ON-CALL MUNICIPAL WATER AND SEWER  
SYSTEMS MAINTENANCE**

**September 2024**

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

  
Chris Castillo, Water Division Manager



**Yodit Glaze**  
**City Clerk**

# City of South Gate

8650 California Avenue, South Gate, Ca 90280 (323) 563-9576 Fax (323) 563-9572

Office of the  
South Gate City Clerk

SEP 24 2024  
FILED

## **THE CITY OF SOUTH GATE**

8650 California Avenue  
South Gate, California 90280

### **NOTICE INVITING BIDS**

Sealed bids will be received at the office of the City Clerk, City of South Gate, California, 8650 California Avenue South Gate, CA 90280 until **11:00 A.M., on Monday, November 4, 2024**, and on the same day shortly thereafter, they will be publicly opened and read for the **“On-Call Municipal Water and Sewer Systems Maintenance”** in accordance with the Specifications, therefore. Bids must be made on the forms provided for this purpose, addressed to the City Clerk, City of South Gate, marked "Bid For," followed by the title of the project and the date and hour for submitting bids. Bids are required for the entire work as described in the Bid Schedule, the Plans, and the Specifications.

The purpose of this Notice Inviting Bids is to help the City qualify and enter into contracts with one or more “on-call” Contractors who have relevant and verifiable experience in performing, on short notice, maintenance services on municipal water systems and maintenance and repair services on municipal sewer systems. Each such contract would require the Contractor to respond to the City’s request for such services within one hour after receiving notice by telephone from the City, and to mobilize and commence the services within 30 minutes thereafter.

Those portions of the City’s water and sewer systems to be maintained pursuant to the subject contracts consist primarily of the following components and may involve the following maintenance activities:

- A. Ductile-iron pipe water mains, including tie-in connections to existing pipelines, valves, and fittings, maintenance of which may include removal and installation, surface restoration, chlorination and testing.
- B. VCP sewer mains, including tie-in connections to existing pipelines, service laterals, manholes, and fittings, maintenance of which may include removal and installation, surface restoration and testing.
- C. Miscellaneous maintenance work including rehabilitation of sewer mains using cured-in-place pipe, pot holing, dewatering, limited excavating as necessary to access components

that are to be maintained, and incidental hauling of contaminated soil resulting from sewer-line failures.

Contractors will be selected through the evaluation of bidders' qualifications and bids based (among other things) on applying labor, material, and equipment rates in the bid to a sample service call. The selected Contractors shall be placed on an on-call list, ranked from lowest to highest based on factors established by the City in its sole discretion; cost will be included among those factors but will not be the only factor and will not necessarily be the principal factor. The City may award multiple contracts, or none at all. In the event services are required, the City shall contact the selected Contractors, starting with the one ranked best by the City. If the best-ranked Contractor is not willing or able to provide the necessary services, the City shall proceed to the next-best-ranked Contractor and so forth. If any selected Contractor is not willing or able to provide services upon the City's request as required by the contract, the City reserves the right to withdraw that Contractor from consideration on subsequent service calls. Because the type and frequency of the City's need for on-call services will vary during the term of the contracts, the City cannot guaranty the amount, if any, of services which each Contractor may be called upon to provide during the term of its contract.

**Informational Pre-bid Meeting:** There will be an Informational Pre-Bid meeting on **Tuesday, October 15, 2024 at 10:00 a.m.**, the City of South Gate Operations Yard, located at 4244 Santa Ana Street, South Gate, CA 90280.

**Term of Contract:** Term of each on-call contract shall be for approximately three years. Each contract is subject to extension for two separate, consecutive periods of one year each at the option of the City. Because the City is likely to enter into multiple contracts pursuant to this Notice Inviting Bids, the City reserves the right to adjust the terms of each contract so that all of the contracts terminate simultaneously.

**Obtaining Contract Documents:** Plans, specifications, and contract documents may download free electronic copies online by visiting:  
<https://pbsystem.planetbids.com/portal/60317/portal-home>

The documents are entitled "**On-Call Municipal Water and Sewer Systems Maintenance**".

Bids will not be considered unless they are made on a proposal form furnished in the Contract Documents by the City of South Gate. Each bid must be accompanied by cash, certified check, cashier's check or bidder's bond, made payable to the City of South Gate for an amount equal to at least ten percent (10%) of the amount bid, such guarantee to be forfeited should the bidder to whom the Contract is awarded fail to enter into the Contract. All bids shall be valid for a period of 120 days after City's bid opening date, notwithstanding any award of Contract by the City to another bidder.

Attention is directed to Government Code Sections 4590 and 14402.5 permitting the substitution of specified and approved securities for contract retention of funds. All such securities shall be subject to the review and approval of the City Attorney for the City of South Gate.

**Contractor License:** Bids will not be accepted from contractors who are not licensed in accordance with the provisions of Chapter 9, Division III of the Business and Professions Code of the State of California. The Contractor shall be required to possess a current License under the "Classification A - General Engineering Contractor license" for the aforementioned at the time the contract is awarded. Attention is directed to the provisions in Section 1777.5 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under him.

A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

**Prevailing Wage Requirements:** Pursuant to California Labor Code Sections 1770, 1773, 1773.L 1773.6, and 1773.7, as amended, the applicable prevailing wages for the maintenance work that is the subject of this Notice Inviting Bids have been determined. It shall be mandatory for each bidder to whom a contract is awarded and upon any subcontractor under that bidder to pay not less than the higher of the Federal and the State prevailing wage rates to all workers employed by them in the execution of the contract. The applicable Federal prevailing wage rates are those that are in effect ten (10) calendar days prior to bid opening; they are set forth on the Department of Labor website: <http://www.wdol.gov/wdol/scafiles/davisbacon/ca33.dvb> but are not printed in the Specifications. Lower State wage rates for work classifications not specifically listed in the Federal wage decision are not acceptable. The applicable State prevailing wage rates are set forth on the California Department of Industrial Relations website: <http://www.dir.ca.gov/DLSR/PWD> but are not printed in the Specifications; these rates are subject to predetermined increases.

Attention is directed to the provisions in Section 1777.5 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under the contractor. Pursuant to the provisions of Section 1773.2 of the Labor Code of the State of California, the minimum prevailing rate of per diem wages for each craft, classification or type of workman needed to execute the contract shall be determined by the Director of Industrial Relations of the State of California which are on file with the City Clerk of South Gate and copies will be made available to any interested party on request. These rates shall be the minimum wage rates for services performed under contracts awarded in connection with this Notice Inviting Bids.

Before a contract is entered into with any bidder, the bidder shall present evidence in writing to the City Clerk, City of South Gate, that the bidder has a current combined single limit liability policy with aggregate limits for Bodily Injury and Property Damage in the amount of two million dollars (\$2,000,000).

The successful Bidder will be required to furnish a payment bond in an amount equal to one hundred percent (100%) of the contract price and a faithful performance bond in an amount equal to one hundred percent (100%) of a contract price and said bonds shall be secured from a surety

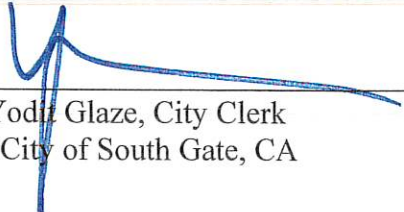
company satisfactory to the City Attorney for the City of South Gate.

The City reserves the right to reject any and all bids, or delete portions of any and all bids or waive any informality or irregularity in the bid or the bid procedures and shall be the sole judge of the bids received. Should the City deem this necessary for the public good, the City also may reject the bid of any bidder who has been in breach or default any former contract with the City of South Gate.

If any interested person seeks additional information regarding this Notice Inviting Bids on the proposed Project, please contact during regular business hours of the City of South Gate, 7 a.m. to 5 p.m., Monday through Thursday at (323) 563-5779 or by email at [ccastillo@sogate.org](mailto:ccastillo@sogate.org) (email preferred).

Notice given this 3<sup>rd</sup> day of October, 2024.

By order of the City of South Gate.



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Yodif Glaze, City Clerk  
City of South Gate, CA

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## **PART I**

### **INSTRUCTIONS TO BIDDERS**

#### **1. FORM OF BID AND SIGNATURE**

- (A) The Proposal shall be submitted on the form hereto and shall be enclosed in a sealed envelope marked and addresses as hereinafter directed.
- (B) The bidder shall state the lump sum amount for which he proposes to supply the labor, materials, supplies or equipment, and perform the work required by the specifications.
- (C) If the proposal is made by an individual, it shall be signed and his full name and his address shall be given, if it is made by a partnership firm, also sign his own name and the name and address of each partner shall be given, and if it is made by a corporation, the name of the corporation shall be signed by its duly authorized officer or officers attested by the corporate seal, and the name and titles of all officers of the corporation shall be given.
- (D) The City of South Gate reserves the right to reject any and all bids or reject portions of any and all bids or waive any informality or irregularity in the bid or the bid procedure. The City shall be the sole judge of the bids received and take all bids under advisement for a period of 120 days.

#### **2. INTERPRETATION OF DRAWINGS AND SPECIFICATIONS**

If any person contemplating the submittal of a bid for the proposed contract is in doubt as to the true meaning of any requirement of the Contract Documents or he finds any discrepancies in or omissions from the Contract Documents, he may submit to the Engineer a written request for an interpretation or correction thereof. The written request must be received at least seven (7) calendar days prior to the date fixed for opening of bids. The person making the request will be responsible for its prompt delivery. Interpretations or corrections will be made only by addenda to specifications or by dated revisions or drawings with a copy of each addition or change being furnished through the City of South Gate (herein "City") to each prospective bidder.

#### **3. PREPARATION OF THE PROPOSAL**

- (A) Blank spaces in the Proposal and Bid Schedule(s) shall be properly filled. The phraseology of the proposal must not be changed and no additions shall be made to the items mentioned therein.

Unauthorized conditions, limitations or provisions attached to a proposal will render it informal and may cause its rejection. Alterations by erasure of

interlineations must be explained or noted in the proposal over the signature of the bidder.

- (B) A bidder may withdraw his proposal before the hour fixed for opening bid by submitting a written request to the City for its withdrawal. On receipt of this written request, the proposal will be returned unopened.
- (C) No proposal may be withdrawn after the hour fixed for opening of bids without rendering the accompanying certified or cashier's check or bidder's bond subject to forfeiture as liquidated damages in like manner as in the case of failure to execute the contract after award, as hereinafter provided. All bids shall be valid for a period of 120 days after City's bid opening date, notwithstanding any award of contract by the City to another bidder.
- (D) No proposal received after the time named or at any place other than the place stated in the Notice Inviting Bids will be considered. All proposals will be opened and declared publicly. Bidders, their representatives, and others interested are invited to be present at the opening. The City reserves the right to waive any informality in any proposal, to reject any or all proposals, and to make award to the lowest responsible bidder as the interest of the City may require. The bidder shall name in his bid the surety or sureties which have agreed to furnish said bonds.

#### **4. REGISTRATION OF CONTRACTORS**

Before submitting bids, Contractors shall be licensed in accordance with the provisions of Chapter 9, Division 3, of the Business and Professions Code of the State of California. The Contractor shall be required to possess a current "Classification A, General Engineering Contractor" license for the aforementioned at the time the contract is awarded.

#### **5. LIST OF SUBCONTRACTORS FILED WITH BID**

In accordance with the provisions of the Sections 4100 through 4113, inclusive, of the Government Code of the State of California, each bidder shall submit with his proposal the name, location of place of business, and contractor's license information of each proposed subcontractor who will perform work or labor or render service to the principal Contractor in an amount in excess of one half ( $\frac{1}{2}$ ) of one percent (1%) of the principal Contractor's bid and shall state the portions of the work which will be done by each such subcontractor.

#### **6. BIDDERS INTERESTED IN MORE THAN ONE BID**

No person, firm or corporation shall make, file, or be interested in more than one proposal for the same work. A person, firm or corporation who has submitted a sub-proposal to a bidder, or who has quoted prices of materials to a bidder, is not hereby disqualified from submitting a sub-proposal or quoting prices to other bidders.

## **7. LOWEST RESPONSIBLE BIDDER**

In selecting the lowest responsible bidder, consideration will be given to the general competency of the bidder for the performance of the work covered by the bid. To receive consideration, a bidder shall be required to certify that the bidder has successfully performed similar work of comparable magnitude for at least three (3) projects per the “Contractor’s Qualification Statement” included herein. References will be verified by the City. Professional integrity and honesty of purpose shall be essential requirements. The bidder shall furnish the City any additional information as may be requested by the City. The City Engineer and staff shall have absolute discretion as to the evaluation of past work performance of any bidder and his decision in regards thereto shall not be subject to challenge unless completely arbitrary and capricious.

## **8. AWARD PROCESS**

Once all Bids are opened and reviewed to determine the lowest responsive and responsible Bidder, the City Council may award the Contract. The apparent successful Bidder should begin to prepare the following documents: (1) the Performance Bond; (2) the Payment (Labor and Materials) Bond; and (3) the required insurance certificates and endorsements. Once the City notifies the Bidder of the award, the Bidder will have 10 consecutive calendar days from the date of this notification to execute the Contract and supply the City with all of the required documents and certifications. Regardless of whether or not the Bidder supplies the required documents and certifications in a timely manner, the Contract time may begin to run 10 calendar days from the date of the notification upon the issuance of a Notice to Award by the City. Once the City receives all of the properly drafted and executed documents and certifications from the Bidder, the City shall issue a Notice to Proceed to that Bidder, however, the City reserves the right to issue the Notice to Proceed 10 days from the date of the notification regardless of the status of the contract documents. No Bid shall be considered as binding upon the City until the Contract is fully executed.

## **9. FILING OF BID PROTEST**

Bidders may file a “protest” of a Bid with the Public Works Department. In order for a Bidder’s protest to be considered valid, the protest must: A. Be filed in writing within five (5) calendar days after the bid opening date; B. Clearly identify the specific irregularity or accusation; C. Clearly identify the specific City staff determination or recommendation being protested; D. Specify, in detail, the grounds of the protest and the facts supporting the protest; and E. Include all relevant, supporting documentation with the protest at time of filing. If the protest does not comply with each of these requirements, it will be rejected as invalid. If the protest is valid, the Public Works Department or other designated City staff member shall review the basis of the protest and all relevant information. The Assistant City Manager/Director of Public Works or his designee will provide a written decision to the protestor. The protestor may then appeal the decision of the Assistant City Manager/Director of Public Works or his designee to the City Manager.

## **10. BID BOND OR CHECK**

Each bidder shall submit with his bid an unconditional certified or cashier's check drawn on a solvent state or national bank, or a bidder's bond with a responsible corporate surety, on the form attached hereto subject to the provisions of the Notice Inviting Bids and the Complementary Provisions hereof. Said bid security or bidder's bond shall be in a sum not less than ten percent (10%) of the amount of the base bid, and shall be made payable to the City as a guarantee that the bidder will, if an award is made to him in accordance with the terms of his Proposal, promptly execute a contract in the required form, provide certificate for workers' compensation coverage, and furnish satisfactory Performance and Payment Bonds and proof of insurance coverage.

## **11. LOCAL CONDITIONS**

- (A) Bidders shall read the specifications, examine the site and make their own estimates of the existing conditions and the difficulties which attend the execution of the work called for by the proposed contract, including local conditions, uncertainty of weather, and all other contingencies.
- (B) Bidders shall satisfy themselves by personal examination of the location of the proposed work, and by such other means as they may choose as to actual conditions and requirements necessary to bid. Information derived from the specifications or drawings, or from the City Engineer or his assistants, shall not relieve the bidder of this responsibility.

## **12. EXECUTION OF CONTRACT**

A bidder to whom award is made shall execute a written contract with the City on the form of agreement attached hereto, provide certificate for workers' compensation coverage, and furnish good and approved bonds as required in the following paragraph, all in accordance with the provisions hereof within ten (10) days (not including Sundays or holidays) or such additional time as may be allowed by the City Engineer from the date of mailing of a notice from the City to the bidder, according to the address given by him, of the acceptance of his proposal. If a bidder to whom award is made fails or refuses to enter into contract as herein provided, or to conform to any of the stipulated requirements in connection therewith, the money represented by his check or bidder's bond shall become the property of the City as provided in Paragraph 8 hereof, and the award will be annulled; and at the discretion of the City, a new award may be made to the second lowest responsible bidder, and such bidder shall fulfill every stipulation embraced herein as if he were the party to whom the first award was made. A corporation to which an award is made shall be required, before the Contract is finally executed, to furnish evidence of its corporate existence, of its right to do business in California, and of the authority of the officer, manager, partner, or other authorized individual signing the contract and bonds for the entity.

### 13. FINANCIAL CONDITION

The City may request a complete, notarized financial statement from the contractor prior to the award of the contract, and will notify the Contractor if said statement will be required.

### 14. BONDS

All bonds shall be written and executed by a corporate surety with a Best's rating of A:V or better. In conformance with the Proposal, Part I, Bidding and Contractual Documents, a bidder to whom the contract is awarded shall, within the time mentioned in said Proposal furnish a bond with a responsible corporate surety or corporate sureties conditioned upon the faithful performance of said bidder of all covenants and stipulations in the Contract Documents. Said bond, hereinafter referred to as the Performance and Guarantee Bond, shall be on the mandatory form included as a part of these Contract Documents and shall be in accordance with the following:

- (A) Amount of Security- Contractor shall provide as security to the City
  - (1) For Performance and Guarantee: Security in an amount equal to one hundred (100) percent of the estimated total cost of the improvements. With this security the form of which shall be subject to the City's prior approval, the Contractor shall assume faithful performance of the agreement and guarantee the improvements for one year after the completion and acceptance of the last of such improvements against any defective workmanship or materials or any unsatisfactory performance. The estimated total cost of the improvements shall be subject to prior approval of the City Engineer and shall provide for (a) not less than five percent (5%) nor more than ten percent (10%) of the estimated total cost for contingencies and (b) an increase for projected inflation computed to the estimated midpoint of construction.
  - (2) For Payment: Security in an amount equal to one hundred (100) percent of the estimated total cost of the improvements. With this security the form of which shall be subject to the City's prior approval, the Contractor shall guarantee payment to subcontractors, and persons renting equipment or furnishing labor or materials to them or to the Contractor.
- (B) Reduction or Release of Security. Upon acceptance of improvements by the City, and upon request of the Contractor, the security may be reduced as follows:
  - (1) Security for performance and guarantee: Unless Contractor submits new or additional warranty security in an amount equal to ten percent of the estimated total cost of the improvements, the security for performance and guarantee shall not be reduced or released in an amount greater than ninety percent of the aggregate principal amount thereof prior to the expiration of the one-year guarantee and warranty period specified in subsection a (1) of

this section, nor until all claims filed or deficiencies identified during such period have been settled or corrected. New or additional warranty security shall be released upon expiration of the one-year guarantee and warranty period, provided that all claims filed or deficiencies identified during the period have been settled or corrected.

- (2) Security for payment: Security furnished to secure payment to contractors, subcontractors, and to persons providing labor, materials or equipment shall, six months after acceptance of all of the improvements, be reduced to an amount equal to the total amount claimed by all claimants for whom liens have been filed and of which notice has been given to the City plus an amount reasonably determined by the City Engineer to be required to assure the performance of any other obligations secured by the security. The balance of the security shall be released upon settlement or release of all claims and obligations for which the security was given.

## **15. INSURANCE POLICIES AND BONDS**

Attention is invited to the provisions of the Insurance Code of the State of California with reference to the writing of insurance policies and bonds covering risks located in this state, and the premiums and commissions thereon. A bidder to whom the Contract is awarded shall furnish, at the time his bond or bonds are submitted for approval, satisfactory evidence that the requirements of said code have been observed.

## **16. LIABILITY INSURANCE**

Before the contract is executed on behalf of the City, a bidder to whom the Contract has been awarded shall furnish to the City a policy or certificate of protective liability insurance in which the City shall be named as an additional named insured with the bidder. The policy shall insure the City, the City of South Gate, and their officers, employees, elected officials, and agents; the bidder, his employees and his subcontractors and their employees, and their heirs, agents, and employees, while acting within the scope of their duties, against all claims arising out of or in connection with the work to be performed and shall remain in full force and effect until the work is accepted by the City.

## **17. INDEMNIFICATION**

The Contractor shall indemnify, hold harmless and defend (with counsel selected by the South Gate City), the City of South Gate, South Gate City, the City of South Gate Housing Authority, consultants and sub-consultants, their respective officers, agents, employees, from any and all claims and losses whatsoever occurring or resulting to any and all persons, firms, or corporations furnishing or supplying work, services, materials, or supplies in connection with the performance of this Agreement, any and all claims, lawsuits or actions arising from the awarding or execution of this Agreement, and from any and all claims and losses occurring or resulting to any person, firm, corporation or property for damage, injury, death arising out of or connected with the Contractor's obligation to indemnify,



defend and save harmless the South Gate City, the City of South Gate, the City of South Gate Housing Authority, consultants, sub-consultants, as stated hereinabove shall include, but not be limited to, paying all legal fees and costs incurred by legal counsel of the City of South Gate City's choice in representing the City of South Gate City, the City of South Gate, consultants and sub-consultants in connection with any such claims, losses, lawsuits or actions. THIS PROVISION SHALL SURVIVE THE COMPLETION OF WORK AND SERVICES TO BE PROVIDED UNDER THIS AGREEMENT.

## **18. ASSIGNMENT OF CONTRACT**

No assignment by the Contractor of any contract to be entered into in accordance with the Notice Inviting Bids and these Instructions to Bidders, or any part thereof, or of funds to be received thereunder, will be recognized by the City unless has had prior approval of the City and Surety has had notice of such assignment in writing and has given his written consent thereto. Notwithstanding the foregoing, and to the extent permitted by law, the City has the absolute right to refuse, on any grounds or no grounds, any and all assignments or attempted assignments of the Contract Documents or of any rights to payment pursuant thereto.

## **19. NON-COLLUSION AFFIDAVIT**

The City reserves the right, before any award of the contract is made, to require any bidders to whom it may make an award of the principal contract, to execute a Non-Collusion Affidavit in the form attached hereto.

## **20. LABOR COMPLIANCE**

- (A) The Contractor must comply with the prevailing wage rates as determined by the State of California. Pursuant to the provisions of Section 1-3 of the Labor Code of the State of California, the City has obtained the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in this locality for each craft, classification or type of workman needed to execute this contract from the Director of the Department of Industrial Relations. These rates are on file with the City Clerk of the City of South Gate and copies will be made available to any interested party on request. Contractor shall post a copy of such wage rates at the job site, and shall pay the adopted prevailing wage rates. The provisions of Section 1810 to 1815 of the Labor Code will be complied with.
- (B) All mechanics and laborers employed or working upon the site of the work in the construction or development of the project, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations under Copeland Act 29 CFR Part 3), the full amount due at time of payment computed as wage rates not less than those contained in the above determination, regarding of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. For the purpose of this clause, contributions made

or cost reasonably anticipated under section 1 (b) (2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subjected to the provisions of 29 CFR 5.5. (a) (1) (iv). Also, for the purpose of this clause, regular contributions made or cost incurred for more than a weekly period under plans, funds, or programs, but covering the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

- (C) The Contractor shall not require nor permit any laborer or mechanic in any work week in which he is employed on such work to work in excess of eight (8) hours in any calendar day or in excess of forty (40) hours in such work week unless such laborer or mechanic compensation at a rate not less than one and one-half ( 1 ½) times basic rate of pay for all hours worked in excess of eight (8) hours in any calendar day or in excess of forty (40) hours in such week, as the case may be.
- (D) The Contractor shall submit weekly a copy of all certified payroll to the City. The copy shall be accompanied by a statement signed by the employer and his agent indication that the payroll are corrected and completed, that the wage rates contained therein are not less than those determined by the Director of the Department of Industrial Relationship and that the classification set forth for each laborer or merchant conforms with the work he performed. The prime contractor shall be responsible for the submission of copies of payroll of all subcontractors. The Contractor will make the records required under labor standards clauses of the Contractor available for inspection by authorized representatives of the City and Department of Labor, and will permit such representative to review employees during working hours on the job. Contractors employing apprentices or trainees under approved programs shall include a notation on the first weekly certificate payroll submitted to the contracting agencies that their employment is pursuant to an approved program and shall identify the program. Payroll and basic records relationship thereto will be maintained by the Contractor during the course of the work and preserved for a period of three (3) years thereafter for all laborers and mechanics working at the site of the work in the construction or development of the project.
- (E) The Contractor shall insert in any subcontracts the required of this section and also clause required any subcontractor to include these requirements in any lower tier subcontracts into which they may in turn be made.

## **21. CONTRACTOR'S OVERHEAD AND PROFIT LIMITATION**

For all negotiated Change Orders the allowance for overhead and profit shall include full compensation for superintendence, insurance premiums, taxes, field office expense, extended overhead, home office overhead, and all other items of expense or cost not included in the cost of labor, materials, or equipment provided for in this Article. The allowance for overhead and profit shall not exceed the following schedule:

	Overhead	Profit
Labor =	10 percent	10 percent
Materials =	10 percent	5 percent
Equipment =	10 percent	5 percent

**22. SUBCONTRACTOR MARK-UP**

It is understood that labor, materials, and equipment may be furnished by the Contractor or by the Subcontractor on behalf of the Contractor. When all or any part of the extra work is performed by a Subcontractor, the allowance specified herein shall be applied to the labor, materials, and equipment costs of the Subcontractor, to which the Contractor may add 5 percent of the Subcontractor's total cost for the extra work. Regardless of the number of hierarchical tiers of Subcontractors, the 5 percent increase above the performing subcontractor's total cost which includes the allowances for overhead and profit may be applied one time only.

## CONTRACTOR'S CHECKLIST

The Contractor shall submit the following items with this proposal:

<b>Specification Page No.</b>	<b>Item</b>	<b>Check</b>
P-1	Proposal	<input type="checkbox"/>
P-4	Bid Schedule	<input type="checkbox"/>
P-10	List of Sub-Contractors	<input type="checkbox"/>
P-12	Contractor's Industrial Safety Record	<input type="checkbox"/>
P-13	Contractor's Qualification Statement	<input type="checkbox"/>
P-14	Contractor's Organization Statement and Performance History	<input type="checkbox"/>
P-16	Additional Information and/or Comments	<input type="checkbox"/>
P-17	Equals	<input type="checkbox"/>
P-18	Certification of Non-Discrimination and Affirmative Action	<input type="checkbox"/>
P-19	Bid Security Forms for Check or bond to accompany bid	<input type="checkbox"/>
P-20	Bid bond	<input type="checkbox"/>
P-21	Non-Collusion Affidavit	<input type="checkbox"/>
P-22	Statement Acknowledging Penal and Civil Penalties Concerning the Contractor's Licensing Laws	<input type="checkbox"/>

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

## PROPOSAL

TO THE HONORABLE MAYOR AND MEMBERS  
OF THE CITY COUNCIL OF THE  
CITY OF SOUTH GATE, CALIFORNIA

The undersigned hereby proposes to perform all work for which a contract may be awarded him and to furnish any and all labor, material, equipment, transportation and other facilities required for

### **ON-CALL MUNICIPAL WATER AND SEWER SYSTEMS MAINTENANCE**

together with appurtenances thereto, all as set forth in the Specifications, and other Contract Documents, and he further proposes and agrees that, if his bid is accepted, he will contract in the form and manner stipulated, to perform all work called for by the Specifications and other Contract Documents, and to complete all such work in strict conformity therewith within the time limits set forth therein, and that he will accept as full payment therefore, the total bid amounts named in the Bid Schedule(s) forming a part hereof. **A bid bond in favor of the City of South Gate for**

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

which amount is not less than ten percent (10%) of the total amount of his proposal which is attached hereto and is given as a guarantee that the undersigned will execute the agreement and furnish the required bonds if awarded the Contract and in case of failure to do so within the time provided, said check or bid bond shall be forfeited to the City of South Gate. The face amount of bid bond shall be considered established.

**It is understood and agreed that:**

1. The undersigned has carefully examined all the Contract Documents which will form a part of the Contract; namely, Notice Inviting Bids, Instructions to Bidders, Proposal Forms, the Bid Schedules, the Contractor's Industrial Safety Record, the Contractor's Qualification Statement, the Worker's Compensation Insurance Certificate, the Construction Agreement, Performance Bond, Payment Bond, Non-Collusion Affidavit, Specifications and Construction Drawings, and all revisions or addenda setting forth any modifications or interpretations of any of said documents.
2. The undersigned has by investigation at the site of the work and otherwise satisfied himself as to the nature and location of the work and fully informed himself as to all conditions and matters which can in any way affect the work or the cost thereof.
3. The undersigned fully understands the scope of the work and has checked carefully all words and figures inserted in this bid and he further understands that the City will in no way be responsible for any errors or omissions in the preparation of this bid.
4. The undersigned will execute the agreement and furnish the required bonds and certificates of insurance within ten (10) calendar days after notice to him of acceptance of his bid by the City. The inability to execute the agreement within ten (10) days will be cause to reject the bid and award to the next low bidder.
5. The undersigned hereby certifies that this proposal is genuine and not sham or collusive or made in the interest or on behalf of any person not herein named and the undersigned has not directly or indirectly induced or solicited any other bidder to put in a sham bid or any other person, firm or corporation to refrain from bidding, the undersigned has not in any manner sought by collusion to secure for himself an advantage over any other bidder.
6. The undersigned will accept an award and enter into a contract for all work scheduled herein on which he submits a bid. The award for such work shall be entirely at the discretion of the City after evaluation of the bids. In the event the bidder to whom the work is awarded fails to enter into a contract and furnish the required bonds therefore within the time provided, the bidder will be liable for forfeiture of ten percent (10%) of the total bid amount to the City, even though such amount may be less than the face amount of the bid security, check or bond posted with the bid.

**Note:** All amounts and totals given in the Bid Schedule(s) will be subject to verification by the City. In case of variation between the unit price and totals shown by bidder, the unit prices will be considered to be his bid. In case of variation between unit prices written in words and unit prices given in numerals, those written in words shall be considered to be the correct prices.

Addenda No(s). Received

---

The undersigned is licensed in accordance with the laws of the State of California providing for the registration of Contractors.

\_\_\_\_\_  
Signature

By \_\_\_\_\_

\_\_\_\_\_  
Address

\_\_\_\_\_  
Title

\_\_\_\_\_  
Signature

By \_\_\_\_\_

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
Title

---

License No. \_\_\_\_\_ Classification License Expiration Date \_\_\_\_\_

\* Surety to be utilized for Contract Bonds (Performance Bond and Payment Bond)

\_\_\_\_\_  
Name of Surety

\_\_\_\_\_  
Name of Local Representative

\_\_\_\_\_  
Address

\_\_\_\_\_  
Address

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
Telephone Number

Best Key Rating

\_\_\_\_\_  
Grade

\_\_\_\_\_  
Class

**\*Note:** Surety information is required as part of this proposal, failure to provide such information will cause this bid to be informal and subject to rejection.

**ON-CALL MUNICIPAL WATER AND SEWER  
SYSTEMS MAINTENANCE**

Contractor's Name \_\_\_\_\_

Honorable Mayor and City Council \_\_\_\_\_, 2024  
South Gate, California:

The undersigned declares that he/she has carefully examined Plans and Specification for this project, read notice to bidders, is familiar with the requirements therein contained, and proposes to furnish all labor, material supplies necessary to accomplish the work outlined therein at the following prices. The undersigned also guarantees that the following prices outlined herein shall remain valid for one year following the opening of the bid opening date:

<b>BID ON-CALL MUNICIPAL WATER AND SEWER SYSTEMS MAINTENANCE</b>			
No.	Description	Unit	Unit Rate
1	Replace existing 6" VCP sewer main - 1 to 300 feet (5-10 ft. deep)	LF	\$
	Replace existing 8" VCP sewer main - 1 to 300 feet (5-10 ft. deep)	LF	\$
2	Replace sewer manhole (48-inch Dia) 5-feet Deep	Each	\$
	Replace sewer manhole (48-inch Dia) 8-feet Deep	Each	\$
	Replace sewer manhole (48-inch Dia) 10-feet Deep	Each	\$
3	Furnish and Install 6" DI pipeline - 1 to 300 feet	LF	\$
	Furnish and Install 8" DI pipeline - 1 to 300 feet	LF	\$
	Furnish and Install 12" DI pipeline - 1 to 300 feet	LF	\$
4	Furnish and Install 6" Gate Valve Complete	Each	\$
5	Furnish and Install 8" Gate Valve Complete	Each	\$
6	Furnish and Install 12" Gate Valve Complete	Each	\$



**BID  
ON-CALL MUNICIPAL WATER AND SEWER  
SYSTEMS MAINTENANCE**

No.	Description	Unit	Unit Rate
7	<u>Traffic Control</u>	Each per Day	\$
	Arrow Board		
	Construction sign	Each per Day	\$
	Delineator	Each per Day	\$
8	Move Trailer	Each per Day	\$
9	Welder 170 AMP	Each per Day	\$
	Welder 170 AMP Standby	Each per Day	\$
10	Hand Compactor	Each per Day	\$
11	Compaction Wheel	Each per Day	\$
12	3 Ton Roller	Each per Day	\$
	3 Ton Roller Standby	Each per Day	\$
13	Generator Set: (10 kw)	Each per Day	\$
	Generator Set: (10 kw) Standby	Each per Day	\$
	Generator Set: (100 kw)	Each per Day	\$
	Generator Set: (100 kw) Standby	Each per Day	\$
14	Foreman Truck w/Tools (3/4 ton)	Each per Day	\$
15	Foreman Truck w/Tools (1 ton)	Each per Day	\$
16	Dump Truck (10- 12 cubic yard)	Each per Day	\$
17	Water Truck up to 1800 Gallons	Each per Day	\$
	Water Truck up to 1800 Gallons Standby	Each per Day	\$
18	Hot Tap Machine 3"- 12"	Each per Day	\$
19	Backhoe, John Deere 310 or equivalent	Each per Day	\$

**BID  
ON-CALL MUNICIPAL WATER AND SEWER  
SYSTEMS MAINTENANCE**

No.	Description	Unit	Unit Rate
	Backhoe, John Deere 310 or equivalent Standby	Each per Day	\$
20	Fork Lift, 7,000 pounds	Each per Day	\$
	Fork Lift, 7,000 pounds Standby	Each per Day	\$
21	Compressor 175 CFM	Each per Day	\$
22	<u>Pumps:</u> 2" Dewatering Pump	Each per Day	\$
	2" Dewatering Pump Standby	Each per Day	\$
23	<u>Pumps:</u> 4" Dewatering Pump	Each per Day	\$
	4" Dewatering Pump Standby	Each per Day	\$
24	2" Trash Pump	Each per Day	\$
25	Concrete Saw	Each per Day	\$
26	Jack Hammer and Points	Each per Day	\$
27	Soil Compaction Test	Each	\$
28	10,000 gal. Water Tank	Each per Day	\$
29	Shoring Shields (8'x8'x8')	Each per Day	\$
30	Shoring Jacks	Each per Day	\$
31	Trench Plates	Each per Day	\$
32	Gas Detector	Each per Day	\$
33	<u>Water Meter Replacement</u> (See Note 3 below) 3/4" – 2" Meters in meter boxes		
	3" - 4" Ultrasonic Meters in vaults		

**BID  
ON-CALL MUNICIPAL WATER AND SEWER  
SYSTEMS MAINTENANCE**

No.	Description	Unit	Unit Rate
34	<u>Line Stops:</u> 8" Line	Each	\$
	12" Line	Each	\$
35	<u>Insertion Valves:.</u> 8" Line	Each	\$
	12" Line	Each	\$
36	Cost of furnishing both Performance and Labor Bonds (As a percentage of Contract Amount)	Percentage	%
37	<u>Labor Rates:</u> Two-Man Crew	Hour	\$
	Three-Man Crew	Hour	\$
	Four-Man Crew	Hour	\$
	Each Additional Man	Hour	\$
	Each Additional Operator	Hour	\$
	Pipe layer	Hour	\$
	Welder	Hour	\$
	Cement Mason	Hour	\$
	Carpenter	Hour	\$
	Mechanics	Hour	\$
	Truck Driver	Hour	\$
	Foreman	Hour	\$
Superintendent	Hour	\$	

<b>BID ON-CALL MUNICIPAL WATER AND SEWER SYSTEMS MAINTENANCE</b>			
No.	Description	Unit	Unit Rate
38	Attach your firm's standard rate schedule for labor, materials, and equipment. (See Note 2 below)	N/A	N/A

Please specify if a minimum time is billed for each call if requested by the City to report to Work:  
 \_\_\_\_\_ Hours.

**Notes:**

- 1. Unit Rates in the Bid shall include mark-ups, overhead, and profit.**
- 2. The rates shown on the firm's standard rate schedule shall include mark-ups, overhead, and profit. If in case the standard rate schedule does not include mark-ups, overhead, and profit, append an attachment showing the necessary allowances for mark-ups, overhead, and profit.**
- 3. Installation cost only. All meter parts, transmitters to be provided by the City.**

Terms of Extension

A contract entered with Bidder may be extended for up to two separate, consecutive periods of one year each at the option of the Owner. The maximum percentage rate increase for extension will be according to the "Construction Cost Index of Engineering News Record" as applicable to the Los Angeles Region and subject to the approval of the Owner:

Bidder acknowledges that Owner may enter contracts with more than one Bidder. **Owner does not promise or guarantee that Contractor's services will be called upon at any time or at all.**

**CONTRACTORS WILL BE SELECTED THROUGH THE EVALUATION OF CONTRACTOR'S QUALIFICATIONS AND BID BASED ON APPLYING LABOR, MATERIAL, AND EQUIPMENT RATES IN THE BID TO A SAMPLE JOB. THE CONTRACTORS WILL THEN BE AWARDED CONTRACTS AND PLACED ON THE ON-CALL LIST IN AN ORDER DETERMINED BY THE LOWEST BID**

Accompanying this proposal is the bidder's security consisting of \_\_\_\_\_ payable to the City of South Gate in the amount of \$10,000 and the undersigned bidder hereby agrees that should he be awarded a contract on the basis hereof, and thereafter fails to properly execute and return the contract agreement together with the required bonds in connection therewith within ten (10) days after it has been delivered or mailed to him or his authorized agent, the Owner will be damaged by the delay so caused in an amount that is impossible to definitely ascertain, bidder's

security; said bidder further agrees that in such an event the amount of security shall become the property of the Owner and may be collected thereby, and that otherwise it shall be returned.

The City of South Gate reserves the right to reject any and all bids, or delete portions of any and all bids or waive any informality or irregularity in the bid or the bid procedures and shall be the sole judge of the bids received.

The undersigned has carefully checked all of the above figures and understands that the City of South Gate, or any officer thereof, will not be responsible for any errors or omissions on the part of the undersigned in submitting this bid. In case words and figures stated here in do not agree, the words shall govern and the figures shall be disregarded. In case the unit price and the total amount stated for any item are not in agreement, the unit price shall govern and the amount shall be corrected to conform thereto. In case of any discrepancy between Item Total Prices and Total Amount Bid, the Item Total Prices shall prevail and the Total Amount Bid shall be adjusted to conform to the Item Total Prices. The Contract shall then be awarded to the lowest qualified bidder based on the Total Amount Bid.

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

**License No:** \_\_\_\_\_ **Expiration date:** \_\_\_\_\_

**Name:** \_\_\_\_\_ **Title:** \_\_\_\_\_

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

**ON-CALL MUNICIPAL WATER AND SEWER  
SYSTEMS MAINTENANCE**

NAME OF BIDDER \_\_\_\_\_

**LIST OF SUBCONTRACTORS**

In accordance with Division 2, Part I, Chapter 4 of the Public Contract Code, the prime contractor shall submit with his bid a list of subcontractors who will perform work in excess of one-half of 1 percent of the prime contractor's total bid.

Subcontractors listed must be properly licensed for the type of work they are to perform and their license numbers must be indicated below. Do not list alternate subcontractors for the same work.

	<u>Name &amp; Address of Subcontractor</u>	<u>Specific Description of Subcontract</u>
1.	Name _____ Address _____ License No. _____ Classification _____	_____ _____ _____ _____
2.	Name _____ Address _____ License No. _____ Classification _____	_____ _____ _____ _____
3.	Name _____ Address _____ License No. _____ Classification _____	_____ _____ _____ _____

4. Name \_\_\_\_\_  
Address \_\_\_\_\_  
License No. \_\_\_\_\_  
Classification \_\_\_\_\_

5. Name \_\_\_\_\_  
Address \_\_\_\_\_  
License No. \_\_\_\_\_  
Classification \_\_\_\_\_

6. Name \_\_\_\_\_  
Address \_\_\_\_\_  
License No. \_\_\_\_\_  
Classification \_\_\_\_\_

7. Name \_\_\_\_\_  
Address \_\_\_\_\_  
License No. \_\_\_\_\_  
Classification \_\_\_\_\_

**ON-CALL MUNICIPAL WATER AND SEWER  
SYSTEMS MAINTENANCE**

This information must include all construction work undertaken in the State of California by the bidder and any partnership, joint venture or corporation that any principal of the bidder participated as a principal or owner for the last five calendar years and current calendar year prior to the date of bid submittal. Separate information shall be submitted for each particular partnership, joint venture, corporate or individual bidder. The bidder may attach any additional information or explanation of data, which he would like taken into consideration in evaluating the safety record. An explanation must be attached of the circumstances surrounding any and all fatalities.

**CONTRACTOR'S INDUSTRIAL SAFETY RECORD**  
**5 Calendar Years Prior to Current Year**

Year	2019	2020	2021	2022	2023	TOTAL	Current Year
1. No. of Contracts							
2. Total dollar amount of contracts (in thousands of \$)							
* 3. No. of fatalities							
* 4. No. of lost workday cases							
* 5. No. of lost workday cases involving permanent transfer to another job or termination of employment							
* 6. No. of lost workdays							

The information required for these items is the same as required for column 3 to 6, Code 10, Occupational Injuries, Summary Occupational Injuries and illnesses. OSHA No. 102

The above information was compiled from the records that are available to me at this time and I declare under penalty of perjury that the information is true and accurate within the limitations of those records.

\_\_\_\_\_  
Name of Bidder (print)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Address

\_\_\_\_\_  
State Contractors' License. No. & Classification

\_\_\_\_\_  
City

\_\_\_\_\_  
Zip Code

\_\_\_\_\_  
Telephone



**CONTRACTOR'S QUALIFICATION STATEMENT**

To: The City of South Gate

The undersigned certifies that the bidder has successfully and properly completed projects of like nature, magnitude, comparable difficulty, and scope as specified in these specifications.

Three (3) of recent comparable projects completed are below:

1. Project Name \_\_\_\_\_

\_\_\_\_\_  
Person to Contact    Job Title    Phone No.

\_\_\_\_\_  
City    Contract Amount    Date Completed

2. Project Name \_\_\_\_\_

\_\_\_\_\_  
Person to Contact    Job Title    Phone No.

\_\_\_\_\_  
City    Contract Amount    Date Completed

3. Project Name \_\_\_\_\_

\_\_\_\_\_  
Person to Contact    Job Title    Phone No.

\_\_\_\_\_  
City    Contract Amount    Date Completed

Failure to complete this portion of the bid shall at the City's discretion constitute the basis to either declare the apparent low bidder's bid non-responsive or declare the bidder to be non-responsive.

Signed \_\_\_\_\_ Title \_\_\_\_\_

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_

**CONTRACTOR'S ORGANIZATION STATEMENT AND PERFORMANCE HISTORY**

The term "Owner" shall refer to any private firm or public agency to which the Contractor has submitted a bid to, or contracted with, for any construction contract.

Submitted By: \_\_\_\_\_  
*Name must correspond with the Contractor's License*

\_\_\_\_\_ Corporation    \_\_\_\_\_ Partnership    \_\_\_\_\_ Individual    \_\_\_\_\_ Joint Venture

If a corporation, under the laws of what State is it organized? \_\_\_\_\_

California Regional Office (s): \_\_\_\_\_

Use the form titled "Additional Information and/or Comments" for providing requested or additional information for each of the following questions to which you answer "yes" or for any comments.

A. How many years experience in construction work under current organization?

(a) As a General Contractor? \_\_\_\_\_ From \_\_\_\_\_ to 20\_\_\_\_

(b) As a Subcontractor? \_\_\_\_\_ From \_\_\_\_\_ to 20\_\_\_\_

B. Provide the following information as to contract experience with public entities or governmental agencies only, within the past ten (10) years. If none, write "NONE" on the chart.

TITLE OF PROJECT	COMPLETION DATE	NAME OF AGENCY, TELEPHONE No. AND NAME OF PERSON TO CONTACT

C. Have you or your company, or any officer or partner thereof, failed to complete a contract for an Owner? YES \_\_\_\_ NO \_\_\_\_ . If so, indicate the name of each agency, dates, and the circumstances.

- D. Have you or your company been denied an award of an Owner contract notwithstanding submission of the lowest responsive bid? YES \_\_\_\_ NO \_\_\_\_\_. If so, as to each such denial, state the name of the Owner, the date of the denial, the title and number of the contract bid, and the grounds on which the Owner based the denial of award.
- E. Has your company been assessed liquidated damages by any Owner? YES \_\_\_\_ NO \_\_\_\_\_. If so, as to each assessment of liquidated damages, state the name of the Owner, the date of the assessment, the title and number of the contract, and the grounds on which the Owner based the assessment of liquidated damages.
- F. Has your company been the subject of any inquiry by any Owner as to whether your company is a non-responsible bidder or non-responsible contractor? YES \_\_\_\_ NO \_\_\_\_\_. If so, as to each inquiry, state the name of the Owner, the date of the inquiry, the grounds on which the Owner based the inquiry, and the result of the inquiry.
- G. Has your company been the subject of any inquiry by any Owner as to whether your company has made any false claim or other material misrepresentation? YES \_\_\_\_ NO \_\_\_\_\_. If so, as to each inquiry, state the name of the Owner, the date of the inquiry, the grounds on which the Owner based the inquiry, and the result of the inquiry.
- H. Has your company made any false claim or misrepresentation in the submittal of any claim pertaining to any construction contractor with an Owner? YES \_\_\_\_ NO \_\_\_\_\_. If so, state the circumstances, including the reason for submittal of false material.
- I. Is your company currently asserting against any Owner any construction claim (s) in excess of \$100,000.00, or has your company made such claim (s) against any Owner? YES \_\_\_\_ NO \_\_\_\_\_. If so, as to each such claim, state the name of the Owner, the date of the claim, the grounds of the claim, the amount of such claim, the present status of such claim, the date of resolution of such claim if resolved, and the amount and method by which such claim was resolved, if resolved.
- J. Is your company currently a party against any Owner in any litigation pertaining to any construction project, or has your company been a party to such litigation? YES \_\_\_\_ NO \_\_\_\_\_. If so, as to each such litigation, state the name of the Owner, case number, the court and jurisdiction in which said litigation is pending or was brought, the nature of the litigation, the amount at issue in the litigation, the present status of such litigation, the date of resolution of such litigation if resolved, and the amount and method by which such litigation was resolved, if resolved.

**ADDITIONAL INFORMATION AND/OR COMMENTS**

Use this page for providing requested or additional information or for any comments. If no comments or additional information, write "NONE" at the top of this page. (Duplicate this page if more space is needed). Add corresponding "letter" of each question that the information or comment pertains to.

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**ON-CALL MUNICIPAL WATER AND SEWER  
SYSTEMS MAINTENANCE**

**EQUALS**

The undersigned desires to use the material product, thing, or service described below as “an equal” to such item as specified.

In accordance with the provisions under 4-1.6 of the Standard Specifications for Public Works Construction (Greenbook), if the City shall find any such item so described as equal to the respective item specified, then the undersigned may furnish such item, together with all necessary labor materials, equipment, and incidentals required to perform the work.

Date \_\_\_\_\_ Contractor’s Name \_\_\_\_\_

Phone No. \_\_\_\_\_ Contractor’s Address \_\_\_\_\_

<b>Materials, Apparatus, or Equipment Specified for Which Bidder Proposes “An Equal”</b>		<b>Complete Description of Materials, Apparatus, or Equipment Specified for Which the Bidder Desires to Use as “An Equal” and Name of Subcontractor if Different</b>

**CERTIFICATION OF NONDISCRIMINATION  
AND AFFIRMATIVE ACTION**

As suppliers of goods or services to the City of South Gate, the firm listed below certifies that it does not discriminate in its employment with regard to race, medical condition, color, marital status, religion, sex, handicap, or national origin; that is in compliance with all federal, state and local directives and executive orders regarding nondiscrimination in employment: and that it agrees to demonstrate positively aggressively in principle of equal opportunity in employment.

We agree specifically:

1. To establish or observe employment policies which affirmatively promote opportunities for minority persons at all job levels.
2. To communicate this policy to all persons concerned including all company employees, outside recruiting services, especially those servicing minority communities and to the minority communities at large.
3. To take affirmative steps to hire minority employees within the company.

\_\_\_\_\_

Firm

\_\_\_\_\_

Signature

\_\_\_\_\_

Title

Please include any additional information regarding equal opportunity employment programs now in effect within your company.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**ON-CALL MUNICIPAL WATER AND SEWER  
SYSTEMS MAINTENANCE**

**BID SECURITY FORMS  
FOR  
CHECK OR BOND TO ACCOMPANY BID**

NOTE: The following form shall be used in case check accompanies bid.

Accompanying this proposal is \*certified/cashier's check payable to the order of the City of South Gate for:

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

thus, amount being not less than ten percent (10%) of the total amount of the Base Bid plus "Additional Bid Items." The proceeds of this check shall become the property of the City of South Gate provided this proposal shall be accepted by the City of South Gate through action of its legally constituted contracting authorities and the undersigned shall fail to execute a contract and furnish the required bonds within the stipulated time; otherwise, the check shall be returned to the undersigned.

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

.....  
NOTE: If the bidder desires to use a bond instead of a check, the following form shall be executed. The sum of this bond shall not be less than ten percent (10%) of the total amount of the base bid plus "Additional Bid Items."

**BID BOND**

KNOW ALL MEN BY THESE PRESENTS

That we \_\_\_\_\_, as Principal, and \_\_\_\_\_, as Surety, are held and firmly bound unto the City of South Gate in the sum of: \_\_\_\_\_, (words) Dollars (\$ \_\_\_\_\_), to be paid to the City of South Gate, its successors and assigns, for which payment will and truly be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**THE CONDITION OF THIS OBLIGATION IS SUCH:**

That if the certain proposal of the above bonded \_\_\_\_\_ for **ON-CALL MUNICIPAL WATER AND SEWER SYSTEMS MAINTENANCE**, in strict accordance with the Specifications on file at the office of the City of South Gate is accepted by the City of South Gate through action of its legally constituted contracting authorities and if the above bonded \_\_\_\_\_, his heirs, executors, administrators, successors and assigns shall duly enter into and execute a contract for such removal and shall execute and deliver the required Performance Bond, Payment Bond and proof of insurance within ten (10) working days after the date of notification by and from said City of South Gate that said contract is ready for execution, then this obligation shall become null and void, otherwise it shall be and remain in full force and virtue.

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

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

NOTE: The standard printed bid bond form of any bonding company acceptable to the City of South Gate may be used in lieu of the foregoing approved sample bond form, provided the security stipulations protecting the City of South Gate are not in any way reduced by use of the Surety Company's printed standard form.



**NON-COLLUSION AFFIDAVIT**

\_\_\_\_\_ being first duly sworn, deposes and says that he is  
\_\_\_\_\_ of (sole owner, a partner, president, etc.)  
\_\_\_\_\_ the party making the  
foregoing bid, that such bid is not made in the interest of or behalf of any undisclosed person,  
partnership, company, association, organization or corporation, that such bid is genuine and not  
collusive or sham, that said bidder has not directly or indirectly induced or solicited any other  
bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived  
or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from  
bidding, that said bidder has not in any manner, directly or indirectly, sought by agreements,  
communication or conference with anyone to fix the bid price of said bidder or of any other bidder,  
or to fix the overhead, profit or cost element of such bid price, or of that of any other bidder, or to  
secure any advantage against the public body awarding the Contract or anyone interested in the  
proposed Contract; that all statements contained in such bid are true and, further, that said bidder  
has not, directly or indirectly, submitted his bid price, or any breakdown thereof, or the contents  
thereof, or divulged information or data relative thereto, or paid and will not pay any fee in  
connection therewith to any corporation, partnership, company, association, organization, bid  
depository or to any member or agent thereof, or to any other individual, except to such person or  
persons as have a partnership or other financial interest with said bidder in their general business.

Signed \_\_\_\_\_

\_\_\_\_\_  
Title

STATE OF CALIFORNIA

COUNTY OF LOS ANGELES

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

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

WITNESS my hand and official seal.

\_\_\_\_\_  
Notary Public

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

[Business & Professions Code § 7028.15]

[Public Contract Code § 20103.5]

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

Business & Professions Code § 7028.15:

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

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

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

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

- c. This section shall not apply to a joint venture license as required by Section 7029.1. However, at the time of making a bid as a joint venture each person submitting the bid shall be subject to this section with respect to his or her individual licensure.
- d. This section shall not affect the right or liability of a licensed architect, land surveyor, or registered professional engineer to form joint ventures with licensed contractors to render services within the scope of their respective practices.
- e. Unless one of the foregoing exceptions applies a bid submitted to a public agency by a contractor who is not licensed in accordance with this chapter shall be considered non-responsive and shall be rejected by the public agency. Unless one of the forgoing exceptions applies, a local public agency shall, before awarding a contract or issuing a purchase order, verify that the contractor was properly licensed when the contractor submitted the bid. Notwithstanding any other provision of law, unless one of the foregoing exceptions applies, the registrar may issue a citation to

any public officer or employee of a public entity who knowingly awards a contract or issues a purchase order to a contractor who is not licensed pursuant to this chapter. The amount of civil penalties, appeal, and finality of such citations shall be subject to Sections 7028.7 to 7028.13, inclusive. **Any contract awarded to, or any purchase order issued to, a contractor who is not licensed pursuant to this chapter is void.**

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

Public Contract Code § 20103.5:

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

License No.: \_\_\_\_\_ Class: \_\_\_\_\_ Expiration date: \_\_\_\_\_

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

**AGREEMENT**

**To be Submitted  
AFTER  
Notice of Award of Contract**

**ON-CALL MUNICIPAL WATER AND SEWER  
SYSTEMS MAINTENANCE  
BETWEEN THE CITY OF SOUTH GATE AND \_\_\_\_\_**

This Agreement for the \_\_\_\_\_, City Project No. \_\_\_\_\_ (“Agreement”), is made and entered into on \_\_\_\_\_, by and between the City of South Gate, a municipal corporation (“City”), and \_\_\_\_\_, a California corporation, License No. \_\_\_\_\_ (“Contractor”). City and Contractor are sometimes hereinafter individually referred to as a “Party” and collectively referred to as “Parties.”

The City and the Contractor hereto mutually agree as follows:

**ARTICLE I**

**THE PROJECT**

For and in consideration of the mutual promises set forth herein, Contractor agrees with City to perform and complete in good and workmanlike manner all work required by the Contract Documents for City Contract No. \_\_\_\_\_, which involves the \_\_\_\_\_, City Project No. \_\_\_\_\_.

Said work shall be performed in accordance with the Plans, Specifications, and other Contract Documents, all of which are referenced in Article III hereof and incorporated herein as though fully set forth. Contractor shall furnish at its own expense all labor, materials, equipment and services necessary therefore, except such labor, materials, equipment and services as are specified in the Contract Documents to be furnished by City.

**ARTICLE II**

**CONTRACT SUM AND PAYMENT**

For performing and completing the work in accordance with the Contract Documents, City shall pay Contractor, in full compensation therefore, the contract sum of \_\_\_\_\_ (**\$\_\_\_\_\_00**) set forth in the Bid Schedule(s) that are included among the Contract Documents. Said sum shall constitute payment in full for all work performed hereunder, including, without limitation, all labor, materials, equipment, tools and services used or incorporated in the work, supervision, administration, overhead, expenses and any and all other things required, furnished or incurred for completion of the work as specified in the Contract Documents. City shall make payments to Contractor on account of the contract sum at the time, in the manner, and upon the conditions specified in the Contract Documents.

### **ARTICLE III**

#### CONTRACT DOCUMENTS

The Contract Documents, which constitute the entire Agreement between the City and the Contractor, are enumerated as follows: the Notice Inviting Bids, the Instructions to Bidders, the Accepted Proposal, the Bid Schedule(s), the List of Subcontractors, Contractor's Industrial Safety Record, the Contractors Qualification Statement, the Bid Security Forms for Check or Bond, this Agreement, the Worker's Compensation Insurance Certificate, the Performance Bond, the Payment Bond, the Non-Collusion Affidavit, the Specifications, and Special Provisions and all addenda as prepared prior to the date of bid opening setting forth any modifications or interpretations of any of said documents, and any and all supplemental agreements heretofore or herewith executed amending or extending the work contemplated and which may be required to complete the work in a substantial and acceptable manner, all of which are referred to as the Contract Documents. These form the entire "Contract", and all are as fully a part of the Contract as if attached to this Agreement or repeated herein.

### **ARTICLE IV**

#### INDEMNIFICATION

The Contractor shall indemnify, hold harmless and defend (with counsel selected by the City), the City of South Gate and its affiliated entities, its officers, employees, consultants and sub-consultants, their respective officers, agents, employees (collectively the "Indemnified Parties"), from any and all claims and losses whatsoever occurring or resulting to any and all persons, firms, or corporations furnishing or supplying work, services, materials, or supplies in connection with the performance of this Agreement, any and all claims, lawsuits or actions arising from the awarding or execution of this Agreement, and from any and all claims and losses occurring or resulting to any person, firm, corporation or property for damage, injury, death arising out of or connected with the Contractor's obligation to indemnify, defend and save harmless the "Indemnified Parties" as stated hereinabove including, but not be limited to, paying all legal fees and costs incurred in connection with any such claims, losses, lawsuits or actions. THIS PROVISION SHALL SURVIVE THE COMPLETION OF WORK AND SERVICES TO BE PROVIDED UNDER THIS AGREEMENT AND THE OTHER CONTRACT DOCUMENTS.

### **ARTICLE V**

#### COMMENCEMENT, COMPLETION AND LIQUIDATED DAMAGES

Contractor shall commence work on a date to be specified in a written Notice to Proceed from the City's Director of Public Works, and shall complete all work within \_\_\_\_\_ (\_\_\_\_) calendar days thereafter (subject to "force majeure" delays, if any, to the extent allowed under the Contract Documents). If the work is not completed within that time, Contractor shall owe and pay to the City liquidated damages in the amount or amounts set forth in the Contract Documents.

**ARTICLE VI**

**EFFECTIVE DATE**

This Agreement shall become effective and commence on \_\_\_\_\_, 2024.

**IN WITNESS WHEREOF**, the Parties hereto have caused this Agreement to be executed and attested by their respective officers thereunto duly authorized.

**CITY OF SOUTH GATE:**

By: \_\_\_\_\_  
Gilbert L. Hurtado, Mayor

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

**ATTEST:**

By: \_\_\_\_\_  
Yodit Glaze, City Clerk  
(SEAL)

**APPROVED AS TO FORM:**

By: \_\_\_\_\_  
Raul F. Salinas, City Attorney

**CONTRACTOR NAME:**

By: \_\_\_\_\_  
Name, Title

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

**WORKER'S COMPENSATION INSURANCE CERTIFICATE**

The Contractor shall execute the following form as required by the California Labor Code, Sections 1860 AND 1861.

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

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

\_\_\_\_\_  
Contractor

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

\_\_\_\_\_  
Title

ATTEST:

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

\_\_\_\_\_  
Title



## **INDEMNIFICATION AND LIABILITY INSURANCE REQUIREMENTS**

The following requirements must be met when submitting insurance certificates to the City of South Gate in connection with Public Works and other projects:

1. The insurance certificate must be issued to the City of South Gate, 8650 California Avenue, South Gate, CA 90280, attention of the City Engineer.
2. The City of South Gate, South Gate Housing Authority, and their officers, employees, elected officials, and agents must be shown as additional insured per ISO CG 20 10 11 85, and separate endorsement signed by an authorized representative of the insurance company is required.
3. The City has the right to request a copy of complete insurance policy including all endorsements and certificates.
4. The Certificate must include cross liability coverage either included in the Commercial General Liability coverage, and so indicate on the face of the Certificate under that heading or by separate endorsement.
5. The Certificate should also indicate that the insurance covers “All Operations” or should specify the particular services to be provided.
6. Contractor shall procure and maintain for the duration of the Contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors.

### Minimum Scope of Insurance

Coverage shall be at least as broad as:

1. Insurance Services Office Commercial General Liability coverage (occurrence from CG 0001).
2. Insurance Services Office form number CA 0001 (Ed. 1/87) covering Automobile Liability, code 1 (any auto).
3. Workers’ Compensation insurance as required by the State of California and Employer’s Liability Insurance.
4. Course of Construction insurance covering for “all risks” of loss. Earthquake and flood insurance is not required to be furnished by the Contractor.

Contractor shall maintain limits no less than:

1. General Liability: \$2,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to the project which is the subject of this Agreement and the location where work thereunder is to be performed, or the general aggregate limit shall be twice the required occurrence limit.
2. Automobile Liability: \$1,000,000 per accident for bodily injury and property damage.
3. Employer's Liability: \$1,000,000 per accident for bodily injury or disease.
4. Course of Construction: Completed value of the project that is the subject of this Agreement.

#### Deductibles and Self-Insured Retention

Any deductibles or self-insured retention must be declared to and approved by the City. At the option of the City, either the insurer shall reduce or eliminate such deductibles or self-insured retention as respects the City, its officers, officials, employees and volunteers; or the Contractor shall provide a financial guarantee satisfactory to the City guaranteeing payment of losses and related investigations, claim administration and defense expenses.

#### Other Insurance Provisions

The general liability and automobile policies are to contain, or be endorsed to contain, the following provisions:

1. The City, its officers, officials, employees, and volunteers are to be covered as insurers with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of the Contractor; and with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance or as a separate owner's policy.
2. For any claims related to the project that is the subject of this Agreement, the Contractor's insurance coverage shall be primary insurance as respects the City, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees, or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.
3. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be canceled, or modified, by either party, except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the City

Course of construction policies shall contain the following provisions:

1. The City shall be named as loss payee.
2. The insurer shall waive all rights of subrogation against the City.

Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII.

Verification of Coverage

Contractor shall furnish the City with original certificates and amendatory endorsements effecting coverage required by this clause. The endorsements should be on forms provided by the City or on other than the City's forms, provided those endorsements or policies conform to the requirements. All certificates and endorsements are to be received and approved by the City before work commences. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements affecting the coverage required by these specifications at any time.

Subcontractors

Contractor shall include all subcontractors as insurers under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors shall be subject to all of the requirements stated herein.

Indemnification

The Contractor shall indemnify, hold harmless and defend (with counsel selected by the City of South Gate), the City of South Gate, the City of South Gate Housing Authority, their consultants and sub-consultants, and their respective officers, agents, and employees, from any and all claims and losses whatsoever occurring or resulting to any and all persons, firms, corporations or other entities furnishing or supplying work, services, materials, or supplies in connection with the performance of this Agreement, any and all claims, lawsuits or actions arising from the awarding or execution of this Agreement, and from any and all claims and losses occurring or resulting to any person, firm, corporation or other entity, or property for damage, injury, death arising out of or connected with the Contractor's obligation to indemnify, defend and save harmless the City of South Gate, the City of South Gate Housing Authority, their consultants, sub-consultants, and other parties listed above, as stated hereinabove shall include, but not be limited to, paying all legal fees and costs incurred by legal counsel of the City of South Gate's choice in representing the City of South Gate, the City of South Gate Housing Authority, consultants and sub-consultants in connection with any such claims, losses, lawsuits or actions. THIS PROVISION SHALL SURVIVE THE COMPLETION OF WORK AND SERVICES TO BE PROVIDED UNDER THIS AGREEMENT.

**ON-CALL MUNICIPAL WATER AND SEWER  
SYSTEMS MAINTENANCE**

**FAITHFUL PERFORMANCE BOND**  
**100% OF CONTRACT AMOUNT**

KNOW ALL MEN BY THESE PRESENTS:

**WHEREAS**, the City of South Gate (“City” herein) has awarded to \_\_\_\_\_ **Inc.**, (“Contractor” herein) a Contract for:

**ON-CALL MUNICIPAL WATER AND SEWER SYSTEMS MAINTENANCE; and**

**WHEREAS**, said Contract is incorporated herein by this reference; and

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

**NOW, THEREFORE**, we, Contractor and \_\_\_\_\_ as Surety, are held and firmly bound unto the City in the penal sum of \_\_\_\_\_ (**\$** \_\_\_\_\_) lawful money of the United States, for the payment of which we bind ourselves, our heirs, successors, executors and administrators, jointly and severally, firmly by these presents.

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

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

The Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, the work to be performed thereunder, or the specifications that accompany the Contract shall in any manner affect its obligations on this bond. The Surety hereby waives notice of any such change, extension of time, alteration or addition to the terms of the Contract, the work, or the specifications.

Note: All signatures must be acknowledged before a notary public. Attach appropriate acknowledgment.

**CONTRACTOR NAME:**

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

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

\_\_\_\_\_  
\_\_\_\_\_  
(Type address of Contractor)

\_\_\_\_\_  
(Type name of Surety)

\_\_\_\_\_  
\_\_\_\_\_  
(Type address of Surety)

By: \_\_\_\_\_  
(Signature of authorized officer)

\_\_\_\_\_  
(Title of officer)

APPROVED AS TO FORM:

\_\_\_\_\_  
Raul F. Salinas, City Attorney

**ON-CALL MUNICIPAL WATER AND SEWER  
SYSTEMS MAINTENANCE**

**100% PAYMENT BOND**

**WHEREAS**, the City of South Gate, South Gate, California (“City” herein), has awarded to \_\_\_\_\_, (“Contractor” herein) a Contract for the work described as follows:

**ON-CALL MUNICIPAL WATER AND SEWER SYSTEMS MAINTENANCE**

**WHEREAS**, said Contractor is required to furnish a bond in connection with said Contract, to secure the payment of claims of laborers, mechanics, material suppliers and other persons, as provided by law;

**NOW, THEREFORE**, we, the undersigned Contractor and Surety, are held firmly bound unto the City in the sum of \_\_\_\_\_ (**\$** \_\_\_\_\_) for which payment well and truly to be made we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

**THE CONDITION OF THIS OBLIGATION IS SUCH THAT**, if said Contractor, its heirs, executors, administrators, successors, assigns, or subcontractors shall fail to pay any of the persons named in Civil Code Section 9100(a), or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the Contract, or any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Contractor and its subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, with respect to such work and labor, then the Surety herein will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligation shall be void. If suit is brought upon this bond, the said Surety will pay a reasonable attorney’s fee to the plaintiff(s) and the City in an amount to be fixed by the court.

This bond shall inure to the benefit of any of the persons named in Civil Code Section 9100(a) as to give a right of action to such persons or their assigns in any suit brought upon this bond.

Said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or modification of the Contract Documents or the work to be performed thereunder shall in any way affect its obligations on this bond, and it does hereby waive notice of such change, extension of time, alteration or modification of the Contract Documents or of work to be performed thereunder.

**IN WITNESS WHEREOF**, this instrument has been duly executed by the above-named Contractor and Surety on \_\_\_\_\_, 2024.

Note: All signatures must be acknowledged before a notary public. Attach appropriate acknowledgment.

**CONTRACTOR:  
CONTRACTOR NAME.**

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

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

\_\_\_\_\_  
\_\_\_\_\_  
(Type address of Contractor)

\_\_\_\_\_  
(Type name of Surety)

\_\_\_\_\_  
\_\_\_\_\_  
(Type address of Surety)

By: \_\_\_\_\_  
(Signature of authorized officer)

\_\_\_\_\_  
(Title of officer)

APPROVED AS TO FORM:

\_\_\_\_\_  
Raul F. Salinas, City Attorney

**NON-COLLUSION AFFIDAVIT TO BE EXECUTED BY  
EACH AWARDEE OF A PRINCIPAL CONTRACT**

STATE OF CALIFORNIA )  
 ) SS.  
COUNTY OF )

\_\_\_\_\_ being first duly sworn, deposes and says that he is  
\_\_\_\_\_ of \_\_\_\_\_ (sole owner, a  
partner, president, etc.) \_\_\_\_\_ the party making the foregoing bid,  
that such bid is not made in the interest of or behalf of any undisclosed person, partnership,  
company, association, organization or corporation, that such bid is genuine and not collusive or  
sham, that said bidder has not directly or indirectly induced or solicited any other bidder to put in  
a false or sham bid, and has not directly or indirectly colluded, conspired, connived or agreed with  
any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding, that said  
bidder has not in any manner, directly or indirectly, sought by agreements, communication or  
conference with anyone to fix the bid price of said bidder or of any other bidder, or to fix the  
overhead, profit or cost element of such bid price, or of that of any other bidder, or to secure any  
advantage against the public body awarding the Contract or anyone interested in the proposed  
Contract; that all statements contained in such bid are true and, further, that said bidder has not,  
directly or indirectly, submitted his bid price, or any breakdown thereof, or the contents thereof,  
or divulged information or data relative thereto, or paid and will not pay any fee in connection  
therewith to any corporation, partnership, company, association, organization, bid depository or to  
any member or agent thereof, or to any other individual, except to such person or persons as have  
a partnership or other financial interest with said bidder in their general business.

Signed \_\_\_\_\_

\_\_\_\_\_  
Title

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 2024.

\_\_\_\_\_  
Notary Public

(Attach Notary Certificate)



## **PART II**

### **SPECIAL PROVISIONS**

## **PART II**

### **SPECIAL PROVISIONS**

**Order of Precedence of Contract Documents** - In resolving conflicts resulting from errors, discrepancies, ambiguities, or inconsistencies in any of the Contract Documents, the order of precedence shall be as follows:

1. Permits from other agencies as may be required by law
2. Change orders
3. Contract
4. Addenda
5. The Bid
6. Special Provision
7. General Provision
8. Technical Specifications
9. Drawings
10. Standard Specifications (Greenbook) latest version
11. Standard Plans City of South Gate
12. Notice Inviting Bids
13. Instructions to Bidders

**Order of Precedence of the Drawings** - With reference to the Drawings, the order of precedence is as follows:

1. Figures govern over scaled dimensions
2. Detail drawings govern over general drawings
3. Addenda and change order drawings govern over Contract Drawings
4. Contract Drawings govern over standard drawings

**PART III**  
**GENERAL PROVISIONS**

**PART III  
GENERAL PROVISIONS**

**Section 1     Description of Work**

The work consists of assisting the City in water and sewer main repairs on an as needed basis.

**Section 2     Location of Work**

The general locations and limits of the work are as follows:

- Citywide, the City of South Gate.

**Section 3     Time of Completion**

Not Used.

**Section 4     Definitions**

**4.1     Agency** - Pursuant to supplemental conditions, " Agency," as used in the *Standard Specifications for Public Works Construction*, shall be synonymous with "City" or "City of South Gate."

**4.2     Alterations and Additions** - The City may, if it deems it necessary, make alterations and modifications to the Specifications and plans for the work, covering any portion under such altered or modified work shall be agreed upon in writing endorsed upon the original Contract and signed by the proper parties to the Contract. It is expressly understood and agreed that such alterations, additions, modifications or omissions shall not in any way violate or annul the contract, and the Contractor shall agree not to claim or bring suit for any damages whether for loss of profits or otherwise, on account of said changes. Whenever, during the progress of work, any additional work or change or modification in the work contracted for is agreed upon as aforesaid, such additional work or modification shall be considered and treated as though originally contracted for, and shall be subject to all the terms, conditions and provisions of the original Contract.

**4.3     Baseline Schedule** - The approved final schedule from which all Contract performance will be measured. It cannot be changed without the written consent of the City.

**4.4     Bid Price** - The unit or lump sum amount shown in the Bid Schedule(s) for the work to be performed.

**4.5     CALTRANS Specifications** - The current specifications of the *Standard Specifications of the State of California*, Department of Transportation (CALTRANS).

- 4.6 **City** - City of South Gate, California.
- 4.7 **Conferences and Meetings** - When and as directed by the City, the Contractor shall attend all conferences and meetings which the City deems necessary for the proper progress of work under this contract. The Contractor shall coordinate and meet the requirements of the City Gate. All costs associated with coordination shall be included in the various unit prices and no additional payment will be made therefor.
- 4.8 **Contract Documents** - All data provided by the City associated with the Work, including but not limited to, Bid Instructions, General Provisions, Supplemental Provisions, Addenda, Plans, Specifications, and all other data as may be referred to under the Terms and Conditions of the Contract Agreement between the City and the CONTRACTOR.
- 4.9 **CONTRACTOR** - As defined by the *Standard Specifications for Public Works Construction*.
- 4.10 **CONTRACTOR Move-in** - The move-in action whereby the CONTRACTOR at the direction of the ENGINEER was ordered to cease work and remove all men and equipment from the project site vicinity indefinitely and then at a later time determined by the ENGINEER the CONTRACTOR was directed to re-mobilize his men and equipment to complete the project. The ENGINEER shall have sole discretion to specify the awarding of move-in cost. The CONTRACTOR shall not be entitled to additional compensation for complying with contract construction schedule.
- 4.11 **Construction** - All, labor, material, equipment, supplies, and other effort required or incidental to the accomplishment of a defined scope of work in accordance with all applicable drawings, specifications, codes, ordinances, industry standards, and other such rules and regulations.
- 4.12 **Days** - Calendar days, unless otherwise indicated.
- 4.13 **Deliverable** - Any item that may be required to start a work activity, i.e. approved design documents, shop drawings, utility clearance, environmental report, materials, specialty work crews, equipment, etc.
- 4.14 **ENGINEER** - The City Engineer of the City of South Gate or a designated representative.
- 4.15 **Final Pay Quantity** - "Final Pay" items designated by a (F) following the quantity unit in the Bid Schedule shall be the final quantities for which payment for such specific portion of the work shall be considered as approximate only and no guarantee is made that the quantities which can be determined by computations, based on the details and land dimension shown on the plan will equal the estimated quantities. No allowance will

be made in the event that the quantities which can be determined by computations based on the details and land dimensions shown on the plan will equal the estimated quantities. Final pay quantities will be adjusted to reflect any change order extra work or additional quantities authorized by the ENGINEER.

- 4.16 Normal Working Hours (working days) - 8:00 A.M. to 4:00 P.M. Monday through Friday.** An alternative working hours or additional hours or days may be scheduled with approval of the ENGINEER.

**Night and weekend hours may be authorized at the sole discretion of the CITY ENGINEER with no additional compensation made therefor.**

- 4.17 Notice To Proceed (NTP)** - A written notice given by the City to the CONTRACTOR establishing the date on which the Contract time will start. A Notice to Proceed will not be issued until a construction schedule is submitted to and approved by the City Engineer.

- 4.18 Water Division** - City of South Gate Public Works Department.

- 4.19 Work Plan** - A comprehensive outline describing how the CONTRACTOR intends to perform the Scope of Work as defined under the Contract Documents. A Notice to Proceed will not be issued until a Work Plan is submitted to and approved by the City Engineer.

- 4.20 Temporary Suspension of Work** – The City shall have the authority to suspend the work wholly or in part, for such a period as it may deem necessary, due to the unsuitable weather, or to such other conditions as are considered unfavorable for the suitable prosecution of the work, or for such time as it may deem convenient due to failure on the part of the Contractor to carry out orders given or to perform any provisions of the work. The Contractor shall immediately obey such order and shall not resume the work until so ordered in writing by the City.

## **Section 5 Pre-Work Conference**

Prior to commencement of the project, but after award of the Contract the Contractor must contact the City to arrange for a pre-construction conference. All sub-contractors shall attend the pre-construction meeting unless otherwise approved by the City Engineer.

## **Section 6 Liability Insurance**

The insurance limits specified in Subsection 7-3 of the Standard Specifications shall be amended as follows:

Contractor shall provide a combined single limit liability policy with aggregate limits for Bodily Injury and Property Damage in an amount not less than two million dollars (\$2,000,000).

**Section 7 Permits and Contracts Correspondence**

- 7.1 The Contractor shall obtain and pay all costs for permits made necessary by his operations prior to commencing the work. No fee will be charged for any permit issued by the City of South Gate.
- 7.2 All correspondence relating to this Contract shall be between the Contractor and the Engineer. The Engineer and the Contractor shall serialize each item of correspondence consecutively starting with 001.

**Section 8 Scheduling of Work**

- 8.1 No work, services, material or equipment shall be performed or finished until a Notice to Proceed has been given in writing to the Contractor by the City. Prior to the start of any work a pre-work conference shall be arranged by the Contractor between his job foreman, the Contractor, the Engineer and any other parties that may be deemed necessary by the City.
- 8.2 The Contractor shall so conduct his operations as to have under contract no greater amount of work than he can prosecute properly. Prior to starting any phase of the work, the Contractor shall be prepared and shall have sufficient equipment and labor on hand to prosecute the work to its completion.
- 8.3 The Contractor shall at all times have a copy of the Safety Plan, Contract Documents, Specifications, and permits at the job site to which the Engineer shall be given access at all times.
- 8.4 The Contractor shall submit to the Engineer, City of South Gate Public Works, and Police Department emergency telephone number listing where the Contractor can be reached day or night, including weekends and holidays.

**Section 9 General Guarantee**

- 9.1 Unless otherwise provided in these Specifications, the Contractor shall guarantee for a period of one year after Acceptance of Contract by the City, that all equipment, materials, and workmanship furnished under these Specifications shall be free from defects. He shall repair or replace all such defective equipment, materials, or workmanship. Guarantee bond provisions are included in the Instruction to Bidders, Section 12, Bonds.
- 9.2 In emergencies demanding immediate attention, the City shall have the right to remedy or contract for the remedy of, the hazard, defect. or damage and charge the Contractor with the cost of labor, equipment, and material required.

**Section 10**     **Progress Payments**

- 10.1     The Contractor shall, on or before the 20th day of each calendar month after actual work is started, except in case of final estimate hereinafter provided, cause an estimate to be made in writing of the value of the total amount of the work done and materials furnished by the Contractor and incorporated into the work completed up to and including the 15th day of the month in which the estimate is made for review and approval by the Engineer. **The City shall process the Contractor's request for progress payment within thirty (30) days from the date of submittal of the corrected invoice.**
- 10.2     The Contractor shall submit an updated copy of his schedule with each invoice. In reviewing the Contractor's estimate the Engineer may take into consideration, along with other facts and conditions deemed by him to be proper, the ratio of the difficulty of the work done to the probable difficulties of the work yet to be done. The Engineer shall submit in writing to the City with a copy to the Contractor his evaluation of the amount of the Contractor's estimate, which the Engineer considers as approved for payment by the City. The City shall retain five percent (5%) of such estimated value as partial security for the fulfillment of the contract by the Contractor. In addition 125% of the amount of outstanding "Stop Notices" shall be withheld. From the balance remaining all previous payments and all sums to be excepted, or retained under the terms of the contract shall be deducted and the remainder will be paid to the Contractor within 60 days from the receipt of the invoice. Contractor must submit certified payrolls with each progress payment invoice. Contractor must utilize City format. No portion of any retention payment shall be released until 35 days after the project is completed and accepted by the City unless specified in Section 7-3.1 of the Standard Specifications for Public Works Construction "Greenbook".
- 10.3     Should Contractor find it necessary to work overtime or weekends to complete the project, the Contractor shall be responsible to reimburse the City or to cover any and all cost associated with overtime inspection. The cost for this shall be included in the total contract price for this work or shall be deducted by the Contractor when billing the City. The amount shall be specified within the progress payment.
- 10.4     Should Contractor find it necessary to work overtime or weekends to complete the project, the Contractor shall be responsible to pay the Construction Manager assigned to this project by the City.

**Section 11**     **City 's Right to Withhold Certain Amounts and Make Application Thereof**

In addition to the amount which the City may retain under the above section on the progress payments, the City may withhold a sufficient amount or



amounts or any payment otherwise due to the Contractor as in its judgment may be necessary to cover:

- (1) Amounts claimed by the City as liquidated damages or other offset.
- (2) Costs incurred by the City:
  - a. In providing services which the Contractor is unable to provide in a timely manner to either correct a hazardous condition or maintain the work in a safe condition, such as but not limited to, repairing, filling or covering of trenches, placing of barricades, a directing or detouring of traffic.  
  
A base charge of \$700 will be assessed for each incident and the cost of all time and materials used will be charged in addition to this fee.
  - b. As a result of the Contractor failing to pay his bills in a timely manner, including legal and attorney costs relating to processing "Stop Notices" and/or settlement of related litigation.
- (3) Estimated or actual costs for correcting defective work not remedied.
- (4) Deficient labor compliance, or federal compliance documentation.

## **Section 12 Final Estimate and Payment**

- 12.1 The Engineer, after the completion of the Contract, shall make a final estimate of the amount of work done thereunder and the value of such work, and the City shall pay the entire sum so found to be due after deducting therefrom all previous payments and all amounts to be kept and all amounts to be retained under the provisions of the Contract. All partial payments and estimates shall be subject to correction in the final estimate and payment. The final retention payment shall not be due and payable until the expiration of thirty-five (35) calendar days from the date of filing a Notice of Completion of the work by the City and correction of record.
- 12.2 It is mutually agreed between the parties to the Contract that no certificate given or payment under the contract shall be conclusive evidence of performance of the Contract and no payment shall be construed to be an acceptance of a defective work or improper materials.
- 12.3 The Contractor further agrees that the payment of the final amount due under the Contract shall release the City, the City's representative, the Engineer and their consultant from any and all claims or liability on amount of work performed under the Contract.

**Section 13 Progress Charts - Project Schedule**

General

The Contractor shall at least 7 days prior to the commencement of work, prepare and submit to the City Engineer for approval a progress schedule, showing the order in which the Contractor proposes to carry on the work, the date on which he will start and contemplated dates for completing the same. The schedule shall be currently maintained with each submittal.

The Contractor shall submit an updated copy of his schedule with each invoice, and when required by major changes in the work.

**Section 14 Site Conditions and Restrictions**

All construction activities shall be limited to the hours as indicated in Section 4.16 of this section.

**Section 15 Coordination With Utilities**

15.1 The Contractor's attention is directed to the potential existence of HAZARDOUS services and underground utilities and pipelines within the project areas which include, but are not limited to, electrical and natural gas. The Contractor shall be responsible for notifying the following utility companies in advance of any work in order that they can coordinate removal of their facilities to accommodate this project. The City believes (but makes no representations) that the following utilities can be reached at the following numbers:

AT&T California	(323) 224-0784
AT&T Local	(213) 787-9996
AT&T Cudahy	(626) 308-4042
Catch Basin & Storm Drain Maintenance	(562) 861-0316
Central Basin Municipal Water District	(323) 201-5528
Charter Communications	(424) 212-6961
Chevron Pipeline Co. – Cudahy (Chad)	(714) 981-5820
Chevron Pipeline Company	(714) 228-1506
County Sanitation Districts of Los Angeles County	(562) 699-7411
Golden State Water	(800) 999-4033
Golden State Water Company	(562) 907-9200
LA County Flood Control District	(626) 458-2195
LA County Sewer Maintenance Division	(626) 300-3348
Level 3 Communications, LLC	(720) 888-3860
Level 3 Communications, LLC – Cudahy (Brad Bishop)	(213) 996-5596

Metropolitan Water District	(213) 217-7663
Sprint-Nextel	(949) 225-2931
Qwest/CenturyLink	(714) 666-8016
South Gate, City of	(323) 563-5790
Pacific Pipeline Systems	(562) 728-2800
South Gate, City of	(323) 563-5790
South Gate Park	
Southern California Edison	(310) 608-5005
Southern California Edison – Cudahy (Mike Frazier)	(310) 608-5153
TESORO West Coast Products, LLC	(714) 228-6526
The Gas Company - Cudahy	(310) 687-2021
The Gas Company (Distribution)	(310) 687-2011
The Gas Company (Transmission Planning)	(818) 701-4546
Time Warner Cable – Anthony Xanthis/ Ernest:	(562) 259-2015
Tract 349 Mutual Water Company - West of Atlantic	(323) 560-1601
Tract 349 Mutual Water Company – East of Atlantic	(323) 771-6682
Union Pacific Railroad	(972) 729-6016
Verizon Telephone Co.	(562) 903-7914

15.2 Utility owners, contractors of the City, or contractors authorized by the City responsible for facilities located within the limits of work shall have the right to enter upon the limits of work and upon any structure therein for the purpose of making new installations, changes, or repairs, and the Contractor shall so conduct his operations as to provide the time needed for such work to be accomplished during the progress of the improvements made by those other parties.

15.3 At least two (2) working days prior to starting work, the Contractor shall contact Underground Service Alert at 1-800-422-4133 and Red Flex. Contractor shall submit to Underground Service Alert a complete list of Thomas Brothers Map Book Pages and Grids encompassing the area of work. Contractor shall notify the Underground Service Alert of any changes as they occur to the area of work.

15.4 The following entities shall be notified at least **72 hours** in advance of any street closure or restriction to access by the Contractor. Coordination of established service schedules will be available to the Contractor at the pre-construction meeting.

	<u>Phone #</u>
1. City Engineer	(323) 563-9578
2. South Gate Park	(323) 563 5478
	(323) 563 5449
3. Post Office	(800) 275-8777

4. LA CO. Fire Department (323) 890-4235
5. South Gate Police Department (323) 563-5436
6. Universal Waste Systems (563) 334-3660
7. City of Huntington Park (323) 582-6161
8. City of Lynwood (310) 603-0220
9. MTA (Bus Routes) (213) 922-6000
10. Residents and business adjacent to project site.
11. South Gate schools adjacent to project site.

And any others that are determined by the City designates.

**Section 16 Protection of the Work, the Public and Emergency Response**

Whenever, in the opinion of the Engineer, an emergency exists, against which the Contractor has not taken sufficient precaution for the public safety protection of utilities and protection of adjacent structures or property, which may be damaged by the Contractor's operations and when, in the opinion of the Engineer, immediate action shall be considered necessary in order to protect the public or property due to the Contractor's operations under this Contract, the Engineer will order the Contractor to provide a remedy for the unsafe condition.

If the Contractor fails to act on the situation within a reasonable time period, the City will provide suitable protection of said interests by causing such work to be done and material to be furnished as may seem reasonable and necessary at the expense of the Contractor.

**Section 17 Claim Notification**

If the Contractor should claim that any instruction, request, drawing specification, action, condition, omission, default, or other situation obligates the City to pay additional compensation to the Contractor or to grant an extension of time for the completion of the contract, he shall notify the Engineer, in writing, of such claim within ten (10) days from the date he has actual or constructive notice of the factual basis supporting the claim. The Contractor's failure to notify the Engineer within such ten (10) day period shall be deemed a waiver and relinquishment of the claim against the City.

**Section 18 Specification Changes**

No changes, additions or deletions will be made to these specifications and plans unless directed by the City Engineer.

**Section 19 Liquidated Damages**

The liquidated damages, as described in Section 6-9 of the Standard Specifications for Public Works construction are changed to \$ 1,000.00 per calendar day.

**Section 20**     **Change Orders/Extra Work Format**

Contractor shall utilize format provided by City for change orders/extra work.

**Section 21**     **Site Supervision**

The Contractor shall provide an on-site supervisor at all times when work is in progress. This supervisor shall be qualified in public works construction and site safety. The site supervisor shall be named in writing and changed only on approval of the Engineer.

**Section 22**     **Site Security**

The Contractor shall assume the responsibility for security of each site. This responsibility includes applicability of insurance along with indemnification of the City and loss due to vandalism, theft or illegal dumping.

**Section 23**     **Examination of Specifications and Site of Work**

The bidder is required to carefully examine the site, the bid proposal, exhibits, plans, specifications, and contract forms for the work to be completed. It will be assumed that the bidder has investigated and is satisfied as to the conditions to be encountered as to the character, type, quality and quantities of work to be performed and materials to be furnished, and as to the requirements of the Plans and Specifications, the Special Provisions and the Contract. It is mutually agreed that submission of a proposal shall be considered prima facie evidence that the bidder has made such examination. It should be noted that the examination shall include the type of existing pavements.

**Section 24**     **Water**

Contractor may utilize City water without charge from the adjacent City fire hydrants for dust control. Contractor shall utilize a City fire hydrant meter whenever he uses water, to record water use. Contractor shall be fully responsible for the City fire hydrant meter.

**Section 25**     **Taxes**

Bidders shall include any and all taxes in their bids. Upon request, the City will furnish manufacturer's excise tax exemption certificate to the successful bidder, as may be applicable under existing laws. It shall be the sole responsibility of the bidder to determine the applicability of any and all taxes which may or may not be due under the provisions of these specifications.

## **Section 26     Work Area Traffic Control**

The Contractor shall notify the occupants of all affected properties at least 48 hours prior to any temporary obstruction of access. Vehicular access to property line shall be maintained, except as required for construction, for a reasonable period of time. No overnight closure of any driveway will be allowed, except as permitted by the Engineer.

The Contractor shall furnish, install, maintain and remove traffic signal hardware; install, maintain and remove temporary striping pavement markings and signs; furnish certified flaggers; protect vehicular and pedestrian traffic on streets and sidewalks adjacent to the worksite affected by construction; restrict construction vehicular traffic to City-approved haul routes, staging areas, and hauling hours; ensure unimpeded access to buildings adjacent to the Worksite.

At least one 12-foot wide traffic lane shall be provided for each direction of travel on all streets at all times, except as permitted by the Engineer or as otherwise specified. The traffic lanes shall be maintained on pavement, and shall remain unobstructed. Barricades shall be removed after working hours wherever possible to maximize parking and traffic lanes.

Clearances from traffic lanes shall be 5 feet to the edge of any excavation and 2 feet to the face of any curb, pole, barricade, delineator, or other vertical obstruction.

The Contractor shall be responsible for furnishing, posting, and removing temporary “**No Parking**” signs. Signs shall be posted at a maximum of 200 feet between signs. Signs may be attached to existing poles, street lights standards, parkway trees, or whatever exists in the public right-of-way. When necessary, the Contractor shall furnish posts. Signs shall be posted 48 to 72 hours in advance of work with the specific date of construction stated, and signs shall be removed within 16 hours of completion of work in the area of the sign. Contractor shall coordinate with South Gate Police Department for enforcement of “No Parking” signs.

Section 12 of the CALTRANS Standard Specifications shall be included as a part of this specification.

Traffic control shall be in compliance with applicable provisions of CALIFORNIA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (CMUTCD).

The CMUTCD for Construction and Maintenance Work Zones (latest edition) as published by the State of California, Business and Transportation Agency and Housing Agency, Department of Transportation, shall be included in this specification.

Flagging costs and/or flagman costs will be borne totally and exclusively by the Contractor.

Portable delineators shall be spaced as necessary for proper delineation of the travel way. The spacing between delineators shall not exceed 50 feet on tangents or 25 feet on curves except when used for lane closures. When used for lane closures, the fluorescent traffic cones or portable delineators shall be placed at intervals not to exceed the following:

Tapers	25 feet
Edge of closed lane	50 feet
Tangents	50 feet
Curves	25 feet

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 that the highway is under construction and of any dangerous conditions to be encountered as a result thereof, shall perform their duties and shall be provided with the necessary equipment in accordance with the current "Instructions to Flagmen of the State of California Department of Transportation". The equipment shall be furnished and kept clean and in good repair by the Contractor at his expense.

Should the Contractor appear to be neglectful or negligent in furnishing warning and protective measures as above provided, the Engineer may direct attention to the existence of a hazard, and the necessary warning and protective measures shall be furnished and installed by the Contractor at his expense. Should the Engineer point out the inadequacy of warning and protective measures, such action on the part of the Engineer shall not relieve the Contractor from responsibility for public safety or abrogate his obligation to furnish and pay for these devices.

Personal vehicles of the Contractor's employees shall not be parked on the traveled way at any time, including any section closed to public traffic.

The Contractor shall notify local authorities of his intent to begin work at each location at least 2 days before work is begun. The Contractor shall cooperate with local authorities relative to handling traffic through the area and shall make his own arrangements relative to keeping the working area clear of parked vehicles.

Unless the Contractor makes other arrangements satisfactory to the Engineer and the owners, the following shall also apply to business establishments:

1. For each establishment (such as but not limited to, gas stations, markets and other "drive-in " businesses) on the corner of an intersection which has a

driveway (or driveways) on each intersecting street, the Contractor shall provide vehicular access to at least one driveway on each intersecting street.

2. For each establishment (such as but not limited to, motels, parking lots and garages) which has a one way traffic pattern with the appropriate entrance driveway and exit driveway, the Contractor shall provide vehicular access to both the entrance driveway and the exit driveway.

At least one week and again 48 hours in advance of closing or restricting access to any property, the Contractor shall notify the owner or resident of said property. The Contractor shall conduct all operations so as to provide reasonable access to the adjacent properties and have no greater length or quantity of work under construction than can be properly prosecuted with a minimum of inconvenience to the public and other contractors engaged on adjacent or related work.

No lane closure shall be permitted except as approved by the City Engineer. Only one lane shall be closed during the hours specified in Section 4.16. No work that interferes with public traffic shall be performed except during the hours specified in Section 4.16.

Flashing arrow signs shall conform to Section 12-3.03 of the State Standard Specifications.

If required by the City, the Contractor shall submit to the City a Traffic Control Plan (TCP) which shall encompass all Traffic Control measures for the project and shall be prepared by a CA registered Civil or Traffic Engineer experienced in the development of TCPs at least 3 weeks prior to the proposed start of construction activities. The City (or the City's Consultant) shall review the TCP. The Contractor's Engineer shall make any and all corrections or changes requested by the City and shall re-submit the revised TCP to the City as necessary to achieve approval. Construction activity shall NOT commence until the TCP is approved by the City.

The cost for Traffic Control shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in placing of the components of the traffic control system, all associated flagging and/or flagman costs.

## **Section 27 Other Requirements**

The Contractor is required to maintain fencing, barricades, signs, restrooms and construction equipment at the construction site free of graffiti at all times.

Upon completion of work in any specific street or location, the Contractor shall remove any survey, site or reference markings that have been painted or inked into any curb, street, sidewalk or any other permanent feature on site.

During construction, the Contractor shall maintain landscaping, sidewalks, and



parkways in and around the project site in a proper manner. If pedestrian or vehicular access is obstructed, alternate paths of travel shall be provided, maintained and identified.

All costs involved in complying with all or any one for the above requirements shall be included in the unit price for the various related items of work and no additional compensation will be made therefore.

The Contractor is to distribute two (2) "Public Notice" in English and Spanish to each resident and business affected by the project. The first notice shall be distributed ten (10) calendar days prior to the start of any work. The second notice shall be distributed at least seventy two (72) hours prior to the start of work. A sample copy of the notice must be approved by the City. Said notice shall be attached to a red information hanger provided by the Contractor and hung on the front door knob. The Contractor shall also coordinate with the bus services to ensure the safe operation of buses and access to bus stops in the construction area.

The Contractor shall also coordinate with the trash disposal and postal services agencies to ensure the safe operation of their vehicle and access in the construction area.

**Section 28 Fire Department Requirements**

The Contractor shall provide a continuous clear access to existing fire hydrants along the construction site with a minimum 20-foot space required for fire apparatus hook-up hydrants.

**Section 29 Paramedics**

The Contractor shall notify the Police Department Watch Commander or Dispatcher at 323-563-5457, the LA. County Fire Department at 323-567-8580, and the MTA, South East Area at 213-922-2825, on a daily basis during the entire period construction is in progress whenever the roadways are reduced in width or blocked.

**Section 30 Requirements of the Clean Air and Clean Water Acts**

**All Contractors shall be responsible for and implement Best Management Practices to:** (1) Retain sediments generated from the project onsite; (2) Avoid spills and discharges of construction-related materials, construction wastes, and residues to streets, draining facilities and adjacent properties; (3) Prevent non-storm water discharges such as washing construction vehicles from leaving the site, (4) Minimize erosion from slopes and channels.

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION  
AND LAND DISTURBANCE ACTIVITIES WATER QUALITY ORDER NO.  
2009-0009-DWQ**

On September 2, 2009, the State Water Resources Control Board adopted Order No. 2009-0009-DWQ (Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activities and Land Disturbance Activities). Effective July 1, 2010, all discharges (construction sites where calculated soil disturbance totals 1 acre or more) are required to obtain coverage and comply with this Construction General Permit (CGP).

A copy of this permit and related documents/attachments may be found on the internet at:

[http://www.swrcb.ca.gov/water\\_issues/programs/stormwater/constpermits.shtml](http://www.swrcb.ca.gov/water_issues/programs/stormwater/constpermits.shtml)

The CONTRACTOR is hereby directed to read and understand all the requirements of this Permit, or most current successor permit, as they related to this project

The Contractor shall be required to comply with all requirements of the NPDES Permit, including preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) as shown on the Technical provision.

### **Section 31 Spill Prevention Plan**

The Contractor shall develop and submit within 30 days of receiving the Notice to Proceed a Spill Prevention Plan for City approval. The plan shall address implementation of measures to prevent sewage spills, procedures for spill control and containment, notifications, emergency response, cleanup, and spill and damage reporting. The Contractor shall then implement the final approved Spill Prevention Plan.

The Work of this Section will be paid for in the unit price for the various items of work and no additional compensation will be made therefore.

## **PART IV**

# **TECHNICAL PROVISIONS**

# TECHNICAL SPECIFICATIONS

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## **SECTION 01000: SUMMARY OF WORK**

### **PART 1 - GENERAL**

#### **1.1 SECTION INCLUDES**

This Section describes the Project and the Work to be performed hereunder. Detailed requirements and extent of Work are stated in applicable Specification Sections and shown on the Drawings.

#### **1.2 ORGANIZATION AND INTERPRETATION OF CONTRACT DOCUMENTS**

- A. Specifications and Drawings included in the Contract Documents establish the performance, quality, location and general arrangement of materials and equipment, and establish the minimum standards of quality workmanship and appearance.
- B. Specification Sections have not been divided into groups of work for subcontractors or various trades. If there are questions concerning the applicability or interpretation of a particular Section or part of a Section or Drawing, direct questions to the Engineer.
- C. Piping Work shown on the Drawings is intended to be depictive and may not be an exact and complete representation of the actual finished Work. Include fittings, joints, supports, nuts, bolts, and other accessories required to provide complete and satisfactory piping systems, as specified, even though some items may not be specifically shown on the Drawings.
- D. A part of the Work that is necessary or required to make each installation satisfactory and operable for its intended purpose, even though it is not specifically included in the Specifications or on the Drawings, shall be performed as incidental work as if it were described in the Specifications and shown on the Drawings.

#### **1.3 SERVICES TO BE PROVIDED BY CONTRACTOR**

- A. Contractor shall provide services to assist Owner in natural or manmade emergency situations when Owner has an insufficient number of personnel and/or insufficient materials and/or equipment required to take action necessary on an expedited basis to prevent a system outage, to expeditiously restore service to normal operating conditions or to maintain service during such emergencies. Contractor shall provide personnel, materials, tools, and equipment to assist Owner during such emergencies.
- B. Contractor shall, within ten (10) days after execution of a Contract, designate an authorized representative and one alternate who shall have

authority to act on behalf of Contractor. Contractor shall, within ten (10) days after execution of a Contract, give to Owner an emergency contact list containing name, job title, and emergency telephone number.

#### **1.4 DESCRIPTION OF WORK**

The Work described in this Section is for projects anticipated in the future. The Contractor is cautioned that the Work will be assigned on an as-needed basis and there is no guarantee that any Work will be assigned during the term of the Contract.

- A. Ductile-iron pipe water mains, including tie-in connections to existing pipelines, valves, fittings, and installation, surface restoration, chlorination and testing.
- B. VCP sewer mains, including tie-in connections to existing pipelines, service laterals, manholes, fittings, and installation, surface restoration and testing.
- C. Miscellaneous work including rehabilitation of sewer mains using cured-in-place pipe, pot holing, dewatering, and excavating and hauling contaminated soil.

#### **1.5 RESPONSIBILITIES OF OWNER**

- A. Documents. Owner will, on request, provide to Contractor copies of existing drawings, maps, and other existing information relevant to the services to be performed if same is readily available to Owner.
- B. Research of Owner Records. Owner will assist Contractor in researching Owner's record data pertaining to Owner's facilities.
- C. Review of Contractor's Work Product. Owner will review the services provided by Contractor and comment, as appropriate.

#### **PART 2 - PRODUCTS**

(Not Used)

#### **PART 3 - EXECUTION**

(Not Used)

#### **PART 4 - PAYMENT**

(Not Used)

**END OF SECTION**

## **SECTION 01001: GENERAL REQUIREMENTS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section contains general requirements and information for all aspects of the Work.

#### **1.2 REQUIREMENTS**

- A. From time to time, Owner requires the services of private contractors to provide as-needed or emergency repairs to its water and sewer systems.
- B. Owner desires to have contractors available to provide personnel, materials, tools, and equipment to assist Owner during such emergencies.
- C. Contractor's construction yard where the construction equipment is mobilized must be within a 40-mile radius from the City of South Gate Yard Located at 4244 Santa Ana Street, South Gate, California 90280.

#### **1.3 RELATED WORK DESCRIBED ELSEWHERE**

Refer to the following Specification Section(s) for additional requirements:

Submittals: Section 01300

#### **1.4 SUBMITTALS**

Submit Shop Drawings in accordance with Section 01300, Submittals, at Contractor's sole expense.

#### **1.5 REVIEW OF CONTRACT DOCUMENTS, DRAWINGS AND SPECIFICATIONS BY CONTRACTOR**

Carefully study and compare the Contract Documents and at once report to the Owner errors, inconsistencies or omissions discovered within one business day of discovery. The Owner shall not be liable to the Contractor for damage or delays resulting from errors, inconsistencies or omissions in the Contract Documents which should have been recognized by the Contractor and disclosed to the Owner. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Owner, the Contractor shall assume responsibility for such performance and pay the costs for corrections at Contractor's sole expense.



Take field measurements and verify field conditions and carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Report errors, inconsistencies or omissions discovered to the Owner at once.

Inspect portions of Work, if any, already performed under this Contract to determine that such portions are in a proper condition to receive subsequent Work.

## **1.6 LOCAL CONDITIONS**

By submitting a bid, Contractor represents that it has carefully examined the Contract Documents and the site where the Work is to be performed and that it has familiarized itself with all local conditions and Federal, State and local laws, ordinances, rules, and regulations that may affect in any manner the performance of the Work, and further represents that it has studied all surveys and soils investigation reports about subsurface and latent physical conditions pertaining to the site, that it has performed such additional surveys and investigations as deemed necessary to complete the Work, and that it has correlated the results of all such data with the requirements of the Contract Documents. The submittal of a bid shall be conclusive evidence that the Contractor has investigated and is satisfied as to the conditions to be encountered, including locality, uncertainty of weather and all other contingencies, and as to the character, quality, quantities, and scope of the Work.

The Drawings for the Work show subsurface conditions or otherwise hidden conditions as they are supposed or believed by the Engineer to exist; but it is not intended or to be inferred that the conditions as shown thereon constitute a representation that such conditions are actually existent. Except as otherwise specifically provided in the Contract Documents, the Owner, the Engineer, and their consultants shall not be liable for any loss sustained by the Contractor as a result of any variance of such conditions as shown on the Drawings and the actual conditions revealed during the progress of the Work or otherwise.

## **1.7 INTERPRETATION OF PLANS**

The Contract Documents shall be interpreted as follows:

- A. Discrepancies between Drawings and the figures written thereon shall be resolved by taking the figures as correct.
- B. Figured dimensions shall govern over scaled dimensions.
- C. Full scale Drawings shall govern over reduced size Drawings.

- D. Where a dimension necessary for the prosecution of the Work can only be obtained by means of a scaled dimension, Contractor shall request a determination from the Owner's Representative.

## **1.8 REQUEST FOR WORK**

When an emergency exists and Work is needed, OWNER will contact via telephone the Contractor who ranks first on the on-call rotational list. On receipt of telephone call from the OWNER, promptly determine and notify OWNER within one hour whether Contractor is willing to accept the offer and able to provide the Work relating to the emergency. Once the offer is accepted by the Contractor, immediately mobilize all equipment and, within 30 minutes after acceptance, commence Work and diligently perform the Work, and continue to furnish all tools, equipment, apparatus, facilities, labor, services and transportation necessary to complete the Work.

## **1.9 ASSIGNMENT OF WORK**

When a Contractor indicates availability for Work and acceptance of an emergency repair project, a written Construction Order will be issued by the Owner which constitutes Notice to Proceed. Contractors will be notified and offered emergency projects in sequence as they appear on the on-call rotational list. Once a Contractor is offered a project, the Contractor's name will be moved to the end of the list. Although a Contractor may elect to refuse a job when offered and be moved to the end of the rotating list, refusal or inability to perform in three successive jobs will be cause for removal from the list.

At the discretion of the Owner, if the Contractor is unable to mobilize within 30 minutes after acceptance of Work, the Contractor will be moved to the end of the rotating list and the next Contractor on the rotating list may be notified and offered the project.

If the cost of performing emergency on-call Work cannot be agreed upon on a lump sum price prior to commencement of the Work, the Engineer may direct in writing that the Work be done on a Time and Material (T&M) basis or, at the discretion of the Engineer, the next Contractor on the rotating list may be notified and offered the project.

## **1.10 CESSATION OF WORK**

Owner may, at any time, declare that there is no further need for Contractor's Work in connection with a particular emergency, in which event Contractor shall cease Work promptly on notification to do so, but in no event later than twenty four (24) hours after notification. Contractor shall, on notification from Owner, take all actions to secure the Work prior to terminating the Work. Any cessation of Work ordered by Owner shall not terminate the Contract, and Owner may call for further Work in other

emergencies.

### **1.11 WORK SCHEDULE**

Do not begin Work until a Work Schedule has been accepted by the Owner. File with the Owner a Work Schedule within 7 days after the award of the Contract. This schedule shall outline the various phases of Work and the estimated dates of commencement and completion for each. Said schedule shall be sufficiently detailed to permit ready comparisons with the actual construction as Work progresses. The schedule shall make allowances for delays and shall correlate to dates and times Contractor is allowed to Work.

Unless otherwise mutually agreed by the Owner and the Contractor, the Contractor's activities shall be confined to the hours between 8:00 a.m. and 4:00 p.m., Monday through Friday, excluding holidays. Deviation from these hours will not be permitted without the prior written consent of the Owner and all agencies having jurisdiction over the Work, except in emergencies involving immediate hazard to persons or property. Work on holidays or other hours is not allowed except emergency operations as required to protect the public health and safety.

### **1.12 CONFERENCES**

At any time during the progress of the Work, the Owner shall have the authority to require the Contractor to attend additional conferences along with any or all of the subcontractors engaged in the Work, and any notice of such conferences shall be duly observed and complied with by the Contractor.

Failure of the Contractor to attend conferences or meetings may result in issuance of a "stop work notice" by the Owner. Delays resulting from the Contractor's non-compliance or non-responsiveness to attend conferences or meetings shall be the responsibility of the Contractor. Time extensions and monetary claims will not be granted or paid for any such delays.

### **1.13 RIGHT-OF-WAY**

The Owner will provide the right-of-way to the Project site. It shall be the sole responsibility of the Contractor to acquire any additional right-of-way necessary to prosecute the Work. The Contractor will be permitted to occupy only that area that is reasonably needed to complete the Work.

### **1.14 PERMITS**

The Contractor will be required to obtain an excavation permit (no fee) from the City of South Gate. The Contractor shall notify the City, 48 hours prior to excavation. No water or liquids, except potable water, shall be discharged onto city streets at anytime for any reason without proof of a NPDES permit approving of the discharge. The Contractor will be required to perform self-inspections to evaluate if minimum

appropriate controls to reduce pollutant discharges from entering the storm drain system are being met. The Contractor shall make monthly self-inspections during the dry season and weekly self-inspections during the rainy season, October 1<sup>st</sup> through April 15<sup>th</sup>. Best Management Practices (BMPs) are made a part of this permit from the City. The discharge of liquids from concrete truck washouts into storm drains, streets, gutters or catch basins is strictly **prohibited**.

Paving, street sawcutting and sidewalk sawcutting is prohibited during a storm event of 0.25 inches or greater. Concrete thrust blocks exist at all tees, bends, crosses and other water main fittings. Contractor shall work with caution when excavating in the vicinity of any thrust blocks. Contractor shall not disturb any thrust blocks. Do not disturb local depressions or concrete cross gutters unless shown on the plans. If they are disturbed, the entire structure shall be replaced. Do not disturb decorative/patterned concrete or decorative asphaltic concrete pavement without notifying the City prior to any removal. If disturbed, the entire decorative/patterned portion shall be wholly replaced by the Contractor. Any landscaping or sprinklers disturbed by the construction shall be restored by the Contractor.

All provisions of these permits will apply as though stated in the Plans and Specifications and will have authority over any conditions herein unless the requirements are less stringent than the requirements of these Plans and Specifications.

The Owner has not applied for any other permits or licenses for this Work. The Contractor shall be solely responsible for obtaining and complying with any permits and/or licenses required to execute the Project, at its sole expense. No additional allowance will be made therefor.

#### **1.15 JOINING TO EXISTING PIPELINES**

Field verify the location, size and depth of the existing pipelines to which connections are to be made, by potholing. Contact the Owner to arrange for temporary draining and shutdown of these existing mains. Provide to Owner seven (7) working days notice prior to required shutdown. Make connections to existing pipelines after the new pipelines have been completed, from end to end, including successful hydrostatic testing and disinfection, to the point that the new pipelines are ready to receive flow.

#### **1.16 MINIMUM COVER OVER PIPELINES**

Pipe profile elevations have been established to account for typical pavement sections at finished grade elevations. If varying field conditions are encountered and sufficient cover does not exist, install and maintain steel traffic support plates over the backfilled and compacted trench that is within traffic areas until vehicle traffic is no longer permitted over the pipeline or the final paving is placed. The steel

plates shall conform to the requirements specified in Section 01570, Traffic Regulation of these Specifications.

### **1.17 ROCK ENCOUNTERED DURING CONSTRUCTION**

It is possible that the Contractor may encounter large rock boulders during excavation. If the rock encountered is larger in any dimension than the trench width being cut, and cannot feasibly be removed by the equipment the Contractor has on-site, then the Contractor shall immediately notify the Owner. The Owner at its sole discretion may choose to have the Contractor remove the rock on a time and materials basis or may choose to have a different contractor perform the removal.

### **1.18 ASBESTOS CEMENT PIPE**

The Contractor may encounter existing asbestos materials (i.e. asbestos cement pipe) during the Work. The Contractor is warned that asbestos is a known human carcinogen when inhaled and poses serious health risks. Asbestos fibers are easily inhaled and can result in chronic respiratory illness, cancer, and other severe health effects.

Removal of existing asbestos material shall be performed by a contractor or subcontractor registered by CAL/OSHA and certified by the State Contractors Licensing Board for asbestos removal. Submit copies of the certification to the Owner prior to the commencement of any asbestos removal activities. Comply with all Laws and Regulations regarding handling and removal of asbestos materials. Properly identify, remove, and dispose of all asbestos materials.

In the specific instance of making connections to existing asbestos cement pipe, disconnect, at the nearest joints, the length of asbestos cement pipe to be connected to the new pipe. This length of existing asbestos cement pipe will be replaced by the new pipe making the tie-in.

Cut asbestos cement pipe only when absolutely necessary and perform all cutting and handling of asbestos cement pipe in strict conformance with all applicable CAL/OSHA, USEPA and governing health agency requirements. Provide sufficient supervision and monitoring to assure conformance.

### **1.19 SITE GRADING**

The Contractor is solely responsible for any and all grading necessary to construct the Work to the lines, grades and elevations as shown on the Drawings. It is recommended the Contractor thoroughly familiarize itself with the Project Site prior to submitting its bid. It will be assumed the Contractor has accurately estimated the Work required to grade the site and has included all costs of said Work in the lump sum cost for site grading. No additional allowance shall be made therefor.

## **1.20 CONTRACTOR'S JOBSITE DRAWINGS**

Provide and maintain on the jobsite one complete set of prints of all Drawings which form a part of the contract. Immediately after each portion of the Work is installed, indicate all deviations from the original design shown in the Drawings either by additional sketches or ink thereon. Upon completion of the job, deliver this record set to the Owner's Representative.

## **1.21 OPERATING EXISTING VALVES**

Coordinate all waterline shutdowns and startups with the City Water Division. **Do not operate any valves within the City.** The Contractor shall repair or pay for all damages or other consequential impacts due to the advertent or inadvertent operation of the valves.

## **1.22 MAINTAINING EXISTING SEWER FLOW**

The Contractor is cautioned that the existing sewer mains/laterals are in service and that sewage will be flowing in these lines at all times. Sewage flows from all sewer mains, out of, or around any manhole shall remain uninterrupted at all times under this Contract. All sewage flows shall be conveyed in closed conduits and disposed of in a sanitary sewer system, including pumping if required. Sewage flow shall not be permitted to flow into trenches or be covered by backfill. The Contractor shall submit to the Engineer for review the proposed method of providing continuation of sewer service two weeks prior to the scheduled interruption and/or flow diversion. The submittal shall include the following:

- A. A plot plan showing the existing sewer main and the proposed points of flow interruption and/or flow diversion.
- B. A construction time schedule showing anticipated times of flow interruption and/or flow diversion.
- C. A description of the equipment to be used including size and model of pumps, and the standby equipment that will be provided onsite in case of emergency.

The Contractor will be responsible to determine the daily maximum flow rate in the existing sewer that will need to be diverted. (For the purpose of preparing a bid, the Contractor shall assume the daily maximum flow rate in the existing sewer is when the pipe is flowing 75% full.) Temporary piping can be placed above ground only if it will be in service for no more than one calendar day. Place all other temporary piping in a recessed trench. Temporary resurfacing of recessed trenches shall be flush with the existing grade. When the temporary pipeline crosses a wheelchair ramp or sidewalk, install the pipeline within a recessed trench or provide an asphalt mound ramped at a slope not greater than 1:12.

The Contractor shall provide all pump, pipes and hoses required to maintain uninterrupted flow in all existing sewer mains associated with this Project. The Contractor must also provide an on-site standby pump of equivalent size to the bypass pump in the event of a bypass pump failure. If temporary electrical power is used to run the bypass system, the Contractor must also provide a standby diesel generator of sufficient power to run the bypass system in the event of power failure.

All labor, materials, equipment, and incidentals associated with the temporary controls and diversions required to maintain existing sewer flow shall be borne by the Contractor.

## **PART 2 - PRODUCTS**

### **2.1 ALTERNATIVE EQUIPMENT AND MATERIALS**

Submit data substantiating requests for substitution of "acceptable alternate" items within 35 days after award of Contract. This 35-day period of time is included in the number of days allowed for the completion of the Work set forth in the General Provisions and shall be strictly complied with.

### **2.2 AVAILABILITY OF MATERIALS**

Ensure the availability of all material prior to the start of Work. Unavailability of material will not be sufficient reason to grant an extension of time.

### **2.3 CORRECTION OF DEFECTS**

Without limitation of any other rights or remedies of the Owner, if any defect in the Work in violation of the warranties herein arises after the date of the Certificate of Completion, per the General Condition Article 13 the Contractor and its sureties shall, upon receipt of written notice of such defect and demand to correct any such defective Work, at no cost to the Owner, promptly furnish and provide all design and engineering, labor, equipment, materials and other services at the site necessary to correct such defect and cause the Work to comply fully with the foregoing guarantees. The Contractor shall correct all such defects, whether these defects are discovered before or after the certification of completion. The Contractor shall bear all costs of correcting such rejected and defective Work, including access to the Work and removal and replacement of non-defective Work which is needed in order to correct defective Work, and also including compensation for additional services made necessary thereby.

## **2.4 CONTRACTOR'S FAILURE TO CORRECT**

In the event the Contractor has been notified of any defect in the Work in violation of the Contractor's foregoing guarantees, and in the event the Contractor fails to promptly and adequately correct such defect, the Owner shall have the right to correct or to have such defects corrected for the Contractor, and the Contractor shall promptly pay the Owner its costs incurred in correcting such defect.

## **PART 3 - EXECUTION**

### **3.1 SAFETY**

Be solely and completely responsible for conditions on the Project Site, including safety of all persons and property during performance of the Work. Fully comply with all Laws and Regulations relating to safety of the public and workers.

The right of the Owner to conduct construction review or observation of the Contractor's performance will not include review or observation of the adequacy of the Contractor's safety measures in, on, or near the site.

In the event the Contractor fails to take corrective action to ensure compliance with said safety regulations and/or removal of rubbish or debris resulting from its Work, the Owner will have the right, but not the duty, to undertake these measures and charge the cost of same to the Contractor without further notice to the Contractor.

Notify the Owner of all Work-related accidents which may occur to persons or property at or near the Project site, and provide the Owner with a copy of all accident reports. Sign all accident reports and submitted to the Owner within twenty-four (24) hours after the accident's occurrence.

All construction tools, equipment, temporary facilities, and other items used in accomplishing the Work, whether purchased, rented, or otherwise provided by the Contractor or provided by others, shall be in a safe, sound, and good condition. All such items must be capable of performing the functions for which they are intended and maintained in conformity with applicable Laws and Regulations.

Guard all machinery and equipment and other physical hazards in accordance with the safety provisions of the Manual of Accident Prevention in Construction of the Associated General Contractors of America unless such provisions are incompatible with Laws or Regulations, in which event such Laws or Regulations shall control.

Maintain workable and harmonious relations among Contractor's employees and between the Contractor's employees and the employees of subcontractors, sub-subcontractors, vendors and material suppliers and the employees of the Owner, and its consultants. Whenever the Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of



the Work, immediately give notice thereof to the Owner, including all relevant information regarding such dispute.

Enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. Do not permit employment of unfit persons or persons not skilled in tasks assigned to them. Remove any employee of the Contractor deemed by the Owner, in its sole judgment, to be objectionable from the site immediately upon the Owner's request and promptly replace that employee by the Contractor at no extra expense to the Owner.

### **3.2 EXCAVATION PLANS FOR WORKER PROTECTION REQUIRED BY LABOR CODE SECTION 6705**

Submit to the Owner for acceptance, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any trench or trenches 5 feet or more in depth. The plan shall be prepared by a registered civil or structural engineer. As a part of the plan, include a note stating that the registered civil or structural engineer certifies that the plan complies with the CAL-OSHA Construction Safety Orders, or that the registered civil or structural engineer certifies that the plan is not less effective than the shoring, bracing, sloping, or other provisions of the Safety Orders.

The Owner or its consultants may have made investigations of the subsurface conditions in areas where the Work is to be performed. If so, these investigations are identified in Division 1 of the Specifications and the records of such investigations are available for inspection at the office of the Owner. The detailed plan showing the design of shoring, etc., which the Contractor is required to submit to the Owner for acceptance in advance of excavation will not be accepted by the Owner if the plan is based on subsurface conditions which are more favorable than those revealed by the investigations made by the Owner or its consultants; nor will the plan be accepted if it is based on soils related design criteria which is less restrictive than the criteria set forth in the report on the aforesaid investigations of subsurface conditions.

The detailed plan showing the design of shoring, etc., shall include surcharge loads for nearby embankments and structures, for spoil banks, and for construction equipment and other construction loadings. The plan shall indicate for all trench conditions the minimum horizontal distances from the side of the trench at its top to the near side of the surcharge loads.

Nothing contained herein shall be construed as relieving the Contractor of the full responsibility for providing shoring, bracing, sloping, or other provisions which are adequate for worker protection.

### **3.3 COORDINATION WITH OTHER CONTRACTORS**

Contact the contractors of any other adjacent projects under construction and coordinate the Work to avoid any delays or inconvenience to this Project or any other project.

### **3.4 ASSIGNMENT AND EXPERIENCE OF SUPERVISORS**

Assign a responsible supervisor and an alternate who shall be identified at the beginning of the Project as required by Article 6.3 of the General Conditions. The Contractor's responsible supervisor shall remain in charge of the Contractor's duties through completion of the Work.

Provide in writing evidence of the responsible supervisor's experience prior to beginning the Work. The supervisor and alternate shall each have a minimum of five (5) years' prior experience in direct construction supervision on the type of project described herein.

If the Contractor's responsible supervisor should be unable to continue with the Work, then the Contractor's alternate responsible supervisor will become the primary responsible supervisor. Any other changes in the responsible supervisor must be approved by the OWNER in advance. The OWNER will have the right to reject proposed changes in responsible supervisor.

The Contractor's responsible supervisor shall have Contractor's complete authority to act on behalf of, and to bind, Contractor in all matters pertaining to the Work and the Contract Documents. The responsible supervisor shall be available to consult with the OWNER and its authorized representatives at all times during the course of the Work.

### **3.5 EXPOSURE OF UTILITIES IN ADVANCE OF WORK**

Determine the true location and depth of all utilities and points of connection. Also determine the type of material and condition of any utility which may be affected by or affect the Work.

The Contract Drawings show the general location of underground pipelines and utilities. The location is based on the information available to the Owner. The Owner does not guarantee the location and it shall be the Contractor's responsibility to find the exact location.

Expose all utilities and services prior to any Work. If the utilities and service connections differ from those shown on the Plans, notify the Owner immediately in writing. Within one week, the Owner may make changes with alignment and grade of Work to obviate the necessity to remove, relocate, protect or temporarily maintain such utility facilities or to reduce the costs of the Work involved in removing,

relocating, protecting or temporarily maintaining such utility facilities. All costs of potholing and exposing shall be paid solely by the Contractor.

No payment will be made to the Contractor for the Contractor's work in connection with aboveground or underground utilities, their relocation or negotiation for relocation. Any cost shall be included in other bid items to which the relocation may pertain.

### **3.6 ADVANCED NOTIFICATION**

Determine and notify those agencies requiring advance notification for inspection or other purposes before beginning construction in any area of concern to said agency.

Give a minimum of 48 hours advance notice to various agencies before beginning construction in the area unless specified advance times are stated in the Contract Documents.

Comply with Section 4216 of the California Government Code and notify Underground Service Alert (USA), telephone number 1-800-422-4133 not less than 48 hours before commencing excavation, drilling, potholing or soil sampling.

The Contractor acknowledges that some (or all) of the utility companies with facilities shown on the Drawings may not be members of the USA system and, therefore, not automatically contacted by the above referenced phone number. Become aware of utility company facilities not reported by the USA system. Contractor shall be liable for any and all damages stemming from repair or delay costs or any other expenses resulting from the unanticipated discovery of underground utilities. Notify all utilities at least 48 hours in advance of the commencement of Work at any site to allow the utilities to examine the construction site and mark the location of the utilities' respective facilities. Verify that each utility has responded to such notification.

### **3.7 NOISE MITIGATION**

Contractor shall conform to all noise Laws and Regulations. Immediately address any noise complaints from the residents due to construction activity. Also notify the Owner of the complaint. If the Owner receives a noise complaint, address the complaint to the satisfaction of the complainer at no additional cost to the Owner.

### **3.8 EMERGENCY RESPONSE**

Acknowledge and respond to emergency calls related to the Project within 15 minutes after receipt of call. Also, be at the site of the emergency work and begin action to mitigate damage and correct the emergency situation within 60 minutes after receipt of call. If the Contractor does not respond to call within 15 minutes or is not at the site commencing with the emergency work within 60 minutes, the Owner will dispatch a crew to perform the Work and deduct the amount therefore from the next progress payment due to the Contractor.

Once the Owner's crew is dispatched, the Contractor will pay the costs related to dispatching the crew even if the emergency work is performed solely by the Contractor. The amount therefor will be deducted from the next progress payment due to the Contractor.

#### **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

**SECTION 01010: COORDINATION OF WORK/CONTRACTOR'S WORK SCHEDULE**

**PART 1 - GENERAL**

**1.1 REASONABLY IMPLIED PARTS OF THE WORK SHALL BE DONE ALTHOUGH ABSENT FROM SPECIFICATIONS**

Perform specific tasks not completely described in these Specifications that are necessary or normally required as part of the Work described, or that are necessary or required to make each installation satisfactorily or legally operable, shall be performed by the Contractor as incidental Work without extra cost to the Owner, as if fully described in these Specifications. The expense of such Work shall be included in the applicable unit prices for the Work described.

**1.2 LOCATION OF SITES**

The Work sites will be located within the limits of the City of South Gate.

**1.3 NOTIFICATIONS**

A. Give to the Owner advance notice prior to performance of specific Work items as specified within individual Sections of these Specifications.

B. Start of Construction:

Notify not less than two (2) working days prior to the start of Work, the following listed agencies:

City of South Gate Department of Public Works  
(323) 563-5785

Notifications to Residents:

Hand deliver three written notices to residents. The three notices shall include the Public Notification (handed out 7 days prior to start of construction), the 7-day notice (handed out 7 days prior to a water service disruption), and a 24-hour notice (handed out 24 hours prior to a water service disruption). The notices shall be prepared by the Engineer and furnished to the Contractor for hand delivery.

Underground Service Alert (USA)  
811

C. Overtime Notification:

If Contractor for convenience should desire to carry on Work at night or outside regular working hours, submit written notice to the Engineer for approval and allow ample time for satisfactory arrangements to be made for inspecting Work in progress.

**1.4 PRE-CONSTRUCTION MEETING**

Attend a pre-construction meeting to discuss the schedule of Work, coordination with other contractors working in the vicinity of the sites, points of contacts for various parties involved, site layout, submittals procedures, and inspection procedures. Have the following people present: a principal of the General Contractor, the General Contractor's Superintendent and Alternate Superintendent, and the owner or superintendent of all subcontractors. Other items that need to be discussed will be provided to the Contractor prior to the pre-construction meeting.

**1.5 SITE PROTECTION**

A. Throughout the period of construction, keep the site(s) free and clean of all rubbish and debris. Provide protective barriers and other safety protection necessary to protect the public and workers. Protect all existing fences, walls, buildings, trees, and landscape during the progress of Work. In the event of damage to such property, immediately restore the property to a condition equal to its original condition and to the satisfaction of the Engineer, at no additional cost to the Owner. This provision includes damage to surface and subsurface utilities. After completion of the Work, remove from the site and Work areas all materials, tools, debris, and solids. At the completion of the construction, clear the site of all materials and leave it in a condition acceptable to the condition to the Engineer.

B. Secure the site and any excavations at the end of each working day to prevent unauthorized access.

**1.6 CONTAMINATION**

At all times perform operations in such a manner as to prevent the introduction of contaminants into the pipelines. Keep tools, equipment, and other elements clean. Clean and disinfect materials and equipment if, in the Engineer's sole opinion, the operation is introducing contaminants into the pipelines.

**1.7 REMOVAL AND SALVAGING**

Remove existing materials as specified herein. Materials salvaged from the sites are the property of the Owner. The Owner may designate certain materials

and equipment to become the property of the Contractor and, in such case, remove such materials and equipment from the site(s). Move salvaged equipment not designated by the Owner to become the property of the Contractor to a lay-down area (or areas) within the site(s) as determined by the Owner.

#### **1.8 DISPOSAL OF MATERIAL**

Dispose of all materials generated during vault construction, and any associated activities, as specified in the Technical Specifications.

#### **1.9 SAFETY REQUIREMENTS**

In accordance with the requirements of the OSHA and California OSHA Regulations for Construction, provide and require the use of personal protective and lifesaving equipment for all persons working at the sites.

#### **1.10 LAWS, REGULATIONS, AND PERMITS**

All work required hereunder shall be done in full compliance with all Laws and Regulations. Obtain all permits required by federal, state, county, or other agencies, pay all required fees, and obtain a no fee excavation permit from the City of South Gate of Public Works.

Necessary City licenses may be secured after the bids are opened, but must be obtained prior to execution of the Contract.

#### **1.11 EXAMINATION OF THE SITE**

All bidders shall inspect the route of the Work, and in submitting a bid are understood to be familiar with all conditions which may affect the conduct of the Work.

#### **1.12 INSPECTION AND APPROVAL**

- A. All work and materials required shall be subject to the observation and acceptance of the Engineer, or its authorized representative.
- B. Furnish to the Owner full information as to the progress of the Work in its various parts and give the Owner timely notice of the Contractor's readiness for inspection. When practicable, the Owner will make observation during the manufacture of articles. Furnish, without additional charge to the Owner, all reasonable facilities and assistance for the safe and convenient observation and for the tests required by the Owner.

- C. Final observation and acceptance of the articles or materials may be made after delivery at the site(s) of the Work and at the expense of the Owner. In the event that any material at the site(s) of the Work is rejected because it is defective, non-compliant with these specifications, or on account of failure to pass testing, the Contractor shall replace material promptly. Final inspection will be made as promptly as practicable but may not in all cases be made prior to construction or final assembly.
- D. The Owner shall have the right at all times and places to reject articles and materials furnished hereunder which, in any respect, fail to meet the requirements or these specifications, regardless of whether the defects in such articles or materials are detected at the point of manufacture or after completion of the Work at the sites. If the observer, through an oversight or otherwise, has accepted material or work which is defective or which is contrary to the specifications, such material, no matter in what stage or condition of manufacture, delivery, or erection may nonetheless be rejected by the Owner. Compliance with the specifications is solely a duty of the Contractor and shall not be deemed avoided by act or omission on the part of the Owner's observer.
- E. Remove rejected articles and materials promptly after notification to a satisfactory distance from the vicinity of the accepted articles and materials at the sole expense of the Contractor. Pay for any adjustments, corrections or repairs found necessary after the delivery of articles or materials, including all additional handling and shipping.

### **1.13 RELOCATE WORK HEADING/CONTAMINATED SOIL EXCAVATION**

Immediately notify the Owner's Representative if contamination is suspected. If hazardous materials have been encountered, the Owner's Representative will instruct the Contractor to plate the trench and move ahead, beginning a new heading as directed by the Owner.

Coordinate removal of the hazardous materials with the Owner's contaminated soil remediation consultant/contractor (CSRC). Excavate the hazardous materials and place directly into CSRC's trucks. Owner's CSRC will haul away the hazardous material as required by CAL/OSHA and other responsible regulatory agencies.

All costs associated with the coordination, excavation, labor, equipment, tools and training shall be borne by the Contractor as part of the bid item of the original bid. No additional compensation shall be paid for such coordination.



**PART 2 - PRODUCTS**  
(Not Used)

**PART 3 - EXECUTION**  
(Not Used)

**PART 4 - PAYMENT**

Payment for any work done under this Section shall be included in the bid amount for which such Work is appurtenant; no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 01045: EXISTING FACILITIES**

### **PART - 1 GENERAL**

#### **1.1 DESCRIPTION**

This Section includes requirements for connection to and abandonment of existing water facilities.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Trenching, Backfilling, and Compacting: Section 02223
- B. Chlorination of Water Mains for Disinfection: Section 15041
- C. Pressure Testing of Piping: Section 15044
- D. Control and Check Valves: Section 15100

#### **1.3 LOCATION**

Determine in advance the location of all existing pipelines to which connections are made.

### **PART 2 - MATERIALS**

All materials used in making the connection or removing the facility from service shall conform to the applicable Sections of these Specifications.

### **PART 3 - EXECUTION**

#### **3.1 CONNECTION TO EXISTING WATERLINES**

- A. Notification: Give the Owner a minimum of seven working days notice before the time of any proposed shutdown of existing mains or services.
- B. Notice to Proceed: Make connections only in the presence of the Owner's Representative and do not make any connection until the Owner's Representative has given notice to proceed.
- C. Material: Furnish all pipe and materials including as may be required, labor and equipment necessary to make the connections, all required excavation, backfill, pavement replacement, lights, and barricades, water truck, highline hose, and fittings for making the connections. In addition, assist the Owner in alleviating any hardship incurred during the shutdown for connections.

- D. Temporary Work: Where connections are made to existing valves, furnish and install all temporary blocking, steel clamps, shackles, and anchors as required by the Owner's Representative. Replace and adjust valve boxes and covers to the proper grade in accordance with Section 15100, Control and Check Valves.
- E. Dewatering: Dewater existing mains, as required, in the presence of the Owner's Representative.
- F. Leakage at Existing Valves: Leakage through existing water valves of up to 5 gallons per minute (gpm) is considered normal and acceptable performance. Provide all necessary means to remove and dispose of water that enters the excavation and/or hinders performance of the Work from leaking water valves at a rate of up to 5 gpm. Leakage rates exceeding 5 gpm will be considered a changed condition.
- G. Inadequate Progress: If progress is inadequate during the connection operations to complete the connection in the time specified, the Owner's Representative shall order necessary corrective measures. All costs for corrective measures shall be paid solely by the Contractor.
- H. Tapping Sleeves and Valves: Install tapping sleeves and valves in accordance with Section 15100, Control and Check Valves.
- I. Connections: Make connections with as little change as possible in the grade of new main. If the grade of the existing pipe is below that of the new pipeline, deepen a sufficient length of the new line so as to prevent the creation of any high spot or abrupt changes in grade of the new line. Where the grade of the existing pipe is above that of the new pipeline, lay the new line at specified depth, except for the first joint adjacent to the connection, which shall be deflected as necessary to meet the grade of the existing pipe. If sufficient change in direction cannot be obtained by the limited deflection of the first joint, install a fitting of the proper angle. Where the connection creates a high or low spot in the line, install a standard air release or blowoff assembly as directed by the Owner's Representative.
- J. Testing: Do not connect the new pipeline to an existing facility until the new pipeline has successfully passed all pressure and disinfection tests in accordance with Sections 15041, Chlorination of Water Mains for Disinfection, and 15044, Pressure Testing of Piping.

### **3.2 REMOVAL FROM SERVICE OF EXISTING MAINS AND APPURTENANCES**

- A. General: Remove existing mains and appurtenances from service at the locations shown on the Plans or as directed by the Owner's Representative.
- B. Method of Abandonment: Existing pipe and appurtenances may be filled with grout or driller's mud, or removed from the ground, in which case all backfill and repair of surface shall be in accordance with Section 02223, Trenching, Backfilling, and Compacting.
- C. Storage of Removed Material: Removed pipe and appurtenances may be temporarily stockpiled on the site in a location that will not disrupt traffic or be a safety hazard, or it may be delivered to the Owner's yard as directed by the Owner's Representative.
- D. Maintenance of Service: Before excavating for laying mains that are to replace existing pipes and/or services, make proper provisions for the maintenance and continuation of service as directed by the Owner's Representative.
- E. Abandoned Water Services: If the meter box is to be removed from an abandoned water service, remove the service line and corporation stop and plug the saddle. If there is no corporation stop on the service, remove the adapter and install a brass plug in the service saddle. If the meter box is to remain after the water service is abandoned, close and lock the angle meter stop. Remove the meter and customer service valve.
- F. Abandoned Valves: Notify the Owner of intent to abandon valve. The Owner will shut off valve. Remove valve box, lid and riser pipe and backfill with 1½ sack cement slurry to bottom of pavement. Replace PCC/AC pavement in accordance with the City of South Gate Standards.

### **PART 4 – PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid for which such Work is appurtenant thereto, and no additional payment will be made specifically for Work in this Section.

**END OF SECTION**

## **SECTION 01050: SURVEY CONTROL**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes the survey information that the Owner will provide to the Contractor for the items described herein.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE (NOT APPLICABLE)**

#### **1.3 SUBMITTALS (NOT APPLICABLE)**

#### **1.4 CONSTRUCTION STAKING PROVIDED BY OWNER**

The Owner will provide one set of each item listed below, of the construction survey controls for the construction of the facilities, pipelines and appurtenances at no charge to the Contractor:

Prior to construction of the facilities (one move-in):

- A. Elevation reference stake.
- B. Stakes for horizontal location for all tie-in locations, at 25-foot intervals for the pipeline and grade including the location of horizontal and vertical bends, fittings and pipeline appurtenances.

#### **1.5 CONDITIONS/REQUESTS FOR SURVEY STAKING**

Owner-furnished construction staking is subject to the following conditions:

- A. That the request for construction stakes be received in writing at least two working days in advance of staking. Survey requests shall be made in writing on forms provided by the Owner.
- B. That the stakes, reference markers, and other survey points be preserved or the Contractor will be charged for their replacement, and the Contractor shall pay, at its sole cost, any expense resulting from their loss or disturbance. Should the Owner be required to reset construction stakes, the cost for such resetting will be at the then current per diem rate. The charges shall be deducted from the progress payments for the Contractor, for the month in which the surveying work is done by the Owner.
- C. Unless otherwise specified, the construction staking provided by the Owner will be only for those items specified to be constructed or

reconstructed on the Drawings or in these Specifications. Any additional construction stakes required by the Contractor shall be provided and paid for by the Contractor.

- D. Do not proceed with Work until construction stakes, which constitute instructions from the Owner, are provided.

## **1.6 CONTRACTOR'S RESPONSIBILITIES**

Provide any and all additional construction staking to do the Work. Preserve reference points and all other survey points. In case of their loss or destruction, the Contractor shall be liable for and charged with the cost of their replacement and of any expense resulting from their loss or disturbance.

The accuracy of all survey staking not provided by the Owner is the responsibility of the Contractor. However, the Owner has the discretionary right to check the Contractor's stakes, alignments, and grades at any time. Where such discretion is to be exercised by the Owner, the Owner will notify the Contractor of the Owner's intention, stating the time at which the checking will commence. Any part of the Work in progress, the results of which are predicted directly upon the Contractor's stakes, alignments, or grades to be checked, shall be held in abeyance until the Owner has notified the Contractor that the checking has been completed.

Coordinate between the Owner's surveyor and the Contractor's surveyor. Unless otherwise specified, the construction staking provided by the Owner will be only for those items specified to be constructed on the Drawings or in the Specifications. Make timely demands of the Owner for construction staking. Field survey parties will be available only on normal working days and hours. In general, a notice to the Owner of not less than two working days will be required.

## **1.7 SURVEY MONUMENTS**

Do not move survey monuments and property marks or otherwise disturb them until an authorized agent of the agency having jurisdiction over the monuments or property marks setting has witnessed or otherwise referenced their location, and only then in accordance with the requirements of the agency having jurisdiction.

## **PART 2 - PRODUCTS**

(Not Used)

## **PART 3 - EXECUTION**

(Not Used)

#### **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 01092: ABBREVIATIONS**

### **PART 1 – GENERAL**

#### **1.1 SUMMARY**

This Section lists many of the construction industry organizations, professional and technical associations, societies and institutes, and government agencies issuing, promoting, or enforcing standards to which references may be made in the Contract Document, along with the abbreviations commonly used for those references. Also included are certain general requirements for the use of industry standards specified, and for application of the standards in quality control.

#### **1.2 USE OF REFERENCE STANDARDS**

- A. Work specified by reference to the published standard or specification of a government agency, technical association, trade association, professional society or institute, testing agency, or other organization shall conform to or surpass the minimum standards of quality for materials and workmanship established by the designated standard or specification.
- B. Where so specified, products or workmanship shall also conform to the additional prescriptive or performance requirements included within the Contract Document to establish a higher or more stringent standard of quality than that required by the referenced standard.
- C. Where the specific date or issue of the standard is not included with the reference to the standard, the edition, including all amendments published and available on the first published date of the Invitation to Bid, shall apply.
- D. Where two or more standards are specified to establish quality, the product and workmanship shall conform to or surpass the requirements of both.
- E. In case of conflict between referenced standards, the more stringent shall apply.
- F. Copies of Standards:
  - 1. Copies of applicable referenced standards have not been bound in the Contract Documents.
  - 2. Where copies of standards are needed by the Contractor for superintendence and quality control of the work, obtain a copy or copies directly from the publication source and maintain in an orderly manner at the jobsite, available to the Contractor's personnel, Subcontractors, Owner, and Engineer.



- G. Submittals: Submit for approval the requests to use products conforming to printed standards or publications with a different publication date from that effective hereunder. Clearly indicate the changes in product or workmanship quality involved in the proposed change, if any, and reasons for the request.

### **1.3 ABBREVIATIONS**

Abbreviations for Trade Organizations and Government Agencies: Following is a list of construction industry organizations and government agencies to which references may be made in the Contract Document, with abbreviations used.

- |           |  |
|-----------|--|
| 1. AA     | Aluminum Association   |
| 2. AAMA   | Architectural Aluminum Manufacturers' Association                  |
| 3. AASHTO | American Association of State Highway and Transportation Officials |
| 4. ACI    | American Concrete Institute  |
| 5. AFBMA  | Anti-Friction Bearing Manufacturers' Association                   |
| 6. AGA    | American Gas Association   |
| 7. AGMA   | American Gear Manufacturers' Association                           |
| 8. AISC   | American Institute of Steel Construction                           |
| 9. AISI   | American Iron and Steel Institute                                  |
| 10. AITC  | American Institute of Timber Construction                          |
| 11. ALS   | American Lumber Standards  |
| 12. AMCA  | Air Moving and Conditioning Association                            |
| 13. ANSI  | American National Standards Institute                              |
| 14. APA   | American Plywood Association                                       |
| 15. API   | American Petroleum Institute                                       |
| 16. AREA  | American Railway Engineering Association                           |
| 17. ARI   | Air Conditioning and Refrigeration Institute                       |
| 18. ASAE  | American Society of Agricultural Engineers                         |
| 19. ASCE  | American Society of Civil Engineers                                |

20. ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
21. ASME	American Society of Mechanical Engineers
22. ASTM	American Society for Testing and Materials
23. AWI	Architectural Woodwork Institute
24. AWPA	American Wood Preservers' Association
25. AWPB	American Wood Preservers Bureau
26. AWPI	American Wood Preservers' Institute
27. AWS	American Welding Society
28. AWWA	American Water Works Association
29. BHMA	Builders Hardware Manufacturers' Association
30. CBMA	Certified Ballast Manufacturers' Association
31. CDA	Copper Development Association
32. CGA	Compressed Gas Association
33. CISPI	Cast Iron Soil Pipe Institute
34. CMAA	Crane Manufacturers' Association of America
35. CRSI	Concrete Reinforcing Steel Institute
36. FGMA	Flat Glass Marketing Association
37. FM	Factory Mutual
38. Fed. Spec.	Federal Specifications
39. FS	Federal Specification
40. GA	Gypsum Association
41. HI	Hydraulic Institute
42. HMI	Hoist Manufacturers' Institute
43. ICBO	International Conference of Building Officials
44. ICEA	Insulated Cable Engineers' Association

45. IEEE	Institute of Electrical and Electronics Engineers, Inc.
46. IES	Illuminating Engineering Society
47. ISA	Instrument Society of America
48. JIC	Joint Industry Conferences of Hydraulic Manufacturers
49. MIA	Marble Institute of America
50. Mil. Sp.	Military Specification
51. MS	Military Specifications
52. MMA	Monorail Manufacturers' Association
53. NAAMM	National Association of Architectural Metal Manufacturers
54. NBHA	National Builders' Hardware Association
55. NEC	National Electrical Code
56. NEMA	National Electrical Manufacturers' Association
57. NESC	National Electric Safety Code
58. NFPA	National Fire Protection Association
59. NHLA	National Hardwood Lumber Association
60. NLMA	National Lumber Manufacturers' Association
61. NTMA	National Terrazzo and Mosaic Association
62. NWMA	National Woodwork Manufacturers' Association
63. OECI	Overhead Electrical Crane Institute
64. OSHA	Occupational Safety and Health Act (both Federal and State)
65. PEI	Porcelain Enamel Institute
66. PS	Product Standards Section - U.S. Department of Commerce
67. RLM	RLM Standards Institute, Inc.
68. RMA	Rubber Manufacturers' Association
69. SAE	Society of Automotive Engineers

70. SDI	Steel Deck Institute
71. SDI	Steel Door Institute
72. SIGMA	Sealed Insulating Glass Manufacturing Association
73. SJI	Steel Joist Institute
74. SMACNA	Sheet Metal and Air Conditioning Contractors National Association
75. SSPC	Steel Structures Painting Council
76. SWI	Steel Window Institute
77. TEMA	Tubular Exchanger Manufacturers' Association
78. TCA	Tile Council of America
79. UBC	Uniform Building Code
80. UL	Underwriters' Laboratories, Inc.
81. WCLIB	West Coast Lumber Inspection Bureau
82. WWPA	Western Wood Products Association

## **PART 2 -- PRODUCTS**

(Not Used)

## **PART 3 -- EXECUTION**

(Not Used)

## **PART 4 -- PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid for which such Work is appurtenant thereto, and no additional payment will be made specifically for Work in this Section.

**END OF SECTION**

## **SECTION 01150: MEASUREMENT AND PAYMENT**

### **PART 1 – GENERAL**

The Owner reserves the right to negotiate a lump sum price for any Work or additional Work not covered in these specifications. No additional work shall be done without the written authorization of the Owner.

If a lump sum price for performing emergency on-call Work cannot be agreed prior to commencement of the Work, the Engineer may direct in writing that the Work be done on a Time and Materials (T&M) basis. T&M payment for emergency Work will be based on the cumulative direct costs, with allowable markup, in accordance with Section 1.10 Mark-Ups, Overhead and Profit of this Specification Section. If the Engineer determines that such Work is to be done on a T&M basis, the Contractor shall provide all labor, equipment, and materials necessary to complete the Work in a satisfactory manner, within a reasonable amount of time, in accordance with the provisions of the Specifications, Drawings, and/ or directions provided for the T&M Work.

The costs of all T&M Work performed by the Contractor and/or Subcontractor(s), at any level, shall be determined, and payment made, per these requirements.

The Contractor shall notify the Engineer at the beginning of each day when T&M Work is to be performed. The Contractor shall indicate the T&M Work being performed and the personnel involved, including all Work being performed by Subcontractors at any level. Unless otherwise approved by the Engineer, failure to notify the Engineer prior to start of T&M Work shall serve to waive all claims for compensation for that day.

Payment shall be made for the actual direct cost of T&M Work, with the mark-up described above, in accordance with the following:

#### **1.1 LABOR**

- A. All employees of the Contractor or Subcontractor(s) who are directly assigned to the T&M Work and who physically perform Work, up to and including working foremen, may be charged as labor on T&M Work. These costs shall be the actual cost for wages of workers performing the T&M Work at the time the Work is done, plus the labor burden in accordance with this Specification Section.
- B. The Engineer shall determine allowable personnel to perform the T&M Work.
- C. The Engineer shall determine the allowable hours worked by personnel performing the T&M Work.

- D. The use of a labor classification of higher pay grade than necessary to accomplish the Work, and which would increase the direct cost of T&M Work, is not permitted.
- E. Indirect labor costs of the Contractor and/or Subcontractor(s) shall be considered part of overhead and are not allowed as a direct cost.

## **1.2 EQUIPMENT AND TOOLS**

- A. The cost of Contractor-owned equipment or equipment or tools rented or leased shall be limited to hours actually utilized on the T&M Work.
- B. The Engineer shall determine the allowable hours for equipment utilized in T&M Work.
- C. The Engineer shall determine the allowable “stand-by” or “idle” time for equipment utilized in T&M Work.

## **1.3 MATERIALS**

- A. The allowable cost of materials provided for exclusive use in T&M Work shall include the actual cost of the material plus applicable sales tax, freight, and delivery, as substantiated by the original invoice for said materials.
- B. The Engineer shall determine allowable cost of materials incorporated into T&M Work.

## **1.4 SMALL TOOLS, CONSUMABLES, SAFETY EQUIPMENT, INCIDENTAL COSTS**

- A. No payment will be made for the use of tools owned by Contractor or any Subcontractor which have a replacement value of \$500 or less.
- B. No payment will be made for fuel, lubricants, or other maintenance items.
- C. No payment will be made for consumables.
- D. No payment will be made for incidental job burdens such as, but not limited to, personal safety equipment, personal protective equipment, and conformance to CAL OSHA IIPP requirements.
- E. No payment will be made for drinking water, sanitary facilities, or incidentals.

## **1.5 DELIVERY RECEIPTS, BILLS OF LADING**

- A. Submit delivery receipt(s) and/or bills of lading to the Engineer no later than the Work day after the material or rented equipment was delivered to the Work site, unless otherwise approved by the Engineer.
- B. No payment will be made for materials and/or rented equipment for which no delivery receipt(s) and/or bill(s) of lading are submitted.

## **1.6 RENTAL EQUIPMENT AND MATERIAL INVOICES**

Submit invoice(s) for materials, rented equipment, and other allowable expenditures with the request for payment.

## **1.7 T&M SHEETS**

- A. Submit a Daily Report of Time and Material Work to the Engineer on a form approved by the Owner.
- B. The Engineer shall sign T&M sheets for Work acceptably completed.
- C. No payment will be made for any labor, equipment, or material not included a form approved by the Owner and signed by the Engineer. Payment requests submitted on any other forms or formats other than that is approved by the Owner will be denied.
- D. Include all items of labor, equipment, or material for which Contractor requests compensation on the completed days Work, including any appurtenances added to equipment which would increase the basic rate for said equipment.
- E. Submit the T&M sheet(s) to the Engineer for approval by the close of the next work day, unless otherwise approved by the Engineer. Prepare and submit for approval all T&M sheets for Work done by Subcontractor(s) at any tier. The T&M sheet(s) shall be signed by the Contractor when submitted to the Engineer for approval.
- F. Only with prior approval by the Engineer may the Contractor submit Supplemental T&M Sheet(s) for labor, materials, or equipment for which the Contractor requests compensation and failed to list on the original T&M Sheet(s) for the day's work.
- G. Work that cannot be substantiated by a T&M Sheet, approved and signed by the Engineer is ineligible for payment.

## 1.8 BONDS AND INSURANCE

Furnish satisfactory Bonds for Performance and Labor and Material per Article 5.1 of the General Conditions. All costs of furnishing such bonds shall be included in the Bid item it is appurtenant to and no additional payment will be made for those costs.

## 1.9 TIME EXTENSION / IMPACT COSTS

Extensions of time shall be based solely upon the effect of delays to the Work as a whole and shall be determined by the Engineer with final approval of the Engineer.

## 1.10 MARK-UPS, OVERHEAD AND PROFIT

To the direct costs discussed herein, an added lump sum to provide compensation for overhead and profit on T&M work is allowed to the Contractor and all Subcontractor(s) at any tier. The allowance for overhead and profit shall include full compensation for superintendence, insurance premiums, taxes, field office expense, extended overhead, home office overhead, and all other items of expense or cost not included in the cost of labor, materials, or equipment provided for in this Section. The allowance for overhead and profit shall not exceed the following schedule:

	<u>Overhead</u>	<u>Profit</u>
Labor =	10 percent	10 percent
Materials =	10 percent	5 percent
Equipment =	10 percent	5 percent

Additional mark up of five percent (5%) based on the total direct costs, less mark up, of all Subcontractors, at any tier, directly involved in the work, shall be allowed to the Contractor for additional administrative costs.

## 1.11 PAYMENT OF OVERTIME

Overtime Rate: Overtime rate shall be no more than, time and one-half, except for hours worked over twelve (12) in a single work day, Sundays, and Holidays, which are double (2) time.

Overtime will be paid under the following conditions:

- A. If hours worked on the job are more than eight (8) hours during a regular shift. Prior approval of the Owner shall be required for the overtime.



- B. For Work performed outside the working hours, if requested by the Owner to report to Work.
- C. For Work performed outside the working hours on an as needed basis, at the request of the Contractor, subject to approval of the Owner.

#### **1.12 TRAVEL TIME**

For unscheduled Work requested by the Owner, travel time will be paid subject to prior approval by the Owner.

#### **1.13 REQUEST FOR PAYMENT**

- A. Submit the request for payment to the Engineer no later than thirty (30) days following completion of the T&M Work, unless otherwise approved by the Engineer.
- B. No payment will be considered for any labor, equipment, or material not included on T&M sheets signed and approved by the Engineer.
- C. Include in the request for payment the Contractor's request for any extension(s) of time or impact costs(s).
- D. Failure to make request for payment within the required time shall constitute a waiver by the Contractor of all rights and claims for compensation for the changed/extra Work completed, unless otherwise approved by the Engineer.
- E. The Engineer, with final approval of the Engineer, will verify allowable time charges, rates, material, additional bond(s) and/or insurance where applicable, time extensions, and/or impact costs for the Work completed.

### **PART 2 - MATERIALS**

(Not Used)

### **PART 3 - EXECUTION**

(Not Used)

### **PART 4 – PAYMENT**

No payment will be made for any labor, equipment, or material not included on T&M sheets signed and approved by the Engineer. There shall be no interim or partial payments for materials for which the Contractor fails to provide an original invoice.

The Engineer shall determine the final direct cost of Work completed, any allowable time extensions and impact costs associated with T&M Work.

The final costs shall be based on allowable hours and/or materials as per T&M sheets signed by the Contractor and approved by the Engineer.

**END OF SECTION**

## **SECTION 01300: SUBMITTALS**

### **PART 1 - GENERAL**

#### **1.1 WORK INCLUDED**

This Section includes the submittals during construction and submittal procedures.

#### **1.2 SUBMITTALS DURING CONSTRUCTION**

- A. Review, acceptance, or approval of substitutions, schedules, Shop Drawings, lists of materials, and procedures submitted or requested by the Contractor shall not add to the Contract Price, and all additional costs which may result therefrom shall be solely the obligation of the Contractor.
- B. The Owner is not precluded, by virtue of review, acceptance, or approval, from obtaining a credit for construction savings resulting from allowed concessions in the work or materials therefor.
- C. It shall not be the responsibility of the Owner or Owner's Representatives to provide engineering or other services to protect the Contractor from additional costs accruing from such approvals.
- D. After checking and verifying all field measurements, submit to Engineer, in accordance with the schedule for submittals for review, submittals which shall bear a stamp or specific written indication that Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to the review of the submittal. The data shown shall be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to enable the Owner to review the information.
- E. All samples shall have been checked by and accompanied by a specific written indication that Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to the review of the submission and shall be identified clearly as to material, supplier, pertinent data such as catalog numbers and the use for which intended.
- F. Before submission of each submittal, determine and verify all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto and reviewed or coordinated each submittal with other submittals and with the requirements of the Work and the Contract Documents.

- G. At the time of each submission, give to the Engineer specific written notice of each variation that the submittal may have from the requirements of the Contract Documents, and, in addition, make a specific notation on each shop drawing submitted to Owner for review and approval of each such variation.
- H. Owner's review will be only for general conformance with the design concept and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences, or procedures of construction (except where a specific means, method, technique, sequence, or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review of a separate item as such will not indicate review of the assembly in which the item functions.
- I. Engineer's review of submittals shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has in writing called Owner's attention to each such variation at the time of submission and Owner has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the shop drawing or sample approval; nor will any approval by City relieve Contractor from responsibility for having complied with the provisions herein.
- J. Where a shop drawing or sample is required by the Specifications, any related work performed prior to Engineer's review and acceptance of the pertinent submission shall be the sole expense and responsibility of Contractor.
- K. Furnish a mark-up set of drawings indicating "As-Constructed" conditions, which shall reflect actual construction details in the field.

## **PART 2 - PRODUCTS**

(Not Used)

## **PART 3 - EXECUTION**

### **SUBMITTALS PROCEDURES**

- A. Transmit five copies of each submittal to the City or its representative. A specific submittal address and person will be provided to Contractor upon award of the Contract.
- B. Sequentially number the transmittal forms. Resubmittals shall have original number with unique alphabetic suffix.

- C. Identify Project, Contractor, Project Title, description of the submittal and reference to the Specifications Section and Paragraph number being addressed, including products, units and assemblies, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, verifications of products required, field dimensions, adjacent construction work, and coordination of information, is in accordance with the requirements of the Contract Documents.
- E. Submit information documenting the experience of fabricators and manufacturers of materials and equipment to be supplied to the Owner with shop drawing submittals as herein specified.
  - 1. Information for 3 or more projects including the purchaser, size and type of product provided, date of installation, and the name, address and phone number of a contact person knowledgeable of the project shall be included in these submittals. Experience requirements for manufacturers and fabricators shall be in accordance with the Notice to Bidders.
  - 2. The company name, address, phone number and name of a contact person of the local service representative of each manufacturer of equipment to be supplied shall be identified in the shop drawing submittals as herein specified.
  - 3. At a time sufficiently early to allow review as hereinafter specified and to accommodate the rate of construction progress required under the Contract Documents, submit to the Owner for review, complete shop, assembly and layout drawings of the fabricated materials to be furnished and installed under the Contract Documents.
  - 4. Said drawings shall indicate type of steel another metal proposed to be used and five copies shall be submitted prior to manufacture or fabrication of the respective articles.
- F. Transmit submittals in accordance with final schedule of submittals.
- G. Provide space for Owner review stamps.
- H. Revise and resubmit submittals as required; identify all changes made since previous submittal. Revisions shown of said shop, assembly, or layout drawings, equipment drawings or catalogue data necessary to meet the requirements of the Specifications shall not be taken as the basis of claims for extra charges. The Contractor shall accept such revisions or submit others for the Owner to review. When delay is caused by the

resubmission of details, the Contractor shall not be entitled to any damages or extensions of time on account of such delay.

- I. Submittals will be acted upon by the Owner promptly and transmitted to the Contractor not later than 15 working days after receipt by the Owner.
- J. As soon as practicable after acceptance by the Owner of any data or shop, assembly, or layout drawing, make a final submittal with all corrections noted by the Engineer incorporated. Clearly note as being a final submittal of accepted drawings or data. Submit 5 clear legible copies of all information or one clear legible transparent print on vellum of all sheets larger than legal size, 8½"x14". Send final submittals to the Owner. No fabrication or other work shall be performed in advance of the receipt of the final accepted drawings and data. Do not deviate in any way from the design, details, or dimensions shown on said final drawings or data without written consent of the Owner.

#### **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 01311: SCHEDULING AND REPORTING**

### **PART 1 - GENERAL**

This item includes the scheduling and reporting requirements.

### **PART 2 - PRODUCTS**

(Not Used)

### **PART 3 - EXECUTION**

#### **3.1 CONTRACT SCHEDULE OF WORK**

Submit to the City the Contract Schedule of Work in the form of a bar chart within 10 calendar days following the Notice to Proceed. Show various elements of the Work in sufficient detail to identify submittals acquisition, manufacture and delivery of project materials, and the various tasks and elements of construction, cleanup and demobilization.

#### **3.2 REPORTING**

Prepare monthly written narrative reports of the status of the Project and submit to the Owner. Written status reports shall include:

- A. The status of major components (including but not limited to percent complete, amount of time ahead or behind schedule) and an explanation of how the Work will be brought back on schedule if delays have occurred.
- B. The progress made on critical activities indicated on the schedule.
- C. Explanations for any lack of work on activities planned to be performed during the last month.
- D. Explanations for any schedule changes, including changes to the schedule logic or sequence, or to activity duration.
- E. A list and schedule of the critical activities to be performed over the next month.
- F. Any delays encountered during the reporting period.
- G. An assessment of inclement weather delays and impacts to the progress of the Work.

- H. Include any other information pertinent to the status of the Project. The Contractor shall also include any additional status information requested by the Owner.
- I. Include an estimate of the amount and value of the Work done up to that time in the performance of the Contract. Such estimates shall include estimated quantities of unit price items of the Bid and the approved itemized breakdown of any Lump Sum items. Partial estimates shall be subject to adjustments and approval of the City as provided in the General Conditions. Partial estimates and partial payments shall also be subject to deductions and withholding as provided in the General Conditions.

#### **PART 4 – PAYMENT**

Work done under this Section shall be included in the amount bid on the Schedule of Bid Items and no additional payment will be made for this Work.

**END OF SECTION**



## **SECTION 01500: CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

### **PART 1 – GENERAL**

#### **1.1 DUST CONTROL**

Perform continuous dust control operations to prevent construction operations from producing dust in amounts harmful to persons or causing a nuisance to persons living nearby or occupying buildings in the vicinity of the work. Use water or dust preventative to control dust. Sweep or wash streets affected by the Work, as required by the Owner. Supplying and application of water shall be at the sole expense of the Contractor.

#### **1.2 FIRE DANGER**

Minimize fire danger in the vicinity of and adjacent to the site. Provide labor and equipment to protect the surrounding private property from fire damage resulting from the Work. All costs arising from fire or the prevention of fire shall be at the sole expense of the Contractor.

#### **1.3 ACCESS ROADS AND PARKING AREAS**

Make arrangements for parking of employee's vehicles.

#### **1.4 STORAGE YARDS AND STAGING AREAS**

Acquire at Contractor's sole expense site of adequate size and access to facilitate Contractor's own operations, storing and staging of materials, equipment, and personnel. Meet conditions and requirements of Owner. Include expenses related to storage yards and staging areas in the various items bid; no additional payment will be made therefor.

#### **1.5 COVERING OF PIPE ENDS**

Block ends of any stockpiled pipe to prevent entry of humans and animals.

#### **1.6 VIBRATORY EQUIPMENT**

Do not use equipment capable of causing ground shaking.

#### **1.7 NOISE ORDINANCE**

Do not violate local noise ordinances. Determine any noise requirements and adhere to them at no additional cost to the Owner.

## **1.8 SAFETY SPECIALIST, SUPERINTENDENT EMERGENCY PHONE**

The Contractor's safety specialist and the Project Superintendent shall have immediate access to a cellular telephone for emergency purposes (i.e., calls to 911 for primary response by police and fire departments).

## **1.9 USE OF EXPLOSIVES**

Do not use explosives without the written permission of the Owner. No such permission is given at this time.

## **1.10 GUARANTEE**

- A. Guarantee the materials furnished by Contractor and the workmanship used in the construction of all Work called for under these Specifications to be as herein specified or agreed upon, free from injurious defects, and in all respects satisfactory for the required service, for a period of one (1) year as stated in Paragraph 13.6.2 of the General Conditions. Damage or leaks due to "acts of God" or from sabotage or vandalism are specifically excepted from this guarantee.
- B. When defective materials or workmanship is discovered in a pipeline, backfill, or pavement surfacing which requires repairs to be made under this guarantee, do all such work at Contractor's sole expense within five (5) working days after notice of such leaks, breaks, or settlement has been given by the Owner. Should the Contractor fail to repair such leaks or damage within five (5) working days thereafter, or in an emergency demanding immediate attention, the Owner may make the necessary repairs and charge the Contractor with the actual cost of all labor, equipment, and material required.
- C. The required surety bonds shall extend for a period of one year beyond the filing of the Notice of Completion to cover this guarantee.

## **1.11 RECORD DRAWINGS**

- A. Keep one complete set of prints of the approved construction plans, reserved for use as record drawings, on the site at all times. Maintain on these prints a current updated record of all construction changes and variations from the plans, including all underground and surface improvements found or installed in locations other than those indicated on the plans. Properly dimension and locate all changes and variations to the plans to the satisfaction of the Owner. Enter said record information in red. Where a plan does not exist, submit to the Owner an accurate and detailed sketch which shall become a part of the record set.

- B. Prior to final acceptance of the Work, furnish the above specified record drawing prints to the City.

**PART 2 - PRODUCTS**

(Not Used)

**PART 3 - EXECUTION**

(Not Used)

**PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid for which such Work is appurtenant thereto, and no additional payment will be made specifically for Work in this Section.

**END OF SECTION**

## **SECTION 01501: TEMPORARY UTILITIES**

### **PART 1 - GENERAL**

#### **1.1 TEMPORARY WATER**

- A. Obtain water and pay all costs associated with obtaining a temporary water supply to conduct the Work at Contractor's sole expense. All water requirements costs shall be included in the Contractor's bid.
- B. Install temporary pipe, valves, and other appurtenances necessary to convey water to the sites from any temporary water service connection obtained by the Contractor.
- C. The Owner will provide a construction meter at the nearest fire hydrant upon request. Water can be obtained from the City by calling Water Services at (323) 357-5814 to make application for temporary water service. Charges for this water service will be at the standard established rates of the City.
- D. Do not use water from any fire hydrant unless said water first passes through a meter provided for the Contractor's use. Furthermore, do not, for any purpose, operate any valve in the water system, but request any necessary valve operation be done by authorized City personnel.

#### **1.2 TEMPORARY ELECTRIC POWER**

- A. Electric power is not available at the sites. The Contractor shall meet its own power requirements.
- B. The cost of power shall be included in the appropriate bid items to which it is appurtenant and shall include full compensation for furnishing all labor, materials, tools, and equipment required to obtain and distribute power for construction purposes.

#### **1.3 SANITARY FACILITIES**

Provide and maintain sanitary facilities for Contractor's employees and subcontractors' employees that will comply with all Laws and Regulations. The cost of portable toilets and other appurtenances shall be included in Contractor's bid.

#### **1.4 TELEPHONE**

Telephone service shall be established at the sites prior to conducting Work and until all construction Work is complete. The purpose of this service is to allow the Owner and the Engineer to communicate with the Contractor's representatives or the Engineer's on-site personnel. A temporary telephone service or mobile telephone service are acceptable alternatives. The telephone shall be audible/visual to the field crew at all times and the number shall be provided to Owner and the Engineer. Owner and Engineer shall have unrestricted access to the telephone. All telephone costs, other than charges for toll calls originated by the Owner or Engineer, shall be included as a part of the Contractor's mobilization bid. Toll calls originated by Owner or Engineer shall be billed to the City by the Contractor at the rates charged to it by the telephone company.

#### **PART 2 - MATERIALS**

(Not Used)

#### **PART 3 - EXECUTION**

(Not Used)

#### **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 01570: TRAFFIC REGULATION**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes procedures for traffic regulation during construction.

#### **1.2 STANDARD SPECIFICATIONS AND REFERENCES**

Wherever reference is made to the State Specifications and Plans, such reference shall mean the State of California, Department of Transportation (Caltrans) Standard Specifications and Plans, latest edition. Traffic control devices and signing used for handling traffic and public convenience shall conform to the latest edition of the "Work Area Traffic Control Handbook" (WATCH), published by BNI Books, Division of Building News, Incorporated, 3055 Overland Avenue, Los Angeles, California 90034.

#### **1.3 SUBMITTAL**

Prepare a traffic control plan signed and sealed by a California licensed civil or traffic engineer, and submit to the City of South Gate Public Works Department, Traffic Control Division, for approval, not less than five working days prior to the start of operations involving or requiring traffic control. No Work involving or requiring traffic control shall begin until the City has approved a traffic control plan.

### **PART 2 - MATERIALS**

(Not Used)

### **PART 3 - EXECUTION**

#### **3.1 GENERAL**

- A. Provide safe and continuous passage for pedestrian and vehicular traffic at all times.
- B. Furnish, install, construct, maintain, and remove signs, barricades, fences, miscellaneous traffic devices, flagmen, drainage facilities, paving, and such other items and services as are necessary to adequately safeguard the public from hazard and inconvenience. All such work shall comply with the approved Traffic Control Plan Laws and Regulations of authorities with jurisdiction over the public roads in which the construction takes place and over which detoured traffic is routed by the Contractor.

- C. Maintain and keep all temporary traffic control devices in good repair and working order until no longer required, at the Contractor's sole expense. Also pay the cost of replacing such devices that are lost or damaged, to such an extent as to require replacement, regardless of the cause of such loss or damage.
- D. Prior to the start of construction operations, notify the City, giving the expected starting date and completion date. Notifications on progress to the emergency service agencies shall be in accordance with procedures and channels to be established at the pre-construction meeting.
- E. Provide a minimum of 48 hours prior notice to the appropriated Agency for any Work that may affect signal loops, equipment, or devices. In the event that any underground utilities, traffic devices, pipes, or conduits are damaged and require emergency repair by the appropriate Agency, all costs incurred by that Agency in making such repairs, plus 25 percent for administration costs, shall be paid solely by the Contractor.
- F. Post temporary "No Parking – Tow Away" signs 48 hours prior to work in areas where parking is normally permitted. The police department shall be notified 48 hours prior to the posting of any temporary parking restrictions in the City.
- G. Maintain a 24-hour emergency service to remove, install, relocate, and maintain warning devices and furnish to the authority having jurisdiction the names and telephone numbers of the person(s) responsible for this emergency service. The emergency response service shall be through cellular phones in order to minimize response time to a construction-related emergency. In the event these persons do not promptly respond or the authority having jurisdiction deems it necessary to call out other forces to accomplish emergency service, the Contractor shall pay the cost of such emergency service at no additional cost to the Owner.
- H. In the event the Engineer finds the Work site to be improperly barricaded or delineated and the Contractor is either unavailable or unresponsive to requests for improvement, the Owner will furnish and set up barricades and delineators as required. The Owner will charge Five Hundred Dollars (\$500) to the Contractor for each setup event, plus a Five Dollars (\$5) "use fee" for each barricade or delineator for each day's or partial day's use until such barricades or delineators are returned in good condition by Contractor to the Owner's Operations Services Center.

After devices have been installed, at Contractor's sole expense, maintain and keep them in good repair and working order until no longer required. Also pay the cost of replacing such devices that are lost or damaged, regardless of the cause of such loss or damage.

### **3.2 TRAFFIC CONTROL DEVICES AND SIGNS**

- A. Traffic control devices shall conform to the State Standard Plans and Specifications. Construction signs shall conform to the latest edition of the State of California Sign Specification Sheets.
- B. The placement of construction signing, barricades, and other traffic control devices used for handling traffic and public convenience shall conform to the WATCH.
- C. Signs shall be reflectorized when they are used during hours of darkness. Barricades shall be equipped with flashers if in place during hours of darkness.

### **3.3 TEMPORARY STEEL PLATE BRIDGING, WITH A NONSKID SURFACE**

When backfilling operations of an excavation in the traveled way, whether transverse or longitudinal, cannot be properly completed within a workday, provide steel plate bridging with a nonskid surface and shoring to preserve unobstructed traffic flow. In such cases, the following conditions shall apply:

- A. Steel plates used for bridging shall extend a minimum of 12 inches beyond the edges of the trench.
- B. Install steel plate bridging to operate with minimum noise.
- C. Shore the trench to support the bridging and traffic loads.
- D. Use temporary paving with cold asphalt concrete to feather the edges of the plates if plate installation by Method 2 is used.
- E. Secure bridging against displacement by using adjustable cleats, shims, or other devices.
- F. Attach approach plate(s) and ending plate (if longitudinal placement) to the roadway by a minimum of two dowels predrilled into the corners of the plate and drilled 2 inches into the pavement. Butt subsequent plates to each other. Compact fine graded asphalt concrete to form ramps, maximum slope 8.5% with a minimum 12-inch taper to cover all edges of the steel plates. When steel plates are removed, backfill the dowel holes in the pavement with either graded fines of asphalt concrete mix or concrete slurry.
- G. Maintain the steel plates, shoring, and asphalt concrete ramps.
- H. Leave plates in place for no more than two days before completion of the pipe trench backfill and pavement placement.



- I. The following table shows the required minimal thickness of steel plate bridging required for a given trench width:

<b>Trench Width (feet)</b>	<b>Minimum Plate Thickness (inches)</b>
1	1/2
1-1/2	3/4
2	7/8
3	1
4	1-1/4

NOTE: For spans greater than 4 feet, prepare a structural design by a registered civil engineer and submit to the Owner for review.

### **3.4 VEHICULAR TRAFFIC CONTROL**

- A. Comply with the general requirements of the referenced Standard Specifications, the WATCH, the approved Traffic Control Plan, the Drawings and the following special requirements, unless otherwise approved or revised by the Owner.

Where traffic is directed around or adjacent to the site, provide, install, maintain and remove delineators, barricades, lights, signs, and other devices required for the control of traffic. The Owner reserves the right to direct the Contractor to relocate traffic control devices.

Use temporary concrete barriers (K-rail) where a traffic line is within five feet of an excavation more than 18 inches deep. Remove K-rail at the end of each day in areas that require that all lanes of traffic be open at the end of each day.

Mark traffic lane transitions from permanent lanes to construction zone patterns in accordance with the requirements for then normal posted speed limit and the approved Traffic Control Plans.

- B. Accomplish construction in phases by detouring traffic from its normal patterns along the route as approved to form the site. Remove traffic control equipment and materials for one stage of construction prior to the installation of equipment and materials for the subsequent work zone area.
- C. Unless otherwise shown in the Drawings, contract documents, or allowed by the agency within whose jurisdiction the work is being performed, limit all construction activities to 7:30 a.m. Monday to 4 p.m. Friday, and return all roadways and sidewalks to unrestricted vehicle and pedestrian usage when construction is not under way.

### **3.5 PEDESTRIAN TRAFFIC CONTROL**

- A. Unless otherwise shown in the Drawings, maintain and delineate a minimum of one 4-foot-wide pedestrian walkway along each public street at all times during construction. Maintain existing pedestrian accesses at intersections at all times. When existing crosswalks are blocked by construction activity, install signs directing pedestrian traffic to the nearest alternative crosswalk.
- B. Erect a fence or provide other means to preclude unauthorized entry to any open excavation during all nonworking hours on a 24-hour basis including weekends and holidays. Said fence shall be a minimum of 7 feet high around the entire excavation, consisting of a minimum of 9-gauge chain link fence fabric and shall be sturdy enough to prohibit toppling by children or adults. There shall be no openings under the wire large enough for any child to crawl through. Lock any gates if no adult is in attendance. Place warning signs spaced on 50-foot centers on the outside of the fence with the statement "DEEP HOLE DANGER."

### **3.6 ACCESS TO ADJACENT PROPERTIES**

Maintain reasonable access from public streets to all adjacent properties at all times during the Work. Prior to restricting normal access from public streets to adjacent properties, notify each resident, informing him or her of the nature of the access restriction, the approximate duration of the restriction, and the best alternate access route for that particular property.

### **3.7 PERMANENT TRAFFIC CONTROL DEVICES**

- A. Existing permanent traffic control signs and devices shall remain in effective operation unless a substitute operation is arranged for and approved under the traffic control plan. Traffic signal restoration work shall be in accordance with the referenced Standard Specifications and Special Provisions.
- B. Traffic control detection loops have not been shown in the Drawings. Completely replace traffic control detection loops which are cut, removed, or otherwise disturbed for pipeline construction to the original position or as directed by the appropriate Agency. Perform all loop replacement work in conformance with the Standard Specifications and Special Provisions.
- C. Replace traffic signal conduits damaged to the nearest pull box, including new wire, back to the terminal, and/or back to the signal controller to the satisfaction of the appropriate Agency before proceeding to the next construction phase. Splicing is not permitted.

Report all such damage immediately to the appropriate Agency.

- D. Do temporary restriping as required by the Owner. Remove any temporary painted striping required for traffic control during construction by wet sandblasting or other method approved the appropriate Agency. Temporary striping includes any striping required on any pavement replaced prior to the final surface course. Reinstall all permanent striping and markings in their original location. Replace any damaged or obliterated raised pavement markers in accordance with City Standards.

Payment for the furnishing, placing and removal of permanent and temporary striping and markings shall be included in the price for which work is appurtenant and no additional payment will be made therefore.

#### **PART 4 – PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum bid for this item of Work.

**END OF SECTION**

## **SECTION 01700: CLEANING DURING CONSTRUCTION & FINAL CLEANING**

### **PART 1 - GENERAL**

#### **1.1 GENERAL**

- A. Section includes cleaning during construction and final cleaning on completion of the Work.
- B. At all times maintain areas covered by the Contract Documents and adjacent properties and public access roads free from accumulations of waste, debris, and rubbish caused by Contractor's operations.
- C. Conduct cleaning and disposal operations to comply with Laws and Regulations. Do not burn or bury rubbish and waste materials on Project site. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains. Do not dispose of wastes into streams or waterways.
- D. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

#### **1.2 CLEANING DURING CONSTRUCTION**

- A. During execution of Work, clean site, adjacent properties, and public access roads and dispose of waste materials, debris, and rubbish to assure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- C. Provide containers for collection and disposal of waste materials, debris, and rubbish.
- D. Cover or wet loads of excavated material leaving the site or of material being imported to prevent blowing dust. Clean the public access roads to the site of any material falling from the haul trucks.

#### **1.3 FINAL CLEANING**

- A. At the completion of Work and immediately prior to final inspection, clean the entire Project as follows.
- B. Clean, sweep, wash, and polish all Work and all equipment including finishes.

- C. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior finished surfaces; polish surfaces so designated.
- D. Repair, patch, and touch up marred surfaces to specified finish to match adjacent surfaces.
- E. Broom clean paved surfaces; rake clean other surfaces of grounds.
- F. Remove all temporary structures and all materials, equipment, and appurtenances not required as a part of, or appurtenant to, the completed Work.

## **PART 2 - MATERIALS**

(Not Used)

## **PART 3 - EXECUTION**

(Not Used)

## **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid for which such Work is appurtenant thereto, and no additional payment will be made specifically for Work in this Section.

**END OF SECTION**

## **SECTION 01720: RECORD DRAWINGS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

Keep accurate and legible records on a single set of full size, blueline prints of the Drawings. Make Record Drawings available for review by the City in Contractor's field office. Maintain Record Drawings on an up-to-date basis with all entries reviewed by Owner's Representative. Protect the Record Drawings from damage or loss.

#### **1.2 DETAILED REQUIREMENTS**

Provide Record Drawings which shall clearly show all differences between the Drawings and as-installed for all concealed construction, as well as construction added to the Contract which is not indicated on the Drawings.

Concealed shall mean construction installed underground or in an area which cannot be readily inspected by use of access panels, inspection plates or other removable features.

Show all changes in the Work, or Work added, on the Record Drawings in a contrasting color.

In showing changes in the Work, or added Work, use the same legends that are used on the Drawings. Indicate exact locations by dimensions and exact elevations. Give dimensions from a permanent point.

Record, by marking on the Drawings, all changes in the Work which occur during construction including adding approved change orders.

Show locations by key dimensions, depths, and elevations of all underground lines, conduit runs, sensor lines, valves, capped ends, branch fittings, pull boxes, etc., whether pre-existing or part of the Work. Show unanticipated subsurface conditions.

Record information on how to maintain and/or service concealed Work.

Make a record of finalized hydraulic and electrical equipment control settings in the tables and spaces provided on the Drawings. If tables have not been provided, the Contractor shall add suitable tables to the Record Drawings.

## **PART 2 - PRODUCTS**

(Not used)

## **PART 3 - EXECUTION**

Deliver the marked Record Drawings to the City prior to acceptance of the Work.

## **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 02050: REMOVAL OF EXISTING FACILITIES**

### **PART I - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes demolition, removal, replacement, and abandonment of existing pipelines and other facilities interfering with construction of new facilities.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Refer to the following Specification Sections for additional requirements:

- A. Section 02222: Protecting Existing Underground Utilities
- B. Section 02223: Trenching, Backfilling and Compacting

#### **1.3 SUBMITTALS**

Submit shop drawings for new pipelines and connections to existing pipelines.

Sand for filling abandoned piping shall be in accordance with Section 02223, Trenching, Backfilling and Compacting.

Submit supporting calculations for crossing of critical existing utilities per Section 02222, Protecting Existing Underground Utilities.

### **PART 2 - MATERIALS**

#### **2.1 GENERAL**

Perform removal, replacement, abandonment, and demolition work in accordance with these Specifications and as shown on the drawings. Prepare remaining surfaces to receive new scheduled and specified materials and finishes or to match materials and finishes of adjacent surfaces if none are specified or shown on the drawings.

#### **2.2 REMOVAL AND SALVAGING**

Remove piping and other facilities as shown on the drawings or specified herein. Materials and equipment salvaged from the Project site are the property of the Owner. Unless designated on the construction drawings, materials and equipment to be removed shall become the property of the Contractor and, in such case, remove such materials and equipment from the Project site. Salvaged material and equipment designated by the drawings to become the property of the Owner shall be delivered by the Contractor to a laydown area or



areas within the Project site, as determined by the Owner or to the City's Operations yard.

### **2.3 REPLACEMENT**

Replace, remove or abandon piping with new piping in locations as shown on the Drawings.

### **2.4 ABANDON**

- A. Abandon in place piping shown on the Drawings.
- B. Pipes to be abandoned shall be completely drained of fluid, and completely filled with sand. Properly dispose of all liquids removed from pipeline. Pipes already abandoned in place which are not shown to be removed as part of this Work shall be plugged as shown on the drawings, at the location where existing abandoned pipe is to be removed as part of this Work.

### **2.5 DEMOLITION**

- A. Remove, alter, salvage and dispose of existing structures, boxes, pipes, and other items as specified herein or indicated on the drawings. Remove and dispose of all portions of these items that interfere with the Work. Protect existing facilities that do not directly interfere with the Work unless otherwise shown on the drawings to be abandoned or removed.
- B. Remove facilities to be demolished in their entirety and dispose of offsite including all appurtenances as shown on the drawings or as specified herein. Backfill and compact all site areas disturbed by demolition work with earth backfill material in accordance with Section 02223, Trenching, Backfilling and Compacting.
- C. Perform the Work in a manner that will not damage parts of the structure not intended to be removed or to be salvaged for the City. If, in the opinion of the Engineer, the method of demolition used may endanger or damage parts of the structure or affect the satisfactory operation of the facilities, promptly change the method when so notified by the Engineer. No blasting is permitted.
- D. All equipment, material, and piping, except as specified to be salvaged for the City, or removed by others, within the limits of the demolition, excavations, and backfills, shall become the property of the Contractor and shall be removed by the Contractor from the Project site.
- E. Do not reuse material salvaged from demolition work on this Project, except as specifically shown.

### **PART 3 - EXECUTION**

(Not Used)

### **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump-sum or unit-price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 02060: TEMPORARY LINE STOP DEVICES**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section includes materials and installation of temporary line stop devices in existing water laterals and water mains in order to isolate portions of the existing water laterals and water mains without shutting off water service during construction of new water lines.

### **PART 2 - MATERIALS**

#### **2.1 GENERAL**

Provide manually operated temporary line stop devices complete with tapping sleeve, temporary tapping valve, and line stopping device, as required for installation and operation.

#### **2.2 LINE STOP DEVICE**

Provide line stop devices that are specifically designed as a means of plugging a water pipe. Line stop devices shall provide a watertight seal in fragile, out of round, or cement mortar lined pipes. Line stop devices shall be designed to mount on the tapping valve of a tapped water line and shall be operated by inserting a stopping head through the opened tapping valve and rotating the head in the water line until the water line has been sealed tightly shut. Line stop devices shall be as manufactured by International Flow Technologies, Hydra-Stop, or approved equal.

#### **2.3 TAPPING SLEEVES**

Tapping sleeves shall conform to the requirements described in Section 15100, Control and Check Valves.

#### **2.4 TAPPING VALVES**

Tapping valves shall conform to the requirements described in Section 15100, Control and Check Valves.

## **PART 3 - EXECUTION**

### **3.1 LINE STOP DEVICE INSTALLATION**

Install line stop device in accordance with the manufacturer's instructions. Thoroughly clean flange on tapping valve with a wire brush to provide a smooth surface for gasket. Support the line stop device as necessary to avoid placing stress on the tapping sleeve, tapping valve, and water pipe.

### **3.2 TAPPING SLEEVE INSTALLATION**

Install tapping sleeves in conformance to the requirements described in Section 15100, Control and Check Valves.

### **3.3 TAPPING VALVE INSTALLATION**

Install tapping valves in conformance to the requirements described in Section 15100, Control and Check Valves.

### **3.4 THRUST RESTRAINT**

Provide adequate thrust restraint for tapping valve and line stop to prevent movement and leakage of valve or line stop or connections with valve or line stop in open or closed position. Thrust restraint shall be constructed of concrete, wood, or steel shoring, or bracing as necessary. Install, maintain, and remove thrust restraint for valve for the duration that the valve and line stop is in place.

### **3.5 VALVE AND LINE STOP LEAKAGE TESTING**

Visually observe valve and line stop for leakage following installation.

### **3.6 TEMPORARY LINE STOP DEVICE REMOVAL**

Following completion of the work to install, test, and place into service the new water main, remove all tapping sleeves, tapping valves, fittings, line stop devices, thrust restraint and connection hardware used for installation of the temporary line stop device. Perform backfill, surface repair, and pavement restoration as necessary in accordance with the requirements of Section 02223, Trenching, Backfilling, and Compacting and Section 02513, Asphalt Concrete Paving.

### **3.7 TRAFFIC CONTROL AND ACCESS**

Provide and maintain traffic control and access at the location of each line stop during installation, use, and removal of the line stop in accordance with the traffic control plan and Section 01570, Traffic Regulation.

## **PART 4 - PAYMENT**

The unit price bid for installation of temporary line stop devices includes full compensation for furnishing the labor, materials, tools and equipment and doing all Work involved to complete the line stop installation, provide traffic control, and remove the line stop and all appurtenances.

**END OF SECTION**

## **SECTION 02100: MOBILIZATION/DEMobilIZATION/CLEANUP**

### **PART 1 - GENERAL**

#### **1.1 WORK INCLUDED**

This Section includes the Work necessary to mobilize, demobilize, and clean up the Project sites(s).

### **PART 2 - PRODUCTS**

#### **2.1 GENERAL**

Provide all temporary and permanent materials, equipment, and labor required to accomplish the Work as specified.

#### **2.2 SECURITY FENCE**

- A. If requested by the Owner, construct security fences for safety or the protection of materials, tools, and equipment of the Contractor and lower-tier subcontractors. At completion of the Work, remove fence from the sites and restore the area. The security fence(s) shall be constructed at the sole expense of the Contractor.
- B. Provide access at any time and any necessary keys to the Engineer.

#### **2.3 PARKING FACILITIES**

Provide parking facilities for personnel working at the sites.

### **PART 3 - EXECUTION**

#### **3.1 CONSTRUCTION LAYOUT**

- A. Set up construction facilities in a neat and orderly manner within designated area at location of choice. Accomplish all required Work in accordance with applicable portions of these Specifications. Confine operations to work area shown.
- B. Some obstructions may not be shown. The removal and replacement of minor obstructions such as electrical conduits, water piping, waste piping, and similar items shall be anticipated and accomplished, even though not shown or specifically mentioned, at contractor's sole cost.

- C. Major obstructions encountered that are not shown on the Drawings, and could not have been foreseen by visual inspection of the site prior to bidding, shall immediately be brought to the attention of the Engineer. The Engineer will make a determination for proceeding with the Work.

### **3.2 CONTAMINATION PRECAUTIONS**

Avoid contamination of the sites. Do not dump waste oil, rubbish, or other similar materials on the ground.

### **3.3 CLEANUP OF CONSTRUCTION AREAS**

- A. During execution of the Work, the Contractor shall daily clean the sites, adjacent properties, and public access roads and dispose of waste materials, debris, and rubbish to assure that grounds, and public and private properties are maintained free from accumulations of waste materials and rubbish. Daily cleanup shall be performed and completed near end of workday. Contractor shall provide containers for collection and disposal of waste materials, rubbish, and debris.
- B. Upon completion of rehabilitation, remove from the sites all rehabilitation and related equipment, and all debris, unused materials, temporary construction buildings, and other miscellaneous items resulting from or used in the operations. Replace or repair any facility that has been damaged during the construction Work. Restore the sites as nearly as possible to its original condition.
- C. Remove all utility identification and construction-related marking to the satisfaction of the Engineer after completion of Work or when requested by Owner.

## **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

Any extension of Contract time that may be granted by the Owner will not of itself constitute a claim for additional payment for the Work under this Section.

**END OF SECTION**

## **SECTION 02140: DEWATERING**

### **PART I - GENERAL**

#### **1.1 DESCRIPTION**

Provide all labor, equipment, materials and perform all Work of design, construction, operation and maintenance of effective dewatering system(s) to assure a safe and dewatered condition of all cut-and-cover, jacking and receiving pits, and areas on which the Work of this Contract will be performed. Continue operation of systems as required to complete the Contract Work and to protect adjacent property or construction until danger of damage resulting from rise or fall of groundwater and/or inflow of surface water is precluded. Remove or relocate equipment when no longer required, or as approved well-points and like items may be abandoned in place in accordance with all applicable local, City, County, State and Federal requirements.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Refer to the following Specification Sections for additional requirements:

- A. Section 02222: Protecting Existing Underground Utilities
- B. Section 02223: Trenching, Backfilling and Compacting

#### **1.3 QUALITY ASSURANCE/WARRANTY**

Qualifications. Furnish the services of an experienced, qualified, and equipped Dewatering Subcontractor to design and operate the dewatering system(s) required for the Work. In lieu of the above, implement the dewatering in accordance with a system approved by City and designed by a Civil Engineer who is registered in the State of California and who has proven experience in this type of work.

#### **1.4 SUBMITTAL**

Submit for approval, shop drawings and data showing the intended work plan for dewatering operations. Include locations and capabilities of dewatering wells, well points, pumps, sumps, collection and discharge lines, standby units, water disposal methods, monitoring and settlement measuring equipment, and data collection and dissemination procedures. Submit not less than 30 days prior to start of dewatering.



## **1.5 ALTERNATIVES**

Groundwater may be high, seasonally variable and subject to tidal fluctuations. Dewatering systems shall effectively intercept and remove water from the surrounding strata and thus prevent its entry into the excavation. The employment of available alternatives to achieve this objective may be required. Do not place reliance solely on sheeting to protect Work areas; supplement sheeting with dewatering. The use of a system of interlocking sheet piling with braces, walers, and struts, or other means which may be suitable, will be permitted. Trench boxes, tie-backs and soil anchors are not allowed.

## **1.6 PERMIT REQUIREMENTS**

Obtain an NPDES Permit through the Regional Water Quality Control Board, which regulates the discharge of construction dewatering material into the Alamos Bay. Comply with these permit conditions, and all other agency permit conditions that may apply to this Work such as the City's existing NPDES Permit. Allow ample time in the construction schedule for obtaining the NPDES Permit.

## **PART 2 – PRODUCTS**

### **COMPONENTS OF THE DEWATERING SYSTEM**

Provide units of standard manufacture and in good working order. Unserviceable parts and equipment shall be removed from the jobsite. Major equipment for which repair parts are unavailable from local suppliers shall be considered obsolete and therefore not acceptable.

Furnish and maintain all materials, tools, equipment, facilities and services as required for providing the necessary dewatering work and facilities. Dewatering may include the use of well points, sump pumps, temporary pipeline for water disposal, rock or gravel placement, and other means, as approved by the Owner.

Provide sufficient equipment and machinery in good working condition and have available, at all times, competent workmen for the operation of the pumping equipment. Keep adequate standby equipment available at all times to insure efficient dewatering and maintenance of dewatering operation during power failure.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Coordination: Lay out and install dewatering installations beyond the limits of the permanent works. Avoid interference with access or other necessary activities.
- B. Barricades, Shelters, and Safety: Provide protections for vital parts from accidental damage, and erect signs and barricades to isolate hazardous areas.

### **3.2 PERFORMANCE**

- A. Dewatering: Perform dewatering operations as required so all underground and below-grade Work is performed or installed in dry excavations, in accordance with recommendations set forth in Section 02223, Trenching, Backfilling and Compacting. Maintain dewatering systems in continuous operation until the involved Work is completed, including the placing and compaction of backfill materials.
- B. Protection of Existing Facilities: Contractor shall provide standby equipment of sufficient size and capacity to insure continuous operation of the dewatering systems. Where any sloped excavation infringes on or potentially endangers any existing facilities or structures, provide shoring, sheeting, and bracing according to shop drawings and calculations signed and stamped by a Structural or Civil Engineer registered in the state of California. File a copy of such plans and calculations with the City for record purposes. At Contractor's expense and to Owner's satisfaction, repair and make good all damage or settlement to the foundation or other portion of any new or any existing facilities or structures caused by permanent or temporary failure or operation of the dewatering or by failure to maintain the existing groundwater level outside the dewatering areas.
- C. Drainage: During the life of this Contract, provide and maintain ample means to promptly and effectively remove water from all areas of Work, to prevent the entry of harmful quantities of water into the excavations and to dispose of the water removed. Avoid environmental damage and nuisance.
- D. Removal: Remove equipment when no longer required for dewatering or water controlling operations. Maintain operation of monitoring and settlement measurement systems until their removal is approved. To the extent approved, well points and like items may be abandoned in place, otherwise remove all temporary works, dewatering and/or recharging facilities in a manner satisfactory to the Owner.

- E. Dewater to a minimum of 2 feet below bottom of excavation and/or Work zone.

### **3.3 TESTING AND FIELD QUALITY CONTROL**

Observe and record the elevation of the groundwater during the period that the dewatering system is in operation.

### **3.4 REPAIR AND CLEANUP**

- A. The dewatering system can be removed when surface water or ground water is no longer encountered in the Work or when the requirements of this Section are met.
- B. Replace or repair any defective equipment or system components prior to commencing construction operations to ensure all dewatering requirements are adhered to.

## **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump-sum or unit-price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 02220: STRUCTURE EARTHWORK**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes excavation, backfilling, materials, testing, and shoring for underground structures including tank foundation.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Submittals, Section 01300

Trenching, Backfilling, and Compacting: Section 02223

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with the requirements of Section 01300, Shop Drawing Submittals. The following submittals are required:

- A. Drawings of excavation, sloping, and shoring, sheeting or bracing for worker protection in accordance with the General Provisions.
- B. Six copies of a report from a testing laboratory verifying that gravel base and structural backfill conforms to the specified gradations and characteristics.
- C. Test reports on borrow material.
- D. Other tests and material reports as required.

#### **1.4 PROTECTION OF EXISTING UTILITIES AND FACILITIES**

- A. General: Care for and protect all existing sewer pipelines, water pipelines, gas mains, storm drains, culverts, electrical conduit, or other facilities and structures that may be encountered in or near the area of Work.
- B. Notification: Notify each agency having jurisdiction over the Work and make arrangements for locating each agency's facilities prior to beginning construction.
- C. Damage: In the event of damage to any existing facilities during the progress of the Work due to the failure of the Contractor to exercise the proper precautions, pay the cost of all repairs and protection to said facilities, at Contractor's sole expense. The Contractor's Work may be stopped until repair operations are complete without cost to the Owner.

## 1.5 PROTECTION OF LANDSCAPING

Protect all trees, shrubs, fences, and other landscape items adjacent to or within the work area, unless directed otherwise on the Drawings. In the event of damage to landscape items, replace the damaged items in a manner satisfactory to the Owner.

## PART 2 - MATERIALS

### 2.1 DEFINITION OF ZONES

- A. Pavement and Street Zones: Pavement and street zones shall be as defined in Section 02223, Trenching, Backfilling and Compacting.
- B. Upper Backfill Zone: The upper backfill zone is defined as the backfill to the full width of the excavation from the top of the structure to the bottom of the street zone in paved areas or to the finished surface in unpaved areas.
- C. Structural Backfill Zone: The structural backfill zone is defined as backfill from the top of the structure to the bottom of the excavation, extending the full width of the excavation.

### 2.2 NATIVE EARTH BACKFILL-UPPER BACKFILL ZONE

Excavate native earth backfill fine grained non-organic materials free from peat, roots, debris, and rocks larger than 3 inches, and which can be compacted to the specified relative compaction.

### 2.3 STRUCTURAL BACKFILL - STRUCTURAL BACKFILL ZONE

Structural backfill materials shall consist of hard, durable, and clean sand, gravel, or crushed stone which is free of organic material, clay balls, and other deleterious substances, and shall have the following gradation:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
2 inches	100
1-1/2 inches	95 to 100
3/4 inch	50 to 100
3/8 inch	15 to 55
No. 4	0 to 25
No. 8	0 to 5
No. 200	0 to 3

## **2.4 CRUSHED AGGREGATE BASE**

Crushed aggregate base shall be as specified in Section 200-2.2 of the Standard Specifications. Durability index shall be at least 40 per California Test Method No. 229.

## **2.5 WATER FOR COMPACTION**

Water used to assist in compaction shall conform to Section 02223, Trenching, Backfilling, and Compacting.

# **PART 3 - EXECUTION**

## **3.1 TESTING FOR COMPACTION**

Testing for compaction shall conform to Section 02223, Trenching, Backfilling, and Compacting.

## **3.2 COMPACTION REQUIREMENTS**

- A. Backfill in Street Zone: 95% relative compaction.
- B. Upper Backfill Zone: 90% relative compaction.
- C. Structural Backfill Zone: 90% relative compaction.
- D. Crushed Rock Base: 80% relative density.

## **3.3 DEWATERING**

- A. General: Dewatering operations shall continuously remove and dispose of all water entering the excavation during construction of the structure and all backfill operations. Dispose of water in a manner to prevent damage to adjacent property and pipe trenches in conformance with all local regulations. Do not allow water to rise in the excavation until backfilling around and above the structure is completed to the finish grade or street zone, as applicable.
- B. Notification: Notify the Owner 48 hours prior to commencement of dewatering operations. Methods employed shall be in conformance with the Owner's existing NPDES permit, a copy of which is available at the office of the Owner.

### 3.4 **STRUCTURE EXCAVATION**

- A. **Removal of Material:** Structure excavation shall include the removal of all material necessary for the construction of underground structures and foundations.
- B. **Clearance:** Unless noted otherwise on the Drawings, the sides of excavations for structures shall be sufficient to leave at least a 2-foot clearance, as measured from the extreme outside of formwork or the structure. Excavation side slopes shall be as specified in Section 3.5.
- C. **Overdepth Excavations:** Correct overdepth excavations by backfilling with crushed rock or concrete, as directed by the Engineer. Do not use native earth backfill to correct overdepth excavation beneath structures.
- D. **Surplus Material:** Dispose of surplus material in accordance with Section 02223, Trenching, Backfilling, and Compacting.

### 3.5 **SUPPORT FOR EXCAVATIONS FOR STRUCTURES**

- A. **Safety:** Provide a safe working area for workers. Use the services of a Registered Civil Engineer to design sheeting, shoring and bracing, or side slopes. Use the requirements of CAL/OSHA and of these Specifications as minimum design criteria. Obtain sufficient geotechnical data to provide safe design.
- B. **Side Slopes:** Minimum side slope shall be per CAL/OSHA but not steeper than (soil descriptions per USDA definitions):
  - 1. Clayey soil up to 12-foot depth--3/4 horizontal to 1 vertical (3/4:1).
  - 2. Clayey soil more than 12-foot depth—vary evenly from 3/4:1 for 12-foot depth to 3:1 for 20-foot depth.
  - 3. Gravelly soil--2:1.
  - 4. Flatten above slopes if groundwater is present.
- C. **Traffic Safety:** Select methods of support or side slopes to provide sufficient clearance for public traffic safety and convenience.
- D. **Design Loads:** Consider the characteristics of the soil exposed in the excavation, the groundwater conditions, traffic, and other surcharge loads when selecting lateral pressures to be used for design of soil supporting systems.

- E. Design Criteria: Use the following minimum design criteria for allowable lateral passive soil pressure expressed in pounds per square foot (psf) to calculate depth of penetration of isolated soldier piles or solid sheet piles. Where needed for safety, these values shall be increased.

	<u>Predominant Soil Type</u>	
	<u>Clayey</u>	<u>Granular</u>
Isolated Soldier	200 Z + 1,870	467 Z
Solid Sheet	67 Z + 633	300 Z

Where Z = depth in feet below bottom of excavation.

- F. Verification of Soil Types: Prior to design and submittal of support system, verify the type of soil below the bottom of the excavation.

### 3.6 **BACKFILL AGAINST WALLS AND OVER ROOF SLABS**

A. Precautions

1. Backfill over structures in a manner so as to not damage the roof membrane and protective cover.
2. Do not backfill against walls or above buried roof slabs until the concrete has obtained a comprehensive strength equal to the specified 28-day compressive strength. Where backfill is to be placed on both sides of the wall, place it uniformly on both sides. Where backfill is to be placed around a structure, place it at a uniform rate around the structure.
3. Do not backfill against the walls of structures that are laterally restrained or supported by suspended slabs or slabs on grade until the slab is poured and the concrete has reached the specified minimum 28-day compressive strength.
4. When backfill is to be placed before 7-day concrete strength tests have been conducted on concrete arches for VCP sewers or thrust blocks, the concrete shall have achieved 50 percent of the specified minimum 28-day strength. Make an additional test cylinder for this test.

- B. Equipment: Equipment for placing and compacting backfill over structures shall not exceed 15 tons total weight and a maximum wheel load of 10,000 pounds. Do not use equipment weighing more than 10,000 pounds closer to walls and structures than a horizontal distance equal to the depth of fill at the time.



### 3.7 COMPACTION

- A. Compaction for Zones: Compact to the percentage of maximum dry density, or relative compaction, specified for each zone.
- B. Moisture Control: Control moisture as follows:
1. Where subgrade or soil material layers must be moisture conditioned before compaction, apply water uniformly to the subgrade surface or soil layer material in order to prevent free water from appearing on the surface during or subsequent to compaction operations. The moisture content of the compacted soil shall be within 2 percentage points of the optimum.
  2. Remove and replace or scarify and air-dry soil material that is too wet to permit compaction to specified density.
  3. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread within an approved area and allowed to dry. Drying may be assisted by discing, harrowing or pulverizing, until moisture content is reduced to satisfactory value.
  4. Do not backfill or use fill material on surfaces that are muddy, frozen, or contain frost or ice.
- C. Requirements Prior to Backfilling: Backfill excavations as work permits, but not until completion of the following:
1. Acceptance of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
  2. Inspection, testing, approval, and recording locations of underground utilities.
  3. Removal of concrete formwork.
  4. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures and remove in manner to prevent settlement of the structure or utilities, or leave in place, if required.
  5. Removal of trash and debris.
  6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.

- D. Backfill Layers: Backfill and use fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- E. Jetting: Unless specified otherwise, do not use water jetting techniques to densify granular fill materials.
- F. Uniform Backfill Lifts: Backfill and use fill materials evenly adjacent to structures, to required finish elevations. Take care to prevent wedging action of backfill against structures by carrying material uniformly around structure to approximately same elevation in each lift.

#### **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 02222: PROTECTING EXISTING UNDERGROUND UTILITIES**

### **PART 1 - GENERAL**

#### **1.1 GENERAL**

This Section describes materials and procedures for protecting existing underground utilities.

#### **1.2 RELATED WORK DESCRIBED ELSEWHERE**

- A. Submittals: Section 01300
- B. Trenching, Backfilling, and Compacting: Section 02223

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with the requirements of Section 01300, Submittals. The following submittals are required:

Submit drawings and calculations for support and protection at pipeline crossings larger than 36-inch at least 30 days prior to excavation of crossing.

### **PART 2 - PRODUCTS**

#### **2.1 REPLACEMENT IN KIND**

Except as indicated on the Drawings or as specifically authorized by the Engineer, reconstruct utilities with new material of the same size, type, and original quality as that removed.

### **PART 3 - EXECUTION**

#### **3.1 GENERAL**

- A. Replace "in kind" street improvements, such as curbs and gutters, ramps, barricades, traffic islands, signalization, fences, signs, mail boxes, etc., that are cut, removed, damaged, or otherwise disturbed by the construction.
- B. Where utilities are parallel to or cross the pipeline trench but do not conflict with the permanent work to be constructed, follow the procedures given below and as indicated on the Drawings. Notify the utility owner 48 hours in advance of the crossing construction and coordinate the

construction schedule with the utility owner's requirements. Obtain agency approval before submitting shop drawings.

- C. Determine the true location and depth of utilities and service connections which may be affected by or affect the Work. Determine the type, material, and condition of these utilities. Pothole all utilities, except those listed in the Contract Documents as already being potholed, prior to submitting pipe laying drawings. Submit a set of potholing plans to the Engineer prior to submitting laying diagrams. In addition, expose all utilities at least 500 lineal feet in advance of pipeline excavation.

### **3.2 PROCEDURES**

- A. **Protect in Place:** Protect utilities in place, unless abandoned, and maintain the utility in service, unless otherwise specified on the Drawings or in the Specifications.
- B. **Cut and Plug Ends:** Cut abandoned utility lines (conduits) and plug the ends. Plug with an 8-inch wall of brick and mortar or 8-inch concrete plug measured from the cut end of the pipe. Dispose of the cut pipe as unsuitable material.
- C. Provide temporary support for all pipelines crossing the proposed trench. All pipelines 18-inches in diameter or larger crossing over the proposed water main with less than 4 feet of clearance shall have a permanent concrete support. Permanently protect all pipelines less than 18-inches in diameter and crossing over the proposed water main with less than 2 feet of clearance by pouring a 1-sack sand/cement slurry from the top of the water main to the bottom of the crossing pipeline.

### **3.3 THRUST BLOCKS ON WATER LINES**

The Contractor's attention is called to existing thrust blocks on water lines throughout the Work whose thrust is toward the trench excavation and, therefore, may be affected by the pipeline construction. Protect thrust blocks in place or shore to resist the thrust by a means acceptable to the Engineer, and reconstruct.

### **3.4 ABANDONED UTILITIES**

Remove and dispose of abandoned utilities within the trench excavation.

#### **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 02223: TRENCHING, BACKFILLING, AND COMPACTING**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes materials, testing, and performance of trench excavation, backfilling, and compacting.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Submittals, Section 01300  
Structure Earthwork, Section 02220  
Asphalt Concrete Paving, Section 02513  
General Concrete Construction, Section 03000  
General Piping Requirements, Section 15000

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with the requirements of Section 01300, Submittals. The following submittals are required:

- A. Submit Drawings showing excavation and shoring, bracing, or sloping for worker protection.
- B. Submit six copies of a report from a testing laboratory verifying that backfill material conforms to the specified gradations or characteristics for pea gravel, granular material, imported sand, rock refill for foundation stabilization, and water.

#### **1.4 PROTECTION OF EXISTING UTILITIES AND FACILITIES**

- A. General: Protect all existing sewer pipelines, water pipelines, gas mains, storm drains, culverts, or other facilities and structures that may be encountered in or near the area of Work.
- B. Notification: Notify each agency having jurisdiction and make arrangements for locating each agency's facilities prior to beginning construction.
- C. Damage: In the event of damage to any existing facilities during the progress of the Work due to the failure of the Contractor to exercise proper precautions, pay for the cost of all repairs and protection to said facilities, at Contractor's sole expense. The Contractor's Work may be stopped until repair operations are complete without cost to the Owner.

## 1.5 PROTECTION OF LANDSCAPING

- A. General: Protect all trees, shrubs, fences, and other landscape items adjacent to or within the site unless directed otherwise in the Drawings. In the event of damage to landscape items, replace the damaged items in a manner satisfactory to the Engineer.
- B. Restoration: After the completion of Work in planted or improved areas within public or private easements, restore such areas to original condition. Restoration shall include regrading, placement of 5 inches of topsoil, reseeding, and replacement of landscaping.

## PART 2 - MATERIALS

### 2.1 DEFINITION OF ZONES

- A. Pavement Zone: The pavement zone shall include the asphaltic concrete (or portland cement concrete) and aggregate base pavement section placed over the street zone.
- B. Street Zone: The street zone shall consist of the top 18 inches of the trench immediately below the pavement zone in paved areas or areas to be paved.
- C. Trench Zone: The trench zone shall include the portion of the trench from the top of the pipe zone to the bottom of the street zone in paved areas or to the final grade in unpaved areas.
- D. Pipe Zone: The pipe zone shall include the full width of trench from the bottom of the pipe or conduit to a horizontal level 12 inches above the top of the pipe. Where multiple pipes or conduits are placed in the same trench, the pipe zone shall extend from the bottom of the lowest pipe(s) to a horizontal level 12 inches above the top of the highest or topmost pipe.
- E. Pipe Base: The pipe base shall be defined as a layer of material immediately below the pipe zone and extending over the full trench width.

### 2.2 NATIVE EARTH BACKFILL--TRENCH ZONE

Excavated native earth backfill shall be fine-grained non-organic materials free from peat, roots, debris, and rocks larger than 3 inches, and which can be compacted to the specified relative compaction.

### 2.3 **BACKFILL--PIPE ZONE AND PIPE BASE**

Unless otherwise specified or shown on the Drawings, the pipe base and pipe zone backfill material shall be imported sand as specified herein.

### 2.4 **IMPORTED SAND--PIPE ZONE AND PIPE BASE**

Imported sand used in the pipe zone or for the pipe base shall have the following gradation:

<u>Sieve Size</u>	<u>Percent passing by Weight</u>
3/8-inch	100
No. 4	75 - 100
No. 30	12 - 50
No. 100	5 - 20
No. 200	0 - 15

Minimum sand equivalent shall be 30 per ASTM D 2419.

### 2.5 **GRAVEL AND CRUSHED ROCK--PIPE ZONE AND PIPE BASE**

Gravel or crushed rock material shall conform to the Standard Specifications, Section 200-1.2 and shall meet the following gradation:

<u>Sieve Sizes</u>	<u>Designated Material Size</u>			
	<u>1-1/2-Inch Percent Passing</u>	<u>1-Inch Percent Passing</u>	<u>3/4-Inch Percent Passing</u>	<u>3/8-Inch Percent Passing</u>
2-inches	100	---	---	---
1-1/2-inches	90 - 100	100	---	---
1-inch	20 - 55	90 - 100	100	---
3/4-inch	0 - 15	30 - 60	90 - 100	---
1/2-inch	---	0 - 20	30 - 60	100
3/8-inch	0 - 5	---	0 - 20	90 - 100
No. 4	---	0 - 5	0 - 5	30 - 60
No. 8	---	---	---	0 - 10

### 2.6 **REFILL MATERIAL FOR FOUNDATION STABILIZATION**

Refill material below the pipe shall be either material conforming to the 1½-inch size requirement for gravel or crushed rock, or naturally occurring rock having the following gradation:



<u>Sieve Size</u>	<u>Percent Passing By Weight</u>
3 inches	100
1-1/2 inches	70 - 100
3/4 inch	60 - 100
No. 4	5 - 55
No. 30	0 - 30
No. 200	0 - 10

## **2.7 SAND-CEMENT SLURRY REFILL MATERIAL FOR FOUNDATION STABILIZATION IN PIPE BASE AND PIPE ZONE**

Sand-cement slurry shall consist of one sack (94 pounds) of portland cement per cubic yard of sand and sufficient moisture for workability.

## **2.8 PEA GRAVEL**

Pea gravel shall be defined as gravel, uniformly graded from coarse to fine with less than 10% passing a No. 200 sieve, less than 50% passing a No. 4 sieve, and having a maximum particle size of 3/4 inch.

## **2.9 WATER FOR COMPACTION**

Water used in compaction shall have a maximum chloride concentration of 500 mg/l, a maximum sulfate concentration of 500 mg/l, and shall have a pH of 7.0 to 9.0. Water shall be free of acid, alkali, or organic materials injurious to the pipe coatings.

# **PART 3 - EXECUTION**

## **3.1 TESTING FOR COMPACTION**

- A. Perform compaction testing as described below.
- B. Methods: Determine the density of soil in place by the sand cone method, (ASTM D 1556), or by the nuclear method (ASTM D 2922 or D 3017).
- C. Soil Moisture-Density Relationship: Determine the laboratory moisture-density relations of soils shall be determined per ASTM D 1557.
- D. Cohesionless Materials: Determine the relative density of cohesionless materials by ASTM D 4253 and D 4254.
- E. Sampling: Sample backfill materials per ASTM D 75.

- F. Relative Compaction: Express "relative compaction" or "relative density" as the ratio, expressed as a percentage, of the in place dry density to the laboratory maximum dry density.
- G. Compaction Compliance: Compaction shall be deemed to comply with the Specifications when none of the tests falls below the specified relative compaction.

### **3.2 COMPACTION REQUIREMENTS**

Unless otherwise shown on the Drawings or otherwise described in the Specifications for the particular type of pipe installed, relative compaction in pipe trenches shall be as follows:

- A. Pipe Base and Pipe Zone: Pipe base and pipe zone--90% relative compaction. Note 95% relative compaction requirement in specific areas shown on the plan and profile Drawings.
- B. Trench Zone - Not Beneath Paving: Backfill in trench zone not beneath paving--90% relative compaction.
- C. Trench Zone - Paved Areas: Backfill in trench zone in paved areas--90% relative compaction.
- D. Street Zone: Backfill in street zone in paved areas--95% relative compaction.
- E. Foundation Stabilization: Rock refill material for foundation stabilization--90% relative density.
- F. Overexcavation: Rock refill for overexcavation--90% relative density.
- G. Test all imported or native materials before the start of compaction operations to determine the moisture density relationship for materials with cohesive components, and the maximum density for cohesionless materials. Variations in imported or native earth materials may require a number of base curves of the moisture-density relationship.
- H. Unless noted otherwise, perform compaction tests at random depths and at 200-foot intervals, and as directed by the Engineer.

### **3.3 MATERIAL REPLACEMENT**

Remove trenching and backfilling material, which does not meet the Specifications and replace at no additional expense to Owner.

### **3.4 SHEETING, SHORING, AND BRACING OF TRENCHES**

Trenches shall have sheeting, shoring, and bracing conforming to CAL/OSHA requirements; Section 02220, Structure Earthwork, Paragraphs 3.5B-C; and General Conditions. Base lateral pressures for design of trench sheeting, shoring, and bracing on type of soil exposed in the trench, groundwater conditions, surcharge loads adjacent to the trench, and type of shoring that will be used in the trench.

### **3.5 TRENCH WIDTHS**

- A. Pipe Diameter 12 inches and Greater: Unless shown otherwise on the Drawings, trench widths in the pipe zone shall be equal to the pipe outside diameter plus 12 inches on each side of the pipe. Trench width at the top of the trench shall not be limited except where width of excavation would undercut adjacent structures and footings. In such cases, width of trench shall be such that there is at least 18 inches between the top edge of the trench and the structure or footing.
- B. Pipe Diameter 10 inches and Under: Excavation and trenching shall be true to line so that a clear space of not more than 8 inches or less than 6 inches in width is provided on each side of the largest outside diameter of the pipe in place measured at a point 12 inches above the top of the pipe. The largest outside diameter shall be the outside diameter of the bell on bell and spigot pipe.
- C. Where the trench width, measured at a point 12 inches above the top of the bell of the pipe, is wider than the maximum set forth above, backfill the trench area around the pipe with crushed rock, Class B concrete, or slurry to form a cradle for the pipe as shown on the Standard Drawing S-8 or S-10, at the discretion of the Engineer.

### **3.6 GRADE**

Excavate trenches to the lines and grades shown on the Drawings with allowance for pipe thickness and for pipe base. If the trench is excavated below the required grade, refill the portion of the trench excavated below the grade with refill material at no additional cost to the Owner. Place the refill material over the full width of trench in compacted layers not exceeding 6 inches deep to the required grade less allowance for the pipe base. Remove hard spots that would prevent a uniform thickness of pipe base. Before laying pipe sections, check the grade with a 10-foot straightedge and correct any irregularities. The trench bottom shall form a continuous and uniform bearing and support for the pipe at every point.

### **3.7 PIPE BASE THICKNESS**

Thickness of the pipe base shall be as shown on the Drawings or as otherwise described in the Specifications for the particular type of pipe installed, but in no case shall the thickness be less than 4 inches.

### **3.8. DEWATERING**

- A. Means and Devices: Provide and maintain suitable and sufficient means and devices to continuously remove and dispose of all water entering the trench excavation during the time the trench is being prepared for the pipe laying, during the laying of the pipe, and until the backfill at the pipe zone has been completed. These provisions shall apply during the noon hour as well as overnight. Dispose of water of in a manner to prevent damage to adjacent property. Do not drain trench water through the pipeline under construction. Do not allow groundwater to rise above the bottom of the pipe until jointing compound has firmly set (if any) and the pipe is watertight.
- B. Notification: Notify the City 48 hours prior to commencement of dewatering. Methods employed shall be in conformance with the Owner's existing NPDES permit.

### **3.9 STORAGE OF EXCAVATED MATERIAL**

During trench excavation, store excavated material only within the Work area. Do not obstruct roadways or streets. The safe loading of trenches with excavated material shall conform to Laws and Regulations.

### **3.10 LENGTH OF OPEN TRENCH**

The length of open trench shall be limited to 600 feet in advance of pipe laying, or the amount of pipe installed in one working day, whichever is less. Complete backfilling and temporary or first layer paving so that not more than 500 feet of trench is open in the rear of pipe laying. Backfill or adequately bridge sidewalks, driveways and other traveled ways to provide safe access and egress at the completion of each day's Work.

### **3.11 FOUNDATION STABILIZATION**

After the required excavation has been completed, the Engineer will inspect the exposed trench subgrade to determine the need for any additional excavation. It is the intent that additional excavation shall be conducted in all areas within the influence of the pipeline where unacceptable materials exist at the exposed subgrade. Overexcavation shall include the removal of all such unacceptable material that exists directly beneath the pipe base and to the depth required.

The presence of unacceptable material may require excavating a wider trench. Backfill the overexcavated portion of the trench to the subgrade of the pipe base with refill material for foundation stabilization. Place foundation stabilization material over the full width of the excavation and compacted in layers (lifts) not exceeding 6-inches in compacted depth, to the required grade.

### **3.12 TRENCH BACKFILLING AND COMPACTION**

- A. General: Trench backfilling shall conform to requirements of the detailed piping specification for the particular type of pipe and the following.
- B. Pipe Base: Place the specified thickness of pipe base material over the full width of trench. Grade the top of the pipe base ahead of the pipe laying to provide firm, uniform support along the full length of the barrel of the pipe.
- C. Bell Holes: Excavate holes at each joint to permit proper assembly and inspection of the entire joint.
- D. Pipe Zone: After the pipe has been bedded, place pipe zone material simultaneously on both sides of the pipe, keeping the level of backfill the same on each side. Carefully place material around the pipe so that the pipe barrel is completely supported and that no voids or uncompacted areas are left beneath the pipe. Particular care shall be taken in placing material on the underside of the pipe to prevent lateral movement during subsequent backfilling. Compact material placed within the pipe zone by hand tamping only.
- E. Trench Zone: Carefully deposit backfill material onto the backfill previously placed in the pipe zone. Free fall of the material shall not be permitted until at least 2 feet of cover is provided over the top of the pipe. Do not drop sharp or heavy pieces of material directly onto the pipe or the tamped material around the pipe.
- F. Trench Backfill: Compact trench backfill to the specified relative compaction. Perform compaction by using mechanical compaction or hand tamping equipment. Unless specified otherwise, consolidation by jetting or flooding shall not be permitted. Do not use high impact hammer-type equipment except where the pipe manufacturer warrants in writing that such use will not damage the pipe.
- G. Equipment: Do not use axle-driven or tractor-drawn compaction equipment within 5 feet of walls and structures.
- H. Street Zone Backfill: Street zone backfill shall be done in accordance with the requirements and to the satisfaction of the agency having jurisdiction.

### **3.13 IMPORT OR EXPORT OF BACKFILL MATERIAL**

- A. Excess Material: Remove and dispose of excess excavated soil material off the sites at no additional expense to the Owner. Dispose of excess soil material in accordance with Laws and Regulations.
- B. Imported Material: Import, place and compact any additional backfill material necessary to return all grades to plus or minus 0.2 foot from the grade encountered at the beginning of construction or as shown on the Drawings, at no additional cost to the Owner.

### **3.14 MOISTURE CONTENT OF BACKFILL MATERIAL**

During the compacting operations, maintain optimum feasible moisture content required for compaction purposes in each lift of the backfill material. Maintain moisture content throughout the lift at a uniform level. If placement is discontinued and proper moisture content not maintained, bring the upper layer back to proper moisture content by sprinkling, cultivating and rolling the backfill material before placing new material. At the time of compaction, the water content of the material shall be at optimum water content plus or minus two percentage points. Do not work material, which contains excessive moisture to obtain the required compaction. Material having excessive moisture content may be dried by blading, discing, or harrowing to hasten the drying process.

## **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 02513: ASPHALT CONCRETE PAVING**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section includes materials, testing, and installation of asphalt concrete pavement, aggregate base course, herbicide, prime coat, tack coat, and seal coat.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Trenching, Backfilling and Compacting: Section 02223

#### **1.3 SUBMITTALS**

~~Submit eight copies of a report from a testing laboratory verifying that aggregate material contains less than 1% asbestos by weight or volume and conforms to the specified gradations and characteristics. Submit batch test results prior to permanent paving.~~

#### **1.4 TESTING FOR COMPACTION**

Test for subgrade and base compaction as described in Section 02223, Trenching, Backfilling, and Compacting. Test for asphalt concrete compaction per Section 302-5 of the Standard Specifications.

### **PART 2 - MATERIALS**

#### **2.1 ASPHALT CONCRETE PAVING**

Asphalt concrete paving shall conform to III-C2-AR-4000 as listed in Section 400-4 of the Standard Specifications.

#### **2.2 AGGREGATE BASE COURSE**

Aggregate base shall be crushed aggregate base as specified in Section 400-2 of the Standard Specifications. Aggregate shall contain less than 1% asbestos by weight or volume.

#### **2.3 PRIME COAT**

Prime coat shall be slow curing (SC-70) in accordance with Section 203-2 of the Standard Specifications.

## **2.4 TACK COAT**

Tack coat shall conform with Section 302-5.4 of the Standard Specifications and shall be either AR 1000 paving asphalt or Grade SS-1h emulsified asphalt.

## **2.5 ASPHALT**

Asphalt shall be viscosity grade AR 4000 or AR 8000. Asphalt content in the asphalt concrete shall be 5.5% to 6.0%.

## **2.6 AGGREGATE FOR ASPHALT CONCRETE**

Aggregate shall be in accordance with Section 400-1.1 and Section 400-1.2 of the Standard Specifications. Aggregate shall contain less than 1% asbestos by weight or volume.

## **2.7. SLURRY SEAL COAT**

Seal slurry shall be Emulsion Aggregate Slurry with Type II grade aggregate per Section 203-5 of the Standard Specifications.

## **2.8. HERBICIDE OR WEED KILLER**

Use Spike 80W, Elanco Products Company; Pramitol 30 WP, CIBA-Geigy, or approved equal.

## **2.9 PAINT FOR TRAFFIC STRIPING AND MARKING**

Provide thermoplastic rapid dry or fast dry paint of the appropriate color per Section 210-1.6 of the Standard Specifications.

## **2.10 SCHEDULE FOR FINAL PAVEMENT**

Backfill, compaction, and the base pavement paving, except for the final asphalt surface course, shall be complete at all times to a point not to exceed 500 feet behind any working heading and within 30 days after trench excavation. Base pavement shall be made flush with the adjacent finished road surface. Grind 1 ½ inches of asphalt to one foot outside of trench width prior to final asphalt surface course. The final asphalt surface shall be 1-1/2 inch thick. Do not place final surface course until at least 30 days, but not more than 60 days, after traffic has been returned to that portion of the street. Place temporary striping after the base course of asphalt concrete pavement has been completed in the same configuration as the existing permanent striping so that traffic can be returned to normal patterns. This striping shall be considered temporary.



## **PART 3 - EXECUTION**

### **3.1 PAVEMENT REMOVAL**

- A. Initially cut asphalt concrete pavement with pneumatic pavement cutter or other equipment at the limits of the excavation and remove the pavement. After backfilling the excavation, saw cut asphalt concrete pavement to a minimum depth of 12 inches at a point not less than 12 inches outside the limits of the excavation, any broken asphalt or the previous pavement cut, whichever is greater, and remove the additional pavement.
- B. Saw cut concrete pavement, including cross gutters, curbs and gutters, sidewalks, and driveways, to a minimum depth of 1-1/2 inches at a point at least 12 inches beyond the edge of the excavation and remove the pavement. The concrete pavement may initially be cut at the limits of the excavation by other methods prior to removal and the saw cut made after backfilling the excavation. If the saw cut falls within 3 feet of a concrete joint or pavement edge, remove the concrete to the joint or edge.
- C. Make arrangements for and dispose of the removed pavement and concrete.
- D. Final pavement saw cuts shall be straight along both sides of trenches, parallel to the pipeline alignment, and provide clean, solid, vertical faces free from loose material. Saw cut and remove damaged or disturbed adjoining pavement. Saw cuts shall be parallel to the pipeline alignment or the roadway centerline or perpendicular to same.

### **3.2 PAVEMENT REPLACEMENT**

- A. Backfill, compaction, and the pavement paving, except for the final asphalt surface course, shall be complete at all times to a point not to exceed 1,000 feet behind any working heading. The final asphalt surface course shall be minimum 1-1/2 inch thick. Do not place final surface course until at least 30 days after traffic has been returned to that portion of the street. Place temporary striping after the base course of A.C. pavement has been completed in the same configuration as the existing permanent striping so that traffic can be returned to normal patterns. This striping shall be considered temporary and is the Contractor's responsibility to place and maintain.
- B. The total pavement replacement thickness shall be per the City Standard Drawing.

### **3.3 INSTALLATION**

Apply prime coat to all areas to be paved. Producing, hauling, placing, compacting and finishing of asphalt concrete shall conform to Section 302-5 of the Standard Specifications.

### **3.4 CONNECTIONS WITH EXISTING PAVEMENT**

Where new paving joins existing paving, chip the existing surfaces 12 inches back from the join line so that there will be sufficient depth to provide a minimum of 1-1/2 inches asphalt concrete. Dispose of waste material offsite. Tack coat chipped areas prior to placing the asphalt concrete. Meet lines shall be straight and the edges vertical. Paint the edges of meet line cuts with liquid asphalt or emulsified asphalt prior to placing asphalt concrete. After placing the asphalt concrete, seal the meet line by painting with a liquid asphalt or emulsified asphalt and then immediately cover with clean, dry sand.

### **3.5 PREPARATION OF SUBGRADE**

- A. Excavate and shape subgrade to line, grade, and cross section shown in the drawings. The subgrade shall be considered to extend over the full width of the base course.
- B. Compact the top 30 inches of subgrade (street zone) to 90% relative compaction.
- C. The finished subgrade shall be within a tolerance of  $\pm 0.08$  of a foot of the grade and cross section shown and shall be smooth and free from irregularities and at the specified relative compaction.

### **3.6 INSTALLING REDWOOD HEADERS**

Provide redwood header at edges of paving except where paving is adjacent to concrete slabs, gutters, walks, existing paving, or structures.

### **3.7 PLACING AGGREGATE BASE COURSE**

Place replacement aggregate base course to a minimum thickness of existing plus one inch, unless shown otherwise in the Drawings. Compact to 90% relative compaction. Install in accordance with Section 301-2 of the Standard Specifications.

### **3.8. COMPACTION OF AGGREGATE BASE AND LEVELING COURSES**

Begin compaction and rolling at the outer edges of the surfacing and continue toward the center. Apply water uniformly throughout the material to provide

moisture for obtaining the specified compaction. Compact each layer to the specified relative compaction before placing the next layer.

### **3.9 APPLYING HERBICIDE OR WEED KILLER**

Apply weed killer or herbicide on base prior to placing pavement. Apply at the rate recommended by the manufacturer to control dawny brome grass, puncture vine, and plaintain. Apply from outside of curb to opposite outside of curb and for the full width of curbless roadways and parking areas.

### **3.10 PLACING PRIME COAT**

Apply prime coat to the surface of the leveling course of aggregate base at the rate of 0.25 gallon per square yard per Section 302-5.3 of the Standard Specifications.

### **3.11 PLACING TACK COAT**

Apply tack coat on surfaces to receive finish pavement per Section 302-5.4 of the Standard Specifications. Apply tack coat to metal or concrete surfaces that will be in contact with the asphalt concrete paving.

### **3.12 PLACING ASPHALT PAVING**

Place asphalt paving to a minimum thickness of 5 inches unless otherwise shown in the Drawings. Install in accordance with Section 302-5 of the Standard Specifications. Maintain existing cross sectional slope and crown of roadway.

### **3.13 COMPACTION OF ASPHALT CONCRETE PAVING**

Compact until roller marks are eliminated and a density of 92% minimum to 98% maximum has been attained per ASTM D 2041.

### **3.14 APPLYING SLURRY SEAL COAT**

After final paving, apply slurry seal coat per Section 302-4 of the Standard Specifications at the rate of 10 to 18 pounds of dry aggregate per square yard to the repaved section and to any area damaged by the Contractor during construction. Replace obliterated striping in kind.

### **3.15 SURFACE TOLERANCE**

After paving has been installed and compacted, spray water over the entire paved area. Correct any areas where water collects and does not drain away.

### **3.16 APPLY PAINT FOR TRAFFIC STRIPING AND MARKING**

Apply temporary and permanent traffic striping in accordance with Section 310-5.6 of the Standard Specifications.

#### **PART 4 – PAYMENT**

Payment for the Work in this Section shall be included as part of the unit prices stated in the Bid for pipeline installation.

Include allowances for pavement removal in the unit prices bid for the Work. No extra compensation will be made if the existing pavement sections vary from the conditions as listed or described.

**END OF SECTION**

## **SECTION 02520: CURED-IN-PLACE PIPE**

### **PART 1 - GENERAL**

#### **1.1 GENERAL**

It is the intent of this Section to provide for the reconstruction of pipelines and conduits by the installation of a resin-impregnated flexible tube, which is formed to the original conduit by use of a hydrostatic head. The resin is cured using hot water under hydrostatic pressure within the tube. The Cured-In-Place Pipe (CIPP) shall be continuous and tight-fitting.

#### **1.2 REFERENCED DOCUMENTS**

This Section refers to ASTM F1216 (Rehabilitation of pipelines by the inversion and curing of a resin-impregnated tube), ASTM F1743 (Rehabilitation of pipelines by pulled-in-place installation of a cured-in-place thermosetting resin pipe), and ASTM D790 (Test methods for flexural properties of non-reinforced plastics) which are incorporated by this reference and shall be the latest editions and revisions. In case of conflicting requirements between this Section and these referenced documents, this Section shall govern.

#### **1.3 PRODUCT, MANUFACTURER/INSTALLER QUALIFICATION REQUIREMENTS**

Products and installers must meet the following criteria:

- A. The installer or company must satisfy all insurance, financial, and bonding requirements of the Owner, and must have had at least 5 (five) years active experience in the commercial installation of the product bid under its current license. Acceptable documentation of these minimum requirements must be submitted to the Owner with the Bid.
- B. Sewer rehabilitation products submitted for approval must be accompanied by third party test results supporting the long term performance and structural strength of the product and such data shall be satisfactory to the Owner. Prepare test samples so as to simulate installation methods and trauma of the product. No product will be approved without independent third party testing verification.
- C. The products shall be:
  - 1. Insituform
  - 2. Perma-Liner Industries Inc.
  - 3. American Pipe and Plastics, Inc.
  - 4. Or approved equal.

## **PART 2 - PRODUCTS**

### **2.1 TUBE**

- A. The sewn tube shall consist of one or more layers of absorbent non-woven felt fabric and meet the requirements of ASTM F1216 or ASTM F1743, Section 5. The tube shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular pipe sections.
- B. The wet out tube shall have a uniform thickness that, when compressed at installation pressures, will meet or exceed the design thickness.
- C. Sew tube to a size that, when installed, will tightly fit the internal circumference and length of the original pipe. Make allowance for circumferential stretching during inversion. Do not use overlapped layers of felt in longitudinal seams that cause lumps in the final product.
- D. The outside layer of the tube (before wet out) shall be coated with an impermeable, flexible membrane that will contain the resin and facilitate monitoring of resin saturation during the resin impregnation (wet out) procedure.
- E. The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No material shall be included in the tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be evident.
- F. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made.
- G. Seams in the tube shall be stronger than the non-seamed felt.
- H. The outside of the tube shall be marked for distance at regular intervals along its entire length, not to exceed 5 ft. Such markings shall include the manufacturer's name or identifying symbol.

### **2.2 RESIN**

The resin system shall be a corrosion resistant polyester, vinyl ester, or epoxy and catalyst system that, when properly cured within the tube composite, meets the requirements of ASTM F1216 and ASTM F1743, the physical properties in this Section, and those which are to be utilized in the design of the CIPP for this project. The resin shall produce CIPP which will comply with the structural and chemical resistance requirements of this specification.

## 2.3 STRUCTURAL REQUIREMENTS

- A. The CIPP shall be designed as per ASTM F1216, Appendix X.1. The CIPP design shall assume no bonding to the original pipe wall.
- B. Perform long-term testing for flexural creep of the CIPP pipe material to be installed. A percentage of the instantaneous flexural modulus value (as measured by ASTM D-790 testing) shall be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, shall be verified by this testing. Values in excess of 50% may not be applied unless substantiated by qualified third party test data. The materials utilized for the project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in design.
- C. The Enhancement factor “K” to be used in partially deteriorated design conditions shall be assigned a value of 7. Application of Enhancement factors in excess of 7 shall be substantiated through independent test data.
- D. The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers. If separation of the layers occurs during testing of field samples, new samples will be cut from the Work. Any reoccurrence may cause rejection of the Work.
- E. The cured pipe material (CIPP) shall conform to the structural properties, as listed below in Table 1.

**Table 1**  
**MINIMUM PHYSICAL PROPERTIES**

Property	Test Method	Min. Per ASTM F1216	Cured Composite (400,000 psi Resin)
Modulus of Elasticity	ASTM D-790 (short term)	250,000 psi	400,000 psi
Flexural Stress	ASTM D-790	4,500 psi	4,000 psi

- F. The required structural CIPP wall thickness shall be based as a minimum, on the physical properties in Section 2.3 E, Table 2 below, and in accordance with the design equations in the appendix of ASTM F 1216, and the following design parameters:

Design Safety Factor = 2.0

Retention Factor for Long-Term Flexural

Modulus to be used in Design = 1%-60%

*(as determined by Long-Term tests described in the Section 2.3 of the Specifications)*

- G. Refer to the attached Dimensional Ratio table for specific pipe section requirements, based on the pipe condition, depth, ovality, etc. as computed for the conditions shown, using ASTM F 1216 design equations.
- H. Any layers of the tube that are not saturated with resin prior to insertion into the existing pipe shall not be included in the structural CIPP wall thickness computation.



**TABLE 2**  
**CIPP WALL THICKNESS FOR FULLY DETERIORATED DESIGN (FD)**

		Required DR (D / t)			
		Ei = 250,000 psi		Ei = 400,000 psi	
		Ground Water Depth			
Ovality	Range of Depth to invert (feet)	50% Depth	Full Depth	50% Depth	Full Depth
2 % *	4 - 8	49	43	58	51
	8 - 12	49	43	58	51
	12 - 16	44	39	52	46
	16 - 20	40	36	47	41
	20 - 24	37	33	44	38
5 %	4 - 8	41	37	48	43
	8 - 12	41	36	48	43
	12 - 16	37	33	44	38
	16 - 20	34	30	40	35
	20 - 24	31	27	37	32
8 %	4 - 8	35	31	40	36
	8 - 12	35	30	41	36
	12 - 16	31	27	37	32
	16 - 20	28	25	33	29
	20 - 24	26	23	31	27

Fully Deteriorated (FD) wall thickness considers groundwater, soil and live loads upon the CIPP pipe. The table assumes two heights of groundwater, 120-lbs/cu. ft. of soil density and an AASHTO H20 highway load. The table represents CIPP pipe wall thickness for a host pipe range of 8 to 48 inches. This is a guideline only. Specific calculations should refer to ASTM F-1216, Appendix X.1.

Design Parameters:

Factor of Safety = 2.0

DR = Dimension Ratio = Diameter / thickness  $\Rightarrow t = D / DR$

Effective reduction of Ei-modulus to approximate effects of creep = 50 %

Soil Modulus = 1,000 psi, assumed for highway loads or depths  $\geq 10$  feet (all others 700 psi).

Ovality % = 100 x (Mean Dia. - Minimum Dia.) / Mean Dia.

- 2% ovality is typically assumed when the host pipe measurements have not been field verified.

## **2.4 TESTING REQUIREMENTS**

- A. Chemical Resistance - The CIPP shall meet the chemical resistance requirements of ASTM F1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. CIPP samples with and without plastic coating shall meet these chemical testing requirements.
- B. Hydraulic Capacity - Overall, the hydraulic profile shall be maintained as large as possible. The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.
- C. CIPP Field Samples - When requested by the Owner, the Contractor shall submit test results from field installations in the USA of the same resin system and tube materials as proposed for the actual installation. These test results must verify that the CIPP physical properties specified in Section 2.3 E have been achieved in previous field applications. Samples for this project shall be made and tested as described in Section 3.3 A.

## **2.5 INSTALLATION RESPONSIBILITIES FOR INCIDENTAL ITEMS**

- A. Cleaning of Sewer Lines - Remove all internal debris out of the sewer line that will interfere with the installation of CIPP. Dispose of all debris removed from the sewers during the cleaning operation at a facility in accordance with legal and regulatory requirements.
- B. Bypassing Sewage - Provide for the flow of sewage around the section or sections of pipe designated for repair. The bypass shall be made by plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the flow. Submit a detail of the bypass plan.
- C. Inspection of Pipelines - Inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles and service connections by closed circuit television. Inspect the interior of the pipeline carefully to determine the location of any conditions which may prevent proper installation of CIPP into the pipelines, and note these conditions for correction. Keep a videotape and suitable log for later reference by the Owner.
- D. Line Obstructions – Clear the line of obstructions such as solids and roots that will prevent the insertion of CIPP. If pre-installation inspection reveals an obstruction, such as a protruding service connection, dropped joint, or

a collapse that will prevent the inversion process, that was not evident on the video taken earlier and it cannot be removed by conventional sewer cleaning equipment, then make a point repair excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the Owner's representative prior to the commencement of the Work and shall be considered as a separate pay item.

- E. Public Notification - Make every effort to maintain service usage throughout the duration of the project. In the event that sewer facilities will be out of service, the maximum amount of time of no service shall be 8 hours. Implement notification by contacting each home or business connected to the sanitary sewer and informing them of the Work to be conducted, and when the sewer will be off-line. The Contractor shall also provide the following:
1. Written notice to be delivered to each home or business the day prior to the beginning of Work being conducted on the section, and a local telephone number of the Contractor they can call to discuss the project or any problems which could arise.
  2. Personal contact with any home or business which cannot be reconnected within the time stated in the written notice.

**2.6** Confirm the locations of all branch service connections prior to installing and curing the CIPP.

### **PART 3 - EXECUTION**

**3.1** CIPP installation shall be in accordance with ASTM F1216, Section 7, or ASTM F1743, Section 6, with the following modifications:

- A. Resin Impregnation - The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used. To insure thorough resin saturation throughout the length of the felt tube, the point of vacuum shall be no further than 25 feet from the point of initial resin introduction.
- B. After vacuum in the tube is established, a vacuum point shall be no further than 75 feet from the leading edge of the resin. The leading edge of the resin slug shall be as near to perpendicular as possible. A roller system shall be used to uniformly distribute the resin throughout the tube. If the Installer uses an alternate method of resin impregnation, the method must produce the same results. Any alternate resin impregnation method must be proven.

1. Tube Insertion – Position the wet out tube in the pipeline using either inversion or a pull-in method. If pulled into place, utilize a power winch and exercise care not to damage the tube as a result of pull-in friction. Pull-in or invert the tube through an existing manhole or approved access point and fully extend to the next designated manhole or termination point.
2. Place temperature gauges inside the tube at the invert level of each end to monitor the temperatures during the cure cycle.
3. Accomplish curing by utilizing hot water under hydrostatic pressure in accordance with the manufacturer's recommended cure schedule.

### **3.2 REINSTATEMENT OF BRANCH CONNECTIONS**

Re-open branch connections to buildings without excavation, utilizing a remote controlled cutting device, monitored by a video TV camera. Certify that there is a minimum of 2 complete working cutters plus spare key components on the site before each inversion. Unless otherwise directed by the Owner, reinstate all laterals. No additional payment will be made for excavations for the purpose of reopening connections and the Contractor shall pay all costs associated with such excavation and restoration work.

### **3.3 INSPECTION, SAMPLING, AND TESTING**

- A. Prepare CIPP samples and test physical properties in accordance with ASTM F1216 or ASTM F1743, Section 8, using either method proposed. The flexural properties must meet or exceed the values listed in the applicable ASTM.
- B. Determine the wall thickness of samples as described in paragraph 8.1.6 of ASTM F1743. The minimum wall thickness at any point shall not be less than 87½% of the design thickness as calculated in Section 2.3 F of the Specifications.
- C. Visual inspection of the CIPP shall be in accordance with ASTM F1743, Section 8.6.

### **3.4 CLEAN-UP**

Upon acceptance of the installation work and testing, restore the project area affected by the operations to a condition equal to or better than existing prior to the Work.

#### **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 02701: INSTALLATION OF GRAVITY SEWER PIPELINES**

### **PART 1 – GENERAL**

#### **1.1 DESCRIPTION**

This Section describes the installation of gravity sewer pipelines fabricated of vitrified clay pipe (VCP).

#### **1.2 GENERAL**

Whenever it is necessary to disturb active sewers or house connections to sewers, the Contractor shall install temporary pipes of adequate size to convey all sewage flowing in said sewers or house connections. No sewage shall be allowed to flow from any cut or broken sewer or house connection upon the surface of the ground, in any street, or into any excavation.

#### **1.3 RELATED WORK DESCRIBED ELSEWHERE**

Refer to the following Specification Sections for additional requirements:

- A. Section 01300: Submittals
- B. Section 02223: Trenching, Backfilling and Compacting
- C. Section 02315: Jacked Casing - Not Used
- D. Section 02710: Vitrified Clay Pipe
- E. Section 02713: Leakage and Infiltration Testing of Non-Pressure Pipelines
- F. Section 03000: General Concrete Construction

#### **1.4 SUBMITTALS**

Submit shop drawings in accordance with Section 01300, Submittals, and an installation schedule (tabulated layout) which includes:

- A. Order of installation and closures.
- B. Pipe centerline station and elevation at each change of grade and alignment.
- C. Locations of manholes.

### **PART 2 – MATERIALS**

Installation Material: Refer to Section 02710, Vitrified Clay Pipe for material requirements.

## **PART 3 – EXECUTION**

### **3.1 DELIVERY AND TEMPORARY STORAGE OF PIPE AT SITE**

- A. On-site Storage Limitation: Limit on-site pipe storage to a maximum of one week, unless exception is approved by the Owner.
- B. Care of Pipe: At times when the pipe laying is not in progress, close the open end of the pipe with a tight-fitting cap or plug to prevent the entrance of foreign matter into the pipe. These provisions shall apply during the noon hours as well as overnight. In no event shall the sewers be used as drains for removing water which has infiltrated into the construction trenches.

### **3.2 HANDLING OF PIPE**

- A. Moving Pipe: Lift pipes with handling beams or wide belt slings as recommended by the pipe manufacturer. Do not use cable slings. Handle pipe in a manner to avoid damage to the pipe. Do not drop or dump pipe from trucks or into trenches under any circumstances.
- B. Inspection Pipe: Inspect the pipe and accessories for defects prior to lowering into the trench. Repair or replace any defective, damaged or unsound pipe. Remove dirt from the interior of the pipe before lowering into position in the trench.

### **3.3 PLACEMENT OF PIPE IN TRENCH**

- A. General: Lay all pipe without a break, upgrade from structure to structure, with the bell ends of the pipe upgrade. Lay pipe to the line and grade given so as to form a close concentric joint with the adjoining pipe and prevent sudden offsets of the flow line.
- B. Trench Excavation: Dewatering, excavation, shoring, sheeting, bracing, backfill material placement, material compaction, compaction testing, and pipe laying requirements and limitations shall be in accordance with Section 02223, Trenching Backfilling, and Compacting.
- C. Pipe Base Thickness: Unless shown otherwise on the drawings, pipe base material shall be as specified in Section 02223, Trenching, Backfilling, and Compacting.
- D. Subgrade at Joints: At each joint in the pipe, recess the pipe subgrade in firm bedding material so as to relieve the bell of the pipe of all load and to ensure continuous bearing along the pipe barrel.

- E. Cleaning: Clean the interior of the sewer pipe of all dirt and superfluous materials as the Work progresses.
- F. Joints: Wipe the mating surfaces of the pipe to be joined clean of all dirt and foreign matter and apply a lubricant that is approved by the pipe manufacturer. Then, with the surfaces properly lubricated, position the spigot end of the pipe inside the bell and shove the joint home. For larger diameter pipe where a lever attachment is required, take the necessary precautions to ensure an undamaged pipe installation.
- G. Pipe Alignment: Unless specified otherwise, pipeline line and grade shall be as shown on the plans. Measure grade along the pipe invert.
- H. Short Lengths of VCP Pipe: When using VCP, use two 1-foot lengths of sewer pipe to provide curve flexibility and prevent cracking or shearing failures as shown on the plans or as may be required by the Owner Representative during construction. The use of short lengths of pipe is particularly required, but not necessarily limited to these locations: (1) inlets and outlets to all manholes; (2) ends of steel casing pipe; (3) ends of concrete encasement; (4) vertical and horizontal curvilinear sewers; and (5) deep lateral connections.
- I. Laterals: Furnish and install VCP wyes, and other types of branches along with the VCP sewer. Install wyes sized as specified on the plans for all sewer house connections and for future sewer house connections as shown on the plans. The longitudinal barrel of branch fittings to be placed in line and grade with the sewer mains shall be of the same diameter, quality, and type as specified herein for sewer installations. Earthwork and bedding for branches shall conform to the applicable provisions set forth for vitrified clay sewer pipe. Unless otherwise specified, incline the branch of wye fittings upward at an angle not greater than 45 degrees from a horizontal line. Do not place any wye for sewer house connection branch closer than 5 feet downstream of the centerline of any structure. Place a support of graded crushed rock or gravel under every wye branch when installed. Place the support in accordance with the detail on the plans, or as specified in Section 02223, Trenching, Backfilling, and Compacting.
- J. Backfill: Place and compact backfill in accordance with the requirements of Section 02223, Trenching, Backfilling and Compacting, and as shown on the Plans.

### **3.4 HOUSE LATERALS**

- A. Locations: Install house laterals and wye branch fittings of the size indicated on the plans at the locations shown on the plans or at the location furnished by the Engineer.



- B. Plugged Branches: Plug all branch fittings that are to be left unconnected.
- C. Fittings: Join house laterals to wye branch fittings at the sanitary sewer main as set forth above by eighth bends. All eighth bends and sixteenth bends are a part of house lateral sewer line.
- D. Alignment: Where possible, all house laterals shall run perpendicular to the sewer main from the main to the property line, and all house laterals shall be bedded the same as the sewer main into which they connect.
- E. Plugged House Laterals: Plug all house laterals with an approved stopper in the socket of the last joint of each house lateral so that it will withstand the internal pressure during the test for leakage, but also in such a manner that it may be removed without injury to the socket.
- F. Marking: Mark the location of each house lateral at its upper end by chiseling a letter "S" 1-1/2-inches high on the face of the curb.
- G. Chimney Connections: Chimney connections are not allowed.

### **3.5 TERMINAL CLEANOUTS (FOR PIPELINES HAVING A DIAMETER OF 10-INCHES OR LESS)**

- A. Limitations: Limit the use of cleanouts to the following:
  - 1. A short section (less than 250 feet) of sewer main that is to be extended.
  - 2. At the end of a sewer main where the distance from the downstream manhole to the cleanout does not exceed 250 feet.
  - 3. Between standard spaced manholes as a means of providing wastewater relief from a possible sewage stoppage. A cleanout or manhole is required wherever the flood level rim of the lowest fixture serving a building is below the rim elevation of the uphill manhole. The cleanout or manhole shall be provided as required to have the rim elevation of the uphill cleanout or manhole 6-inches below the flood level rim of the lowest wastewater fixture in a building.
  - 4. House or building laterals that are installed under a concrete or asphalt driveway.
- B. Size: Cleanouts shall be the same size and material as the line on which they are installed and shall be constructed as shown on the Plans.

### **3.6 SADDLE CONNECTIONS**

- A. General: Make all saddle connections into existing sewer lines with a wye saddle.
- B. Scoring and Tapping: Score the sewer line to be saddled to the approximate shape of wye or tee and be cut with a hole cutter. Cleanly machine the tap holes and further work them by hand to provide a true and neat opening for the collar wye or tee saddle. Replace or repair pipe damaged during this operation. The Engineer shall be the sole judge as to the method of repair or replacement.
- C. Securement: Secure the collar wye to the sewer main with a catalytic epoxy resin. Tie the saddle to the main with wire of sufficient strength that no movement will occur during the setting of the epoxy resin.
- D. Encasement: After the connection has set sufficiently long for the epoxy resin to cure, the City will inspect the connection and, if satisfactory, the Contractor shall encase the fitting with Class A Portland cement concrete to the limits indicated on the plans or directed by Engineer.
- E. Cleaning: Carry out the saddling operation in a workmanlike manner. Keep chips, dirt, epoxy mortar, and concrete out of the sewer line being saddled. If directed by the Engineer, flush, clean and ball the reach of sewer main saddled.
- F. Alternative Connection: In lieu of a saddle connection, a wye connection may be made by cutting the sewer and installing a wye.

### **3.7 INSTALLATION WITHIN JACKED CASING – Not Used**

- A. General: Install vitrified clay sewer pipe within the casing pipe to the lines and grades shown on the plans and in accordance with Section 02315, Jacked Casing.
- B. Pipe Support: Support the carrier pipe on cradles such as T.D. Williamson, Inc., redwood skids, or approved equal before backfilling, in such a manner as to relieve the pipe bells from any bearing loads.
- C. Fill Within the Casing: Backfill the annular space between the casing and the VCP carrier pipe per Section 02315: Jacked Casing.
- D. Testing: Before backfilling as specified above, the sewer carrier pipe shall pass an initial test for leakage as provided in Section 02713, Leakage and Infiltration Testing of Non-Pressure Pipelines.

### **3.8 PIPE ANCHORAGE (FOR PIPELINES HAVING A DIAMETER OF 10-INCHES OR LESS)**

- A. General: Install concrete pipe anchors where shown on the plans in accordance with Section 03000, General Concrete Construction, wherever the profile of the ground surface above the sewer main exceeds 20 percent, and where no pavement or other surfacing is to be laid over the facility.
- B. Dimensions: Anchors shall be a minimum of 12-inches thick and shall extend at least 12-inches into undisturbed material on each side of the trench as excavated.
- C. Slope Protection: Cemented rubble and concrete surface slope protection shall be a minimum of 4-inches thick.
- D. Spacing: Spacing between pipe anchors shall not exceed the distances shown on the plans.
- E. Reinforcement for Concrete Anchors: Anchors constructed of cast-in-place reinforced concrete shall have No. 4 reinforcing bars placed at 6-inches on center each way in the center of the anchor thickness. The bars shall extend full length and height of the anchor.
- F. Reinforcement for Concrete Masonry Unit Anchors: Reinforced hollow masonry units shall have all cells filled solidly with grout. Place a No. 4 reinforcing bar vertically in each row of cells and place No. 9 gage wall mesh in each horizontal joint. In addition, place a bond beam at the top with two No. 4 bars.
- G. Encasement in Lieu of Anchors: In lieu of pipe anchors, a 2-sack cement slurry encasement may be used as directed by the Engineer. The encasement shall extend to within 1-foot of the ground surface and to within 1-foot of the toe of slope in which the pipe is constructed.

### **3.9 CONCRETE ENCASEMENT**

Unless shown otherwise, concrete for encasement shall be reinforced or unformed or rough formed, and of the class as designated on the plans. Concrete shall be in accordance with Section 03000, General Concrete Construction. Use concrete used for encasing, cradling, bedding, cover for pipe, or other objects as shown on the Plans, or as directed by the Engineer.

### **3.10 CLEANING**

Before testing, thoroughly clean each pipe from manhole to manhole with a scrubbing ball, and remove all debris and trash from each manhole.

### **3.11 LEAKAGE AND INFILTRATION TEST OF NON-PRESSURE PIPELINES**

Test the pipe, manholes, and other appurtenances for leakage and infiltration per Section 02713, Leakage and infiltration Testing of Non-Pressure Pipelines.

### **3.12 CLOSED-CIRCUIT TELEVISION INSPECTION**

- A. General: In addition to the regular leakage and infiltration test, inspect all new sewer lines using closed-circuit television equipment. Conduct the inspection after all utilities have been installed prior to paving. Conduct the inspection by Owner forces using camera equipment furnished by City at no cost to the Contractor for the initial inspection. Re-inspection shall be conducted by City, the cost of which the Contractor shall pay.
- B. Labor: Furnish all labor and equipment necessary to assist the City in conducting this inspection.
- C. Pull Line: Pull ¼-inch diameter nylon line from manhole to manhole to be left for use by the City in conducting the TV inspection.
- D. Notification: Make requests for sewer line inspection to the Engineer a minimum of two working days in advance of the requested inspection date.
- E. Repair of Defects: Even though the sewer line may have successfully passed the leakage and infiltration tests, repair any defects in the line to the satisfaction of the City.

### **3.13 FINAL INSPECTION**

After paving has been completed and all manholes raised to grade (where required), make a final visual inspection. Furnish the necessary labor to assist the Engineer in making the final inspection. Additional balling may be required if the lines are dirty, even though lines were previously balled. Furnish a responsible person or supervisor for the final inspection to remove manhole covers and to note any corrections required by the Engineer in order to obtain final approval. Request final City inspection through the Engineer by giving at least one day's notice.

## **PART 4 - PAYMENT**

Include payment for the Work in this Section as part of the lump sum or unit price bid for which such Work is appurtenant thereto, and no additional payment will be made specifically for Work in this Section.

**END OF SECTION**

## **SECTION 02710: VITRIFIED CLAY PIPE**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes materials, testing, and installation of vitrified clay pipe (VCP) and fittings for sanitary sewers.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Refer to the following Specification Sections for additional requirements:

- A. Section 01300: Submittals
- B. Section 02223: Trenching, Backfilling and Compacting
- C. Section 02701: Installation of Gravity Sewer Pipelines
- D. Section 02711: Vitrified Clay Pipe for Jacking and Tunneling - Not Used
- E. Section 03000: General Concrete Construction

#### **1.3 SUBMITTALS**

- A. Submit shop drawings in accordance with Section 01300, Submittals, and the following.
- B. Provide certificates of compliance with all standards referenced in this Section to the City.
- C. Provide copies of the manufacturer's required tests to the following conducted on project pipe:
  - 1. Crushing test.
  - 2. Record of retests and rejections.

### **PART 2 - MATERIALS**

#### **2.1 VITRIFIED CLAY PIPE**

- A. General: All VCP and fittings shall be of one class; designated extra strength; of the best quality; vitrified; homogenous in structure; thoroughly burned through their entire thickness; impervious to moisture; sound; and free from cracks, checks, blister, broken extremities, or other imperfections. Pipe shall be bell and spigot pipe unless otherwise specified. Pipe ends shall be square with the longitudinal axis, and sockets shall be true, circular, and concentric with the barrel of the pipe.

The thickness of the shell, the depth of the socket, and the dimension of the annular space shall be within the limits of permissible variation to dimension standards of the specifications of ASTM C700, for the size of pipe indicated on the plans.

- B. Pipe Marking: Clearly mark all pipe or fittings with the name of the manufacturer or with a trademark and with the size and strength of the pipe as shown on the plans and as herein specified.
- C. Testing: Before being used in any Work under these Specifications, subject pipe to and ensure that it meets the requirements of the following hydrostatic pressure test and loading test; these tests shall be witnessed by a reputable testing laboratory. Deliver pipe selected for testing to the place and at the time designated by the testing laboratory. All costs of furnishing, transporting, and handling the pipe for testing and conducting the tests shall be paid solely by the Contractor.

In lieu of witnessing by a testing laboratory, furnish a certified statement from the pipe manufacturer stating that all prescribed tests have been made and the pipe to be used on the Project has met all requirements of the Specifications.

The testing laboratory shall select, at random, for testing as herein specified, no less than 1% of the number of pipe sections in each size of pipe furnished.

The specimens selected for testing shall be sound pipe having dimensions consistent with these Specifications. The lot or lots from which the tests samples are taken shall be sufficient to fill the entire order for that size of pipe used in the Work under the Contract and, if they pass the tests, shall be so designated and marked.

All pipe shall be subject to inspection at the factory, trench, or other point of delivery by the City Representative. The purpose of the inspection shall be to cull and reject any pipe that, independent of the physical tests herein specified, fails to conform to the requirements of these Specifications or that may have been damaged during transportation or in subsequent handling.

In lieu of the standard ASTM absorption test, substitute the ASTM C301 hydrostatic pressure test. The hydrostatic pressure test shall precede the loading test by not less than one hour or more than three hours and shall be applied to all the specimens received for test in each size of pipe.

The loading test shall be the 3-edge bearing test. The loading tests shall conform to the applicable provisions of ASTM C301 and shall be applied to all specimens selected for testing, except that loading to test ultimate strength will not be required.

If all of the minimum designated percentage or number of the specimens tested meet the requirements of the test, then all of the pipe in the lot, shipment, or delivery corresponding to the sizes and classes so tested shall be considered as complying with the test. If, however, 10% or more of the specimens tested fail to meet the requirements of the test or if more than one specimen fails to meet the requirements of the test when the number to be tested is less than ten, then a second selection of pipe shall be made for that test.

The number of specimens to be tested in the second selection of pipe shall be five for each specimen of the first selection that failed to meet the requirements.

If 90% or more of the specimens tested, including those first tested, meet the requirements of the test, consider all the pipe in the lot, shipment, or delivery corresponding to the sizes and classes so tested as complying with that test, otherwise reject all pipe of these sizes and classes.

D. Causes for Rejection: Consider the following imperfections in a pipe or special fitting injurious and cause for rejection without consideration of the test results specified above:

1. A single crack in the barrel of the pipe.
2. Surface imperfections, such as lumps, blisters, pits or flakes, on the interior surface of a pipe or fitting.
3. When the bore or socket of the pipe varies from a true circle more than 3% of its nominal diameter.
4. If it is designated to be straight and it deviates from a straight line more than 1/16-inch per lineal foot. Measure the deviation from a straight edge at a point midway between the ends of the pipe.
5. A joint of pipe with a piece broken from either the socket or spigot end.
6. Pipe joints that have tramp clays, grog or other foreign matter flushed permanently to the exterior or interior surface of the pipe or fittings.

E. Joints: Furnish all VCP fittings with compression joints equal to "Wedge-Lock" manufactured by Pacific Clay Products or "Speed Seal" manufactured by Pacific Coat Building Projects, or approved equal. The compression joint on the spigot and bell ends of the pipe shall be factory made of plastisol, polyurethane elastomer, or other approved resilient element bonded onto the outside of the spigot and the inside of the bell to

the pipe and molded and cured to a uniform hardness and compressibility to form a tight compression coupling when assembled. Materials for compression joints shall conform to ASTM C425.

Where pipe from different manufacturers is to be jointed together, use an adapter pipe with the proper matching joint on each end for the respective manufacturer. Hot poured joints or concrete encasement of plain end joints are not permitted. For transition from ASTM C700 to ASTM C1208 pipe, refer to Section 02711, Vitrified Clay Pipe for Jacking and Tunneling.

F. Branches: Furnish branches of the type shown on the plans with connections of the sizes specified and securely and completely fasten them to the barrel of the pipe in the process of manufacture. Tee branches shall have their axis perpendicular to the longitudinal axis of the pipe. Wye branches shall have their axis approximately 45 degrees (unless otherwise specified on the plans) to the longitudinal axis of the pipe, measured from the socket end. All branches shall terminate in sockets and the barrel of the branch shall be of sufficient length to permit making a proper joint.

G. Stoppers: The stoppers for all pipe 8-inches in diameter and smaller, in which a sealing component for a flexible compression-type joint is cast, shall be neoprene, polyethylene, or polyurethane. Stoppers in all other cases shall be discs of the same material as the pipe, equal in diameter to the outside of the pipe barrel, and made and installed as approved by the Engineer.

Neoprene stoppers shall be manufactured from a compound containing not less than 50 percent neoprene by volume, which shall be the sole elastomer. Stoppers shall not be adversely affected when exposed to the chemical and bacteriological environments normally found in wastewater sewers.

When installed and braced in place in branch spurs, stoppers shall withstand a hydrostatic pressure test of 10 psi with no leakage. When unbraced, stoppers shall remain in place when subject to a maximum air pressure test of 5 psi.

H. Manufacturers: Vitrified clay pipe shall be as manufactured by Gladding McBean, Can-Clay, Mission Clay Products, or approved equal.



## **2.2 EPOXY RESIN**

Make all approved saddle connections to sewer mains with an approved epoxy resin. Epoxy resin shall be Epibond 157 as manufactured by Furane Plastics, Inc., WR633 A&B as manufactured by Wyndham Chemicals, Inc., EPON 828 as manufactured by Shell Chemical Corporation, or approved equal. Use the epoxy resin in strict accordance with the manufacturer's specifications.

## **PART 3 - EXECUTION**

Perform trench excavation to the depth shown on Drawings or as necessary for installation. Install VCP pipe in accordance with the requirements of Section 02701, Installation of Gravity Sewer Pipelines.

## **PART 4 - PAYMENT**

Include payment for the Work in this Section as part of the lump sum or unit price bid for which such Work is appurtenant thereto, and no additional payment will be made specifically for Work in this Section.

**END OF SECTION**

## **SECTION 02713: LEAKAGE AND INFILTRATION TESTING OF NON-PRESSURE PIPELINES**

### **PART - 1 GENERAL**

#### **1.1 DESCRIPTION**

This Section describes the requirements and procedures for leakage and infiltration testing of gravity sewer systems, in accordance with ANSI/ASTM C828, Low Pressure Air Test of Vitrified Clay Pipelines.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Refer to the following Specification Sections for additional requirements:

- A. Section 02701: Installation of Gravity Sewer Pipelines
- B. Section 02710: Vitrified Clay Pipe

#### **1.3 TESTING**

- A. General: Make all tests in the presence of the Engineer.
- B. Leakage: Test each section of sewer between two successive manholes for leakage on all section of sewer.
- C. Infiltration: Make the infiltration test where excessive groundwater is encountered.
- D. Retesting: Even though a section may have previously passed the leakage or infiltration test, test each section of sewer subsequent to the last backfill compacting operation if, in the opinion of the Engineer, heavy compaction equipment or any of the operations of the Contractor or others may have damaged or affected the structural integrity or water tightness of the pipe, structure, and appurtenances.
- E. Other Utilities: City tests will not be made until after all the other utilities have been installed and their trench compaction verified.
- F. Excessive Leakage or Infiltration: If the leakage or infiltration rate is greater than the amount specified, repair the pipe joints or, if necessary, remove and relay the pipe.
- G. Acceptance: The sewer will not be accepted until the leakage or infiltration rate, as determined by test, is less than the maximum allowable.
- H. House Laterals: When house laterals are added after the sewer main has been constructed by connecting to a previously installed wye fitting or to a new saddle fitting, plug the new house lateral at the sewer main by use of a wye fitting and leak test to the satisfaction of the Engineer.

## **PART 2 - MATERIALS**

Furnish all equipment and materials required for testing.

## **PART 3 - EXECUTION**

### **3.1 LEAKAGE TEST**

Air test for leakage except when the pipe diameter exceeds 42-inches, where, no air test for leakage will be made, but the hydrostatic test and test for infiltration shall apply.

Hydrostatic Tests: Make hydrostatic tests on joints for each size pipe 36-inches and larger. Conduct testing prior to delivery of any pipe to the work site. Conduct one set of tests for each pipe diameter and each wall thickness. Conduct tests on pipes selected by the City from the initial pipe manufactured for each size. Conduct one additional set of tests for each 200-pipe section of any one diameter and wall thickness after acceptance of the joint. Conduct tests as described below.

Join the sections of pipe together in the yard in a horizontal position, with the axes of both sections level and along the same line. Provide vertical support for each section so that no support exists directly under the joint, and the reaction of the spigot on the bell is equivalent to not less than the weight of one-fourth the weight of one pipe section. Join the pipe sections together to produce a gap concentrically around pipe of 1-inch greater than the normal closure. Subject the joints to an internal pressure by a method approved by the City. The internal pressure shall not be less than 30 feet of water. Determine internal pressure at the centerline of the pipe. Maintain the pressure for a period of 4 hours. At the end of that time, the leakage through the rubber gasket of gaskets shall be at a rate not exceeding 1.0 gallon per hour. Repeat the same test with the end of one pipe lowered, to produce a gap at the top of the pipe of not less than 1-1/2 inches. Gap is defined as the distance the joint is open from normal closure measured on the inside of the pipe. If the joint being tested does not meet the leakage requirements, make any necessary modifications to the joint details and re-test the joint.

After acceptance of the joint as an approved type, capable of being manufactured to meet the requirements stated herein, make additional leakage tests on joints. Test joints selected by the City from the pipe manufactured for the job. Not less than one additional joint leakage test shall be required for each 200 pipe sections or fractions thereof of each pipe diameter. Failure of any one of these two retests shall be cause for suspension of the pipe manufacturing operation until the Contractor takes remedial measures to correct the joint. The remainder of the pipes with joints that will not meet the specified leakage requirements, as determined by the Engineer, shall be subject to testing prior to

acceptance. To insure that the correct remedial measures have been taken, requalify the joint as though it were a new joint.

### **3.2 AIR TEST FOR VCP GRAVITY SEWERS**

- A. Test Section: Test each section of sewer between two successive manholes by plugging all pipe outlets with suitable test plugs.
- B. Addition of Air: Slowly add air until the internal pressure is raised to 4.0 pounds per square inch gage (psig). The compressor used to add air to the pipe shall have a blowoff valve set at 5 psig to ensure that at no time the internal pressure in the pipe exceeds 5 psig.
- C. Internal Pressure: Maintain the internal pressure of 4 psig for at least two minutes to allow the air temperature to stabilize, then disconnect the air supply and allow the pressure to decrease to 3.5 psig.
- D. Minimum Time for Allowable Pressure Drop: Measure the time in seconds that is required for the internal air pressure to drop from 3.5 psig to 2.5 psig and compare the results with the minimum permissible pressure holding times indicated in Table 1 attached to this Section.
- E. Retest: If the pressure drop from 3.5 psig to 2.5 psig occurs in less time than specified, repair the pipe and, if necessary, replace and relay until the joints and pipe hold satisfactorily under this test.

### **3.3 INFILTRATION TEST**

- A. Preparation of Test Section: Close the end of the sewer at the upper structure to prevent the entrance of water, and discontinue pumping of groundwater for at least three days, then test the section for infiltration.
- B. Allowable Infiltration Rate: The infiltration shall not exceed 0.025 gpm per inch of diameter per 1,000 feet of main line sewer being tested, not including the length of laterals entering that section.
- C. Excessive Infiltration: Where infiltration in excess of the allowable amount is discovered before completion and acceptance of the sewer, uncover the sewer immediately and reduce the amount of the infiltration to a quality within the specified amount of infiltration, before the sewer is accepted.
- D. Individual Leaks: Even if the infiltration is less than the allowable amount, stop any individual leaks that may be observed as ordered by the Engineer.
- E. Completion of Tests: Complete all tests before the street or trench is resurfaced, unless otherwise directed by the Engineer.

### **3.4 DEFLECTION TEST**

General: Test all flexible and semi-rigid main line pipe for deflection, joint displacement, or other obstruction by passing a rigid mandrel through the pipe by hand, not less than 30 days after completion of the trench backfill, but prior to permanent resurfacing. The mandrel shall be a full circle, solid cylinder, or a cylinder, approved by the City as to design and manufacture. The circular cross section of the mandrel shall have a diameter of at least 95 percent of the specified average inside pipe diameter of the pipe.

### **3.5 MANHOLE TEST**

- A. General: Test water tightness of manholes in connection with tests of sanitary sewers, or at the time the manhole is completed and backfilled.
- B. Plugs: Plug all manhole inlets and outlets with approved stoppers or plugs.
- C. Fill Level: Fill the manhole with water to 2-inches below the bottom of the tapered cone section, with a minimum depth of 4 feet and a maximum depth of 20 feet. The water shall stand in the manhole for a minimum of one hour to allow the manhole material to reach maximum absorption. Before the test is begun, refill the manhole to the original depth as needed.
- D. Test Requirements: Record the drop in water surface after a period of from 15 minutes to one hour. The time of the test shall be determined by the Engineer and may be varied to fit the various field conditions. The maximum allowable drop in the water surface shall be 1/2 inch for each 15-minute period of testing.
- E. Visible Leaks: Even though the leakage is less than the specified amount, stop any leaks that may be observed, to the satisfaction of the Engineer.

## **PART 4 – PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

**Table 1**  
**NATIONAL CLAY PIPE INSTITUTE AIR TEST TABLES**

MINIMUM HOLDING TIME IN SECONDS REQUIRED FOR PRESSURE TO DROP  
FROM 3 ½ TO 1 ½ PSIG

PIPE DIAMETER (FOR USE WHEN TESTING ONE DIAMETER ONLY)

LENGTH	4"	6"	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	39"
25	4	10	18	28	40	62	89	121	158	200	248	299	356	418
50	9	20	35	55	79	124	178	243	317	401	495	599	713	837
75	13	30	53	83	119	186	267	364	475	601	743	898	1020	1105
100	18	40	70	110	158	248	356	485	634	765	851	935	1020	1105
125	22	50	88	138	198	309	446	595	680	765	851	935	1020	1105
150	26	59	106	165	238	371	510	595	680	765	851	935	1020	1105
175	31	69	123	193	277	425	510	595	680	765	851	935	1020	1105
200	35	79	141	220	317	425	510	595	680	765	851	935	1020	1105
225	40	89	158	248	340	425	510	595	680	765	851	935	1020	1105
250	44	99	176	275	340	425	510	595	680	765	851	935	1020	1105
275	48	109	194	283	340	425	510	595	680	765	851	935	1020	1105
300	53	119	211	283	340	425	510	595	680	765	851	935	1020	1105
350	62	139	227	283	340	425	510	595	680	765	851	935	1020	1105
400	70	158	227	283	340	425	510	595	680	765	851	935	1020	1105
450	79	170	227	283	340	425	510	595	680	765	851	935	1020	1105
500	88	170	227	283	340	425	510	595	680	765	851	935	1020	1105
550	97	170	227	283	340	425	510	595	680	765	851	935	1020	1105
600	104	170	227	283	340	425	510	595	680	765	851	935	1020	1105
650	113	170	227	283	340	425	510	595	680	765	851	935	1020	1105

## **SECTION 03000: GENERAL CONCRETE CONSTRUCTION**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section includes materials, installation, and testing of formwork, reinforcing steel, joints, concrete, and finishing and curing for general concrete construction.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Submittals, Section 01300

Trenching, Backfilling, and Compacting, Section 02223

Cement-Mortar Lined and Coated Steel Pipe, Section 15076

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with the requirements of Section 01300, Submittals. The following submittals are required:

- A. Submit manufacturer's catalog data and descriptive literature for form ties, spreaders, corner formers, form coatings and curing compound, bond breakers, joint sealant, backing rod, joint filler, epoxy bonding compound, and color additive.
- B. Submit mill test certificates identifying chemical and physical analyses of each load of reinforcing steel delivered. If mill test reports are unavailable and the quantity of steel for a structure exceeds 5 tons, provide a laboratory test to prove conformance with the specified ASTM standard.
- C. Submit reinforcing bending lists and placing drawings for all reinforcing. Placing drawings shall indicate all openings (mechanical, electrical, equipment, and architectural) including additional reinforcing at openings and corner bar arrangements at intersecting beams, walls, and footings indicated in the typical detail and structural drawings. Placing drawings shall be coordinated with the concrete placing schedule. Each bending list and placing drawing submitted shall be complete for each major element of a structure (grade slabs, footings, walls, deck, floor, or roof slabs) including dowels and corner bars. Furnishing such lists shall not be construed that the lists will be reviewed for accuracy. The Contractor shall be wholly and completely responsible for the accuracy of the lists and for furnishing and placing reinforcing steel in accordance with the details shown on the plans and as specified.
- D. Submit concrete mix design at least 15 days before placing concrete. Mix designs shall be signed and stamped by a registered civil or structural engineer.

- E. Submit copies of a report from a testing laboratory verifying that aggregate material contains less than 1% asbestos by weight or volume and conforms to the specified gradations or characteristics.
- F. Submit copies of lab compressive test results for a proposed mix design. Tests may be for trial batches or past tests for the same identical mix design for this Work.

## **PART 2 - MATERIALS**

### **2.1 FORMWORK**

- A. Design forms according to ACI 347.
- B. Class I Forms: Use steel forms, ply form, or smooth-surface plywood 3/4 inch minimum thickness for straight surfaces and 1/2 inch minimum thickness for curved surfaces.
- C. Class II Forms: Use plywood in good condition, metal, or smooth-planed boards free from large or loose knots with tongue and groove or ship lap joints. Forms shall be oiled.
- D. Class II forms may be used for exterior concrete surfaces which are 1 foot or more below finished grade. Use Class I forms for all other surfaces.

### **2.2 BOND BREAKER**

Bond breaker shall be a nonstaining type which will provide a positive bond prevention, such as Williams Tilt-Up Compound, as manufactured by Williams Distributors, Inc., Silcoseal 77, as manufactured by SCA Construction Supply Division, Superior Concrete Accessories, or approved equal.

### **2.3 FORM RELEASE AGENT**

- A. Form release agent shall effectively prevent absorption of moisture and prevent bond with the concrete. Agent shall be nonstaining and nontoxic after 30 days.
- B. For steel forms, release agent shall prevent discoloration of the concrete due to rust.

### **2.4 REINFORCING STEEL**

- A. Reinforcement shall conform to ASTM A 615, Grade 60, unless noted otherwise on plans.



- B. Fabricate reinforcing in accordance with the current edition of the Manual of Standard Practice, published by the Concrete Reinforcing Steel Institute. Bend reinforcing steel cold.
- C. Deliver reinforcing steel to the site bundled and tagged with identifying tags.

## **2.5 WELDED WIRE FABRIC**

Welded wire fabric shall conform to ASTM A 185.

## **2.6 TIE WIRE**

Tie wire shall be 16 gauge minimum, black, soft annealed.

## **2.7 BAR SUPPORTS**

Galvanize and coat with plastic bar supports in beams and slabs exposed to view after form stripping. Use concrete supports for reinforcing in concrete placed on grade.

## **2.8 BAR COUPLERS**

Reinforcing steel bar splicing couplers shall be a mechanical type as manufactured by Dayton Barsplice Inc., or Barsplice Products, Inc., or approved equal. Use couplers which do not reduce tensile or ultimate strength of bars.

## **2.9 CEMENT**

Cement shall conform to ASTM C 150, Type II, with maximum tricalcium aluminate not to exceed 8%. The maximum percent alkalis shall not exceed 0.6%.

## **2.10 AGGREGATES**

Aggregates shall comply with ASTM C 33 and shall contain less than 1% asbestos by weight or volume and be free from any substances that will react with the cement alkalis.

## **2.11 CONCRETE ADMIXTURES**

- A. Concrete shall contain an air-entraining admixture. Admixture shall conform to ASTM C 260, except it shall be nontoxic after 30 days and shall contain no chlorides. Admixtures shall be Master Builders MB-AE-10, Sika AER (Sikamix 104), or approved equal.
- B. Concrete may contain a water-reducing admixture. The admixture shall conform to ASTM C 494, Type A or D, except it shall contain no chlorides,

shall be nontoxic after 30 days, and shall be compatible with the air-entraining admixtures. The amount of admixture added to the concrete shall be in accordance with the manufacturer's recommendations. Admixtures shall be Master Builders Pozzolith polymer-type normal setting, Plastocrete (Sikamix 160) Normal Set, Sika Chemical Corporation, or approved equal.

- C. Do not use any admixture that contains chlorides or other corrosive elements in any concrete.

**2.12 GROUT**

- A. Nonshrink grout shall meet requirements of ASTM C1107. Use a nongas-liberating type, cement base, premixed product requiring only the addition of water for the required consistency. Grout shall be UPCON High Flow, Master Flow 713, or approved equal. Components shall be inorganic.
- B. Ordinary type group (dry pack) shall consist of one part portland cement to two parts sand (100% passing a No. 8 sieve). Add sufficient water to form a damp formable consistency.
- C. Epoxy Grout:
  - 1. Mix the two components of epoxy bonding compound in compliance with the manufacturer's instructions.
  - 2. Use sand that is oven dry and meets the following gradation requirements for epoxy grout:

Sieve Size	No. 8	No. 50	No. 100
% Passing	100	15+/-45	0+/-10

**2.13 CONCRETE MIX DESIGN**

- A. Conform to ASTM C 94, except as modified by these Specifications.
- B. Air content as determined by ASTM C 231 shall be 3% +/-1%.
- C. Maximum water-cement ratio for Class A concrete = 0.45 by weight.
- D. Use classes of concrete as described in the following table:

<u>Class</u>	<u>Type of Work</u>	<u>28-Day Compressive Strength (in psi)</u>	<u>Minimum Cement Content (in lbs per C.Y.)</u>
A	Concrete for all structures and concrete not otherwise specified. Concrete fill at structure foundations, cradle, supports across pipe trenches.	4,000	564

B	Pavement.	3,000	500
C	Floor grout, miscellaneous unreinforced concrete, mud slabs, lean concrete pipe trench backfill.	2,000	376

E. Measure slump in accordance with ASTM C 143. Slump shall be as follows:

Slab on grade or heavy sections wider (in plan view) than 3 feet	3 inches max.
Footings, walls, suspended slabs, beams, and columns	4 inches max.
Pavement	2 inches max.
Floor grout	4 inches max.

Proportion and produce the concrete to have a maximum slump as shown. A tolerance of up to 1 inch above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent 10 batches tested, whichever is fewer, does not exceed the maximum limit. Concrete of lower than usual slump may be used provided it is properly placed and consolidated.

F. Aggregate size shall be 3/4 inch maximum for slabs and sections 8 inches thick and less. Aggregate size shall be 1 inch maximum for slabs and sections greater than 8 inches and smaller than 17 inches. Aggregate size shall be 1-1/2 inches maximum for all larger slabs and sections. Aggregate size for floor grout shall be maximum 3/8 inch.

G. Combined aggregate grading shall be as shown in the following table:

	<u>Maximum Aggregate Size</u>			
	<u>1-1/2"</u>	<u>1"</u>	<u>3/4"</u>	<u>3/8"</u>
Aggregate Grade per ASTM C 33	4	5	7	8

H. Mix design for pumped concrete shall produce a plastic and workable mix. The percentage of sand in the mix shall be based on the void content of the coarse aggregate.

## 2.14 CONCRETE TESTS

A. Concrete quality testing will be performed on the concrete by the Owner as follows:

1. Frequency of Sampling: Cast four concrete test cylinders from each 50 cubic yards, or fraction thereof, of each class of concrete placed in any one day. Sampling and curing of cylinders shall conform to ASTM C 31.
2. Strength Testing: Test cylinders in accordance with ASTM C 39. Test one cylinder at 7 days for information; test two cylinders at 28 days for acceptance; and hold one cylinder for verification. Strength acceptance will be based on the average of the strengths of the two cylinders tested at 28 days. If one cylinder of a 28-day test manifests evidence of improper sampling, molding, or testing, other than low strength, discard it and use the fourth cylinder for the test result.
3. Determine concrete slump by ASTM C 143 with each strength test sampling and as required to establish consistency.
4. Determine air content of the concrete using ASTM C 231 to verify the percentage of air in the concrete immediately prior to depositing in forms.
5. The average value of concrete strength tests shall be equal to or greater than the specified 28-day strength. No test shall be less than 90% of the specified 28-day strength.
6. If the 28-day strength tests fail to meet the specified minimum compressive strength, the concrete will be assumed to be defective and one set of three cores from each area may be taken as selected by the City and in accordance with ASTM C 42. If the average compressive strength of the set of three concrete cores fails to equal 90% of the specified minimum compressive strength or if any single core is less than 75% of the minimum compressive strength, the concrete will be considered defective. The City may require additional coring, nondestructive load testing, or repair of defective concrete. Costs of coring, testing of cores, load testing, and required repairing pertaining thereto shall be paid by the Contractor at no extra cost to the Owner.

B. To facilitate concrete sampling and testing:

1. Furnish labor to assist the City in obtaining and handling samples at the Project site.

2. Advise the City in advance of concrete placing operations to allow for scheduling and completion of quality testing.
3. Provide and maintain facilities for safe storage and proper curing of concrete test specimens on the Project site, as required by ASTM C31.

**2.15 CURING COMPOUND**

- A. Curing compound shall conform to ASTM C 309, Type 1, Class B.
- B. Curing compound shall be compatible with required finishes and coatings.

**2.16 MATS, PAPER AND SHEETING FOR CURING**

- A. Burlap mats shall conform to AASHTO Specification M182.
- B. Sisal-kraft paper and polyethylene sheets shall conform to ASTM C 171.

**PART 3 - EXECUTION**

**3.1 FORM TOLERANCES**

- A. Failure of the forms in the opinion of the Owner to produce the specified concrete surface and surface tolerance shall be grounds for rejection of the concrete Work. Repair or replace rejected Work at no additional cost to the Owner.
- B. The following table indicates tolerances or allowable variations from dimensions or positions of structural concrete Work:

	<u>Maximum Tolerance</u>
Sleeves and inserts	+1/4" -1/4"
Projected ends of anchors	+1/4" -0.0"
Anchor bolt setting	+1/4" -1/4"
Finished concrete, all	+1/4" -1/4" in
	10 feet Max +/-1"
	in total length

The planes or axes from which the above tolerances are to be measured shall be as follows:

Sleeves and inserts:	Centerline of sleeve or insert
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Projected ends of anchors:	Plane perpendicular to the end of the anchor as located on the Drawings.
Anchor bolt setting:	Centerline of anchor bolt.
Finish concrete:	The concrete surface as located on the Drawings.

Where equipment is to be installed, comply with manufacturer's tolerances if more restrictive than above.

### **3.2 FORM SURFACE PREPARATION**

- A. Clean form surfaces to be in contact with concrete of foreign material prior to installation.
- B. Coat form surfaces in contact with concrete with a release agent prior to form installation.

### **3.3 FORM REUSE**

Reuse only forms, which provide a uniform surface texture on exposed concrete surfaces. Apply light sanding or other surface treatment between uses for uniform texture.

Plug unused tie rod holes with corks, shave flush, and sand the concrete surface side. Do not patch forms other than filling tie rod holes, except in the case of Class II forms. Do not use metal patching discs on Class I forms.

### **3.4 REMOVAL OF FORMS**

- A. Forms and shoring for elevated structural slabs or beams shall remain in place until the concrete has reached a compressive strength equal to the specified 28-day compressive strength as determined by test cylinders. Do not remove supports and reshore. The following table indicates the minimum allowable time after the last cast concrete is placed before forms, shoring, or wall bracing may be removed:

Sides of footings and easements:	24 hours
Walls, vertical sides of beams, girders, columns, and similar members not support loads:	48 hours
Slabs, beams, and girders:	10 days (forms only)

Shoring for slabs, beams, and girders: Until concrete strength reaches specified 28-day strength

Wall bracing: Until top or roof slab concrete reaches specified 28-day strength

- B. Do not remove forms from concrete which has been placed with outside air temperature below 50°F without first determining if the concrete has properly set without regard for time. Do not apply heavy loading on green concrete that has not achieved its required strength. Immediately after forms are removed, carefully examine the surface of the concrete and repair and finish any irregularities in the surface as specified.

### **3.5 FORMED OPENINGS**

Openings shall be of sufficient size to permit final alignment of pipes or other items without deflection or offsets of any kind. Allow space for packing where items pass through the wall to ensure watertightness. Provide openings with continuous keyways and waterstops. Provide a slight flare to facilitate grouting and the escape of entrained air during grouting. Provide formed openings with reinforcement as indicated in the typical structural details. Reinforcing shall be at least 2 inches clear from the opening surfaces and encased items.

### **3.6 EMBEDDED ITEMS**

Set anchor bolts and other embedded items accurately and hold securely in position until the concrete is placed and set. Check all special castings, channels, or other metal parts that are to be embedded in the concrete prior to and again after concreting. Check all nailing blocks, plugs, and strips necessary for the attachment of trim, finish, and similar work prior to concreting.

### **3.7 BEVELED EDGES (CHAMFER)**

Form 3/4-inch beveled edges on exposed concrete edges and corners, beam soffit corners, and where indicated on the Drawings. Re-entrant corners in concrete members shall not have fillets, unless otherwise shown in the Drawings. The top edges of slabs, walkways, beams, and walls may be beveled with an edging trowel in lieu of using chamfer strips.

### **3.8 CONSTRUCTION JOINTS**

- A. Layout of construction joints shall be as shown in the Drawings.
- B. Use formed construction joints for slabs-on-grade that are not subject to hydraulic loading. Maximum size of pour shall be 30 feet each way for

slabs with wire mesh reinforcement and 75 feet each way for slabs with bar reinforcement. Allow 24 hours between pours of adjacent slabs. Provide joints as specified or shown. Set continuous expansion joint strips between slabs and abutting vertical surfaces as indicated in the Drawings.

- C. For control joints of nonstructural slabs, provide partial depth plastic strips set flush with finished surface or 1/8-inch-wide joints cut with a diamond saw. Use control joints one-quarter to one-third the depth of the slab unless otherwise indicated.
- D. Construction joints shall be keyed, unless otherwise detailed. Form keyways by beveled strips or boards placed at right angles to the direction of shear. Except where otherwise shown on the Drawings or specified, keyways shall be at least 1-1/2 inches in depth over at least 25% of the area of the section.
- E. When it is necessary to make a joint because of an emergency, furnish and place reinforcing dowels across the joint. Embed dowels 48 bar diameters each side of the joint. Size and number of dowels shall match reinforcing in the member. Furnishing and placing such reinforcing steel shall be at the Contractor's expense.
- F. After concrete placing has been completed to the construction joint and the concrete has hardened, thoroughly clean the entire surface of the joint of surface laitance, loose or defective concrete, and foreign material, and expose clean aggregate by sandblasting the surface of construction joints before placing the new concrete. Cover horizontal construction joints with mortar. Spread uniformly and work thoroughly into all irregularities of the surface. The water-cement ratio of the mortar in place shall not exceed that of the concrete to be placed, and the consistency of the mortar shall be suitable for placing and working.
- G. In case of emergency, place additional construction joints. (An interval of 45 minutes constitute cause for an emergency construction joint.)

### **3.9 EXPANSION JOINTS**

Provide expansion joints with continuous edge reservoirs, which shall be filled with a joint sealant. Leave the material used for forming the reservoirs in place until immediately before the groves are cleaned and filled with joint sealant. After removing edge forms from the reservoir, remove grout, loose concrete, and fins; then sandblast the slots. Allow the reservoirs to become thoroughly dry; then blow out the reservoirs and immediately prime and fill with the expansion joint sealant and backup materials. The primer used shall be supplied by the same manufacturer supplying the joint sealant.



### **3.10 TIME BETWEEN POURS**

At least two hours shall elapse after depositing concrete in the columns or walls before depositing in beams, girders, or slabs supported thereon. Place beams, girders, brackets, column capitals, and haunches monolithically as part of the floor or roof system, unless otherwise indicated on the Drawings.

### **3.11 PLACING REINFORCEMENT**

- A. Place reinforcing steel in accordance with the current edition of Recommended Practice for Placing Reinforcing Bars, published by the Concrete Reinforcing Steel Institute.
- B. Place reinforcing in accordance with the following, unless otherwise indicated:
  - 1. Reinforcement indicated on the Drawings is continuous through the structure to the farthest extent possible. Terminate bars 2 inches clear from faces of concrete.
  - 2. Splices may be used to provide continuity due to bar length limitations. Minimum length of bars spliced for this reason is 30 feet. Splicing of reinforcement which is detailed to be continuous on the Drawings is not permitted. Minimum lap splices shall be as shown on the construction plans.
- C. Reinforcing steel, before being positioned and just prior to placing concrete, shall be free from loose mill and rust scale and from any coatings that may destroy or reduce the bond. Clean reinforcing steel by sandblasting or wire brushing and remove mortar, oil, or dirt to remove materials that may reduce the bond.
- D. Do not straighten or rebend reinforcing steel in the field. Do not use reinforcing with bends not shown in the Drawings.
- E. Position reinforcing steel in accordance with the Drawings and secure by using annealed wire ties or clips at intersections and support by concrete or metal supports, spacers, or metal hangers. Do not place metal clips or supports in contact with the forms. Bend tie wires away from the forms to provide the specified concrete coverage. Bars additional to those shown on the Drawings, which may be found necessary or desirable by the Contractor for the purpose of securing reinforcement in position, shall be provided by the Contractor at its sole expense.
- F. Place reinforcement a minimum of 2 inches clear of any metal pipe or fittings.

- G. Secure reinforcing dowels in place prior to placing concrete. Do not press dowels into the concrete after the concrete has been placed.
- H. Roll wire mesh used for reinforcement flat before placing concrete. Support and tie wire mesh to prevent movement during concrete placement. Lap mesh 12-inch minimum at splices.
- I. Position dowels for masonry walls to occur at reinforced block cells.

### **3.12 SITE-MIXED CONCRETE**

Conform to ACI 304.

### **3.13 READY-MIXED CONCRETE**

Conform to ASTM C 94.

### **3.14 PLACING CONCRETE**

Conform to ACI 304.

### **3.15 PUMPING CONCRETE**

Conform to ACI 304.2R-71.

### **3.16 WEATHER REQUIREMENTS**

- A. Conform to ACI 305 for placing during hot weather.
- B. Conform to ACI 306 for placing during cold weather.

### **3.17 BONDING TO OLD CONCRETE**

Coat the contact surfaces with epoxy bonding compound. Conform the method of preparation and application of the bonding compound to the manufacturer's printed instructions and recommendations for specific application for this Project.

### **3.18 BACKFILL AGAINST WALLS**

- A. Do not place backfill against walls until the concrete has obtained a compressive strength equal to the specified 28-day compressive strength. Where backfill is to be placed on both sides of the wall, place the backfill uniformly on both sides.
- B. Do not backfill the walls of structures that are laterally restrained or supported by suspended slabs or slabs on grade until the slab is poured and the concrete has reached the specified compressive strength.

### 3.19 CONCRETE FINISHES

- A. Complete concrete surfaces in accordance with the following schedule:

<u>Finish Designation</u>	<u>Area Applied</u>
F-1	Beams, columns, and exterior walls not exposed to view.
F-3	Beams, columns, and walls of structures or buildings exposed to view. Underside of formed floors or slabs.
F-4	Exterior and interior surfaces to be coated.
S-1	Slabs and floors to be covered with concrete or grout.
S-4	Slabs and floors of structures or buildings exposed to view.
S-5	Slabs and floors at slopes greater than 10% and stairs.
E-1	Exposed edges. EXCEPTION: edges normally covered with earth.
E-2	Top of walls, beams, and similar unformed surfaces.

- B. Finish F-1: Repair defective concrete, fill depressions deeper than 1/2 inch, and fill tie holes.

Finish F-3: In addition to Finish F-1, remove fins, fill depressions 1/2 inch or deeper, fill depressions and airholes with mortar. Dampen surfaces and then spread a slurry consisting of one part cement and one and one-half parts sand by damp loose volume, over the surface with clean burlap pads or sponge rubber floats. Remove any surplus by scraping and then rubbing with clean burlap.

Finish F-4: Repair defective concrete, remove fins, fill depressions 1/16 inch or deeper, fill tie holes, remove mortar spatter, and remove bulges higher than 1/16 inch.

Finish S-1: Screed to grade without special finish.

Finish S-4: Steel trowel finish without local depressions or high points and apply a light hair-broom finish. Do not use stiff bristle brooms or brushes. Leave hair-broom lines parallel to the direction of slab drainage.

Finish S-5: Steel trowel finish without local depressions or high points. Apply a stiff bristle broom finish. Leave broom lines parallel to the direction of slope drainage.

Finish E-1: Provide chamfer or beveled edges as shown on construction plans.

Finish E-2: Strike smooth and float to an F-3 or F-4 finish.

### **3.20 CURING CONCRETE**

- A. Conform to ACI 308.
- B. Water cure with burlap mats unless optional curing methods are permitted.
- C. Do not use curing compound on surfaces which are to be coated in accordance with Section 09900, Painting and Coating.
- D. Select the appropriate curing method in response to climatical and site conditions occurring at the time of concrete placement. Take appropriate measure as described in ACI 305 and 306 for protecting and curing concrete during hot and cold weather.

### **3.21 REPAIR OF DEFECTS**

- A. Do not repair defects until concrete has been reviewed by the Owner.
- B. Surface Defects: Repair surface defects that are smaller than 1 foot across in any direction and are less than 1/2 inch in depth.

Repair by removing the honeycombed and other defective concrete down to sound concrete, make the edges perpendicular to the surface and at least 3/8 inch deep, thoroughly dampen the surface, work into the surface a bonding grout (one part cement to one part fine sand), fill the hole with mortar, match the finish on the adjacent concrete, and cure as specified.

- C. Severe Defects: Repair severe defects that are larger than surface defects but do not appear to affect the structural integrity of the structure.

Repair by removing the honeycombed and other defective concrete, make the edges of the hole perpendicular to the surface, sandblast the surface, coat the sandblasted surface with epoxy bonding compound, place nonshrink grout, match the finish on the adjacent concrete, and cure as specified.

- D. Major Defects: If the defects are serious or affect the structural integrity of the structure or if patching does not satisfactorily restore the quality and appearance to the surface, the City may require the concrete to be removed and replaced, complete, in accordance with the provisions of this section.

### **3.22 REPAIR OF CRACKS**

- A. Repair cracks in concrete structures as shown on the construction plans.
- B. If the cracks are serious or affect the structural integrity or function of the element, the City may require the concrete to be removed and replaced, complete, in accordance with the provisions of this section.

### **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid for which such Work is appurtenant thereto, and no additional payment will be made specifically for Work in this Section.

**END OF SECTION**

## **SECTION 03461: PRECAST REINFORCED CONCRETE MANHOLES AND MANHOLE BASES**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section includes materials, testing, and installation of precast concrete manholes, manhole bases, manhole frames and covers.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Refer to the following Specification Sections for additional requirements:

- A. Section 01300: Submittals
- B. Section 02223: Trenching, Backfilling and Compacting
- C. Section 02713: Leakage and Infiltration Testing of Non-Pressure Pipelines
- D. Section 03000: General Concrete Construction

#### **1.3 SUBMITTALS**

- A. Submit shop drawings in accordance with Section 01300, Submittals, and the following.
- B. Submit manufacturer's catalog and test data on precast concrete manholes, frames, and covers along with installation recommendations for inlet and outlet seals and watertight caulking. Show dimensions and materials of construction by ASTM reference and grade. Show manhole cover lettering and pattern.

### **PART 2 - MATERIALS**

#### **2.1 PRECAST CONCRETE MANHOLES**

- A. General: Precast reinforced concrete manholes shall comply with ASTM C 478 and IEUA Standard Sewer Manhole Detail.
- B. Design Load: Design manhole components for H-20 highway loads and site soil conditions.
- C. Concrete: Precast reinforced concrete manhole risers and tops shall be constructed of Class A concrete with Type II or Type V cement per Section 03000, General Concrete Construction.

- D. Manhole Section Configuration: Fabricate manholes only from eccentric taper sections and standard cylinder units of the proper internal diameter.
- E. Manhole Section Dimensions: Unless noted otherwise, minimum diameter and wall thickness of manholes and manhole sections shall be as follows:

<u>Depth of Cover, feet</u>	<u>Manhole Diameter, in</u>	<u>Manhole Section Wall Thickness, in</u>
0-15	48	6
15-22	60	8
22 and greater	72	9

Measure depth of cover from proposed finish surface elevation to the elevation of the top of the manhole base.

- F. Steps: Cast manhole sections without steps.
- G. Manufacturers: Precast reinforced concrete manholes shall be manufactured by Associated Concrete Products, Ameron, Southwest Concrete Products, Inland Concrete Products, Precon Products, or approved equal.
- H. Warning Signs: Fit the entrance to every unventilated manhole with a plastic warning sign, permanently affixed to the wall of the uppermost circular shaft section, with the inscription: "CAUTION-VENTILATE BEFORE ENTERING" in clear large lettering. Attach the sign to the concrete with four Type 316 stainless steel screws and anchors.

## **2.2 MANHOLE FRAMES AND COVERS**

- A. General Requirements: Make manhole frames and covers of ductile iron conforming to ASTM A 536, Class 400, or cast iron conforming to ASTM A 48, Class 30. Casting shall be smooth, clean, and free from blisters, blowholes, and shrinkage. Frames and covers shall be of the traffic type, designed for H-20 loading.
- B. Fit and Matchmarking: Ground or otherwise finish each manhole cover so that it will fit in its frame without rocking. Matchmark frames and covers in sets before shipping to the site.
- C. Cover Inscription: Covers shall have the "SEWER" word cast thereon PER THE City Standard Drawings. No other lettering on the topside is permitted.
- D. Inspection and Coating: Before leaving the foundry, clean castings and subject them to a hammer inspection. Dip castings twice in a preparation

of asphalt or coal tar and oil applied at a temperature of not less than 290°F, and more than 310°F, and in such a manner as to form a firm and tenacious coating.

- E. Manufacturers: Manhole frames and covers shall be manufactured by Neenah Foundry, Long Beach Iron Works, Alhambra Foundry, South Bay Foundry, Pont-A-Mousson, or approved equal.

### **2.3 IMPORTED SAND**

Imported sand shall comply with Section 02223, Trenching, Backfilling and Compacting.

### **2.4 CRUSHED ROCK**

Crushed rock shall comply with Section 02223, Trenching, Backfilling and Compacting. Crushed rock shall be the same material as the pipe bedding. If rock is not used for the pipe bedding, use 3/4-inch crushed rock for the manhole. Crushed rock base material shall extend 1 foot beyond the outside edge of the concrete manhole base.

### **2.5 MANHOLE BASES**

Concrete used in pouring the manhole base shall be Class A concrete, Type II or Type V cement per Section 03000, General Concrete Construction.

### **2.6 CEMENT-MORTAR GROUT**

Grout for watertight joints between precast sections shall be composed of one part portland cement to two parts of clean well-graded sand of such size that all pass a No. 8 sieve. Cement, aggregate, and water for mortar shall conform to the applicable provisions of Section 03000, General Concrete Construction.

### **2.7 EPOXY GROUT**

Use epoxy grout in repairing manhole and manhole base surfaces. Make epoxy grout with epoxy and sand. The sand shall be clean, bagged, graded, and kiln dried silica sand. The prepared grout shall wet the contact surface and provide proper adhesion, or a coat of epoxy shall be applied prior to placing the epoxy grout. The epoxy bonding compound shall be as specified in Section 03000, General Concrete Construction.

### **2.8 PLASTIC JOINT SEALING COMPOUND**

Preformed cold-applied ready-to-use plastic joint sealing compound shall be approved by the City.



## **PART 3 - EXECUTION**

### **3.1 WORK WITHIN EXISTING MANHOLES**

Do no work inside an existing manhole that is part of a sewerage system in service until all the tests and safety provisions of Article 4, Section 1532 "Confined Spaces" State of California Construction Safety Orders have been made.

### **3.2 EXCAVATION**

Excavation for the precast concrete manhole shall be in accordance with Section 02223, Trenching, Backfilling and Compaction.

### **3.3 MANHOLE BASE**

- A. General: Pour manhole bases in place against undisturbed soil with Class A concrete having 3/4-inch-maximum size aggregate and a slump of not greater than 2-inches. Pour the manhole base as one monolithic pour. Observe limitations for site-mixed and ready-mixed concrete set forth in Section 03000, General Concrete Construction. If soil conditions are not adequate as determined by the Engineer, place a 12-inch thick base of 3/4-inch crushed rock prior to the placement of concrete.
- B. Manhole Stub Placement: Set the manhole stubs and sewer main before the concrete is placed; recheck them for alignment and grade before the concrete has set. Locate the various sized inlets and outlets to the manhole as indicated on the plans and as detailed in the detail drawings.
- C. Matching Pipe Crown Elevations: Invert elevations of connecting sewers may vary depending upon sizes. The crown elevation of all pipes shall be the same as the crown elevation of the largest pipe unless otherwise indicated on the plans.
- D. Channel Configuration: Form the invert of the manhole base so as to provide smooth channels conforming in size and shape to the lower portions of the inlet and outlet pipes. The channel shall vary uniformly in size and shape from inlet to outlet, and a shelf shall be constructed higher than the pipe as indicated on the drawings. The manhole base shall extend 12-inches below the bottom of the lowest pipe.
- E. Transitions: All transitions shall be smooth and of the proper radius to give an uninterrupted transition of flow.
- F. Finishing: Shape the concrete base with a wood float and give it a hard steel trowel finish before the concrete sets.

- G. Placement of Additional Mortar: In the event additional mortar is required after initial set has taken place, prime the surface to receive the mortar and mix the mortar with "Willhold Concrete Adhesive" or approved equal in the amounts and proportions recommended by the manufacturer and as directed by the Engineer in order to secure as chip-proof a result as possible.
- H. Curing Time Before Further Construction: Unless approved otherwise by Owner, in advance, the bases shall set a minimum of 24 hours before the manhole construction is continued.

### 3.4 INSTALLING MANHOLES

- A. General: Construct manholes as shown on the plans.
- B. Joints: Set precast concrete manhole units in a bed of grout to make a watertight joint at least 1/2 inch thick with the concrete base or with the preceding unit. Set manhole sections perfectly plumb. Inside joints shall be pointed; wipe off the excess grout. Preformed, cold-applied, ready-to-use, plastic joint sealing compound may be substituted for grout between units and must be used when groundwater is encountered.
- C. Finish Elevation of Manhole Covers: Assemble precast sections so that the cover conforms to the elevation determined by the manhole location as follows, but limited to a maximum of 18-inches of grade ring unless otherwise instructed by the Engineer:
  - 1. In Paved Area: Top of cover shall be flush with the paving surface.
  - 2. In Shoulder Areas: Top of cover shall be flush with existing surface where it is in traveled way or shoulder and 0.1 foot above existing surface where outside limits of traveled way but not in the existing roadside ditch.
  - 3. In Roadside Ditch or Unpaved Open Areas: Top of cover shall be 18-inches above the ground surface. Guard posts or paddle boards may be required adjacent to manholes in open areas.
- D. Manhole Frame and Cover: Bolt the manhole frame to grade ring and secure it with grout and cement mortar fillet. After the frames are securely set, clean the frames and the covers and scrape them free of foreign materials, and ground or otherwise finish as needed so the cover fits in its frame without rocking.
- E. Watertightness: It is the intent of these Specifications that manholes and appurtenances be watertight and free from infiltration. Band all manholes both inside and outside with cement-mortar grout. Where called for in the

plans or supplemental Specifications, manholes that are to be given a protective lining or coating shall be free of any seeping or surface moisture. The adequacy of manholes and appurtenances as to watertightness shall be determined by the Engineer and shall be tested in accordance with Section 02713, Leakage and Infiltration Testing of Non-Pressure Pipelines.

- F. Stubs: Furnish and install sewer pipe in manholes at the locations shown and in conformance with the detail drawings and plans. Plug all stubs with stoppers as shown on the plans for various sizes of pipe.
- G. Sealing Before Completion: In order to prevent accidental use of the new sewer before completion and acceptance, seal the inlet to existing tie-in manholes with broken brick and mortar. Installation of these plugs shall be approved by the Engineer. Remove plugs at the time of final inspection or as directed by the Engineer.
- H. Bulkheads: Install brick and mortar bulkheads at the downstream end of all unused stub channels over 5 feet long to prevent the creation of a septic condition resulting from ponding of sewage and debris in the unused channels, and until such time as the manhole stub is connected and normal sewage flow can occur. A plug is required for all downstream stubs.
- I. New Connections to Existing Manholes: Make new connections to existing manholes wherein stubs have not been provided by core drilling through the base, as directed by the Engineer.
- J. Backfill: Backfill around the precast concrete manhole shall be imported sand; place and compact it in accordance with Section 02223, Trenching, Backfilling and Compacting.
- K. Grade Rings: Cast Class B concrete rings around manhole frames that are flush with the surface. Place the ring after final grading or paving together with final cleanup.
- L. Pavement Replacement: Replacement of bituminous or concrete pavement shall be in accordance with the requirements of the Agency having jurisdiction.

### **3.5 MANHOLE AND MANHOLE BASE REPAIRS**

Manhole sections and bases that exhibit defects in the concrete surface may be rejected. Repair defective concrete surfaces of manhole sections and bases not rejected by chipping away unsound or imperfect concrete. Leave edges sharp and square with the surface. Remove loose material and dust remaining after chipping by means of an air jet. Apply epoxy grout to the surface to be repaired

in accordance with the manufacturer's instructions. The grout shall wet the contact surface and provide proper adhesion, or a coat of epoxy shall be applied prior to placing the epoxy grout.

### **3.6 MANHOLE LINERS**

Where called for in the Plans or Supplemental Specifications, provide protective lining to manholes. The requirements for protective lining of manholes shall be as specified in Section 07950, Manhole Rehabilitation.

## **PART 4 – PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 03462: PRECAST CONCRETE VAULTS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section includes materials, design, and installation of precast concrete vaults and structures.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Submittals: Section 01300
- B. Structure Earthwork: Section 02220
- C. General Concrete Construction: Section 03000
- D. Ladders: Section 05515. - Not Used
- E. Access Hatches: Section 05530

#### **1.3 SUBMITTALS**

- A. Submit shop drawings in accordance with Section 01300, Submittals.
- B. Submit manufacturer's catalog data on precast concrete items. Show dimensions of vaults and thicknesses of walls, floors, and top slabs. Show reinforcing wire and steel. Show materials of construction by ASTM reference and grade.
- C. Submit manufacturer's design calculations and certification signed and sealed by a professional civil or structural engineer registered in the state of California that vault design and construction comply with the specified design load conditions and the referenced ASTM specifications (e.g., ASTM C 857 and C 858).

### **PART 2 - MATERIALS**

#### **2.1 MANUFACTURERS**

Precast concrete vaults shall be manufactured by Brooks Products Inc., Associated Concrete Products Inc., Utility Vault, or approved equal.

#### **2.2 PRECAST CONCRETE VAULTS**

- A. Precast concrete vaults shall comply with ASTM C 858 except as modified herein.
- B. Design loads shall be in accordance with ASTM C 857, except as modified herein. Traffic loads, unless otherwise stated, shall conform to load

designation A-16 per Table 1. Soil lateral loads shall be as determined by ASTM C 857 or loadings specified in the project soils report, whichever is greater. Alternate design by the strength design method shall include a load factor of 1.7 times the lateral earth or hydrostatic pressures.

- C. Include the following load conditions in the design:
  - 1. Vault roof removed while structure is backfilled to grade and subject to live and dead loads.
  - 2. Vault roof in place and walls subject to simultaneous vertical and horizontal application of all live, impact, and dead loads. Include the case of an A-16 designated load placed directly above the wall.
- D. Design shall also comply with the following restrictions:
  - 1. The maximum reinforcement ratio allowed is one-half the reinforcement ratio that would produce a balanced strain condition.
  - 2. Earth pressure shall be converted to a horizontal pressure using a coefficient of earth pressure at rest of 0.5 and not a coefficient of active earth pressure.
  - 3. Include a live load surcharge of 2 feet of soil in the design of the walls.
- E. Design all vaults to receive the specified traffic loading.
- F. Precast vault construction shall be in the form of monolithic walls or horizontal wall sections; do not use panel walls.
- G. Minimum wall thickness shall be 6 inches. Design knockout wall panels to accommodate loading pressures defined above.
- H. Design and construct vaults to be watertight when subjected to groundwater over the entire height of the vault.
- I. Floor slab shall be precast concrete. Calculations for the floor slab design shall be included in the vault design submittal.

### **2.3 SEALANTS AND MORTAR**

Plastic sealing compound shall comply with Federal Specification SS-S-00210. Mortar shall comply with ASTM C 387, Type S, or use grout complying with Section 03000, General Concrete Construction.

### **2.4 LADDERS – NOT USED**

Provide ladders per Section 05515, Ladders.

## **2.5 ACCESS HATCHES**

Provide traffic-rated access hatches per Section 05530, Access Hatches.

## **2.6 RUBBER ANNULAR SEALING DEVICES**

Rubber annular sealing devices shall be of the modular mechanical type, utilizing interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and a wall opening. Provide a Type 304 stainless steel pressure plate under each bolthead and nut. Bolts and nuts shall be Type 316 stainless steel. Sealing element shall be EPDM rubber. Product shall be Link Seal by Thunderline Corporation; Interlynx by Advance Products & Systems, or approved equal.

## **2.7 CEMENT**

Cement shall be ASTM C 150, Type II.

## **2.8 ADMIXTURES**

Provide air entraining and water reducing concrete admixtures as specified in Section 03000, General Concrete Construction.

## **2.9 CRUSHED ROCK BASE**

Use crushed aggregate base per Section 02220, Structure Earthwork.

# **PART 3 - EXECUTION**

## **3.1 VAULT BASE**

- A. Excavate for the vault and install a crushed rock base, 12 inches thick.
- B. Crushed rock base material shall extend 1 foot beyond the outside edge of the concrete vault base. Compact to 90% relative density.

## **3.2 SEALING AND GROUTING**

Fill joints between precast sections with either a plastic sealing compound or mortar.

## **3.3 INSTALLING VAULTS**

- A. Set each precast concrete vault section plumb on a bed of sealant or cement mortar at least 1/2-inch thick to make a watertight joint with the concrete base and with the preceding unit. Point the inside joint and wipe off the excess mortar or sealant.

- B. Install the concrete roof such that it slopes at least 1/8 inch per foot toward the drainage channel around the roof hatch.
- C. Install drainpipe from vault roof hatch drainage channel and terminate at the floor level, near the sump.

### **3.4 BACKFILL AROUND VAULTS**

Backfill and compact around the vaults using fill as specified in Section 02220, Structure Earthwork. Compact to 90% relative compaction.

### **PART 4 – PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**



## **SECTION 05050: BOLTS, WASHERS, AND DRILLED ANCHORS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes materials and installation of anchor bolts, connecting bolts, washers, drilled anchors, and stainless-steel fasteners.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Submittals, Section 01300  
General Concrete Construction, Section 03000  
Structural Steel, Section 05100

#### **1.3 SUBMITTALS**

- A. Submit shop drawings in accordance with Section 01300, Submittals.
- B. Submit manufacturer's catalog data and ICBO reports for bolts, washers, and concrete anchors. Show dimensions and reference materials of construction by ASTM designation and grade.

#### **1.4 DESIGN CRITERIA**

Structural Connections: AISC Specification for Structural Steel Buildings (June 1, 1989), except delete the second paragraph of Section A7.1, the last sentence of the first paragraph of Section M5, the last sentence of Section M5.2, and Chapter N in its entirety.

### **PART 2 - MATERIALS**

#### **2.1 ANCHOR BOLTS**

Steel anchor bolts shall conform to ASTM A 307, Grade A, B, or C.

#### **2.2 CONNECTION BOLTS**

- A. Steel connection bolts shall conform to ASTM A 325, Type 1 or 2. Connection type shall be N per the AISC Specifications.
- B. Provide galvanized bolts where shown in Drawings. Galvanizing of bolts, nuts, and washers shall be by the hot-dipped process.

## **2.3 STAINLESS-STEEL BOLTS**

Stainless-steel bolts shall be ASTM A 193, Grade B8M, or ASTM F 593, Type 316. Nuts shall be ASTM A 194, Grade 8M, or ASTM F 594, Type 316. Use ASTM A 194 nuts with ASTM A 193 bolts; use ASTM F 594 nuts with ASTM F 593 bolts. Provide washer for each nut and bolthead. Provide washers of the same material as the nuts.

## **2.4 WASHERS**

Washers for American Standard beams and channels shall be square or rectangular, tapered in thickness, smooth, hot-dipped galvanized, and conforming to ASTM F 436.

## **2.5 DRILLED ANCHORS**

Drilled anchors shall be Type 316 stainless steel threaded rod adhesive anchors. Epoxy adhesive shall comply with ASTM C 881, Type IV, Grade 3, Class B or C. Adhesive shall be Rawl Power-Fast, Hilti HSE 2411, Simpson Epoxy-tie, or approved equal. Epoxy anchor assemblies shall be ICBO approved.

# **PART 3 – EXECUTION**

## **3.1 STORAGE OF MATERIALS**

Store material, either plain or fabricated, above ground on platforms, skids, or other supports. Keep material free from dirt, grease, and other foreign matter and protect from corrosion.

## **3.2 GALVANIZING**

Zinc coating for bolts, anchor bolts, and threaded parts shall be in accordance with ASTM A 153.

## **3.3 INSTALLING CONNECTION BOLTS**

- A. Use steel bolts to connect structural steel members.
- B. Install ASTM A 325 bolts per the AISC "Specification for Structural Joints using ASTM A 325 or A 490 Bolts."
- C. Install washers per AISC Specification for ASD.
- D. Bolt holes in structural members shall be 1/16 inch in diameter larger than bolt size. Measure cast-in-place bolt locations in the field before drilling companion holes in structural steel beam or assembly.

- E. Slotted holes, if required in the Drawings, shall conform to AISC Specifications, Chapter J, Section J3, Table J3.1.

### **3.4 INSTALLING ANCHOR BOLTS**

- A. Preset bolts and anchors by the use of templates. For mechanical equipment (such as pumps) do not use concrete anchors set in holes drilled in the concrete after the concrete is placed.
- B. After anchor bolts have been embedded, protect projecting threads by applying grease and having the nuts installed until the time of installation of the equipment or metalwork.
- C. Minimum depth of embedment of adhesive anchors shall be as recommended by the manufacturer, but no less than that shown in the Drawings and no less than 12 bolt diameters.
- D. Prepare holes for drilled anchors in accordance with the anchor manufacturer's recommendations prior to installation.

### **PART 4 – PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 05100: STRUCTURAL STEEL**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

Furnish, fabricate and install all structural steel, and miscellaneous metalwork and bolts as specified and shown. All structural steel shapes, plates, bars and their products shall conform to the "Specifications for Structural Steel" (ASTM A36). All structural tubes shall conform to the "Specifications for Hot Formed Welded and Seamless Carbon Steel Structural Tubing" (ASTM A500). All Structural steel and other miscellaneous metalwork shall be hot-dipped galvanized after fabrication in accordance with Paragraph 2.3.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Submittals, Section 01300  
Bolts, Washers, and Drilled Anchors, Section 05050  
General Concrete Construction, Section 03000

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with the requirements of Section 01300, Submittals. The following submittals are required: Shop Drawings of all structural steel and miscellaneous metalwork for review prior to fabrication.

#### **1.4 QUALITY ASSURANCE**

All structural steel and miscellaneous metalwork shall conform in physical and chemical properties and manufacturing, with specification for the Design Fabrication and Evaluation of Structural Steel for Building of AISC and ASTM Specifications.

#### **1.5 BOLTS**

- A. Furnish and set all bolts and anchor bolts. Except where otherwise shown or specified, all bolts, anchor bolts, and nuts shall be stainless steel, Type 316.
- B. Threads shall be Coarse Thread Series conforming to the requirements of the American Standard for Screw Threads. All bolts and cap screws shall have hexagon heads and nuts shall be Heavy Hexagon Series.
- C. Threads on all steel bolts, threaded rods and threaded anchors shall be coated with a non-seizing compound.

## **PART 2 - MATERIALS**

### **2.1 DESCRIPTION**

Except as otherwise shown, the design, fabrication and erection of structural steel shall conform to the requirements of the American Institute of Steel Construction "Manual of Steel Construction".

### **2.2 WELDING**

- A. All welding shall be by the metal-arc method or gas-shielded arc method as described in the American Welding Society's "Welding Handbook" as supplemented by other pertinent standards of the AWS. Qualification of welders shall be in accordance with the AWS Standards governing same. AWS certification shall be provided to the Engineer upon request.
- B. In assembly and during welding, the component parts shall be adequately clamped, supported and restrained to minimize distortion and for control of dimensions. Weld reinforcement shall be as specified by the AWS code. Upon completion of welding, remove all weld splatter, flux, slag and burrs left by attachments. Repair welds to produce a workman-like appearance, with uniform weld contours and dimensions. Grind all sharp corners of material which is to be painted or coated to a minimum of 1/16-inch on the flat.

### **2.3 GALVANIZING**

All structural steel plates, shapes, bars, and fabricated assemblies required to be galvanized, after the steel has been thoroughly cleaned of rust and scale, shall be galvanized in accordance with the "Specification for Zinc (Hot-Galvanized) Coating on Products Fabricated from Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strip" (ASTM A123). Straighten any galvanized part that becomes warped during the galvanizing operation. Bolts, anchor bolts, nuts and similar threaded fasteners, after being properly cleaned, shall be galvanized in accordance with the "Specifications for Zinc Coating (Hot-Dip) on Iron and Steel Hardware" (ASTM A153). Field repairs to galvanizing shall be made using "Galvinox", "Galvo-Weld", or approved equal.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. General: Verify all measurements at the site. Punch holes 1/16 inch larger than the nominal size of the bolts, unless otherwise indicated. Whenever needed, because of the thickness of the metal, subpunch and reame or drill

holes. No drifting of bolts nor enlargement of holes is allowed to correct misalignment. Correct mismatched holes with new materials.

Protect dissimilar metals from galvanic corrosion by means of pressure tapes, coatings or isolators as approved by the Engineer.

Place metalwork to be embedded in concrete accurately and hold in correct position while the concrete is placed or, if shown or accepted, form recesses or blockouts in the concrete and grout the metalwork in place in accordance with Section 03000, General Concrete Construction. Clean the surface of metalwork in contact with or embedded in concrete thoroughly of all rust, dirt, grease, loose scale, grout, mortar and other foreign matter. If accepted, recesses may be neatly cored in the concrete after it has attained its design strength and the metalwork grouted in place as specified in Section 03000, General Concrete Construction.

Erect Structural metalwork as shown or as directed. Repair or replace metalwork which is bent, broken or otherwise damaged to the satisfaction of the Engineer. Embedding of metalwork shall be in strict conformance with Section 03000, General Concrete Construction.

- B. Welding: Welding shall be done by operators who have been qualified by tests as prescribed by the AWS in Standard Qualification Procedure to perform the type of Work required. The quality of welding shall conform to AWS Code for Arc Welding in Building Construction Section 4, Workmanship.
- C. Bolted Connections: All bolted connections shall conform to AISC Framed Beam Connections and shall be bearing-type connections with threads excluded from shear planes.

### **3.2 CLEANING**

After installation, clean damaged surfaces of shop primed metals and touch them up with the same material used for the shop coat. Clean damaged surfaces of galvanized metals and touch them up with zinc dust-zinc oxide coating conforming to Military Specification MIL-P-21035.

## **PART 4 – PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 05530: ACCESS HATCHES**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes materials, fabrication, and installation of access hatches.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Section 01300: Submittals
- B. Section 03000: General Concrete Construction
- C. Section 09900: Painting and Coating

#### **1.3 SUBMITTALS**

- A. Submit shop drawings in accordance with Section 01300, Submittals.
- B. Submit drawings of access hatches. Show dimensions and reference materials of construction by ASTM designation and grade. Show design criteria.

### **PART 2 - MATERIALS**

#### **2.1 ACCESS HATCHES**

- A. Access hatches shall be Bilco Type JAL, U.S. Foundry, or approved equal of the size and configuration shown in the Drawings. Aluminum doors shall be anodized. Latch and lifting mechanism assemblies, hold-open arms and guides, and all brackets, hinges, pins, and fasteners shall be Type 316 stainless steel.
- B. Locking and Latching Devices: Recessed hasp covered by a hinged lid flush with the exterior surface.
- C. Provide stainless-steel safety chains across both accessible sides.
- D. Incorporate trough frame, with drain coupling.

#### **2.2 WELDING ELECTRODES**

Welding electrode for aluminum shall be ER4043 filler metal.

## **PART 3 - EXECUTION**

### **3.1 STORAGE OF MATERIALS**

Store structural material, either plain or fabricated, above ground on platforms, skids, or other supports. Keep material free from dirt, grease, and other foreign matter and protect from corrosion.

### **3.2 INSTALLATION**

- A. Clean surfaces of metalwork to be in contact with concrete of dirt, grease and other foreign substances before placing concrete.
- B. Where metalwork is to be installed in recesses in formed concrete, said recesses shall be made, metalwork installed, and recesses filled with dry-pack mortar in conformance with Section 03000, General Concrete Construction.
- C. Extend Schedule 40 PVC piping from frame drain connection down to the sump.

### **3.3 WELDING**

- A. Perform welding on aluminum by the gas metal arc (MIG) or gas tungsten arc (TIG) process. Welding shall conform to the AWS Structural Welding Code-Aluminum, D1.2-90.
- B. Provide a minimum of two passes for metal in excess of 5/16-inch thickness.
- C. Produce weld uniform in width and size throughout its length with each layer of weldment smooth; free of slag, cracks, pinholes, and undercuttings; and completely fused to the adjacent weld beads and base metal. Avoid irregular surface, nonuniform bead pattern, and high crown. Form fillet welds of the indicated size of uniform height and fully penetrating. Accomplish repair, chipping, and grinding of welds in manner that will not gouge, groove, or reduce the base metal thickness.

### **3.4 CORROSION PROTECTION OF ALUMINUM SURFACES**

- A. Coat aluminum surfaces to be embedded or which will be in contact with concrete or masonry per Section 09900, Painting and Coating, System No. E-1 before installation. Allow the coating to dry before the aluminum is placed in contact with the concrete.
- B. Where aluminum surfaces come in contact with dissimilar metals, keep the dissimilar metallic surfaces from direct contact by use of neoprene gaskets or washers.



#### **PART 4 – PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 07950: MANHOLE REHABILITATION**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes the Work including, but not be limited to, the following phases: traffic control, water blasting interior of manholes, removal of manhole steps, application of air-placed concrete “gunite”, application of epoxy primer and lining with polyurethane.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Refer to the following Specification Sections for additional requirements:

- A. Section 01300: Submittals
- B. Section 03000: General Concrete Construction

#### **1.3 RESPONSIBILITY**

Provide complete and in place, ready for use, manhole rehabilitation.

#### **1.4 SUBMITTALS**

Submit the following to the Engineer for approval in accordance with Section 01300, Submittals:

- A. Manufacturer’s product data including physical properties, surface preparation, repair application, curing and field quality control.
- B. Manufacturer’s qualifications including a list of references for a minimum of five (5) similar rehabilitation installation projects in the United States. The reference list shall include: the names of Agencies and engineering firms under which the work was accomplished, date of completion, contact person(s), and their correct telephone number(s).
- C. Applicator’s qualifications including certification stating the applicator is factory trained and approved by the manufacturer in application of the specified products.

#### **1.5 REFERENCE**

Standard Specifications for Public Works Construction, 2021 edition (“Greenbook”), Section 502.

## **PART 2 - MATERIALS**

Polyurethane Coating: Two-component, 100% solid, non-solvent, non-sag or self-leveling, polyurethane-base material, applicable in horizontal, vertical, and overhead installation:

- A. Coating shall have a shore "D" hardness of 57 at 77 degrees Fahrenheit.
- B. Coating shall pass ASTM D-1737 for flexibility, using cylinder mandrel of 0.5 inch.
- C. Flash point shall be 450 degrees Fahrenheit open Zahn cup.
- D. Lining material shall be per Section 502-5 and shall meet or exceed the requirements of 502-5 of the Greenbook pertaining to Chemical Resistance and Physical Properties.
- E. Primer shall be per Section 502- of the Greenbook.

Coating shall be Sancon 100 polyurethane protective coating system, Raven 405, or approved equal modified as necessary to meet the requirement specified herein.

## **PART 3 - EXECUTION**

### **3.1 GENERAL**

- A. Before use of any product, investigate its compatibility with surfaces, fillers, and joints.
- B. Use only compatible materials.
- C. Install products in accordance with manufacturer's instructions and as specified herein.
- D. Concrete preparation and installation of coating shall be done under the supervision of a manufacturer's representative.

### **3.2 SURFACE PREPARATION**

Perform the preparation of the manholes in the following sequence:

- A. Implement sewage bypassing as necessary. Any flow control is the responsibility of and shall be done by the Contractor.
- B. Water blast the manhole interior to remove deteriorated concrete, oil, grease, or existing coating. Water blast equipment shall be of a minimum pressure of 5,000 psi and shall not include detergent or other chemical cleaning solvents in the process. For new manholes, eliminate this procedure.
- C. Remove all debris prior to coating. No debris shall be allowed to enter the sewer system.
- D. After surface preparation and prior to concrete repair, eliminate all active structure infiltration prior to liner application. Infiltration control will be treated as extra work. The method of stopping these leaks shall be by

injection of chemical grout as approved by the Engineer and in accordance with NASSCO Specifications. For new manholes, this Section can be omitted.

- E. Air-placed concrete gunite application shall conform to Section 303-2 of the Greenbook. Apply gunite to a thickness (minimum one-inch thickness) which will restore the original manhole surface. Allow the gunite to cure for 24 hours prior to the lining application. For new manholes, this Section can be omitted.
- F. As shown on the Construction Drawings, bring back manhole channel and shelf areas to their original dimensions using concrete mortar. Hand-trowel shelves to provide a smooth and uniform surface. Allow concrete to cure seven days prior to coating. For new manholes, this Section can be omitted.
- G. Manufacturer shall field inspect manhole and provide a written statement that the manholes have been prepared properly and is ready for primer coat.

### **3.3 INSPECTION**

Provide to the Engineer safe access to inspect the manholes' structural condition. Notify the Engineer at least two working days prior to inspection.

### **3.4 COATING**

#### **A. Prime Coating**

Prior to application of the lining, all surfaces shall receive a five (5) mil thickness of 100% solids non-solvented, moisture tolerant epoxy primer.

#### **B. Liner Application**

1. Lining application shall conform with Section 502-5 of the Greenbook.
2. The lining application shall be performed only by workmen trained and experienced with the specified material. The Contractor shall provide proof of such experience with the bid documents. Proof shall include a list of similar projects using the specified material. Apply the lining through plural component equipment specifically designed and approved by the manufacturer of the lining material. The equipment shall be in good working order to ensure correct proportioning and mixing of the components.
3. Apply the lining to a thickness of 125 mils (1/8-inch) in one continuous coat, without seams, free from any holes or defects. Terminate manhole lining at the flow line; DO NOT coat manhole channels. During lining application, take wet gauge thickness readings as required to ensure correct lining thickness.

4. The uniform lining shall be free from porosity, without bubbles or pinholes and uniform in color. Remove, rework and patch all areas in question.
5. Application of the lining shall not take place when exposed to rain, or high winds. Protect the Work from the above mentioned conditions.

### **3.5 SPARK TEST**

Perform spark testing upon completion of lining installation and visual inspection. Spark testing voltage will be set at 100 volts per mil of coating thickness specified. Spark testing equipment shall be Tinker and Razor APW or equivalent. Spark testing shall be witnessed by inspection or other appropriate person(s).

### **3.6 REPAIR**

All areas which do not pass the spark test, have bubbles or other defects, shall be immediately repaired as per Section 502-6.2 of the Greenbook.

### **3.7 WARRANTY**

The Contractor and the manufacturer shall provide to the Owner a certificate of warranty which indicates: "The complete manhole concrete rehabilitation was performed properly. We (the Contractor and Manufacturer) warrant all material and workmanship for a period of 3 years starting from the day of final approval from the City. The Contractor and the manufacturer shall provide field response to the Owner's request regarding any defect in the manhole concrete rehabilitation. The Contractor shall repair at its sole cost any areas that fail to meet the requirements of the Contract Documents or are defective. All repair work shall receive a new certificate of warranty of 3 years with the same terms and conditions.

## **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump-sum or unit-price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 09900: PAINTING AND COATING**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes materials and application of painting and coating systems for submerged metal surfaces, exposed metal surfaces, buried metal surfaces, and metal surfaces in contact with concrete.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Submittals, Section 01300  
Cement-Mortar Lined and Coated Steel Pipe, Section 15076  
Control and Check Valves, Section 15100

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with the requirements of Section 01300, Submittals. The following submittals are required:

- A. Submit manufacturer's data sheets showing the following information:
  - 1. Recommended surface preparation.
  - 2. Minimum recommended dry-film thicknesses per coat for prime, intermediate, and finish coats.
  - 3. Percent solids by volume.
  - 4. Recommended thinners.
  - 5. Statement that the selected prime coat is recommended by the manufacturer for use with the selected intermediate and finish coats.
  - 6. Application instructions including recommended application, equipment, humidity, and temperature limitations.
- B. Submit certification that all coatings conform to South Coast Air Quality Management District Rules and Regulations for products and application.

## 1.4 PRE-SUBMITTAL MEETING

Conduct a pre-submittal meeting two weeks prior to the submittal of coating shop Drawings, at the discretion of the Engineer. The meeting shall be attended by the painting and coating subcontractors.

## PART 2 - MATERIALS

### 2.1 COLOR SYSTEM FOR COATINGS

Unless noted otherwise, colors for surfaces that are to be coated shall be defined as follows or approved equal:

COLOR	PANTONE ID No. (closest match in sunlight)	AMERSHIELD DESIGNATION
Light Blue	2925C	1159 Light Blue
Dark Blue	2766C	Newport Coast #33
Purple	512C	PMS 512C
Safety Green	384U	1135 Safety Green
Safety Red	485 C 2X	RO-1 Bright Red
Safety Orange	021 C	OR-2 Safety Orange
Safety Yellow	U2X	Safety Yellow
Olive-lite	451C	PMS 451 C
Factory Finish	N/A	No color coating
Beige	N/A	MWRP Light Beige

### 2.2 SUBMERGED METAL COATING SYSTEMS

#### A. System No. B-1--Submerged Metal, Raw Water or Raw Sewage

Type: Epoxy having a minimum volume solids of 80%.

Service Conditions: Use on metal structures or pipes (such as tanks, clarifier mechanisms, scum troughs, slide gates and other miscellaneous metal) submerged in raw water or raw sewage.

Surface Preparation: SSPC SP-10

Prime Coat: ICI Devoe Bar-Rust 233H, 8 mils; Tnemec 104-1211, 8mils; or approved equal.

Finish Coat: ICI Devoe Bar-Rust 233H, 8mils; Tnemec 104-ABO5, 8mils; or approved equal.”

B. System No. B-2--Submerged Metal, Potable or Nonpotable Water

Type: Epoxy.

Service Conditions: Shall be used on structures, valves, equipment, and piping immersed in potable or nonpotable water.

Surface Preparation: SSPC SP-10

Apply the manufacturer's recommended number of coats to attain a dry-film thickness of 16 mils. Products:

Tnemec 80 or 100;

Carboline Super Hi-Gard 891;

Ameron 395;

International Interline 785 HS;

or approved equal. Color of topcoat: white. Each coat shall have a different color than the one preceding it.

## 2.3 EXPOSED METAL COATING SYSTEMS

A. System No. C-1--Exposed Metal, Severely Corrosive Environment

Type: Inorganic zinc prime coat with high-build epoxy paint finish coat.

Service Conditions: Use on metal structures, piping, fittings, and appurtenances subjected to continuous water condensation, or occasional immersion or splashing.

Surface Preparation: SSPC SP-10.

Prime Coat: Self-curing, two-component inorganic zinc rich primer recommended by the manufacturer to be coated with a high-build epoxy paint finish coating. Minimum zinc content shall be 12 pounds per gallon. Apply to a dry-film thickness of 3 mils. Products:

Carboline 11 HS;

Ameron 9HS;

Tnemec 90-96;

International Interzinc 180HS;

or approved equal.

Finish Coat: One coat of 5 mil dry-film thickness:

Carboline 888 or 890;

Ameron 385;

Tnemec 104;

International Interguard 760HS;

or approved equal.



B. System No. C-2--Exposed Metal, Atmospheric Weathering Environment

Type: Aliphatic or acrylic polyurethane having a minimum volume solids content of 73% with high-build epoxy primer.

Service Conditions: Use on exterior steel and piping, fittings, and appurtenances subject to sunlight and weathering.

Surface Preparation: SSPC SP-10.

Prime Coat: Two-component high-build epoxy. Apply to a dry-film thickness of 8 mils:

Ameron 400;  
Tnemec 104;  
International Interseal 670 HS;  
or approved equal.

Finish Coats: Two-component pigmented high-build polyurethane. Apply one or more coats to a total thickness of 5 mil dry-film thickness:

Ameron Amershield;  
Tnemec Series 1075;  
International Interthane 990HS;  
or approved equal,

C. System No. C-3--Exposed Non-ferrous Metal and Galvanized Steel

Type: Synthetic resin or epoxy primer.

Service Conditions: Use to coat non-ferrous and galvanized steel pipe, fittings, and appurtenances.

Surface Preparation: Galvanized surfaces shall be flat with no protrusions. Remove high spots and tears in the galvanizing with hand and power grinders. Comply with ASTM D 6386, Paragraph 5.2.1. Do not remove the galvanized coating below the specified thickness. Solvent clean galvanized surfaces per ASTM D 6386, Paragraph 5.3.2. Then sweep blast per ASTM D 6386, Paragraph 5.4.1. Use one of the abrasive blast materials that is described.

Solvent clean or steam clean other nonferrous surfaces per SSPC SP-1; do not use alkali cleaning. Then dust blast.

Pre Coat: Apply to a dry-film thickness of 4 mils:

Tnemec 166;  
Ameron 385;  
Carboline Rustbond Penetrating Sealer SG;  
or approved equal.

Finish Coat: Epoxy and polyurethane as described in System No. C-1.

## **2.4 BURIED METAL COATING SYSTEMS**

### System No. D-1 -- Buried Metal, Corrosive Groundwater Exposure

Type: High solids epoxy or phenolic epoxy having a minimum volume solids of 89% (ASTM D 2697).

Service Conditions: Buried metal, such as valves, flanges, bolts and nuts, fittings, flexible pipe couplings, structural steel, especially subject to corrosive groundwater (low pH, high sulfate and chloride concentrations.)

Surface Preparation: SSPC SP-10.

Prime Coat: Not required.

Coating System: Apply three or more coats of Ameron 400, Tnemec 104 HS or 80, ICI Devoe Bar-Rust 233H, Carboline 890LT, Sherwin-Williams Tank Clad HS B62-80 series, or approved equal; 30 mils total. Maximum thickness of an individual coating shall not exceed the manufacturer's recommendation."

## **2.5 COATING SYSTEM FOR ALUMINUM IN CONTACT WITH CONCRETE**

### System No. E-1--Aluminum and Concrete Insulation

Type: Bituminous paint having a minimum volume solids of 68% coal-tar pitch based.

Service Conditions: Use to coat areas of aluminum grating, gates, stairs, or structural members in contact with concrete.

Surface Preparation: Solvent or steam cleaning per SSPC SP-1; do not use alkali cleaning. Then dust blast.

Prime Coat: Apply synthetic resin or epoxy primer to metal surface before finish coat. Products:

International Intervinix VTA528/529, or approved equal. No primer required for Carboline or Tnemec.

Finish Coat: Two coats of 12 mil dry-film thickness each coat:  
Carboline Super Service Black;  
Tnemec 46-465;

International Intertuf 100;  
or approved equal.

## **2.6 PVC PIPE COATING SYSTEM**

### **System No. F-1--Sunlight Exposed PVC Pipe, CPVC and FRP Pipe**

Type: Epoxy primer with a minimum volume solids of 54% and a pigmented polyurethane enamel having a minimum volume solids of 52%.

Service Conditions: Use to coat exposed PVC, CPVC and FRP piping exposed to sunlight.

Surface Preparation: SSPC SP-1. Then lightly abrade the surface with medium-grain sandpaper.

Prime Coat: One coat of Tnemec Series 166, International 7510, Ameron 385, ICI Devoe Devran 224 HS, Sherwin-Williams Macropoxy 646 B58 series, Carboline 888 or 890, or approved equal. Apply to a minimum dry-film thickness of 4 mils.

Finish Coat: One coat of Tnemec Series 1075, International Interthane 990HS, Ameron 450 HS, ICI Devoe Devran 379, Carboline 134 HG, Sherwin-Williams Hi-Solids Polyurethane B65-300 series, or approved equal. Apply to a minimum thickness of 3 mils.

## **2.7 FUSION-BONDED EPOXY COATING SYSTEM**

### **System No. G-1--Ferrous-Metal Surfaces**

Type: Thermosetting powdered epoxy coating.

Service Conditions: Use to coat interior surfaces of ferrous metal valves, excluding seating areas and bronze and stainless steel pieces; pipe; and other ferrous metal surfaces as required.

Surface Preparation: SSPC SP-5. Remove protuberances which may produce pinholes in the coating. Round sharp edges. Remove surface contaminants which may prevent bonding of the coating shall be removed.

Coating: Apply to a dry-film thickness of 12 mils in accordance with manufacturer's recommendation: 3M Scotchkote 134; or approved equal.

## 2.8 AIR QUALITY REQUIREMENTS

Materials shall comply with South Coast Air Quality Management District's Rule 1107 for shop coating and Rule 1113 for field coating.

## PART 3 - EXECUTION

### 3.1 SURFACE PREPARATION

A. General: Sandblast or prepare only as much surface area as can be coated in one day. Remove all sharp edges, burrs, and weld spatter. Do not sandblast epoxy-coated pipe that has been factory coated.

B. SSPC Specifications: Wherever the words "solvent cleaning," "hand tool cleaning," "wire brushing," "blast cleaning" or similar words are used in these Specifications or in paint manufacturer's specifications, they shall be understood to refer to the applicable SSPC (Steel Structures Painting Council, Surfaces Preparation Specifications, ANSI A159.1) Specifications listed below:

SP-1	Solvent Cleaning
SP-2	Hand Tool Cleaning
SP-3	Power Tool Cleaning
SP-5	White Metal Blast Cleaning
SP-6	Commercial Blast Cleaning
SP-7	Brush-Off Blast Cleaning
SP-8	Pickling
SP-10	Near White Blast Cleaning
SP-11-87t	Near-White Power Tool Cleaning

C. Sandblasting: Provide suitable enclosure, exhaust system, and bag house for sandblasting operations to prevent violations of applicable air quality requirements.

### 3.2 PAINTING SYSTEMS

Deliver all paints to the sites in the original, unopened containers. All materials of a specified painting system, including primer, intermediate, and finish coats, shall be produced by the same manufacturer. Thinners, cleaners, driers, and other additives shall be as recommended by the paint manufacturer for the particular coating system.

### **3.3 PAINT MIXING**

Prepare multiple-component coatings using all the contents of each component container as packaged by the paint manufacturer. Do not use partial batches. Do not use multiple-component coatings that have been mixed beyond their pot life. Provide small quantity kits for touch-up painting and for painting other small areas. Mix only the components specified and furnished by the paint manufacturer. For reasons of color or otherwise, do not intermix additional components, even within the same generic type of coating.

### **3.4 SURFACES NOT TO BE PAINTED**

Unless noted otherwise, do not paint the following surfaces and fully protect them when adjacent areas are painted:

- A. Mortar-coated pipe and fittings
- B. Stainless Steel
- C. Galvanized Steel
- C. Metal letters
- D. Nameplates and grease fittings
- E. Aluminum grating
- F. Brass and copper tubing, submerged
- G. Buried pipe, unless specifically required in the piping Specifications

### **3.5 PROTECTION OF SURFACES NOT TO BE PAINTED**

Remove, mask, or otherwise protect hardware, lighting fixtures, switch plates, aluminum surfaces, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not intended to be painted. Provide drop cloths to prevent paint materials from falling on or marring adjacent surfaces. Protect working parts of mechanical and electrical equipment from damage during surface preparation and painting process. Mask openings in motors to prevent paint, dust, and other materials from entering the motors. Completely remove all masking materials and clean surfaces at completion of painting operations.

### **3.6 SURFACES TO BE COATED**

Coat surfaces as described below unless otherwise indicated on the Drawings, in the Specifications or directed by the City:

- A. Above Ground and Exposed Piping: Coat above ground and exposed piping or piping in vaults and structures as described in the various piping specifications and as specified herein. Color shall be as specified herein or as required by the Engineer.

- B. Valves: Coat valves as described in the various valve specifications. Above-ground valves, or valves in vaults and structures, shall match the color of the connecting piping.
- C. Valve Box Lids: Coat valve box lids per System No. C-1.
- D. Buried Items: Coat buried flanges, nuts and bolts, valves, flexible pipe couplings, exposed rebar from thrust blocks, and valve boxes per System No. D-1, unless otherwise specified in the particular specifications for these items.
- E. Above-Ground Structural Steel and Structural Steel in Vaults: Coat above-ground structural steel or structural steel located in vaults and structures as described in the exposed metal coating system section.
- F. Pipe Supports: Coat pipe supports in vaults the same as the adjacent piping. If pipe is PVC, coat pipe supports per System No. C-1.
- G. Exposed Indoor Galvanized Electrical Conduit: Coat exposed indoor galvanized electrical conduit per System No. C-3. Color of finish coat shall be OSHA Safety Orange.
- H. Mechanical Equipment: Mechanical equipment, such as pumps, shall be coated in accordance with System C-2.
- I. Aluminum in Contact with Concrete: Coat aluminum surfaces in contact with concrete per System No. E-1.

### 3.7 COLOR SCHEDULE

- A. Color Guidelines: Unless noted otherwise, coat surfaces to match the colors listed below.

- B. Definitions:

At Grade: Facilities that are flush with streets, sidewalks, parking lots, green belts or graded areas.

Above Grade/Exposed: Pipelines and other facilities that are protruding through and are located above finished grade, out of doors and not enclosed by a shelter, cover, vault or housing.

Enclosed: Pipeline and other facilities that are located above or below grade and are enclosed within a building, shelter, covers, or vaults.

**PART V**  
**RECYCLING OF MATERIALS**

**RECYCLING OF MATERIALS**

N/A: Not Applicable:

I.D. Mark: System identification marker as described herein. The I.D. Mark shall identify the system, of which the facility is a part.

C. Potable Water System:

<b>FACILITY</b>	<b>ENCLOSED</b>	<b>ABOVE GRADE/EXPOSED</b>	<b>AT GRADE</b>
Airvac Assemblies	Dark Blue	Olive-lite w/I.D. Mark	N/A
Airvac Covers	N/A	Olive-lite w/I.D. Mark	N/A
Electric Motors	Dark Blue	Olive-lite w/I.D. Mark	N/A
Electric Enclosures	Factory Finish	Olive-lite or Factory Finish*	N/A
Piping	Dark Blue	Olive-lite w/I.D. Mark	N/A
Pressure Vessels	Dark Blue	Olive-lite w/I.D. Mark	N/A
Pump and Pump Bases	Dark Blue	Olive-lite	N/A
Valves (all types)	Dark Blue	Olive-lite	N/A
Valve Can Lids:			
Normally Open	Dark Blue	N/A	Safety Yellow
Normally Closed (at zone breaks)	Safety Red	N/A	Safety Red
Vault Hatch Lids	Dark Blue or Factory Finish w/I.D. Mark*	N/A	Factory Finish w/I.D. Mark

\* Final color selection shall be determined by the City.

D. Recycled Water System:

<b>FACILITY</b>	<b>ENCLOSED</b>	<b>ABOVE GRADE/EXPOSED</b>	<b>AT GRADE</b>
Airvac Assemblies	Purple	Olive-lite w/I.D. Mark	N/A
Airvac Covers	N/A	Olive-lite w/I.D. Mark	N/A
Electric Motors	Purple	Olive-lite w/I.D. Mark	N/A
Electric Enclosures	Factory Finish	Olive-lite or Factory Finish*	N/A
Piping	Purple	Olive-lite w/I.D. Mark	N/A
Pressure Vessels	Purple	Olive-lite w/I.D. Mark	N/A
Pump & Pump Bases	Purple	Olive-lite	N/A
Valves (all types)	Purple	Olive-lite	N/A
Valve Can Lids:			
Normally Open	Purple	N/A	Purple
Normally Closed (at zone breaks)	Safety Red	N/A	Safety Red
Vault Hatch Lids	Purple or Factory Finish w/I.D. Mark*	N/A	Natural Finish w/I.D. Mark

\* Final color selection shall be determined by the City.



E. Sewer Collection System (Force Mains):

<b>FACILITY</b>	<b>ENCLOSED</b>	<b>ABOVE GRADE/EXPOSED</b>	<b>AT GRADE</b>
Airvac Assemblies	Safety Green	Safety Green	N/A
Airvac Covers	N/A	Safety Green	N/A
Electric Motors	Safety Green	Safety Green	N/A
Electric Enclosures	Factory Finish or Safety Green	Factory Finish or Safety Green	N/A
Piping	Safety Green	Safety Green	N/A
Pump & Pump Bases	Safety Green	Safety Green	N/A
Valves (all types)	Safety Green	Safety Green	N/A
Valve Can Lids	N/A	N/A	Safety Green
Vault Hatch Lids	Safety Green or Factory Finish with I.D. Mark	N/A	Safety Green or Factory Finish w/I.D. Mark

\* Final color selection shall be determined by the City.

F. Raw Water:

<b>FACILITY</b>	<b>ENCLOSED</b>	<b>ABOVE GRADE/EXPOSED</b>	<b>AT GRADE</b>
Airvac Assemblies	Light Blue	Light Blue	N/A
Airvac Covers	N/A	Light Blue	N/A
Electric Motors	Light Blue	Light Blue	N/A
Electric Enclosures	Factory Finish or Light Blue	Factory Finish or Light Blue	N/A
Piping	Light Blue	Light Blue	N/A
Pump & Pump Bases	Light Blue	Light Blue	N/A
Valves (all types)	Light Blue	Light Blue	N/A
Valve Can Lids	N/A	N/A	Light Blue
Vault Hatch Lids	Light Blue or Factory Finish w/I.D. Mark	N/A	Light Blue or Factory Finish w/I.D. Mark

\* Final color selection shall be determined by the City.

G. Identification (I.D.) Mark:

Certain facilities listed above to be coated shall have an identification system applied by the Contractor at the Owner's direction.

Vault hatches (coated or uncoated) shall be identified with the Owner's initials and the system the facility serves (recycled water, raw water, potable water, sewer). The identification mark shall be able to stand up to traffic and not pose a tripping hazard.

Other facilities listed above that are to be coated or provided with an I.D. mark shall receive an identification decal supplied by the City that consists of the Owner's logo, phone number, system identification color, and the system the facility serves.

### **3.8 FIELD TOUCH UP OF SHOP-APPLIED PRIME COATS**

- A. Organic Zinc Primer: Surfaces that are shop primed with inorganic zinc primers shall receive a field touchup of organic zinc primer to cover all scratches or abraded areas. Organic zinc coating system shall have a minimum volume solids of 54% and a minimum zinc content of 14 pounds per gallon. Coating shall be of the converted epoxy, epoxy phenolic, or urethane type and shall be Tnemec 90-97, 3 mils; International Zinc Lock Epoxy 308, 3 mils; or approved equal. Organic zinc primer shall be manufactured by the prime coat and finish coat manufacturer.
- B. Other Surfaces: Other surfaces that are shop primed shall receive a field touchup of the same primer used in the original prime coat.

### **3.9 DRY-FILM THICKNESS TESTING**

- A. Coating Thickness Testing: Measure coating thickness specified for steel surfaces with a magnetic-type dry-film thickness gage. Use dry-film thickness gauge as manufactured by Mikrotest, Elcometer, or approved equal. Each coat shall be checked for the correct dry-film thickness. Measurement shall not be made until a minimum of eight hours after application of the coating. Check non-magnetic surfaces for coating thickness by micrometer measurement of cut and removed coupons. Repair coating at all locations where coupons are removed.
- B. Holiday Testing: Test the finish coat (except zinc primer and galvanizing) for holidays and discontinuities with an electrical holiday detector of the low-voltage, wet-sponge type. Detector shall be manufactured by Tinker and Rasor, K-D Bird Dog, or approved equal.
- C. Repair: If the item has an improper finish color, insufficient film thickness, or holidays, clean the surface and top-coat it with the specified paint material to obtain the specified color and coverage. Sand by hand or power visible areas of chipped, peeled, or abraded paint, feather the edges. Prime the areas and finish coat in accordance with the Specifications. Work shall be free of runs, bridges, shiners, laps, or other imperfections.

#### **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 09952: COLD-APPLIED WAX TAPE COATING**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section includes materials and application of a three-part, cold-applied wax tape coating system for buried piping.

#### **1.2 SUBMITTALS**

- A. Submit shop drawings in accordance with Section 01300, Submittals.
- B. Submit manufacturer's catalog data sheets and application instructions.

### **PART 2 - MATERIALS**

#### **2.1 PRIMER**

- A. Primer shall be a blend of petrolatums, plasticizers, and corrosion inhibitors having a paste-like consistency. The primer shall have the following properties:
  - 1. Pour Point: 100°F to 110°F.
  - 2. Flash Point: 350°F.
  - 3. Coverage: 1 gallon/100 square feet.
- B. Primer shall be Trenton Wax Tape Primer, Denso Paste Primer, or approved equal.

#### **2.2 WAX TAPE**

- A. Wax tape shall consist of a synthetic-fiber felt, saturated with a blend of microcrystalline wax, petrolatums, plasticizers, and corrosion inhibitors, forming a tape coating that is easily formable over irregular surfaces. The tape shall have the following properties:
  - 1. Saturant Pour Point: 115°F to 120°F.
  - 2. Thickness: 50 to 70 mils.
  - 3. Tape Width: 6 inches.
  - 4. Dielectric Strength: 100 volts/mil.

- B. Wax tape shall be Trenton No. 1 Wax Tape, Denso "Densyl Tape," or approved equal.

### **2.3 PLASTIC WRAPPER**

- A. Wrapper shall be a polyvinylidene chloride plastic with three 50-gauge plies wound together as a single sheet. The wrapper shall have the following properties:
  - 1. Color: Clear.
  - 2. Thickness: 1.5 mils.
  - 3. Tape Width: 6 inches.
- B. Plastic wrapper shall be Trenton Poly-Ply, Denso Tape PVC Self-Adhesive, or approved equal.

### **2.4 POLYETHYLENE SHEET ENCASEMENT**

The encasement shall consist of low-density polyethylene of at least 8 mils thickness, conforming to AWWA C105. Tape shall consist of polyolefin backing and adhesive which bonds to common pipeline coatings including polyethylene. Minimum width shall be 2 inches. Products: Canusa Wrapid Tape, Tapecoat 35, Polyken 934, or approved equal.

## **PART 3 - EXECUTION**

### **3.1 WAX TAPE COATING APPLICATION**

- A. Surfaces shall be clean and free of all dirt, grease, water, and other foreign material prior to the application of the primer and wax tape.
- B. Apply primer by hand or brush to all surfaces of the fitting. Work the primer into all crevices and completely cover all exposed metal surfaces.
- C. Apply the wax tape immediately after the primer application. Work the tape into the crevices around fittings. Wrap the wax tape spirally around the pipe and across the fitting. Use a minimum overlap of 55% of the tape width. Apply tape to flanges, mechanical and restrained joint bolts, nuts and glands, and grooved-end couplings to 6 inches beyond each side of the item.
- D. Work the tape into the crevices and contours of irregularly shaped surfaces and smooth out so that there is a continuous protective layer with no voids or spaces under the tape.

- E. Overwrap the completed wax tape installation with the plastic wrapping material. Wrap spirally around the pipe and across the fitting. Use a minimum overlap of 55% of the tape width and apply two layers or applications of overwrap. Secure plastic wrapper to pipe with adhesive tape.

#### **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 15000: GENERAL PIPING REQUIREMENTS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes the general requirements for selecting piping materials; selecting the associated bolts, nuts, and gaskets for flanges for the various piping services in the Project; and miscellaneous piping items such as flange insulation kits and insulating unions.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Trenching, Backfilling and Compacting: Section 02223.
- B. General Concrete Construction: Section 03000.
- C. Installation of Pressure Pipelines: Section 15051.
- D. Ductile-Iron Pipe and Fittings: Section 15056.
- E. Water Facilities Identification: Section 15151.

#### **1.3 SUBMITTALS**

Refer to the applicable pipe installation sections.

#### **1.4 DEFINITIONS OF BURIED AND EXPOSED PIPING**

- A. Buried piping is piping buried in the soil, or encased in concrete.
- B. Exposed piping is piping in any of the following conditions or locations:
  - 1. Above ground.
  - 2. Inside buildings, vaults, or other structures.
  - 3. In underground concrete trenches or galleries.

### **PART 2 - PRODUCTS**

#### **2.1 GASKETS FOR BELL AND SPIGOT JOINTS**

- A. The rubber gaskets used to seal pipe joints shall be made of nitrile rubber (Buna-N) of such size and cross section as to fill completely the recess provided for it. The gasket shall have smooth surfaces and shall be extruded or molded to the required diameters within a tolerance of  $\pm 1/64$  inch. The rubber compound shall contain not less than 50% by volume of nitrile rubber (Buna-N). The remainder of the compound shall consist of pulverized fillers free from rubber substitutes, reclaimed rubber, and deleterious substances. The compound shall meet the following physical

requirements when tested in accordance with appropriate sections of "Method of Physical Tests and Chemical Analyses for Rubber Goods" (Federal Specification ZZ-R-601a):

Tensile strength, psi, min.	15,000
Elongation at rupture, percentage min.	350
Shore durometer, Type A	50 to 65
ASTM D 676 - Lock joint only	45 to 50
Compression set, percentage of original deflection, max.	20
Method B (constant deflection; 22 hours at 158°F) ASTM D 3895 - Lock joint only	20
Accelerated aging in air (70 hours at 212°F):	
Tensile strength, percentage of original strength, min.	85
Hardness change, percentage, max.	+15
Water absorption, percent volume change, max.	10
Ozone 2 ppm to 6 ppm, 25% elongation, 2 hours at 100°F max.	No cracking
Specific gravity	1.35 to 1.45

- B. The gaskets shall be the product of a manufacturer having a successful experience record in the manufacture of rubber gaskets for pipe joints.
- C. Store the rubber at 70°F or less. Do not expose to the direct rays of the sun. Store the gaskets in such a way to permit free circulation of air around the rubber.
- D. Supply rubber gaskets in accordance with AWWA C900, C905, C303 and C200.



## **2.2 BOLTS AND NUTS FOR FLANGES FOR STEEL OR DIP**

- A. Bolts and nuts for buried and submerged flanges and flanges located outdoors above ground or in vaults and structures shall be Type 316 stainless steel conforming to ASTM A 193, Grade B8M, for bolts and ASTM A 194, Grade 8 M, for nuts. Fit shall be Classes 2A and 2B per ANSI B1.1 when connecting to cast-iron valves having body bolt holes.
- B. Bolts used in flange insulation kits shall conform to ASTM A 193 (Grade B7). Nuts shall conform to ASTM A 194 (Grade 2H).
- C. Provide washers for each nut. Washers shall be of the same material as the nuts.

## **2.3 FLANGE INSULATION KITS**

- A. Flange insulation kits shall consist of insulating gasket, an insulating stud sleeve for each bolt, insulating washers for each bolt, and a steel washer between each insulating washer and the nut. The sleeves shall be one piece, integral with the insulating washer. Gaskets shall be full face. Provide double sleeve and washers for each bolt.
- B. Gasket material shall be phenolic, 1/8-inch thick. The flange insulating gasket shall be full diameter of the flange with a nitrile O-ring on each side of the gasket. Dielectric strength shall be not less than 500 volts per mil and a compressive strength of not less than 24,000 psi.
- C. Insulating flange bolt sleeves shall be high-density polyethylene or spiral-wrapper mylar. Dielectric strength shall be not less than 1,200 volts per mil.
- D. Insulating flange bolt washers shall be high-strength phenolic with a minimum thickness of 1/8-inch. Dielectric strength shall be not less than 500 volts per mil and a compressive strength of not less than 25,000 psi.
- E. Steel flange bolt washers for placement over the insulating washers shall be a minimum thickness of 1/8-inch and be cadmium plated.
- F. Flange insulating kits shall be as manufactured by Central Plastics Company, Advance Products Systems, or approved equal.

## **2.4 LUBRICANT FOR STAINLESS-STEEL BOLTS AND NUTS**

Lubricant shall be TRX-Synlub by Ramco, Anti-Seize by Ramco, Husk-It Husky Lube O'Seal, or approved equal.

## **2.5 GASKETS FOR FLANGES FOR DUCTILE-IRON PIPING AND FITTINGS IN WATER SERVICE**

Gaskets shall be full face, 1/8-inch thick, cloth-inserted rubber: John Crane Co. Style 777 or acceptable alternate. Gaskets shall be suitable for a water pressure of 200 psi at a temperature of 180°F. Gaskets shall have "nominal" pipe size inside diameters not the inside diameters per ANSI B16.21.

## **2.6 RUBBER ANNULAR HYDROSTATIC SEALING DEVICES**

- A. Rubber annular hydrostatic sealing devices shall be of the modular mechanical type, utilizing interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe sleeve and the passing pipe. Assemble links to form a continuous rubber belt around the pipe, with a pressure plate under each bolthead and nut.
- B. Pressure plate shall be Type 316 stainless steel. Bolts and nuts shall be Type 304 or 316 stainless steel. Sealing element shall be EPDM rubber.
- C. The size of the wall sleeve needed to accommodate the passing pipe shall be as recommended by the rubber seal manufacturer.
- D. Product shall be Link Seal as manufactured by Thunderline Corporation; Innerlynx as manufactured by Advance Products & Systems, Inc.; or approved equal.

## **2.7 COPPER TUBING**

- A. Copper tubing shall conform to ASTM B 88, Type L, hard drawn.
- B. Wrought copper solder joint fittings shall be per ASTM B 75. Material shall be UNS C10200, C12000, or C12200.
- C. Solder shall be 95-5 (95% tin, 5% antimony) conforming to ASTM B 32, Grade Sb5. Flux shall comply with ASTM B 813.

## **2.8 PVC PIPE**

- A. PVC pipe shall be Schedule 80, Type I, Grade 1 (Class 12454-B), conforming to ASTM D 1784 and D 1785.
- B. Fittings shall be Schedule 80, conforming to ASTM D 2467 for socket-type fittings.
- C. Solvent cement shall comply with ASTM D 2564 and F 656.

## **PART 3 - EXECUTION**

### **3.1 INSTALLING PIPE SPOOLS IN CONCRETE**

Install pipes in walls and slabs before placing concrete. See Section 03000, General Concrete Construction.

### **3.2 RAISED FACE AND FLAT FACE FLANGES**

Use only flat faced flanges.

### **3.3 INSTALLING FLANGED PIPING**

- A. Set pipe with the flange bolt holes straddling the pipe horizontal and vertical centerline. Install pipe without springing, forcing, or stressing the pipe or any adjacent pipe, connecting valves or equipment.
- B. Clean flanges by wire brushing before installing flanged fittings. Clean flange bolts and nuts by wire brushing, lubricate carbon steel bolts with oil and graphite, and tighten nuts uniformly and progressively. If flanges leak under pressure testing, loosen or remove the nuts and bolts, reset or replace the gasket, reinstall and retighten the bolts and nuts, and retest the joints. Joints shall be watertight.
- C. Assemble insulating flanges in the shop, not in the field. Hydrostatically test at 200 psi and then electrically test.

### **3.4 INSTALLATION OF STAINLESS-STEEL BOLTS AND NUTS**

Prior to assembly, coat threaded portions of stainless-steel bolts and nuts with lubricant.

### **3.5 INSTALLATION OF RUBBER ANNULAR HYDROSTATIC SEALING DEVICES**

Install in accordance with the manufacturer's instructions.

### **3.6 INSTALLATION OF FLANGE INSULATION KITS**

Install flange insulation kits per NACE RP0286. Prevent moisture, soil, or other foreign matter from contacting any portion of the insulating joint prior to its being sealed. If moisture, soil, or other foreign matter contacts any portion of the insulating joint, disassemble the entire joint, clean with a solvent, and dry prior to reassembly. Follow the manufacturer's recommendations regarding the torquing pattern of the bolts and the amount of torque to be used when installing the flange insulating kit.

For buried joints, wrap the flanged joint with wax tape per Section 09952, Cold-Applied Wax Tape Coating, for two feet on either side of the flange, then wrap with a double thickness of polyethylene per AWWA C105.

### **3.7 WARNING PIPE IDENTIFICATION TAPE**

Provide warning tape and install above each buried pipe as shown on the Drawings and in accordance with Section 15151, Water Facilities Identification.

### **3.8 INSTALLATION OF COPPER TUBING**

- A. Bends shall be long sweep. Shape bends with shaping tools. Form bends without flattening, bucking, or thinning at any point.
- B. Make soldered joints per ASTM B 828. Solder shall penetrate to the full depth of the cup in joints and fittings.

### **3.9 INSTALLATION OF PVC PIPING**

- A. Cut pipe ends square and remove all burrs, chips, and filings before joining pipe or fittings. Bevel pipe ends as recommended by the pipe manufacturer.
- B. Make up solvent welded joints per ASTM D 2855.
- C. Allow at least eight hours of drying time before moving solvent welded joints or subjecting the joints to any internal or external loads or pressures.”

## **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 15041: CHLORINATION OF WATER MAINS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes the disinfection of potable water mains, appurtenances, and connections by chlorination, in accordance with AWWA C651 and as specified herein.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Submittals, Section 01300  
Disinfection of Potable Water Tanks and Piping, Section 02675 – Not Used  
General Piping Requirements, Section 15000  
Ductile Iron pipe and Fittings: Section 15056  
Cement-Mortar Lined and Coated Steel Pipe, Section 15076

#### **1.3 SUBMITTALS**

Discharge Plans including planned location(s) and flow rate(s).

Chlorination Plan including selected disinfection method. (See AWWA C651 and Part 2 below).

#### **1.4 JOB CONDITIONS**

- A. Discharge of chlorinated water into watercourses or surface waters is regulated by the National Pollutant Discharge Elimination System (NPDES). A copy of the City's permit may be examined at the City office. Conform to permit requirements.
- B. The rate of flow and locations of discharges shall be scheduled in advance to permit review and coordination with the City and appropriate agencies:
  - 1. Los Angeles County Flood Control District.
- C. Use potable water for chlorination. See Special Provisions Section for availability of water.
- D. Submit requests for use of water from waterlines of the Owner 48 hours in advance.
- E. Perform chlorination prior to hydrostatic testing for pipelines having a diameter of 12-inches and larger. See Paragraph 3.1-G of this Section for concurrent testing of smaller diameter pipelines.

## **PART 2 - MATERIALS**

### **2.1 LIQUID CHLORINE SOLUTION**

Liquid chlorine solution shall be in accordance with the requirements of ANSI/AWWA B301. Inject it with a solution feed chlorinator and a water booster pump.

### **2.2 CALCIUM HYPOCHLORITE (DRY)**

Calcium hypochlorite shall be in accordance with the requirements of ANSI/AWWA B300. Dissolve it in water to a known concentration in a container and pump it into the pipeline at a measured rate.

### **2.3 SODIUM HYPOCHLORITE (SOLUTION)**

Sodium hypochlorite shall be in accordance with the requirements of ANSI/AWWA B300. Dilute it in water to desired concentration and pump it into the pipeline at a measured rate.

### **2.4 SODIUM HYPOCHLORITE TABLETS AND ADHESIVE**

- A. Chlorine Content: The tablets shall have an average weight of 0.009 pounds each and shall contain not less than 70% of available chlorine. Tablets shall not contain organic chlorine compounds.
- B. Adhesive: Adhesive shall be a type that will not impart taste, odor, or detrimental compounds to the water supply, EPA or NSF approved for potable use.
- C. Storage: Store hypochlorite tablets in tightly closed containers. Take proper care they will not be accessible to children or unauthorized persons.

### **2.5 CHLORINE RESIDUAL TEST KIT**

For measuring chlorine concentration, use a medium range, drop count, titration kit or an orthotolidine indicator comparator with wide range color discs. The kit shall be capable of determining chlorine concentration in the range 1.0 to 25 mg/L. Test kits shall be Hach Chemical, Hellige, or approved equal. Maintain an adequate number of kits in good working order and available for immediate test of residuals at points of sampling.

## PART 3 - EXECUTION

### 3.1 PIPELINES

- A. General: Before being placed into service, chlorinate all pipelines and appurtenances. Disinfect pipelines with a diameter of 10-inches or less by either direct chlorine solution injection or by use of sodium hypochlorite tablets. Disinfect pipelines with a diameter of 12 inches and larger by direct chlorine solution injection. Bacteriological testing after disinfection shall be performed by the City.
- B. Chlorination Contractor: Chlorination shall be performed by a certified chlorination and testing contractor. Chlorination shall be in accordance with the instructions of the chlorinator manufacturer.
- C. Groundwater: In the event groundwater is encountered and it is impossible to prevent its entrance into the mains, or the mains are not free from dirt, thoroughly clean them prior to disinfection and extra flushing effort will be required. Furthermore, disinfection shall be by direct chlorine solution injection only.
- D. Services: Tightly shut off every service connection served by a main being disinfected at the curb stop before water is applied to the main. Care shall be taken to expel all air from the main and services during the filling operation.
- E. Direct Chlorine Solution Injection:
1. Apply chlorine solution at the beginning of the section to be chlorinated and inject through a corporation stop, a hydrant, or other approved connection to ensure treatment of the entire system being disinfected. Install all required corporation stops and other plumbing materials necessary for chlorination and flushing of the main.
  2. Introduce potable water into the pipeline at a constant measured rate. Inject chlorine solution into the potable feed water at a measured rate. Proportion the two rates so that the chlorine concentration in the pipeline is maintained at a minimum concentration of 50 mg/L to 100 mg/L, with a minimum chlorine residual of 25 mg/L after 24 hours in the pipe. Check the concentration at points downstream periodically during the filling to ascertain that sufficient chlorine is being added.
- F. Disinfection by Sodium Hypochlorite Tablets: The use of sodium hypochlorite tablets will be permitted in pipe sizes 4 through 10 inches.

Attach the tablets by means of an approved adhesive to the inside top of the lengths of pipe as they are being laid. Limit the amount of adhesive to the smallest practicable amount applied to one side of the tablet only.

The following table shows the number of tablets to be used per length of pipe of various sizes to provide the required chlorine residual:

<u>ID of Pipe (Inches)</u>	<u>No. of Hypochlorite Tablets Per Length of Pipe</u>
4	2
6	2
8	3
10	6

- G. Disinfection of Valves and Appurtenances: During the period that the chlorine solution or slug is in the section of pipeline, open and close valves to obtain a chlorine residual at hydrants and other pipeline appurtenances. Care shall be taken to ensure that no chlorinated water enters any active pipeline.
- H. Concurrent Testing (for Pipelines with Diameters of 10 Inches or Less): Disinfecting mains and appurtenances, and hydrostatic testing may run concurrently for the required 24-hour test period. In the event there is leakage and repairs and retesting are necessary, repeat disinfection of the pipeline, by injection of chlorine solution into the line as provided in this Section.
- I. Confirmation of Residual: After the chlorine solution applied by the continuous feed method has been retained in the pipeline for 24 hours, take samples at air valves and other points of access to confirm that a chlorine residual of 25 mg/L minimum exists along the pipeline.
- J. Bacteriologic Tests: Collect one sample at each air-release valve or for each mile where valve intervals are greater, and delivered to the Engineer within six hours. The City will perform a bacteriologic quality test to demonstrate the absence of coliform organisms in each separate section of the pipeline after chlorination and refilling.
- K. Repetition of Procedure: If the initial chlorination fails to produce required residuals and bacteriologic tests, repeat chlorination and until satisfactory results are obtained.
- L. Pipeline Flushing: After confirming the chlorine residual, flush excess chlorine solution from the pipeline until the total chlorine concentration in the water leaving the pipe is within 0.5 mg/L of the replacement water.



- M. Dechlorination: Dechlorinate water flushed and/or discharged from waterlines to the storm drain system in accordance with the requirements of the Regional Water Quality Control Board NPDES permit and any other discharge permits.
- N. Test Facility Removal: After satisfactory disinfection, replace air valves, restore the pipe coating and remove temporary disinfection and test facilities.
- O. Connections to Existing System: Where connections are to be made to an existing potable water system, swab or spray the interior surfaces of all pipe and fittings used in making the connections with a one percent hypochlorite solution before they are installed. Start thorough flushing as soon as the connection is completed and continue until all discolored water is eliminated.

#### **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 15044: PRESSURE TESTING OF PIPING**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section specifies the hydrostatic and leakage testing of water mains.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Submittals, Section 01300  
General Piping Requirements, Section 15000  
Installation of Pressure Pipelines, Section 15051  
Cement-Mortar Lined and Coated Steel Pipe, Section 15076

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with the requirements of Section 01300, Submittals. The following submittals are required:

- A. Submit test bulkhead locations and design calculations, pipe attachment details, and methods to prevent excessive pipe wall stresses.
- B. Submit six copies of the test records to the Engineer upon completion of the testing.

#### **1.4 TEST PRESSURES**

Test pressures for the various services and types of piping are shown below in Section 3.10, Test Pressures.

#### **1.5 TESTING RECORDS**

Provide records of each piping installation during the testing. These records shall include:

- A. Date of test.
- B. Identification of pipeline, or pipeline section, tested or retested.
- C. Identification of pipeline material.
- D. Identification of pipe specification.
- E. Test fluid.

- F. Test pressure.
- G. Remarks: Leaks identified (type and location), types of repairs, or corrections made.
- H. Certification by Contractor that the leakage rate measured conformed to the Specifications.
- I. Test duration.
- J. Allowable losses.
- K. Actual losses.

## **PART 2 - MATERIALS**

### **2.1 VENTS AND DRAINS FOR ABOVEGROUND PIPING**

Install vents on the high points of above ground piping, whether shown on the Drawings or not. Install drains on low points of above ground piping, whether shown on the Drawings or not. Provide a valve at each vent or drain point. Valves shall be 3/4-inch for piping 3 inches and larger and 1/2-inch for piping smaller than 3 inches.

### **2.2 MANUAL AIR-RELEASE VALVES FOR BURIED PIPING**

Provide temporary manual air-release valves for pipeline test. Construct the pipe outlet in the same manner as for a permanent air valve and after use seal with a blind flange, cap, or plug and coat equal to the adjacent pipe.

### **2.3 TEST BULKHEADS**

Design and fabricate test bulkheads per Section VIII of the ASME Boiler and Pressure Vessel Code. Materials shall comply with Part UCS of said code. Design pressure shall be at least 2.0 times the specified test pressure for the section of pipe containing the bulkhead. Limit stresses to 70% of yield strength of the bulkhead material at the bulkhead design pressure. Include air-release and water drainage connections.

### **2.4 TESTING FLUID**

- A. Testing fluid shall be potable water.
- B. Submit request for use of water from water lines of Owner 48 hours in advance.

- C. The Contractor may obtain the water from the Owner at no charge for the initial test. If the initial test fails the Contractor will be charged the cost of additional water at the Owner's current rates.

## **2.5 TESTING EQUIPMENT**

Provide new, calibrated, 6-inch-diameter face pressure gauges, pipes, bulkheads, pumps, calibrated meters and chart recorder to perform the hydrostatic testing.

## **PART 3 - EXECUTION**

### **3.1 TESTING PREPARATION**

- A. Pipes shall be in place and anchored to resist thrust forces based on the test pressure being used before commencing pressure testing. Any concrete anchors, thrust blocks and such shall be fully cured before being used to restrain pipeline and appurtenances.
- B. Conduct pressure tests on exposed and aboveground piping after the piping has been installed and attached to the pipe supports, hangers, anchors, expansion joints, valves, and meters. When valves are used as pipe end closures for testing, testing pressures should not exceed pressure limits of said valves.
- C. Conduct pressure tests on buried piping after the trench has been completely backfilled and compacted.
- D. Provide any temporary piping needed to carry the test fluid to the piping that is to be tested. After the test has been completed and demonstrated to comply with the Specifications, disconnect and remove temporary piping. Do not remove the vent and drain valves at the high and low points in the tested piping. Plug or cap taps or connections to the existing piping from which the test fluid was obtained.
- E. Provide temporary drain lines needed to carry testing fluid away from the pipe being tested. Remove such temporary drain lines after completing the pressure testing.

### **3.2 CLEANING**

Before conducting hydrostatic tests, flush pipes with water to remove dirt and debris. Maintain a flushing velocity of at least 2 fps. Flush pipes for the minimum time period as given by the formula below and as required to thoroughly clear the pipeline of dirt and debris.

$$T = 2/3 L$$

in which:

T = flushing time (seconds)

L = pipe length (feet).

In mains 24-inches or larger in diameter, acceptable alternatives to flushing are use of high-pressure water jet, sweeping, and scrubbing, or equally effective means. All water, sediment, dirt, and foreign material accumulated during this cleaning operation shall be discharged, vacuumed, or otherwise removed from the pipe and construction area.

### **3.3 LENGTH OF TEST SECTION FOR BURIED PIPING**

The maximum length of test section for buried pipe shall be 5,000 feet. Provide test bulkheads where required at the Contractor's sole expense. Testing against valves is not permitted.

### **3.4 INITIAL PIPELINE FILLING FOR HYDROSTATIC TESTING**

Maximum rate of filling shall not cause water velocity in pipeline to exceed 1 fps.

### **3.5 TESTING NEW PIPE WHICH CONNECTS TO EXISTING PIPE**

Test new pipelines which are to be connected to existing pipelines by isolating the new line from the existing line by means of pipe caps, spectacle flanges, or blind flanges. After the new line has been successfully tested, remove caps or flanges and connect to the existing piping.

### **3.6 HYDROSTATIC TESTING OF ABOVEGROUND OR EXPOSED PIPING**

Open vents at high points of the piping system to purge air while the pipe is being filled with water. Subject the piping system to the test pressure specified herein. Maintain the test pressure for a minimum of 24 hours. Examine joints, fittings, valves, and connections for leaks. The piping system shall show zero leakage or weeping. Correct leaks and retest until zero leakage is obtained. Air and vacuum valves shall be in place and working in case of pipe failure during testing.

### **3.7 HYDROSTATIC TESTING OF BURIED PIPING**

- A. Where any section of the piping contains concrete thrust blocks or encasement, do not make the pressure test until at least 10 days after the concrete has been poured. When testing mortar-lined or PVC piping, fill the pipe to be tested with water and allow it to soak for at least 48 hours to absorb water before conducting the pressure test.

- B. Apply and maintain the test pressure by means of a hydraulic force pump.
- C. Maintain the test pressure for the following duration by restoring it whenever it falls 5 psi:

<u>Pipe Diameter</u> <u>(inches)</u>	<u>Hours</u>
18 and less	4
20 to 36	8
Greater than 36	24

- D. After the test pressure is first reached, use a meter to measure the additional water added to maintain the pressure. This amount of water is the loss due to the apparent leakage in the piping system. The allowable loss rate is defined by the formula:

$$L = \frac{HND(P)^{0.5}}{C}$$

in which:

- H = specified test period (hours)
- L = allowable loss (gallons)
- N = number of rubber-gasketed joints in the pipe test
- D = diameter of the pipe (inches)
- P = specified test pressure (psig)
- C = 7,400

- E. The allowable leakage loss for piping having threaded, brazed, flanged or welded (including solvent welded) joints shall be zero.
- F. Repair and retest any pipes showing leakage rates or losses greater than that allowed in the above criteria.

### **3.8 REPETITION OF TEST**

If the actual leakage or loss exceeds the allowable amounts, locate and correct the faulty work and repeat the test. Restore the work and all damage resulting from the leak and its repair. Eliminate visible leakage.

### **3.9 BULKHEAD AND TEST FACILITY REMOVAL**

After a satisfactory test, remove test bulkheads and other test facilities, and restore the pipe coatings and fill the pipeline section tested with water and maintain it full until disinfection and acceptance of the pipeline at the completion

of the contract. The Contractor shall pay all costs for repairing any damage to the pipeline as a result of pressure imposed during operations of filling the pipeline with water and conducting the tests.

### **3.10 TEST PRESSURES**

The field hydrostatic test requirements shall be 150 psi unless shown otherwise in the Drawings.

## **PART 4 - PAYMENT**

Payment for the work in this Section shall be included as part of the lump sum or unit prices bid for pipeline installation, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 15051: INSTALLATION OF PRESSURE PIPELINES**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes the installation of pressure pipelines fabricated of polyvinyl chloride, ductile iron, welded steel; pipeline closures and connections and pipeline encasement.

#### **1.2 RELATED WORK DESCRIBED ELSEWHERE**

- A. Submittals: Section 01300.
- B. Trenching, Backfilling, and Compacting: Section 02223.
- C. General Concrete Construction: Section 03000.
- D. Painting and Coating: Section 09900.
- E. General Piping Requirements: Section 15000.
- F. Chlorination of Water Mains for Disinfection: Section 15041.
- G. Pressure Testing of Piping: Section 15044.
- H. Water Facilities Identification: Section 15151.

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with the requirements of Section 01300, Submittals. The following submittals are required:

- A. Submit an installation schedule (tabulated layout) which includes:
  - 1. Order of installation and closures.
  - 2. Pipe centerline station and elevation at each change of grade and alignment.
  - 3. Elements, curves, and bends, both in horizontal and vertical alignment including elements of the resultant true angular deflections in cases of combined curvature.
  - 4. The location, length, size, design designation, and number designation of each pipe section and pipe special.



- 5. Locations of junction structures.
- B. Submit welder qualification certificates.

## **PART 2 - PRODUCTS**

### **INSTALLATION MATERIAL**

Refer to the various referenced Sections on pipe by type for material requirements.

## **PART 3 - EXECUTION**

### **3.1 DELIVERY AND TEMPORARY STORAGE OF PIPE AT SITE**

- A. On-site Storage Limitation: On-site pipe storage shall be limited to a maximum of one week, unless exception is approved in writing by Owner.
- B. Care of Pipe: Take care to avoid cracking of the cement mortar coating and/or lining on steel pipe. If necessary, use plastic sheet caps to close pipe ends and keep coatings and linings moist.

### **3.2 HANDLING OF PIPE**

- A. Moving Pipe: Lift pipes with handling beams or wide belt slings as recommended by the pipe manufacturer. Do not use cable slings. Handle pipe in a manner to avoid damage to the pipe. Do not drop pipe or dump it from trucks or into trenches under any circumstances.
- B. Internal Pipe Braces: Maintain internal braces placed in steel pipes until backfilling is completed.
- C. Pipe Caps: Do not remove plastic caps placed over the ends of steel pipe until the pipe is ready to be placed in the trench. Plastic caps may be opened temporarily to spray water inside the pipe for moisture control.
- D. Inspection of Pipe: Inspect the pipe and accessories for defects prior to lowering into the trench. Repair or replace any defective, damaged or unsound pipe. Remove all foreign matter or dirt from the interior of the pipe before lowering into position in the trench.

### **3.3 PLACEMENT OF PIPE IN TRENCH**

- A. General: Dewatering, excavation, shoring, sheeting, bracing, backfilling material placement, material compaction, compaction testing, and pipe

laying requirements and limitations shall be in accordance with Section 02223, Trenching, Backfilling and Compacting.

- B. Sanitation of Pipe Interior: During laying operations, do not place tools, clothing, or other materials in the pipe.
- C. Prevention of Entry into Pipe: When pipe laying is not in progress, including lunch-hour, close the ends of the pipe using vermin-proof plugs constructed in a manner to also prevent entry by children.
- D. Laying Pipe on Grades over 10 Percent: Pipes shall be laid uphill whenever the grade exceeds 10 percent.
- E. Pipe Base Thickness: Pipe base thickness shall be as specified in Section 02223, Trenching, Backfilling, and Compacting.
- F. Depressions at Joints and Pipe Sling Points: Dig depressions into pipe base material to accommodate the pipe bell and external joint filler form, and to permit removal of the pipe handling slings.
- G. Placement of Pipe on Pipe Base: Lower pipe onto the bedding and install to line and grade its full length on firm uniform bearing except at the bell and at sling depressions. Unless specified otherwise, the tolerance on grade shall be  $\frac{1}{4}$  inch; the tolerance on line shall be 1 inch. Measure grade along the pipe invert.
- H. Pipe Installation: Install pipe without springing, forcing, or stressing the pipe or any adjacent connecting valves or equipment. Prevent pipe from being displaced by water entering trench. Replace damaged or displaced pipe or return it to specified condition and grade.
- I. Trench Curvature and Pipe Deflection: Use the radius of curvature of the trench to determine maximum length of pipe section that can be used without exceeding the allowable deflection at a coupling. Refer to the various referenced sections on pipe by type for allowable deflection. The deflection at any flexible joint shall not exceed that prescribed by the manufacturer of the pipe. Follow the manufacturer's printed installation guide outlining the radius of curvature that can be negotiated with pipe sections of various lengths.
- J. Equipment for Installation of Pipe: Provide and use proper implements, tools, and facilities as recommended by the pipe manufacturer's standard printed installation instructions for safe and efficient execution of the Work. Carefully lower all pipe, fittings, valves, and accessories shall be into the trench using suitable equipment in such a manner as to prevent

damage to pipe and fittings. Do not drop pipe or accessories or dump them into the trench.

- K. Cutting and Machining Pipe: Cut and machine the pipe in accordance with the pipe manufacturer's standard procedures for this operation. Do not cut pipe with a cold chisel, standard iron pipe cutter, nor any other method that may fracture the pipe or produce ragged, uneven edges.

### **3.4 ASSEMBLING RUBBER RING JOINTS**

- A. Cleaning Ends of Pipe: Clean the ends of the pipe to be joined of foreign material.
- B. Lubrication: After placing pipe in trench, apply a non-toxic water soluble vegetable soap solution to the inside of the bell of the pipe in the trench and to the rubber gasket and spigot groove of the pipe to be installed. Stretch the rubber gasket into the groove of the spigot end of the pipe and distribute uniformly around the circumference.
- C. Joint Assembly: Without tilting the pipe to be installed, insert the spigot into the bell of the pipe. Use come-alongs or pipe jacks to drive spigot end home horizontally. Maintain the joint recess recommended by pipe manufacturer for made-up joints. Where deflections at joints are required for curved alignment, do not exceed the allowable joint opening on one side. Use a feeler gauge to verify proper placement of each gasket.

### **3.5 FLANGED CONNECTIONS**

- A. Bolthole Alignment: Set pipe with flange boltholes straddling the pipe's horizontal and vertical centerlines.
- B. Nuts and Bolts: Lubricate nuts and bolts with oil or graphite prior to installation.
- C. Flange Wrapping: Wrap flanges which connect with buried valves or other equipment with sheet polyethylene film as specified for the valves and equipment. The wrap shall extend over the flanges and bolts and be secured around the adjacent pipe circumference with tape.
- D. Coating: Coat flanges and non-stainless steel bolts as specified in Section 09900, Painting and Coating.

### **3.6 INSTALLATION OF BENDS, TEES, AND REDUCERS**

Install fittings utilizing standard installation procedures. Lower fittings into trench by means of rope, cable, chain, or other acceptable means without damage to

the fittings. Attach cable, rope, or other devices used for lowering fitting into trench around exterior of fitting for handling. Do not attach the cable, rope or other device through the fittings interior for handling. Connect fittings to pipe or other facility, and check joint to insure a sound and proper joint.

### **3.7 INSTALLING THREADED PIPING**

Ream, deburr, and clean threaded pipe before making up joints. Apply thread lubricant to threaded pipe ends before installing fittings, couplings, unions, or joints.

### **3.8 COMPLETION OF INTERIOR JOINTS FOR MORTAR-LINED PIPES 20-INCHES IN DIAMETER AND SMALLER**

- A. Preparation: Insert a tight-fitting swab or squeegee in the joint end of the pipe to be joined.
- B. Application of Cement Mortar: When ready to insert the spigot, coat the face of the cement mortar lining at the bell with a sufficient amount of stiff cement mortar to fill the space between adjacent mortar linings of the two pipes to be joined.
- C. Removal of Excess Mortar: Immediately after joining the pipes, draw the swab or squeegee through the pipe to remove all excess mortar and expel it from the open pipe end.

### **3.9 COMPLETION OF INTERIOR JOINTS FOR MORTAR-LINED PIPES 24-INCHES IN DIAMETER AND LARGER**

- A. Backfill Requirement: Backfill the trench before applying mortar at joints.
- B. Cleaning and Application of Cement Mortar: Working inside the pipe, remove foreign substances which adhere to the steel joint rings, clean the surface, and pack stiff cement mortar into each joint. Finish the mortar with a steel trowel to match the lining in the adjoining pipes.
- C. Removal of Excess Mortar: Remove excess mortar and other construction debris from the pipe interior.

### **3.10 PIPELINE CLOSURE ASSEMBLIES**

- A. General: Use pipeline closure assemblies to unite sections of pipeline laid from opposite directions; to adjust the field length of the pipeline to meet structures, other pipelines, and points established by design stations, and to close areas left open to accommodate temporary test bulkheads for

hydrostatic testing. Use either follower ring design or butt strap design. Install follower ring closures as recommended by the pipe manufacturer.

- B. Butt Straps: Center shaped steel butt straps over the ends of the pipe sections they are to join. On pipes 39 inches in diameter and smaller, weld butt straps to the outside of the pipes with complete circumferential fillet welds equal in size to the thinnest part being joined. Refer to the details shown on the Drawings when joining larger pipes.
- C. General Requirements for Cement Mortar Lining for Closure Assemblies: Line closure assemblies with cement-mortar to a mortar thickness at least equal to the adjoining standard pipe sections. Clean the steel with wire brushes and a cement and water wash coat applied prior to applying the cement mortar. Where more than a 4-inch joint strip of mortar is required, place welded wire mesh reinforcement having a 2-inch by 4-inch pattern of No. 13 gauge over the exposed steel. Install the mesh so that the wires on the 2-inch spacing run around the pipe's circumference. Crimp the wires on the 4-inch spacing to support the mesh 3/8-inch from the metal surface. The interior mortar shall have a steel-troweled finish to match adjoining mortar lined pipe sections.
- D. Lining Closure Assemblies for Pipes 20-Inches in Diameter and Smaller: For lining of closure assemblies on pipelines 20-inches in diameter and smaller, provide threaded 4-inch nipples with galvanized plugs around the perimeter of the closure at third-point intervals to facilitate mortar lining of the interior surface.
- E. Mortar Coating Exterior Surfaces of Closure Assemblies: Reinforce the exterior of closure assemblies with wire mesh as described in Paragraph 3 above. Coat the surface with mortar, or a poured concrete encasement to cover all steel to a minimum thickness of 1-1/2 inches. Protect exterior mortar to retard drying while curing. Pour concrete and vibrate it on one side of the closure assembly only, until mortar or concrete is visible on the opposite side, after which the coating can be completed over the top of the assembly.

### **3.11 OPERATIONS INCIDENTAL TO JOINT COMPLETION**

Plan joint completion to accommodate temporary test bulkheads for hydrostatic testing.

### **3.12 COMPLETION OF EXTERIOR PIPE JOINT FOR CEMENT-MORTAR COATED PIPE**

Fill outside joint recess with cement-mortar grout using a fabric form placed around the joint and secured with steel straps. Pour and rod grout from one side

only until it is visible on the opposite side. After approximately one hour, top off the joint with additional grout.

### **3.13 THRUST RESTRAINT AND ANCHOR BLOCKS**

- A. Location: Provide thrust restraint and anchor blocks on all pressure pipelines, and install them as shown on the Drawings and at all rubber-gasketed fittings that are not otherwise restrained. Install thrust restraint blocks or anchor blocks at all valves, tees, crosses, ends of pipelines, and at all changes of direction of the pipeline greater than 10 degrees deflection either vertically or horizontally when joints are not otherwise restrained.
- B. General Requirements: Thrust restraint and anchor blocks shall be of not less than 2,000 psi concrete (Class C) and shall provide a thrust bearing area to resist horizontal or vertical thrust and shall be of sufficient gross weight and area to give bearing against undisturbed vertical earth banks sufficient to absorb the thrust, allowing an earth bearing of 1,500 pounds per square foot maximum.
- C. Thrust Restraint not Called for on the Plans: Size thrust restraint elements, where not called for on the plans, for 150 percent of operating pipeline pressure. Prior to construction, submit sizing and calculations of thrust and anchor block design to the Owner for approval. Pipe clamps, tie-rods, and their assembly shall meet the requirements of the National Fire Protection Association Bulletin No. 24, latest edition.
- D. Concrete Placement: Place concrete against wetted and undisturbed soil, and clean and wet the exterior of the fitting to provide a good bond with the concrete. The concrete interface with the fitting shall be an area of not less than the projected area of the fitting normal to the thrust resultant and centered on the resultant.
- E. Accessibility to Joints and Fittings: Unless otherwise directed by the Owner, place thrust restraint and anchor blocks so that the pipe and fitting joints are accessible for repair. Placement shall include isolation of adjacent utilities and shall ensure that bearing is against undisturbed soil.
- F. Harness and Tie-Rods: Use metal harness or tie-rods and pipe clamps to prevent movement if shown on the Plans or directed by the Owner. Install the rods and clamp harnessing arrangement utilizing flanged harness hold-downs or lugged fittings and pipe with saddle clamps placed to bear against the pipe bells. Saddle clamps around the barrel of the pipe, which depend on friction or setscrews to prevent sliding of the clamp, are not acceptable. The pipe clamps, tie rods and their assembly shall meet the requirements of the National Fire Protection Association Bulletin No. 24,

Latest Edition. Coat all surfaces of exposed and buried steel rods, reinforcing steel, bolts, clamps, and other metal work before installation and touch up after assembly as specified in Section 09900, Painting and Coating.

- G. In-line Valves: Use reinforcing steel tiedown rods on all in-line valves.

### **3.14 BLOWOFF ASSEMBLIES**

- A. General: Install in-line type or end-of-line type blowoff assemblies in accordance with the Drawings at locations noted, and at such additional locations as required by the Owner for removing water or sediment from the pipeline.
- B. Location: Install the assembly in a level section of pipe. The tap for blowoff in the line shall be no closer than 18 inches to a valve, coupling, joint, or fitting unless it is at the end of the main. Do not allow any in any machined section of asbestos cement pipe.
- C. Restrictions: Do not install blowoffs connected to any sewer, submerged in any stream, or installed in any manner that will permit back siphoning into the distribution system.

### **3.15 AIR AND VACUUM RELEASE VALVES**

- A. General: Install air release valve assemblies and combination air and vacuum valves at each point in the pipeline as shown on the Drawings or as specified by the Owner.
- B. Location: The tap for the air valves shall be made in a level section of pipe no closer than 18 inches to a bell, coupling, joint, or fitting. Do not use any tap in any machined section of asbestos cement pipe.

### **3.16 ABOVEGROUND PIPING INSTALLATION/SUPPORT**

- A. General: Installation of aboveground pipeline materials and appurtenances include requirements for buried pipeline materials and appurtenances as applicable.
- B. Supports: Adequately support all exposed pipe with devices of appropriate design. Where details are shown, the supports shall conform thereto and shall be placed as indicated, provided that the support for all piping shall be complete and adequate as herein specified, whether or not supporting devices are specifically called for. Pipe hangers and supports shall conform to the requirements of the latest editions of the MSS-SP58 and SP69 and ANSI/ASME B31.1.

- C. Grooved-End Pipe and Fittings: Install grooved-end pipe and fittings in accordance with the coupling manufacturer's recommendations and the following:
1. Clean loose scale, rust, oil, grease, and dirt from the pipe or fitting groove. Apply the coupling manufacturer's gasket lubricant to the gasket exterior including lips, pipe ends, and housing interiors.
  2. Tighten couplings alternately and evenly until coupling halves are seated.

### **3.17 WARNING AND LOCATOR TAPE**

Install warning and locator tape on all reclaimed water pipelines. Identify the pipe in accordance with Section 15151, Water Facilities Identification.

### **3.18 DISINFECTION**

Disinfect all pipelines in accordance with Section 15041, Chlorination of Water Mains for Disinfection.

### **3.19 TESTING**

All piping shall be hydrostatically pressure-tested in accordance with Section 15044, Pressure Testing of Piping.

## **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**



## **SECTION 15056: DUCTILE-IRON PIPE AND FITTINGS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section includes materials, installation, and testing of ductile-iron pipe and fittings.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Submittals: Section 01300.
- B. Trenching, Backfilling, and Compacting: Section 02223.
- C. General Concrete Construction: Section 03000.
- D. General Piping Requirements: Section 15000.
- E. Chlorination of Water Mains for Disinfection: Section 15041.
- F. Pressure Testing of Piping: Section 15044.
- G. Installation of Pressure Pipelines: Section 15051.

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with the requirements of Section 01300, Submittals. The following submittals are required:

Submit catalogue order sheets for pipe, flanges, flange insulation kits, companion flanges and unions, showing metal composition and conformance to industry standards (ASTM, etc.) specified.

### **PART 2 - PRODUCTS**

#### **2.1 DUCTILE IRON PIPE**

- A. Ductile-iron pipe shall be manufactured in accordance with AWWA C151.
- B. All ductile-iron pipe shall be thickness Class 52. Minimum wall thickness for pipe having threaded flanges shall be Special Class 53.

- C. All ductile-iron pipe shall be cement-mortar lined in accordance with AWWA C104. Lining thickness shall be the double thickness listed in AWWA C104, Section 4.7.
- D. All joints shall be restrained, TR-Flex Joint or approved equal. The restrained joint shall be a boltless restrained push-on joint design and shall contain a positive axial locking restrained system and be capable of deflection after assembly.
- E. Flanges for ductile-iron pipe shall be flat face and of the "screwed-on" type in accordance with AWWA C115.
- F. Outlets for DIP shall be as follows:
 

2" or smaller:	bronze service saddle
2-1/2" through 3-1/2":	tapped tee
4" and larger:	flanged tee

**2.2 DUCTILE-IRON AND GRAY IRON FITTINGS**

- A. Ductile iron and gray iron fittings shall be manufactured in accordance with AWWA C153.
- B. All fittings shall be cement-mortar lined in accordance with AWWA C104.
- C. All fittings for pipe 12" or smaller shall be made with restrained "push-on" joints designed for use with the type of pipe to be joined unless otherwise noted. All fittings for pipe larger than 12" shall be TR-Flex or approved equal.
- D. Exterior surfaces shall be coated with a bituminous material in conformance with ANSI A21.10 (AWWA C110). The coating shall be free from blisters and holes, shall adhere to the metal surface at all temperatures encountered in the field, shall be smooth, not brittle when cold, and shall not become sticky when exposed to the sun. The coating shall be checked by the manufacturer with a suitable electrical holiday detector.
- E. Test each fitting before lining to one and one-half times the working pressure for a duration of 10 seconds. Provide suitable controls and recording devices so that the test pressure and duration may be adequately ascertained. Any fitting that does not withstand the test pressure shall be rejected. Notify the Owner a minimum of 1 working day in advance of the date, time, and place of inspection and testing of the fittings in order that the Owner may be represented at the tests. When

specified in the special provisions, the Owner may require a certification of compliance to these Specifications.

- F. The ring grooves and interior surfaces of the bell shall be smooth and free from ridges, notches, or uneven surfaces.
- G. Mechanical joint fittings are allowed only in areas specifically approved by the Owner as a substitute for other types of fittings.
- H. Unless otherwise indicated on the Drawings, all fittings with flanged ends shall comply with ANSI B16.1, "Cast Iron Pipe Flanges and Flanged Fittings, Class 125." The gasket surface shall have a serrated finish of approximately 16 serrations per inch, approximately 1/32- inch deep, with serrations in either a concentric or spiral pattern. In addition, all flanges shall be within the following tolerances:

Bolt circle drilling	$\pm 1/16$ inch
Bolthole spacing	$\pm 1/32$ inch
Eccentricity of both circle and facing with respect to bore	$\pm 1/32$ inch maximum

### **2.3 GASKETS**

Rubber gaskets for push-on joints shall be manufactured in accordance with AWWA C111.

### **2.4 BOLTS, NUTS, AND WASHERS**

Bolts and nuts shall be in accordance with Section 15000, General Piping Requirements.

## **PART 3 - EXECUTION**

### **3.1 GENERAL**

Install ductile-iron pipe and ductile iron fittings in accordance with the applicable sections of AWWA C600 and as specified herein.

### **3.2 TRENCHING, BACKFILLING, AND COMPACTING**

- A. Trenching, backfilling, and compacting shall be in accordance with Section 02223, Trenching, Backfilling, and Compacting, and as specified herein.

- B. Backfill within the pipe zone, including the pipe base, shall be imported sand placed and compacted in accordance with Section 02223, Trenching, Backfilling, and Compacting.
- C. Backfill within the trench zone shall be native earth backfill selected, placed and compacted in accordance with Section 02223, Trenching, Backfilling, and Compacting.

### **3.3 TRANSPORTATION**

- A. Transportation shall be by competent haulers and shall be accomplished in a manner that will avoid damage to the pipe or fitting, its lining or its coating.
- B. Unload by mechanical means such as a crane or backhoe, or by rope and skids, as recommended by manufacturer. In using skids, prevent pipes and fittings from striking one another.
- C. Do not drop or dump pipe and fittings from the truck.

### **3.4 FITTINGS**

Weigh each fitting in the presence of the Owner as it is unloaded from the delivery truck. Any fitting weighing less than 95 percent of the weight listed in AWWA C153 shall be rejected and removed from the project site.

### **3.5 PLACEMENT OF PIPE IN TRENCH**

- A. Lay pipes uphill if the grade exceeds 10%.
- B. Provide and use proper implements, tools, and facilities as recommended by the pipe manufacturer's standard printed installation instructions for safe and efficient execution of the Work. Carefully lower all pipe, fittings, valves and accessories into the trench by means of derrick, ropes, or other suitable equipment in such a manner as to prevent damage to pipe and fittings. Do not drop pipe or accessories or dump them into the trench.

Attach cable, rope, or other devices used for lowering fitting into trench around exterior of fitting for handling. Do not attach cable rope or other device through the fitting's interior for handling.

- C. The radius of curvature of the trench shall determine the maximum length of pipe section that can be used without exceeding the allowable deflection at a joint.

Deflections at rubber gasket or flexible coupling joints shall not exceed 2 degrees or that recommended by the manufacturer, whichever is less.

Follow the manufacturer's printed installation guide outlining the radius of curvature that can be negotiated with pipe sections of various lengths.

- D. Where the grade or alignment of the pipes is obstructed by existing utility structures such as conduits, ducts, pipes, branch connections to main sewers, or main drains, the obstruction shall be permanently supported, relocated, removed, or reconstructed by the Contractor in cooperation with owners of such utility structures.
- E. Cut and machine the pipe in accordance with the pipe manufacturer's standard procedures for this operation. Do not cut pipe with a cold chisel, standard iron pipe cutter, or any other method that may fracture the pipe or produce ragged, uneven edges.
- F. Inspect the pipe and accessories for defects prior to lowering into the trench. Repair or replace any defective, damaged or unsound pipe. Remove all foreign matter or dirt from the interior of the pipe before lowering into position in the trench.
- G. Clean the ends of the pipe to be jointed of foreign material.
- H. Immediately prior to lowering each section or pipe into the trench, apply a nontoxic water soluble vegetable soap solution to the inside of the bell of the pipe in the trench and to the rubber gasket and spigot groove of the pipe to be installed.
- I. Without tilting the pipe to be installed, enter its spigot into the bell of the pipe in the trench. Use come-a-longs or pipe jacks to drive spigot end home horizontally. Maintain joint recess recommended by pipe manufacturer for made-up joint. Where deflections at joints are required for curved alignment, do not exceed the pipe manufacturer's recommended maximum joint opening on one side.
- J. Lay the pipe true to the line and grade shown on the Drawings within acceptable tolerances. The tolerance on grade is 1 inch. The tolerance on line is 2 inches.
- K. Protect all ductile iron and gray iron pipe and fittings buried underground with plastic film wrap in accordance with AWWA C105. Wrap shall be a loose 8-mil-thick polyethylene tube. Wrap all joints between plastic tubes with 2-inch-wide polyethylene adhesive tape, Polyken 900, Scotch wrap 50, or approved equal. Installation of plastic film shall conform to the

following procedure, and wrapping shall be applied to the pipe in the field in the following manner:

Using a sling, pick up pipe with a crane at the side of the trench and raise about 3 feet off the ground. Slip the polyethylene tube, cut approximately 2 feet longer than the length of pipe, over the spigot end of the pipe and bunch it up, accordion fashion, between end of the pipe and the sling.

Lower the pipe into the trench. Seat the spigot into the bell of the adjacent installed pipe, and lower the pipe into the trench bottom. Provide a shallow bell hole in the trench bottom to facilitate the wrapping of the joint. Make the pipe joint in the normal fashion. Ensure uniform bearing of the pipe barrel.

Remove the sling from the center of the pipe and hook into the bell cavity. Raise the bell 3 to 4 inches and slip the tube of polyethylene film along the full length of the pipe barrel. Leave enough of the film bunched up, accordion fashion, at each end of the pipe to overlap the adjoining pipe about 1 foot.

To make the overlapped joint wrap, pull the film over the bell of the pipe, fold it around the adjacent spigot, and wrap it with about three circumferential turns of the plastic adhesive tape in order to seal the tube of film to the pipe. Pull the tube on the adjacent pipe over the first wrap on the pipe bell and seal it in place behind the bell, using about three circumferential turns of the polyethylene adhesive tape.

Pull the resulting loose wrap on the barrel of the pipe snugly around the barrel of pipe, fold the excess material over the top and hold the fold in place by means of short strips of the adhesive tape at intervals 3 feet apart along the pipe barrel.

The Contractor may substitute the use of purple plastic film with proper labeling in place of warning tape.

- L. Support fittings independently of the pipe.
- M. Until thrust blocks and supports are poured, temporarily support fittings by placing wooden skids under the bells so that the pipe is not subjected to the weight of the fitting.
- N. Coat all exposed flanges and other exposed metal surfaces and all damaged coatings after assembly per Section 09900, Painting and Coating, System No. D-1.

### **3.6 ANCHORS AND THRUST BLOCKS**

Pour concrete anchors and thrust blocks against wetted undisturbed soil in accordance with Section 03000, General Concrete Construction, and the Owner's Standard Drawings. Use thrust blocks only on pipe 12" in diameter or smaller.

### **3.7 FLANGED CONNECTIONS**

- A. Bolt holes of flanges shall straddle the horizontal and vertical centerlines of the pipe run.
- B. Clean flanges by wire brushing before installing gasket.
- C. Clean flange bolts and nuts by wire brushing, lubricate threads with oil and graphite, and tighten nuts uniformly and progressively. Bolts shall project through the nut between 1/4 inch and 3/8 inch when drawn tight.
- D. If flanges leak under pressure testing, loosen or remove the nuts and bolts, reseal or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. Joints shall be watertight.

### **3.8 PIPE SUPPORT**

Adequately support all exposed pipe with devices of appropriate design. Where details are shown, the supports shall conform thereto and shall be placed as indicated, provided that the support for all piping shall be complete and adequate as herein specified, whether or not supporting devices are specifically called for.

### **3.9 TESTING**

Hydrostatically pressure-test all piping in accordance with Section 15044, Pressure Testing of Piping.

## **PART 4 - PAYMENT**

The unit price for installation of pipe includes full compensation for furnishing the labor, materials, tools and equipment and doing all Work involved to complete the pipeline.

**END OF SECTION**

## **SECTION 15057: COPPER PIPE AND FITTINGS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes materials, installation, and testing of copper and brass pipe, and copper, brass and bronze fittings and appurtenances.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Trenching, Backfilling, and Compacting: Section 02223.
- B. Painting and Coating: Section 09900.
- C. Piping Schedule and General Piping Requirements: Section 15000.
- D. Pressure Testing of Piping: Section 15044.
- E. Installation of Pressure Pipelines: Section 15051.
- F. Control and Check Valves: Section 15100.

#### **1.3 SUBMITTALS**

- A. Submit shop drawings in accordance with the General Requirements, and Specification Section 01300, Submittals.
- B. Submit detailed layout if pipe runs in copper exceed 50 lineal feet.
- C. Submit catalogue order sheets for materials of pipe, flanges, flange insulation kits, companion flanges and unions, showing metal composition and conformance to industry standards (ASTM, etc.) specified.

### **PART 2 - MATERIALS**

#### **2.1 COPPER PIPE AND TUBING**

Copper piping shall conform to ASTM B 88. Copper pipe and tubing shall be cylindrical, of uniform wall thickness, and shall be free from any cracks, seams, or other defects. Piping located above floors or suspended from ceilings shall be Type L. Piping buried or located beneath floor slabs shall be Type K. Copper pipe shall be as manufactured by Halstead, Mueller, or approved equal.

#### **2.2 COPPER FITTINGS**

Copper fittings shall be copper conforming to ASTM B 75 and ANSI B16.22, with solder end joints. Fittings 3/8 inch and smaller may have flared end connections or compression joint connections.



### **2.3 SOLDER**

Solder shall be tin-silver solder conforming to ASTM B 32, Grade SB5. Do not use cored solder. Solder and flux used in joints of potable waterlines shall contain no more than 0.2 percent lead.

### **2.4 BRASS PIPE AND NIPPLES**

Short threaded nipples and brass pipe shall conform to ASTM B 43, regular wall thickness, except that nipples and pipe of sizes 1 inch and smaller shall be extra strong. Threads shall conform to ANSI B1.20.1.

### **2.5 BRONZE APPURTENANCES**

- A. General: All items specified herein shall be manufactured of bronze conforming to ASTM B62, "Composition Brass or Ounce Metal Castings."
- B. Service Saddles: Service saddle bodies shall be manufactured of bronze and shall be tapped for an iron pipe thread. The seal with the pipe shall be either a rubber gasket or an O-ring. Service saddles shall be manufactured by Jones, Mueller, Ford, Rockwell, or approved equal.
1. One-inch service saddles may be the single-strap or double strap type for all sizes of asbestos-cement or ductile iron pipe. Two-inch size service saddles shall be of the double-strap type for all sizes of asbestos-cement or ductile iron pipe. The straps (or bails) shall be flat and shall be manufactured by Everdur, Silnic bronze, or approved equal.
  2. Service saddles for C900 PVC pipe shall be manufactured of bronze or type 316 stainless steel, and shall be cast in two sections for pipe up to and including 8-inches in diameter. Service saddles for use on 10- and 12-inch diameter C900 PVC pipe may be cast in two or three sections. Each saddle shall accurately fit the contour of the pipe O.D. without causing distortion of the pipe. Secure the sections in place with stainless steel or silicon bronze screws or bolts. Casting sections may be hinged and secured with stainless steel pins. Tap the casting sections to receive the screws or bolts.
- C. Corporation Stops: Corporation stops shall be manufactured of bronze. The inlet fitting shall be a male iron pipe thread when used with saddle and the outlet connection shall be a compression type or iron-pipe thread. Corporation stops shall be as manufactured by Jones, Mueller, Ford, or approved equal.

- D. Angle Meter Stops: Angle meter stops shall be manufactured of bronze. The inlet connection shall be a compression type or iron-pipe thread and the outlet fitting shall be a meter flange or meter coupling. The inlet and outlet shall form an angle of 90 degrees on a vertical plane through the centerline of the meter stop. Provide a rectangular lug and lock wing on the top of the fitting to operate the shutoff mechanism. Two-inch angle meter stops shall be with "slotted" holes for 1½-inch or 2-inch meters. Angle meter stops shall be as manufactured by Jones, Mueller, Ford, or approved equal.
- E. Customer Service Valve: Customer service valves shall be manufactured of bronze with lever-type turn handle. The inlet connection shall be a meter flange or a meter coupling and the outlet female iron pipe. Customer service valves shall be manufactured by Jones, Ford, or approved equal.

## **2.6 INSULATING UNIONS AND COUPLINGS**

Isolate pipe, fittings, and appurtenances (air vacs, pressure gauges, etc.) made of dissimilar metals from each other by means of insulating unions, or insulating couplings. Insulating unions, and couplings shall be manufactured by Pipeline Coating and Engineering Company, Smith-Blair, Pipe Seal and Insulator Company, Lochinvar, or approved equal. For applications where pipeline pressures exceed 150 psi, and where the pipe tap for the appurtenance into the main is larger than 1-inch in diameter, provide a 2½-inch extra heavy carbon steel coupling as the outlet, and isolate the fitting or appurtenance from the main by means of a 2-inch type 316 stainless steel bushing, 2-inch type 316 stainless steel nipple, and 2-inch type 316 stainless steel ball valve.

## **2.7 FLANGES, GASKETS, BOLTS AND NUTS**

- A. Flanges for Valves and Fittings: Connect copper pipe to flanged valves and fittings with bronze flanges conforming to ANSI B16.24, Class 125 or Class 150, to match the connecting flange. Use solder end companion flanges.
- B. Gaskets: Gaskets for flanged-end fittings shall be made of synthetic rubber binder and shall be fullface, 1/8-inch thick Johns-Manville 60, John Crane Co. "Cranite", or approved equal.
- C. Bronze Flanges Above Ground: When both above ground adjoining flanges are bronze, bronze bolts and nuts shall be used. Bolts shall conform to ASTM F 468, Grade C 65100 or C 63000. Nuts shall conform to ASTM F 467, Grade C 65100 or C 63000 to match the bolt material.

- D. Bronze-Non-Ferrous Flanges Above Ground: When only one of the above ground adjoining flanges is bronze, use Type 316 stainless-steel bolts and nuts conforming to ASTM A 193, Grade B8M, for bolts and ASTM A 194, Grade 8M, for nuts.
- E. Ferrous Flanges: Make connection to ferrous flanges using flange insulation kits. Bolts used in flange insulation kits shall conform to ASTM A 193, Grade B7. Nuts shall comply with ASTM A 194, Grade 2H. If the adjoining flange is bronze, use bronze bolts and nuts as described above, without a flange insulation kit.
- F. Washers: Provide washers for each nut. Washers shall be of the same material as the nuts.

## 2.8 UNION

Union shall be the same size as the pipe, three part, with copper flared end connections. Unions shall be bronze, conforming to ASTM B 61 or B 62. Use dielectric unions when connecting copper pipe to ferrous metals. Unions shall be Mueller H-15403, Jones J-1528, or approved equal.

## PART 3 - EXECUTION

### 3.1 GENERAL

Install pipe without springing, forcing, or stressing the pipe or any adjacent connecting valves or equipment. Pipe hangers and supports, and pipe penetrations through walls, slabs, and floors shall be as detailed on the Drawings.

### 3.2 INSTALLING FLANGE BOLTS AND NUTS

- A. Bolt Thread Lubrication: Lubricate bolt threads with graphite and oil prior to installation.
- B. Flange Alignment: Set flanges pipe with the flange boltholes straddling the pipe horizontal and vertical centerlines.

### 3.3 INSTALLATION

- A. Related Installation Specification: Install pipe in accordance with the requirements of Section 15051, Installation of Pressure Pipelines.
- B. Pipe/Tubing Preparation: Cut tubing square and remove burrs. Clean both the inside and outside of fitting and pipe ends with steel wool and

muriatic acid before soldering. Take care to prevent annealing of fittings and tubing when making connections. Do not use miter joints in lieu of elbows. Do not notch straight runs of pipe in lieu of tees.

- C. Pipe Bends: Bends in soft copper tubing shall be long sweep. Shape bends with shaping tools. Form bends without flattening, buckling, or thinning the tubing wall at any point.
- D. Brazing: Brazing procedures shall be in accordance with Articles XII and XIII, Section IX, of the ASME Boiler and Pressure Vessel Code. Solder shall penetrate to the full depth of the cup in joints and fittings. Solders shall comply with ANSI B31.3, paragraph 328.
- E. Pipe Flexibility and Minimum Cover for Service Laterals: Install buried piping with some slack to provide flexibility in the event of a load due to settlement, expansion or contraction. Have a minimum cover of 36-inches below the finished street grade. Imbed and cover the tubing with sand or select material.
- F. Minimum Diameter for Domestic Service Laterals: All domestic service laterals shall be 1-inch minimum size copper tubing. End connections shall be compression type.
- G. Two-inch Service Laterals: Install all 2-inch size services with straight lengths of soft copper water tube Type K. Solder or compression fittings are acceptable on only the corporation stop and angle meter stop. All couplings and adapters shall be silver-soldered.

### **3.4 SERVICE SADDLES**

- A. Proximity to Valves, Couplings, Joints, and Fittings: Service saddles shall be no closer than 18-inches to valves, couplings, joints, or fittings unless it is at the end of the main. Do not install a service saddle on any machined section of asbestos cement pipe.
- B. Pipe Surface Preparation: File the surface of the pipe to remove all loose material and to provide a hard, clean surface before placing the service saddle.
- C. Installation: Tighten the service saddle firmly to ensure a tight seal; however, take care to prevent damage or distortion of either the corporation stop or service saddle by over tightening.
- D. Pipe Tap: The tap into the pipe shall be made in accordance with the pipe manufacturer's recommendation.

## **PART 4 – PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid for which such Work is appurtenant thereto, and no additional payment will be made specifically for Work in this Section.

**END OF SECTION**

## **SECTION 15076: CEMENT-MORTAR LINED AND COATED STEEL PIPE**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section designates the requirements for steel pipe fabrication, test in shop, installation of steel pipe, fabrication of steel sheet or plate, mill-manufactured steel pipe, bends, special pipes with outlets, pass holes, flanges and all other fittings. Steel pipe shall conform to the following except as modified by this Specification:

AWWA C200	Steel Water Pipe 6 inches and larger
AWWA C205	Cement-mortar protective lining and coating
AWWA C207	Steel Pipe Flanges
AWWA C210	Coal-tar epoxy coating system for interior and exterior of steel water pipelines
AWWA C213	Fusion-Bonded epoxy coating for the interior and exterior of steel water pipelines
AWS	Standard Qualification Procedure for Manual Welding Operators
ASME	Boiler and Pressure Vessel Code

#### **1.2 RELATED WORK DESCRIBED ELSEWHERE**

Refer to the following Specification Section(s) for additional requirements:

- A. Submittals: Section 01300.
- B. Trenching, Backfilling, and Compacting: Section 02223.
- C. General Concrete Construction: Section 03000.
- D. General Piping Requirements: Section 15000.
- E. Pressure Testing of Piping: Section 15044.
- F. Chlorination of Water Mains for Disinfection: Section 15041.
- F. Installation of Pressure Pipelines: Section 15051.

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with Section 01300, Submittals. Submittals are required for the following:

- A. Submit Shop drawings, material lists, manufacturer's literature and catalog cuts of, but not limited to, the following:

Shop Drawings	Fabrication Details
Layout Schedule	Dimensional Checks
Manufacturer's tests	Protective Coatings
Mill Reports or Plant Test Reports	Welding Rods for Field Welding

Shop drawings shall be submitted and approved prior to manufacture of pipe. The layout schedule shall indicate the order of installation, the length and location of each pipe section and special, the station and elevation of the pipe invert at all changes in grade, and all data on curves and bends for both horizontal and vertical alignment.

- B. Submit data used by the Contractor in manufacture and quality control.
- C. Submit test reports showing the physical properties of the rubber used in gaskets.

## **PART 2 - MATERIALS**

### **2.1 PIPE DESIGN REQUIREMENTS**

Pipe, lining and coating shall be the product of one company in the business of designing and manufacturing cement-mortar lined and coated steel pipe. Use of subcontractors or subcontracts to apply the lining and coating of the steel pipe is not allowed.

The pipe shall consist of the following components:

A welded steel cylinder with joints formed integrally with the steel cylinder or with steel joint rings welded to the ends; a centrifugally-cast cement-mortar lining; a self-centering bell and spigot joint with a circular preformed elastomeric gasket, so designed that the joint will be watertight under all conditions of service; a dense, concentric, steel reinforced exterior cement-mortar coating.

The Drawings indicate the elevations and alignment of the pipeline, the nominal inside diameter of the lined pipe, and the minimum steel cylinder thickness or design pressure (adjusted to satisfy transient conditions). Design soil cover shall be as stated on the Drawings or Specifications or, if none is stated, the amount of cover shall be scaled from the Drawings, with a minimum of 36 inches.

Minimum thickness of the steel cylinder shall be 0.375 inch.

## **2.2 STEEL CYLINDERS**

Materials used in fabricating steel cylinders shall be hot rolled carbon steel sheets conforming to the requirements of ASTM A53, Grade B, ASTM A570 Grade 36 or Grade 33, or steel plates conforming to the requirements of ASTM A36. The method of testing shall conform to the requirements of ASTM A570.

Full penetration welds are required. Welds may be straight or spiral seam. The circumferential stress in the steel shall not exceed 16,500 psi at the design pressure.

## **2.3 GASKETS FOR JOINTS**

Rubber gaskets for sealing the joints shall meet the requirements of AWWA C200, subsection 3.6.6.

## **2.4 CEMENT**

Cement for mortar lining and coating shall be Portland Cement Type II and conform to ASTM C150, unless otherwise specified. Do not use admixtures containing chlorides.

## **2.5 STEEL BAR OR WIRE REINFORCEMENT**

Circumferential steel bar or wire reinforcement shall conform to ASTM A615, Grade 40, "Specifications for Billet-Steel Bars for Concrete Reinforcement". Wire fabric reinforcing for cement-mortar coatings and linings of fittings shall conform to ASTM A185, "Specifications for Welded Steel Wire Fabric," or ASTM A497, "Specifications for Welded Deformed Steel Wire Fabric." Spiral-wire reinforcement for cement-mortar coatings shall conform to ASTM A82.

## **2.6 STEEL FOR JOINT RINGS**

Steel for bell rings shall conform to ASTM A575, "Specification for Merchant Quality Hot Rolled Carbon Steel Bars." Steel for spigot rings shall conform to ASTM A576, "Specification for Special Quality Hot-Rolled Carbon Steel Bars."

## **2.7 DIMENSIONS**

The steel pipe sizes shown on the Drawings or otherwise referred to shall be the nominal inside diameter. Unless otherwise specified, the nominal diameter shown on the Drawings shall be considered to be the inside diameter after lining.



## **2.8 MANUFACTURER'S TESTS**

Hydrostatically test each steel cylinder with joint rings attached and cylinders for specials to a circumferential stress of at least 22,000 psi, but not more than 25,000 psi. If leaks develop during testing, repair the cylinder by welding and retest until all leaks are eliminated.

Test the seams in short-radius bends and special fittings by the air-soap method using air at a pressure of 5 psi or by the dye-check method. However, if the fitting is fabricated from cylinders that have been previously hydrostatically tested, no further test will be required on seams so tested.

Hydrostatic testing of fittings to 150% of the design pressure may replace the tests described above. Repair any defects revealed by any of the alternate test methods by welding and retest the fitting until all defects have been eliminated.

## **2.9 FABRICATION DETAILS**

Mark each special and each length of straight pipe plainly at the bell end to identify the design pressure and the proper location of the pipe or special by reference to layout schedule.

Protect exposed portion of joint rings from corrosion by the manufacturer's standard coating.

Fit the pipe with devices shown on the Drawings to permit continuous electrical bonding of the various joints following field installation.

## **2.10 PROTECTIVE COATINGS AND LININGS**

Paint or coat all exposed metal surfaces as specified in Section 09900, Painting and Coating, except where painting and galvanizing is specified elsewhere and in this Section.

All steel pipe and fittings shall be cement-mortar lined in accordance with AWWA C205 and C602. Linings shall have a minimum thickness of 1/4-inch.

All steel pipe and fittings for underground service shall be cement-mortar lined and cement-mortar coated in accordance with AWWA C205 and C602 unless otherwise specified on the Drawings.

For the following nominal inside diameters, the lining thickness and minimum cement-mortar coating thickness shall be as follows:

Nominal Pipe Size (inches)	LINING		COATING	
	Thickness (inches)	Tolerance (inches)	Thickness (inches)	Tolerance (inches)
4 – 10	1/4	-1/32+1/32	1/2	+1/8
12 – 18	3/8	-1/16+1/8	5/8	+1/8
20 – 44	1/2	-1/16+1/8	3/4	+1/8
45 – 58	3/4	-1/16+1/8	1	+1/8
60 and over	3/4	-1/16+1/8	1 1/4	+1/8

## 2.12 CEMENT-MORTAR CURING

Cure the pipe by water curing, steam curing or a combination of both. Water curing and steam curing may be used interchangeably on a time ratio basis of four hours water curing to one hour of steam curing. Where steam curing is used, keep the pipe in a warm, moist environment maintained at a temperature of 100°F and 100% to 150°F for the specified period and, where water curing is used, keep the pipe continually moist by spraying or other means for the specified periods. Do not allow the pipe to dry either on the inside or outside surfaces during the curing period.

Where water curing is used, keep the pipe continuously moist for seven days at a temperature of not less than 40°F before being moved to the trench site.

Cement-mortar lining and coating of special pipe and fittings may be cured in accordance with the above provisions or by prompt application of a white-pigmented sealing compound conforming to ASTM C309. Do not apply sealing compound at joint ends where compound will interfere with the bond of joint mortar.

## 2.13 SPECIAL PIPE AND FITTINGS

The manufacturer shall furnish all fittings and special pieces required for closures, curves, bends, branches, manholes, outlets, connections for mainline valves, and other specials required by the Drawings.

Special fittings shall be fabricated of welded steel sheet or plate, lined and coated with cement mortar of the same type as the adjoining pipe and applied as specified for lining and coating of specials in AWWA C205 and as modified herein. Use butt welding, unless otherwise indicated on the Drawings.

The maximum deflection at a mitered girth seam shall be 22-1/2 degrees. Minimum centerline radius of an elbow or bend shall be as follows:

<u>Pipe Size (Inches)</u>	<u>Minimum Centerline Radius</u>
30 – 48	2-1/2 times ID
51 – 60	10-feet
Over 60	2 times ID

The circumferential stress in the sheet or plate shall not exceed 13,500 psi at the design pressure. The minimum thickness of sheet or plate shall be as follows:

<u>Fitting Diameter Range (Inches)</u>	<u>Minimum Thickness of Sheet or Plate</u>
24 and under	3/16"
26 – 36	1/4"
38 – 45	5/16"
48 – 54	3/8"
57 – 60	7/16"
63 – 72	1/2"
75 – 84	5/8"

Outlets at special fittings shall be reinforced with collars or crotch plates. If collar reinforcement is used, the outlet diameter shall not exceed 69% of the ID of the fitting. The diameter of outlets reinforced with crotch plates may equal the fitting diameter.

The effective shoulder width "W" of collars from the inside surface of the steel outlet to the outside edge of the collar measured on the surface of the cylinder shall be not less than one-third or more than one-half the ID of steel outlet. The thickness of the collar shall be not less than "T" as determined by:

$$T = \frac{P_w \times ID \text{ cyl.} \times ID \text{ outlet}}{36,000 \times W}$$

where  $P_w$  is the design pressure in pounds per square inch, and all other dimensions are in inches. Collars may be oval in shape or rectangular with well-rounded corners. Outlets 3 inches in diameter and smaller may be installed without collars.

The design of crotch plates shall be based upon the paper by Swanson, Chapton, Wilkinson, King, and Nelson, originally published in June 1955 issue of the Journal of the American Water Works Association.

## **2.14 GROOVED-END COUPLINGS**

- A. Grooved-end couplings shall be ductile iron, ASTM A 536, Grade 60-40-18 or 65-45-12. Gaskets shall be EPDM, and conform to ASTM D 2000.
- B. Couplings for pipe smaller than 20 inches shall be flexible type, square cut groove, per AWWA C606: Victaulic Style 77, Gustin-Bacon figure 100, or approved equal.
- C. Bolts in exposed service shall conform to ASTM A 183, 110,000 psi tensile strength. Bolts in buried service shall be ASTM A 193, Grade B8M, Class 2.

## **2.14 HANDLING AND SHIPMENT**

Handle pipe and special fittings carefully. Use blocking and holddowns during shipment to prevent movement or shifting. Bulkhead or cover both ends of pipe and fittings on trucks or rail cars in order to prevent excessive drying of the interior lining.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Trench Preparation: Perform earthwork in accordance with Section 02223, Trenching, Backfilling and Compacting. Schedule pipe laying so that the bell end of the pipe faces in the direction of laying. Lay pipe on slopes steeper than 20% in an uphill direction. Prior to laying the pipe, grade the bottom of the trench and prepare it to provide uniform bearing throughout the entire length of each joint of pipe. Excavate suitable bell holes at each joint and scoop out a shallow lateral depression half a pipe length from the last pipe laid to allow for easy removal of the belt pipe sling and thus avoid any movement of the pipe after it is placed on proper line and grade.
- B. Rubber-Ring Joints: All field joints shall be rubber-gasketed carnegie joints, except where welded joints are shown on the Drawings or at locations approved by the Owner. The pipe should be picked up well balanced, then lowered into the trench so that the spigot end may be entered into the bell end of the last pipe laid. Prior to placing the spigot into the bell, clean and lubricate the spigot groove, the rubber gasket, and the first two inches of the bell with a soft, vegetable soap compound. Uniformly stretch the gasket, when placing it in the spigot groove so that there is a uniform tension and volume of rubber distributed around the circumference. Place metal or wooden spacers against the inside shoulder of the bell of 24-inch and larger pipe to provide the proper space between abutting ends of the pipe.

For pipe sizes smaller than 24 inches, butter the bell end with cement mortar in a manner and quantity that will completely fill the recess between the respective linings of the two joined sections of pipe. The spigot end shall then be entered into the bell end of the adjacent pipe section the distance shown on the Shop drawings. Immediately after joining, swab the pipe interior to remove all excess mortar by drawing a swab or squeegee through the pipe.

For pipe sizes 24 inches and larger, the joint recess shall be pointed from the inside with cement mortar after the backfill has been placed and compacted and the pipe permitted to take any normal settlement. The mortar shall be mixed of one part cement to one and one-half parts of sand, with water-cement ratio within 5 percent of the plant-applied mortar. Point in two or more lifts and finish off flush by troweling.

After the joint is assembled, insert a thin metal feeler gauge from the exterior between the bell and the spigot and check the position of the rubber gasket around the complete circumference of the pipe. If the gasket is not in the proper position, withdraw the pipe, check the gasket to see that it is not cut or damaged, relay the pipe, and check the gasket position again.

Bond each pipe joint to provide electrical continuity along the entire pipeline. The bond shall be made by welding a jumper in the pipe joint as shown on the Drawings.

Grout the outside joint recess with cement mortar after a diaper has first been placed around the joint and tightened securely to prevent leakage while the mortar is being poured. The diaper shall be made of moisture resisting paper or heavy-duty sailcloth of sufficiently close weave to prevent cement loss from the mortar. Hem the diapers on each edge and provide a metal strap within each hem sufficiently longer than the circumference of the pipe to allow a secure attachment of the diaper to the pipe. The diaper width will depend upon pipe size and design and shall be the width recommended by the manufacturer. Following installation of the diapers, pour the joints and rod from one side only until the mortar comes up to the top of the diaper on the opposite side. Approximately one hour subsequent to the pouring of the joint, check the joint and, if any settlement, leakage or shrinkage has taken place, refill the joint with mortar.

Outside joints may be grouted before or after the placement of bedding and backfill materials if those materials are to be mechanically compacted. If bedding and backfill materials are to be hydraulically densified, pour grout and allow to set before applying water. In any case, joints shall be grouted before backfill is placed over the top of the pipe.

- C. **Butt-Strap Closure Joints:** Butt-strap closure joints shall be completed in the trench after the pipe has been laid to the alignment and grade shown on the Drawings. They shall be field welded by full-circumferential fillet welds or one of the edges may be shop welded and the other field welded. Welding shall be done in the same manner as specified for welded joints.

Fill the interior of the joints with stiff plastic mortar and finish off smoothly with the inside of the pipe. Apply wire mesh, 2" x 4" x No. 13 gauge, clean, and free from rust, to the interior of the joints so that the wires on the 2-inch spacing run circumferentially around the pipe. Crimp the wires on the 4-inch spacing in such a manner that the mesh will be held 3/8-inch from the metal joint surface. Lap the mesh a minimum of 8 inches and securely wire in position.

Coat the joint exterior with mortar to a minimum thickness of 1-1/2 inches. Immediately prior to applying mortar to the interior or exterior of the joints, apply a cement wash to the metal to be coated.

- D. **Welded Joints:** Complete welded joints after the pipe is in final position. Welded joints shall be either a welded carnegie joint or a lap-welded slip joint as shown on the Drawings. Caulk any recess between the bell and spigot with a rod to facilitate the welding. Pipe of 30 inches in diameter or more may be welded from the inside. Welders assigned to the Work shall be qualified under the AWS standard qualification procedure.

Clean joints to be welded, preferably prior to placing the pipe in the trench, of all loose scale, heavy rust, paint, cement, and grease. Provide at least a 1/2-inch recess between adjacent mortar-covered surfaces to place the weld. In all hand welding, deposit the metal in successive layers. The minimum number of passes or beads in the completed weld shall be as follows:

<u>Steel Cylinder Thickness (Inches)</u>	<u>Fillet Weld Minimum Number of Passes</u>
Smaller than 3/16	1
3/16 and 1/4	2
5/16 and 3/8	3

After the joints have been welded, the joint shall be grouted with cement mortar in the same manner as specified for rubber-ring joints.

### **3.2 PREVENTING FOREIGN MATTER FROM ENTERING THE PIPE**

At all times when pipe laying is not in progress, close the open end of the pipe with a tight-fitting cap or plug to prevent the entrance of foreign matter into the pipe. These provisions shall apply during the noon hour as well as overnight. In no event

shall the pipeline be used as a drain for removing water, which has infiltrated into the trench. Maintain the inside of the pipe free from foreign materials and in a clean and sanitary condition until its acceptance by the Owner.

### **3.3 INSTALLING GROOVED-END PIPING**

- A. Install grooved-end pipe and fittings in accordance with the coupling manufacturer's recommendations and the following.
- B. Clean loose scale, rust, oil, grease and dirt from the pipe or fitting groove before installing coupling. Apply the coupling manufacturer's gasket lubricant to the gasket exterior including lips, pipe ends, and housing interiors.
- C. Fasten couplings alternately and evenly until coupling halves are seated. Use torques as recommended by the coupling manufacturer.

### **3.4 LEAKAGE TEST**

- A. General: Test all pipelines in accordance with Section 15044, Pressure Testing of Piping, and the applicable provisions of AWWA C600, except as modified herein.
- B. Allowable Leakage: Notwithstanding 15044, Pressure Testing of Piping, Section 3.8, no pipeline installation will be accepted if the leakage is greater than that of 10 gallons per inch of pipe diameter per mile of pipe per 24 hours. Unless otherwise specified on the Drawings, the test pressure shall be the average observed test pressure of the pipe being tested, equal to at least 125 percent of the working pressure, in pounds per square inch gauge, based on the lowest point in the line or section under test and corrected to the elevation of the test gauge.

No leakage will be allowed for welded joints. The length of pipe with welded joints will be deducted from the total length in computing the allowable leakage. All visible leaks must be eliminated regardless of the results of the leakage allowance measurements.

### **3.5 DISINFECTION**

Disinfection shall be in accordance with Section 15041, Chlorination of Water Mains for Disinfection.

#### **PART 4 – PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid for which such Work is appurtenant thereto, and no additional payment will be made specifically for Work in this Section.

**END OF SECTION**



## **SECTION 15098: BYPASS PIPING AND TEMPORARY SERVICE CONNECTIONS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes the requirements for temporary bypass piping and appurtenances and temporary service connections required to maintain water supply service during construction operations.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Refer to the following Specification Section(s) for additional requirements:

- A. Submittals: Section 01300
- B. Trenching, Backfilling, and Compacting: Section 02223
- C. Piping Schedule and General Piping Requirements: Section 15000
- D. Chlorination of Water Mains for Disinfection: Section 15041
- E. Pressure Testing of Piping: Section 15044
- F. Installation of Pressure Pipelines: Section 15051

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with the requirements of Section 01300, Submittals. Submit bypass pipeline design for the complete Project.

#### **1.4 AVAILABLE INFORMATION**

The Project Plans and City Water Atlas maps will provide the basic information for design and will include, but not be limited to, approximate location and size of water mains, approximate location of services, location of fire hydrants and line valves.

To aid in design, additional copies of the Water Atlas maps will be made available by contacting the City.

### **PART 2 - MATERIALS**

#### **2.1 GENERAL**

Pipe and fittings employed in the bypass pipelines and temporary service connections shall be subject to approval by the City for use. Pipe and fittings shall be clean, free of rust, dirt, debris, and foreign material and shall consist of materials capable of withstanding the maximum system pressure. Pipe and fittings shall not impart any objectionable taste, odor, or color to the water being supplied. Plastic pipe or hose, when employed, shall bear the imprint of the

National Sanitary Foundation approval for potable water, NSF-PW, or shall be capable of meeting the standards established by the NSF for this use. Where "lever" or "toggle" type couplings are employed for joining lengths of pipe for the bypass pipelines, the couplings shall be installed in the inverted position to prevent accidental uncoupling of the pipelines. Each run of bypass pipeline shall terminate with a 2-inch minimum size valve for flushing and chlorination. There shall be no services supplied downstream of the terminal valve.

## **PART 3 - EXECUTION**

### **3.1 GENERAL**

- A. Maintain continuity of water service to the customers during installation, maintenance, and removal of the bypass pipelines. Upon commencement of operation of the bypass pipelines, furnish to the Owner the names and telephone numbers of the personnel designated to perform emergency repairs to the bypass pipelines and service connections.
- B. Changes or modifications to the bypass pipeline configuration may be made by the Contractor subject to the approval of the Owner.
- C. When a bypass pipeline crosses a wheelchair ramp or sidewalk and there is less than a 4-foot wide unobstructed passageway, install the pipeline in a recessed trench or provide a ramp at a slope not greater than 1:12. At all street crossings, install the bypass pipeline in a recessed trench. In all cases, temporary resurfacing of recessed trenches shall be flush with the existing grade. If the bypass pipeline crosses a driveway, provide an asphalt mound over that portion of the pipeline.
- D. After service has been restored to a section of the water main, remove the bypass pipeline and related facilities. Leave the streets, sidewalks, and adjacent areas in a clean and orderly condition and restore to near original condition.

### **3.2 DISINFECTION**

Disinfection of the bypass pipelines shall be performed by the Contractor in accordance with Section 15041, Chlorination of Water Mains for Disinfection. Prior to disinfection, thoroughly flush each run of bypass pipeline to clear the pipe of dirt, debris, or foreign objects. Dechlorinate water that is flushed to the street or storm drain system.

### **3.3 FLUSHING**

When directed by the Owner, provide periodic daily flushing of bypass pipelines to lower water temperatures. Flushing may also be required on weekends and

holidays, depending on weather conditions. Flush the bypass pipelines when the temperature of the water is at or above 80 degrees F. Dechlorinate water that is flushed to the street or storm drain system.

### **3.4 TEMPORARY SERVICE CONNECTIONS**

#### **A. General**

Following disinfection of the bypass pipeline and before shutdown of the water main to be replaced, furnish, install, and maintain temporary service connections from the bypass pipeline to the outlet side of the Owner's water meters, including fire and large domestic services. Remove each water meter from the meter vault and reconnect to the temporary bypass pipeline above ground. Provide shut off valves at each service connection to the temporary bypass piping so that each customer is out of service for a minimum amount of time during reinstallation. Protect the meters, meter vaults and temporary service lines with barricades and warning signs. Notify the Owner of any damage to the meter, meter vault or customer side of the service line.

1. Any movement or temporary relocation of water meters to facilitate the temporary connection shall be made only with approval of City. In the City Water System, the water meter is the terminal unit of City ownership. Any relocations or modifications downstream of the water meter shall be made with approval of the Owner's customer. Since the condition of the customer's piping is unknown to the Owner, prevent any damage or leakage in the customer's piping resulting from movement of the Owner's water meter or the customer's piping. If any damage or leakage should occur, repair the customer's piping in a timely manner at the Contractor's sole expense.
2. Notify customers not less than 48 hours prior to shutdown of the water main and notify Owner of any conflicts.
3. Maintenance, protection, and removal of the connections shall be under the same conditions as Subsection 3.1 of this Section.
4. Notify the Owner 48 hours prior to restoration of service to a water main that meters can be reconnected. The City will reinstall all bypassed meters in the meter box. Install the new service lines from the main only when the meter is in the meter box. Disconnect the temporary service connections after service has been restored to a section of the water main. Prior to reconnection of the water meter, flush each service lateral for not less than 30 seconds to clear the lateral of any debris from the construction operation. Should the flow through the lateral appear to be impaired, make the necessary repairs to restore full flow or request that the City

perform the repairs. The expense of such repairs performed by the Owner will be charged solely to the Contractor.

5. In locations where the service lateral was unable to be flushed prior to connecting the service lateral to the meter, immediately distribute notices furnished by Owner to all service locations.

B. Temporary Connections for Water Supply to 2-inch Bypass Pipelines

1. Install, maintain, and remove 1-1/2-inch service taps at locations deemed necessary to provide water supply to the 2-inch bypass pipelines. Make the 1-1/2-inch taps to existing cast iron pipelines, or new ductile iron pipelines, as appropriate, and install them with the pipelines in service and operating under normal pressure. All bypass pipelines shall withstand maximum system pressure of 90 psi.
2. Make the taps at 60 degrees below the top of the pipe on the side of the pipeline to which the supply for bypass pipeline is required. Space dual taps not less than 12 inches apart. The tapping machine shall be capable of cutting 1-7/16-inch outlet holes through Contractor-furnished 1-1/2-inch service clamps and inserting Contractor-furnished 1-1/2-inch bronze corporation valves with 4-7/8-inch outside diameter. Furnish and permanently install one service clamp and one 1-1/2-inch corporation valve at each location.
3. Furnish, install, and remove fittings for each temporary connection. Fittings shall conform to City standards. Provide submittals for proposed fittings to the City for review a minimum of 14 calendar days prior to use.
4. Following installation of the temporary connection assembly, temporarily backfill or cover the excavation in a manner suitable for traffic use. When the bypass pipeline is in service, the 2-inch curb valve shall be readily accessible at all times to perform repairs to the bypass pipeline.
5. Following removal of the connected bypass pipelines and temporary fittings, cap each corporation valve with a Contractor-furnished, 1-1/2-inch, bronze coupling, B&S x IPT-female, and a Contractor-furnished, 1-1/2-inch, bronze plug, IPT. With the approval of the Owner, the Contractor may plug the service clamp with a Contractor-furnished, 1-1/2-inch, c.c. bronze plug and recover the corporation valve. Following installation of the cap or plug, place the sand-cement slurry backfill in the excavation and shall place the permanent paving over the excavation as soon as practicable.

6. The Work for each temporary connection shall include, but not be limited to, pavement removal, excavation, installation and removal of the connection assembly, capping the corporation valve, sand-cement slurry backfill, and permanent paving, all in accordance with these Specifications.
  7. Include all Work associated with the installation, removal, and maintenance of temporary connections for water supply in the unit price for pipeline construction.
- C. Temporary Connections for Water Supply to 4-inch through 6-inch Bypass Pipelines
1. Install, maintain, and remove 4-inch through 6-inch temporary bulkheads at locations determined by the Owner to provide water supply to 4-inch through 6-inch bypass pipelines. Install the 4-inch through 6-inch temporary bulkheads on existing 4-inch, 6-inch, 8-inch, 10-inch, and 12-inch, cast iron pipelines and install them with the pipelines temporarily out of service.
  2. Attach a 4-inch through 6-inch diameter hose to the temporary bulkhead to supply the bypass pipelines. Lay the hose in a trench and cover it with a temporary asphalt material to a depth flush to the existing grade. The hose shall connect to the 4-inch through 6-inch bypass pipelines at the curb. The hose will be subject to approval by the Owner in accordance with Subsection 2.1 of this Section.
  3. The Work for each temporary bulkhead shall include, but not be limited to, pavement removal, excavation, removal and reinstallation of the nipple, and installation and removal of the temporary bulkhead. Reinstall the nipple in accordance with the details shown on the Plans and as specified in the Specifications.

#### **PART 4 - PAYMENT**

All Work associated with the design, installation, maintenance, and removal of bypass pipelines and temporary service connections shall be included in the unit price bid for pipeline construction.

#### **END OF SECTION**

## **SECTION 15100: CONTROL AND CHECK VALVES**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section includes materials, testing, and installation of manually and electric actuated valves and check valves.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Section 01300: Submittals
- B. Section 02223: Trenching, Backfilling and Compacting
- C. Section 09900: Painting and Coating
- D. Section 15000: General Piping Requirements
- E. Section 15044: Pressure Testing of Piping
- F. Section 15056: Ductile-Iron Pipe and Fittings
- G. Section 15076: Cement-Mortar Lined and Coated Steel Pipe
- H. Section 15119: Electric Motor Actuators – Not Used

#### **1.3 SUBMITTALS**

Furnish the following submittals in accordance with the requirements of Section 01300, Submittals:

- A. Manufacturer's catalog data and detail construction sheets showing all valve parts and describing material of construction by material and specification (such as AISI, ASTM, SAE, or CDA).
- B. Valve dimensions including laying lengths. Show dimensions and orientation of valve operators, as installed on the valves.
- C. Valve linings and coatings.

### **PART 2 - MATERIALS**

#### **2.1 GENERAL**

Provide valves complete with operating handwheels, levers, chainwheels, extension stems, floor stands, worm gear operators, operating nuts, chains, and wrenches required for operation. Valves shall have the name of the manufacturer and the size of the valve cast or molded onto the valve body or bonnet or shown on a permanently attached plate.

Where called out in the Drawings provide valves with electric motor actuators per Section 15119, Electric Motor Actuators.

## **2.2 VALVE OPERATORS**

- A. Operators for Exposed Valves Smaller Than 6 Inches: Provide lever or wrench operators having adjustable, open stop memory positions for exposed valves smaller than 6 inches.
  
- B. Operators for Buried or Submerged Valves
  - 1. Provide direct acting 2-inch square AWWA operating nuts for all buried or submerged valves less than 6 inches, and for buried and submerged gate valves less than 24 inches.
  - 2. Provide watertight shaft seals and watertight valve and actuator cover gaskets. Provide totally enclosed operators designed for buried or submerged service.
  
- C. Operators for Valves 6 Inches and Larger
  - 1. Provide gear operators on butterfly, plug, and ball valves 6-inches and larger. Gear operators for valves 8 inches through 20 inches shall be of the worm and gear, or of the traveling nut type. Gear operators for valves 24 inches and larger shall be of the worm and gear type.
  - 2. Enclose gear operators, suitable for running in oil with seals provided on shafts to prevent entry of dirt and water into the operator. Gear operators for valves located above ground or in vaults and structures shall have handwheels. Minimum handwheel diameter shall be 12 inches.
  - 3. Gear operators shall be of the totally enclosed design, proportioned to permit operation of the valve under full operating head with a maximum pull of 80 pounds on the handwheel or crank. Operators shall be provided with open and closed position stop limiting devices. Operators shall be of the self-locking type to prevent the disc, ball or plug from creeping. Operator components shall be designed to withstand a pull of 200 pounds for handwheel or chainwheel operators between the input and stop limiting devices without damage, and an input torque of 300-foot-pounds for operating nuts when operating against the stops.
  - 4. Self-locking worm gears shall be a one-piece design of gear bronze material (ASTM B 427), accurately machine cut. The worm shall

be hardened alloy steel (ASTM A 322, Grade G 41500; or ASTM A 148, Grade 105-85), with threads ground and polished. The reduction gearing shall run in a proper lubricant. Operators shall be Limatorque Model T Series, EIM Model MG or approved equal.

5. Gear operators shall be able to rotate the valve element (disc, plug, or ball) from the fully closed position to fully open in a number of turns of the operator not exceeding two times the valve diameter in inches (e.g., for a 12-inch valve, the number of turns of the operator shall not exceed 24).
- D. Operating Torque Requirement for Buried Valves: Design operators on buried valves to produce the required torque on the operating nut with a maximum input of 150-foot pounds.
- E. Opening Direction: Valve operators, handwheels or levers shall open by turning counterclockwise.
- F. Position Indicators: Provide valve position indicators for all above ground valves.

### **2.3 VALVE BOXES FOR BURIED VALVES**

- A. General: Valve boxes shall be 8 inch Schedule 40 PVC pipe, or 8 inch ASTM D-3034 sewer pipe. Valve boxes shall conform to the City Standard Drawings.
- B. Valve Box Caps: Valve box caps shall be cast-iron, and shall be designed to rest without a frame on a cast-in-place concrete ring surrounding the valve extension pipe. Taper the cap skirt for a close fit inside the upper sleeve portion of the valve box. Minimum weight of nominal 10-inch cap shall be 40 pounds. Caps for potable water valve boxes shall be circular with the word WATER cast on the cap. Caps for reclaimed water valve boxes shall be triangular with the word "IRRIG" cast on the cap. Coat caps per Section 09900, Painting and Coating, System No. C-1. Color for potable waterlines shall be OSHA-ANSI safety yellow.

### **2.4 EXTENSION STEMS FOR BURIED VALVE OPERATORS**

Where the depth of the valve is such that its operating nut is more than 3 feet below grade, provide operating extension stems to bring the operating nut to a point between 24 to 36 inches below the surface of the ground and/or box cover. Extension stems shall be steel, and shall be complete with 2-inch-square operating nut. Provide stem with a 1/8-inch center guide to keep stem centered in box. Do not use pinned couplings. Extension stems shall conform to the City Standard Drawings.



## 2.5 BOLTS, NUTS, AND GASKETS FOR FLANGED VALVES

Bolts and nuts for flanged valves are described in Section 15000, General Piping Requirements, and the individual piping specifications.

## 2.6 PAINTING AND COATING

- A. Above Ground Valves or Valves in Vaults: Coat metal valves (except bronze and stainless-steel valves) located above ground or in vaults and structures in accordance with Section 09900, Painting and Coating, System No. C-1. Apply the specified prime coat at the place of manufacture. Apply intermediate and finish coats in field. Finish coat shall match the color of the adjacent piping. Handwheels shall receive the same coating as the valves.
- B. Buried Valves: Coat buried metal valves and extension stems at the place of manufacture per Section 09900, Painting and Coating, System No. D-1.
- C. Interior Coating: Coat metal valves 4-inches and larger on the interior metal parts, excluding seating areas and bronze and stainless-steel pieces, per Section 09900, Painting and Coating, System No. B-2. Coating shall be applied at the factory by the valve manufacturer.
- D. Alternative: As an alternative to the coating systems specified above, valves may be lined and coated at the place of manufacture per Section 09900, Painting and Coating, System No. G-1.

## 2.7 VALVES

- A. Butterfly Valves 4 Inches and Larger, Class 150B: Butterfly valves shall be short body, flanged type, conforming to AWWA C504, Class 150B. Do not use wafer style valves. Unless otherwise noted, minimum working differential pressure across the valve disc shall be 150 psi. Valve ends shall be as shown on the Drawings; flanged ends shall be Class 125, ANSI B16.1. Valve shafts shall be Type 304 or 316 stainless-steel, or carbon steel with Type 304 or 316 stainless-steel journals and static seals. Valve shafts shall be stub shaft or one-piece units extending completely through the valve disc. Test valve bodies at a pressure equal to twice the design working pressure. Materials of construction shall be as follows:

<u>Component</u>	<u>Material</u>	<u>Specification</u>
Body	Cast iron or ductile iron	ASTM A48, Class 40; ASTM A126, Class B; or ASTM A536, Grade 65-45-12
Exposed body capscrews, and bolts and nuts	Stainless-steel	ASTM A276, Type 304 or 316
Discs	Cast iron, ductile iron, or Ni-Resist	ASTM A48, Class 40; ASTM A536, Grade 65-45-12; or ASTM A436, Type 1

The rubber seat shall be an integral part of the valve body. Rubber seats fastened to the disc by any means shall not be allowed. Valves shall be Pratt Groundhog, Dezurik BAW, Kennedy AWWA butterfly valve, or approved equal.

- B. Stainless-Steel Ball Valves 2 Inches and Smaller: Ball valves, 2 inches and smaller, for water service shall be stainless steel, and shall be rated at a pressure of 300 psi WOG at a temperature of 150°F. Valves shall have plastic-coated lever operators. Valves shall have full-bore ports, screwed ends, and non-blowout stems. Materials of construction shall be as follows:

<u>Component</u>	<u>Material</u>	<u>Specification</u>
Body, ball, stem	Stainless-steel	Type 316, ASTM A276
Seat, seals	Teflon	

Valves shall be Stockham Figure S-217, Worcester Controls Series 48, or approved equal.

- C. Bronze Ball Valves 2 Inches and Smaller: Ball Valves, 2 inches and smaller, for air or water service shall have bronze (ASTM B 62 or ASTM B 584, Alloy C83600 or C84400) body and plug ball retainer. Ball and stem shall be bronze (as specified for the body) or Type 316 stainless steel. Provide chrome-plated ball, if ball is bronze. Valves shall have screwed ends (ANSI B1.20.1), nonblowout stems, reinforced Teflon seats, and have plastic-coated lever operators. Valves shall have pressure rating of at least 600 psi WOG at a temperature of 150°F. Valves shall be Stockham S-206, Apollo 77-100 Series, or approved equal.

- D. Ball Valves 6 Inches through 12 Inches: Ball valves shall be flanged, conforming to AWWA C507, and the following. The minimum rated working pressure shall be 150 psi. Flanged ends shall be flat-faced Class 125, ANSI B16. Valve shall be of the rubber seat design. Valves shall be double-seated to allow closure in two directions. Manufacturer: Henry Pratt Co., Golden Anderson, or approved equal.

Materials of construction shall be as follows:

<u>Item</u>	<u>Material</u>	<u>Specification</u>
Valve body	Cast iron or	ASTM A 126, Class B or ASTM A 48, Class 35
	Ductile iron	ASTM A 536, Grade 65-45-12
Ball or rotor	Cast iron or	ASTM A 48, Class 35 (minimum)
	Ductile iron	ASTM A 536, Grade 65-45-12
Ball shaft	Alloy steel	ASTM A 564, UNS S17400, Condition H1150
Shaft and taper pins	Stainless steel	ASTM A 276, Type 304 or 316
Body bolts, studs, and nuts	Stainless steel	AISI Type 304
Capscrews (internal and external) and lockwashers	Stainless steel	AISI Type 316
Seats (rubber)	Buna-N	--

Lubricant for stainless-steel body bolts and nuts shall be TRX-Synlube by Ramco, Anti-Seize by Ramco, Husk-It Husky Lube O-Seal, or approved equal.

Packing, O-rings, and gaskets shall be one of the following nonasbestos materials: Teflon, Kevlar, or approved equal, aramid fiber, acrylic or aramid fiber bound by nitrile. (Products: Garlock "Bluegard," Klinger "Klingersil C4400," or approved equal), Buna-N (nitrile), or cotton impregnated with Buna-N.

- E. Lubricated Plug Valves 4-Inches and Smaller: Lubricated plug valves of sizes 4-inches and smaller shall have carbon steel bodies and plugs and shall be short pattern with bolted glands and resilient packing. Plug

coating shall be Teflon, permanently bonded to the plug. Unless noted otherwise on the drawings, valve ends shall be flanged, with face-to-face dimensions conforming to ANSI B16.1, Class 125. Valves shall have a pressure rating of 200 psi WOG. Lubricate valves with manufacturer's recommended lubricant for cold water service. Valves shall be Nordstrom Figure 1925, or approved equal.

- F. Lubricated Plug Valves 6-Inches Through 20-Inches Class 125: Lubricated plug valves of sizes 4-inches through 20-inches shall have cast iron (ASTM A126, Class B) bodies and plugs. Valves shall be of the regular pattern with bolted glands and resilient packing. Plug coating shall be Teflon, permanently bonded to the plug. Unless noted otherwise on the drawings, valve ends shall be flanged, with face-to-face dimensions conforming to ANSI B16.1, Class 125. Valve shall have a pressure rating of 200-psi WOG. Valves shall be enclosed worm gear operated and watertight for submerged service. Lubricate valves with the manufacturer's recommended lubricant for cold-water service. Valves shall be Rockwell Figure 169, Powell, or approved equal.
- G. Eccentric Plug Valves, 4-Inches Through 12-Inches: Eccentric plug valves, 4-inches through 12-inches, shall be of the non-lubricated type. Minimum pressure rating shall be 175 psi. Unless noted otherwise on the drawings, ends shall be flanged, Class 125 per ANSI B16.1. Materials of construction shall be as follows:

<u>Component</u>	<u>Material</u>	<u>Specification</u>
Body	Cast iron	ASTM A126, Class B
Plug Ductile Iron	Cast Iron	ASTM A126, Class B ASTM A536, Grade 65- Ni-Resist 45-12 ASTM A436

Plugs shall have neoprene facing to provide drip-tight shutoff. Valve body seats shall have a raised welded-in overlay of not less than 90 percent nickel. Packing shall be replaceable with valve body under full pressure and with valve in the fully open position. Plug shall be of the one piece design. Valves shall be DeZurik Series 100, Figure 118, or approved equal.

- H. Resilient Wedge Gate Valves, 3 Inches Through 12 Inches: Resilient wedge gate valves shall conform to AWWA 509 and the following requirements. Valves shall be designed for a minimum working pressure of 200 psi, and shall be bubble-tight at that pressure. Valves shall have non-rising stems. Stem nuts shall be independent of the gate and shall be made of solid bronze. All internal working parts, including the stem, shall be all bronze containing not more than 2 percent aluminum or more

than 7 percent zinc. Bronze shall be ASTM B62 (85-5-5-5) bronze, except that stem bronze shall have a minimum tensile strength of 60,000 psi, a minimum yield strength of 30,000 psi, and a minimum of 10 percent elongation in 2-inches before failure. Materials of construction shall be as follows:

<u>Component</u>	<u>Material</u>	<u>Specification</u>
Body Operating Nut, Bonnet, Seal Plate	Cast Iron	ASTM A126, Class B
Gate	Cast Iron Ductile Iron	ASTM A126, Class B ASTM A536, Grade 65-45-12
Bonnet and Seal Plate Nuts and Bolts	Stainless-Steel	ASTM A276, Type 316
O-Rings	Synthetic Rubber	ASTM D2000

Provide low friction, torque reduction thrust bearings both above and below the stem collar. Stuffing boxes shall be O-ring seal type with two rings located in stem above thrust collar. Each valve shall have a smooth unobstructed waterway free from any sediment pockets. Encapsulate gates in Buna-S rubber or nitrile elastomer. Valves shall be Clow RW, Mueller A2360, American AVK, American Flow Control AFC500, M&H Style 4067, or approved equal.

- I. Cast-Iron Swing Check Valves 4 Inches and Larger: Swing check valves shall conform to AWWA C508, and shall be iron-body, bronze-mounted with the following materials of construction:

<u>Component</u>	<u>Material</u>	<u>Specification</u>
Disc or clapper, seat ring, valve body seat ring	Bronze or brass	ASTM B62, B16, or B584 (alloys C84400 or C87600)
Body and Cap	Cast iron	ASTM A126, Class B
Disc and Hinge or Arm	Cast iron or bronze	ASTM A126, Class B ASTM B62
Hinge Pin	Stainless-steel	ASTM A276, Type 303, 304 or 410

Cover Bolts and Nuts	Stainless-steel	ASTM A193, Grade B8M; ASTM A194, Grade 8M
Internal fasteners And accessories	Bronze or Type 304 or 316 sst	

Ends shall be flanged, Class 125, ANSI B16.1. Design valves for a minimum working pressure of 150 psi. Equip valve with outside lever and spring. Valves shall be Clow F-5340, M&H Style 259, or approved equal.

- J. Bronze Check Valves 3 Inches and Smaller: Check valves 3 inches and smaller shall be Class 125, wye pattern, bronze, ASTM B 61, B 62, or B 584 (Alloy C83600). Ends shall be female threaded, ANSI B1.20.1. Disc shall be bronze, swing type. Minimum working pressure shall be 200 psi WOG at a temperature of 150°F. Valves shall be Crane No. 37, Nibco T-413-B, Stockham B-139, or approved equal.
- K. Stainless-Steel Gate Valves: Stainless-steel gate valves, 1/2 inch through 2 inches, shall be of the single wedge type with rising stem and handwheel. Minimum working pressure shall be 200 psig. Bonnet shall be of the screwed type. Ends shall be threaded, ANSI B1.20.1. Materials of construction shall be as follows:

<u>Component</u>	<u>Material</u>	<u>Specification</u>
Body, bonnet, plug, disc, and follower	Stainless steel	ASTM A 351, Grade CF8M
Packing gland, nut, retainer ring and stem	Stainless steel	ASTM A 276, Type 316
Handwheel	Malleable iron	ASTM A 47, A 197
Stuffing box packing	Teflon	--

Valves shall be Powell Figure 1832, Crane/Alloyco Figure 90, or approved equal.

- L. Solenoid Valves 1-1/2-Inches and Smaller: Solenoid valves of sizes 1/4-inch through 1-1/2-inches for water and air service shall have forged brass (Alloy C23000) or bronze (ASTM B 62) bodies with Teflon main seats. Internal plunger, core tube, plunger spring, and cage assembly shall be stainless steel (Types 302, 304, or 305). Solenoid enclosures shall be NEMA Type IV. Valve actuators shall be 120-volt AC. Seals shall be Teflon. Valves shall have a maximum operating pressure and a maximum differential pressure of 250 psi. Energize solenoid valves to open or close, as required. Valves shall be ASCO "Red Hat," or approved equal.
- M. Tapping Valves: Tapping valves shall conform with the requirements for gate valves 3-inches and larger. Valve ends shall be flanged, and the flange at one end shall have slotted boltholes to fit standard tapping

machines. Seat rings shall be oversized to permit the use of full-size cutters. Tapping valves shall be Mueller, Kennedy, or approved equal.

N. Tapping Sleeves: Tapping sleeves shall be full circumference band 18-8 type 304 stainless steel. The flanged outlet shall be AWWA C-207 Class D ANSI 150 lb. Drilling. Gaskets shall be Buna-N rubber with a wide cross-section. Bolts, nuts, and washers shall be type 316 stainless steel. Tapping sleeves shall be Smith Blair No. 623, Ford Style Fast or approved equal.

O. Detector Check Valves: Detector check valves shall have flanged ends conforming to ANSI B16.1, Class 125. Pressure test valves to twice design working pressure. Valve casing shall be hot-dipped galvanized and body shall be tapped to accept by-pass meter piping. Materials of construction shall be as follows:

<u>Component</u>	<u>Material</u>	<u>Specification</u>
Body, bonnet	Cast iron	ASTM B126 Class B
Bonnet bolts	Stainless steel	ASTM A276 Type 304
Hinge pin (shaft)	Stainless steel	ASTM A276 Type 304 or 316
Clapper	Bronze	ASTM B62
Clapper seat ring	Bronze (tinned)	ASTM B62
Clapper seal	Rubber	
Weight	Lead	

The mainline valve shall automatically open, permitting unrestricted flow, when the pressure loss through the by-pass meter is approximately 1.5 psi. Valves shall be Hersey EDC II, Grinnel, Mueller A-2133-6, or approved equal.

P. Reduced Pressure Backflow Device: These devices shall be as shown on the Drawings and as approved by the Los Angeles County Department of Health and Human Services-Environmental Health Bureau.

Q. Pressure-Reducing Valve 3 Inches and Larger: Hydraulically operated, diaphragm actuated, pilot controlled globe valve, cast iron, ductile iron, or steel body, ANSI B16.1 flanged ends, rated 175 psi, bronze or stainless

steel trim, stainless steel stem, externally mounted strainers with cocks, and maintain a constant downstream pressure regardless of fluctuations in flow or upstream pressure. FDA approved fusion bonded epoxy lining and coating installed in accordance with AWWA C550. Size/Rating: PRV-12 inch, maximum of 4,000 gpm with inlet pressure of 90 psig. Outlet pressure set at 25 psig. Manufacturers and Products:

- 1) Cla-Val; 90-01 Series.
- 2) Singer; Model 106PR.
- 3) Or approved equal.

- R. Corporation Stops: Corporation stops shall be manufactured of bronze conforming to ASTM B62. The inlet fitting shall be a male iron pipe thread when used with a saddle and the outlet connection shall be a flare type unless otherwise specified.
- S. Globe Valves: Angle Pattern Valve 2 Inches and Smaller: All bronze, screwed ends, union bonnet, inside screw, rising stem, TFE disc, rated 150-pound SWP, 300-pound WOG. Valves shall be Stockham B-222T, or Crane 17TF, or approved equal.
- T. Gauge Cock: 1/4-inch bronze body, hexagon end pattern, tee head, male ends, rated 125-pound SWP. Valve shall be United Brass Works, Ford Meter Box Co., Mueller Co., or approved equal.

## 2.8 BRONZE AND BRASS

Bronze or brass valve components in contact with water shall comply with the following requirements:

<u>Constituent</u>	<u>Content</u>
Zinc	7% maximum
Aluminum	2% maximum
Lead	8% maximum
Copper + Nickel + Silicon	83% minimum

## PART 3 - EXECUTION

### 3.1 JOINTS

- A. Flanged Joints: Boltholes of flanged valves shall straddle the horizontal and vertical centerlines of the pipe run to which the valves are attached. Clean flanges by wire brushing before installing flanged valves. Clean flange bolts and nuts by wire brushing; lubricate threads with oil and graphite, and tighten nuts uniformly and progressively. If flanges leak



under pressure testing, loosen or remove nuts and bolts, reseal or replace the gasket; reinstall and re-tighten the bolts and nuts; and re-test the joint. Joints shall be watertight.

- B. Threaded Joints: Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing threaded valves. Joints shall be watertight.

### **3.2 VALVE INSTALLATION**

- A. Valves in Horizontal Piping: Unless otherwise indicated on the Drawings, install valves in horizontal runs of pipe having centerline elevations 4'-6", or less, above the floor, with their operating stems vertical. Install valves in horizontal runs of pipe having centerline elevations between 4'-6" and 6'-9" above the floor with their operating stems horizontal.
- B. Valves in Vertical Piping: Install valves on vertical runs of pipe that are next to walls with their stems horizontal, away from the wall. Install valves on vertical runs of pipe that are not located next to walls with their stems horizontal, oriented to facilitate valve operation.
- C. Buried Valves: Wrap buried valves with two layers of 8-mil polyethylene wrap per AWWA C105.
- D. Valve Supports: Anchor valves in concrete as shown on the City Standard Drawings or on the valve detail drawings. Concrete supports are not required for valves bolted to flanged pipe or fittings.
- E. Backfill: Backfill within 24-inches of valves shall be clean washed sand in accordance with the requirements of Section 02223, Trenching, Backfilling, and Compacting.

### **3.3 VALVE BOXES**

Firmly support valve boxes and keep them centered within 1/2" and plumb within 5° over the operating nut of the valve. Do not use beveled sections of pipe at the top of the valve extension pipe. The top cut shall be square and machine made. In new tracts, and where pavement has not been placed, the valve extension risers for "key valves" shall extend well above the ground level to permit ease of location in case of emergency shutoffs. The final valve box elevation shall be flush with the finished pavement surface, or at the level shown on the City Standard Drawings.

### **3.4 TAPPING SLEEVES**

Install tapping sleeves in accordance with the manufacturer's instructions. Thoroughly clean the pipe barrel with a wire brush to provide a smooth, hard surface for the sleeve. Support the sleeve independently of the pipe during the tapping operation. The sleeve shall be pressure-tested in the presence of the Engineer prior to tapping. Provide thrust blocks at the tapping sleeve.

### **3.5 VALVE LEAKAGE TESTING**

Test valves for leakage at the same time that the connecting pipelines are tested. See Section 15044, Pressure Testing of Piping, for pressure testing requirements.

## **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 15108: AIR-RELEASE AND VACUUM-RELIEF VALVES**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section includes materials and installation of air and vacuum valves for water service.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Painting and Coating: Section 09900
- B. Pressure Testing of Piping: Section 15044
- C. General Piping Requirements: Section 15000
- D. Control and Check Valves: Section 15100

#### **1.3 SUBMITTALS**

- A. Submit shop drawings in accordance with Section 01300, Submittals.
- B. Submit manufacturer's catalog data and detail drawings showing all valve parts and describe by material of construction, specification (such as AISI, ASTM, SAE, or CDA), and grade or type. Show linings and coatings.

### **PART 2 - MATERIALS**

#### **2.1 VALVE DESIGN AND OPERATION**

- A. Valve design shall comply with AWWA C512, except as modified herein. Class 150 valves shall have a maximum working pressure of at least 150 psi.
- B. Air-release valves for water service 3/4 inch and smaller shall be of the direct-acting type or lever type.
- C. Air and vacuum valves for water service shall have a body with a flanged top containing the air-release orifice. The float shall rise with the water level in the valve body to close the orifice by sealing against a synthetic rubber seat.

Air and vacuum valves 3 inches and smaller shall have 1/2-inch threaded ports with bronze plugs in the top cover and near the bottom of the valve body. Air and vacuum valves larger than 3 inches shall have a 1-inch threaded drain outlet with bronze plug near the bottom of the valve body

and a 1-inch threaded port with bronze plug on the side of the valve body above the minimum water level in the valve which forces the float against the valve seat.

- D. Combination air valves 3 inches and smaller shall have a float with lever arm to actuate a poppet valve. A needle shall be attached to the float arm. The poppet valve shall serve to admit large quantities of air when the pipeline drains. The needle shall serve to release small quantities of air as the pipeline fills or as air accumulates in the pipeline.
- E. Air and vacuum valves for vertical turbine pump service (3 inches and smaller) shall have a float assembly. The discharge orifice shall have a double-acting throttling device to restrict air venting; it shall fully open to allow unrestricted air entry when the pump is shut down. Valve shall have a body with flanged top containing the air-release orifice. The float shall rise with the water level in the valve body to close the orifice by sealing against a synthetic rubber seat.

Valves 3 inches and smaller shall include the following features:

1. Water diffuser around the float to break up the incoming water column before contacting the float.
2. Double-acting throttling device, which restricts airflow when the pump is started and opens fully when the pump is stopped.

## 2.2 **MATERIALS OF CONSTRUCTION**

- A. Materials of construction for air release, air and vacuum, and combination air valves for water service shall be as follows:

Item	Material	Specification
Body and cover	Cast iron	ASTM A 48, Class 35; or ASTM A 126, Class B
	Stainless steel	AISI Type 316
Float, lever or linkage, air release mechanism, poppet, guide rod, guide bushings, fasteners, other internal metal parts	Stainless steel	AISI Type 316
Plugs	Bronze	
Seat, plunger, needle	Buna-N	--

B. Seating

Valves shall seat driptight at a pressure of 2 psi.

C. Valve End Connections

1. Valves 2 inches and smaller shall have threaded ends. Valves 3 inches and larger shall have flanged ends.
2. Flanges for Class 150 valves shall comply with ANSI B16.1, Class 125.
3. Threaded ends shall comply with ANSI B1.20.1.

D. Valves

1. Air-Release Valves,  $\frac{3}{4}$  Inch and Smaller:

Valves shall have an operating pressure of 150 psi. Orifice sizes shall be:  $\frac{1}{8}$  or  $\frac{3}{32}$  inch for  $\frac{1}{2}$ -inch valves and  $\frac{1}{8}$  inch for  $\frac{3}{4}$ -inch valves. Valves shall be APSO 55 or 65; Val-Matic Model 22; Crispin M3, M5, or M8; or approved equal.

2. Combination Air Valves, 1 Inch Through 3 Inches:

Valves shall have a maximum working pressure of 300 psi. Valves shall be APCO 143C, 145C, or 147C; Val-Matic Model 201C, 202C, or 203C; Crispin UL10, UL20, or UL30; or approved equal.

3. Air and Vacuum Valves for Vertical Turbine Pump Service, 3 Inches and Smaller:

Valves shall be APCO Series 140 DAT, Val-Matic Series 100WST, Crispin Series DL-D/DBL, or approved equal.

Valve shall incorporate an air-release valve.

## **PART 3 - EXECUTION**

### **3.1 LINING AND COATING**

- A. Coat cast-iron valves located above ground or in vaults and structures the same as the adjacent piping. Apply the specified prime and intermediate coats at the place of manufacture. Apply finish coats in field. Finish coat shall match the color of the adjacent piping.

- B. Coat interior surfaces of cast-iron valves at the place of manufacture per Section 09900, Painting and Coating, System No. B-2. Do not coat seating areas and plastic, bronze, stainless steel, or other high alloy parts.
- C. Alternatively, line and coat cast-iron valves with fusion-bonded epoxy per Section 09900, Painting and Coating, System No. G-1. Do not coat seating areas and plastic, bronze, stainless-steel, or other high alloy parts.

### **3.2 INSTALLATION**

Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing threaded valves. Joints shall be watertight.

### **3.3 VALVE PRESSURE TESTING**

Test valves at the same time that the connecting pipelines are pressure tested. See Section 15044, Pressure Testing of Piping, for pressure testing requirements. Protect or isolate any parts of valves, operators, or control and instrumentation systems whose pressure rating is less than the test pressure.

## **PART 4 – PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 15120: SERVICE LATERAL REPLACEMENTS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes the requirements for replacing existing water service connections and/or installation of new water service connections.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Refer to the following Specification Sections for additional requirements:

- A. Submittals: Section 01300
- B. Trenching, Backfilling, and Compacting: Section 02223
- C. Piping Schedule and General Piping Requirements: Section 15000
- D. Chlorination of Water Mains for Disinfection: Section 15041
- E. Pressure Testing of Piping: Section 15044
- F. Installation of Pressure Pipelines: Section 15051
- G. Copper Pipe and Fittings: Section 15057
- H. Control and Check Valves: Section 15100

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with the requirements of Section 01300, Submittals. The following submittals are required:

- A. List of materials for use in the service lateral replacements for approval by the City prior to ordering materials.
- B. Manufacturer's cut sheets and specifications.

### **PART 2 - MATERIALS**

#### **2.1 GENERAL**

Replace the existing laterals with 3/4", 1", 1-1/2", and 2" copper service laterals as described in this Section. Each service lateral shall consist of the materials listed on the City Standard Drawings. The services to be replaced are identified on the Drawings.

## **PART 3 - EXECUTION**

### **3.1 GENERAL**

- A. Replace all existing plastic, cast iron and galvanized service laterals with copper services where indicated. On plastic services, replace the service saddle and corporation stop. In alleys, where the service lines are short and where bulk heads are used for multiple services, install a new tap into the main and cut and cap the existing tap in-place.

Plastic pipe space may be used to install copper pipe by bursting plastic and pulling copper tubing through space.

Where one water main tap serves two or more customers, provide new taps for each customer, and cut and cap the existing tap.

- B. Maintain all services during construction.
- C. Excavations made for tapping the main shall completely expose the main for the tap. Shut-off and disconnect the existing service lateral and remove the existing curb valve. New service laterals shall terminate at and be connected to the existing water meters. New, one-inch taps shall be made at 60 degrees below the top of the pipe and may be made either when the main is shut down or when the main is in service. Flush taps made when the main is in service while tapping to dispose of cuttings.
- D. Installation of service laterals shall be as shown on the City Standard Drawings. The materials to be used by the Contractor in these installations shall be approved by the Owner before the purchase of such materials.
- E. Excavation, backfilling, and resurfacing shall be in accordance with these Specifications.
- F. The Work for each service lateral shall be in accordance with these Specifications and include, but not be limited to, the following:
1. Pavement removal.
  2. Excavation.
  3. Installation of the service lateral.
  4. Disconnection of the existing service lateral and removal of the existing curb valve.



5. Excavation of a "pothole" above the gas main at the location the new lateral is to cross the gas main, oil line, or gasoline line.
6. Boring or pushing of the service lateral and connection of the service lateral to the water meter.
7. Backfilling and permanent resurfacing.

### **3.2 DISINFECTION**

Disinfect the service laterals in accordance with Section 15041, Chlorination of Water Mains for Disinfection. Prior to disinfection, thoroughly flush each service lateral to clear the pipe of dirt, debris, or foreign objects.

### **PART 4 - PAYMENT**

All Work associated with the installation of replacement service laterals shall be included in the unit price bid for installation of copper service laterals.

**END OF SECTION**

## **SECTION 15139: FIRE HYDRANTS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This section includes materials, installation, and testing of California wet-barrel type fire hydrants.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Refer to the following Specification Section(s) for additional requirements:

- A. Section 01300: Submittals.
- B. Section 02223: Trenching, Backfilling, and Compacting
- C. Section 09900: Painting and Coating
- D. Section 15044: Pressure Testing of Piping
- E. Section 15056: Ductile Iron Pipe and Fittings
- F. Section 15100: Control and Check Valves

#### **1.3 SUBMITTALS**

Submit shop drawings in accordance with Section 01300: Submittals.

### **PART 2 - MATERIALS**

#### **2.1 HYDRANT TOP SECTION**

- A. General: Fire hydrants shall be of the California wet barrel type, with individual valves for each outlet, and shall conform with the requirements of AWWA C503.
- B. Outlets: Hydrants for residential shall have one 2½-inch outlet and one 4-inch outlet. Hydrants for industrial or commercial shall have one 2½-inch inch outlet and two 4-inch outlets. All outlets shall have National Standard Hose Threads.
- C. Materials of Construction: The hydrant top section shall be manufactured of bronze conforming to ASTM B 62. All interior working parts, including stems, shall be of bronze containing no more than 7% zinc or 2% aluminum.

- D. Operating Nuts: Supply hydrants with 1½-inch sized pentagon-shaped operating nut, and 1½-inch capnuts.
- E. Outlet Caps: Provide plastic outlet nozzle caps for all outlets. Securely chain caps to the barrel with non-kinking metal chain in a manner to permit free rotation of the cap.
- F. Flanges: Drill hydrant flanges with a 6-hole pattern. Drill the flange with 3/4-inch diameter holes located on a 9-3/8-inch bolt circle.
- G. Manufacturer Identification: All fire hydrants shall have the name of the manufacturer cast or welded onto the fire hydrant body or shown on a permanently attached plate.

## 2.2 **BURY SECTION**

- A. Materials: The bury section shall be ductile iron and shall be cement lined in conformance with Section 15056, Ductile Iron Pipe and Fittings.
- B. Inlet Connection: Inlet size shall be a 6-inch ring-groove connection for asbestos cement pipe, unless otherwise specified on the Plans.
- C. Bury Depth: Bury depth will normally be 48-inches for distribution mains and 54-inches for transmission mains, but different depth buries on fire hydrant buries may be required to fit abnormal pipe depths depending upon field conditions.
- D. Flanges: Drill hydrant flanges with 3/4-inch diameter holes in a 6-hole pattern with a 9-3/8-inch bolt circle.
- E. Approved Manufacturers: Bury and extension sections shall be as manufactured by Clow, Tyler, South Bay Foundry or approved equal.

## 2.3 **BREAK-AWAY BOLTS**

Use cadmium plated break-away bolts to join the bury section to the hydrant top section.

## 2.4 **SHUT-OFF VALVE**

The shut-off valve shall be a gate or resilient-seated gate valve per Section 15100: Control and Check Valves.

## **2.5 GASKETS**

Gaskets shall be full face, and of rubber composition, 1/8-inch thick.

## **2.6 MANUFACTURERS**

- A. Residential Use: For residential applications, fire hydrants shall be James Jones, Clow or approved equal.
- B. Commercial and Industrial Use: For commercial and industrial applications, fire hydrants shall be James Jones, Clow or approved equal. Unless otherwise approved by the City, breakaway check valve is required for commercial and industrial use.

## **PART 3 - EXECUTION**

### **3.1 GENERAL**

Install fire hydrant assemblies in accordance with the City Standard Drawings, detail drawings, and as specified herein, and include the connection to the main, the fire hydrant, hydrant bury, shutoff valve, valve well and valve box, connection piping, concrete thrust blocks, and appurtenances.

### **3.2 LOCATION**

Locate fire hydrant assemblies as shown on the City Standard Drawing and on Contract drawings, or as approved by the Owner. Spools less than 6-inches in length are not permitted when correcting the flange elevation.

### **3.3 VALVE AND VALVE BOX**

Install the valve and valve box in accordance with Section 15100: Control and Check Valves.

### **3.4 BREAK-AWAY BOLTS**

Install break-away bolts with the threads toward the top of the hydrant. Pack bolts with silicon sealant or heavy grease.

### **3.5 CONCRETE**

The concrete pad and thrust blocks shall be Class C concrete placed per Section 03000: General Concrete Construction.

### **3.6 PAINING**

Paint all above ground portions of the fire hydrant and bury with one prime coat and two finish coats of yellow paint in the field, after the fire hydrant has been installed, in accordance with Section 09900: Painting and Coating. Apply the second finish coat just prior to the final inspection.

### **3.7 TESTING**

Test hydrants at the same time that the connecting pipeline is pressure tested. See Section 15044: Pressure Testing of Piping, for pressure testing requirements.

## **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid for which such Work is appurtenant thereto, and no additional payment will be made specifically for Work in this Section.

**END OF SECTION**

## **SECTION 15150: METERS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This section describes the purchase, materials, installation and testing of meter assemblies.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Refer to the following Specification Sections for additional requirements:

#### **1.3 APPROVED MANUFACTURERS**

Size	Brand	Make
3/4"	Badger	Model 35
1"	Badger	Model 70
1.5"	Badger	Model M120
2"	Badger	Model M170
3" – 8"	Badger	E-Series G2 Ultrasonic

### **PART 2 - MATERIALS**

#### **2.1 GENERAL**

A. All meters shall be new and of current manufacture design.

#### **2.2 RADIO STANDARD**

B. ITRON Cellular 500W Modules are IPv4 endpoints Encoder with Integral Connector. Integral connector shall be protected with metal shield.

C. All meters must be equipped with an " ITRON 500W Inline Connector" to plug in to endpoints in order to be read by AMI/AMR system. Contractor

installs the meter, and attaches meter connector and the End Point Transmitter in the existing meter box.

## **2.3 METER STANDARD**

- D. All meters and appurtenances must comply with the California "No Lead" plumbing law. <http://www.noleadbrass.com/educate.html>.
- E. Each meter must have ITRON 500W cable connect ports.
- F. For the residential meters, they must read 6 digits, (9999.99). One Billing Unit is for every 100 cubic feet, however, the ITRON 500W cable connect port must be set up to record up to each cubic foot of water consumed.
- G. For the commercial meters, they must read 8 digits, (999999.99). One Billing Unit is for every 100 cubic feet, but the ITRON 500W cable connect port must be set up to record up to record up to each cubic foot of water consumed.

## **PART 3 - EXECUTION**

### **3.1 METER INSTALLATIONS**

- A. Meter shall be installed per construction plans and these specifications, and in accordance with the manufacturer's written instructions and approved submittals.

## **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid amount for which such Work is appurtenant thereto, and no additional payment will be made specifically for the Work in this Section.

**END OF SECTION**

## **SECTION 15151: WATER FACILITIES IDENTIFICATION**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes materials and installation of potable and reclaimed water facilities identification for pipe, valves, valve boxes, and other pipeline appurtenances.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Submittals: Section 01300
- B. Painting and Coating: Section 09900
- C. General Piping Requirements: Section 15000
- D. Control and Check Valves: Section 15100

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with the requirements of Section 01300, Submittals. The following submittals are required:

- A. Submit material samples of warning tape.
- B. Submit drawings showing location and size of warning labels and signs.

### **PART 2 - PRODUCTS**

#### **2.1 BURIED PIPING WARNING AND LOCATOR TAPE**

Plastic warning tape shall be an inert plastic film specifically formulated for prolonged underground use. The minimum thickness shall be 4 mils and the overall width of the tape shall be 12 inches (for 8-inch diameter pipe and larger) or 6 inches (for 6-inch diameter and smaller pipe). Install locator tape over non-metallic pipe. It shall be similar to warning tape, and include a metallic substance that can be registered by a magnetic field location device. Locator tape shall be 3 inches wide and 4 mils thick, minimum. Warning tape and locator tape shall be as supplied by Griffolyn Co., Inc., Terra Tape, Division of Reef Industries, or approved equal.



- A. Potable Water Pipelines: Blue warning and locator tape with white lettering identifying the potable waterline may be used as an alternate to blue or stenciled pipe. Lettering shall be a minimum of 2 inches high with the wording: "CAUTION: WATERLINE BURIED BELOW".
- B. Reclaimed Water Pipelines: Purple warning and locator tape with black lettering identifying the reclaimed waterline may be used as an alternate to purple or stenciled pipe. Lettering shall be a minimum of 2-inch letters with the wording: "CAUTION: RECLAIMED WATER - DO NOT DRINK" for warning tape and: "CAUTION: RECLAIMED WATER LINE BURIED BELOW - DO NOT DRINK" for locator tape.

## **2.2 STENCILED PIPE - UNDERGROUND USE**

Pipe may be stenciled or colored for identification as an alternate to warning tape. Unless noted otherwise, letters shall be a minimum of 2 inches high and identification shall be stenciled on both sides of pipe at a maximum of 5-foot intervals.

- A. Potable Water Pipelines: Lettering shall be of a color that contrasts with the background color of the pipe, and shall be marked: "POTABLE WATER". For PVC piping, pipe shall either be blue, or shall be white with blue stenciling and the marking "POTABLE WATER" in 5/8-inch letters repeated at 1-foot intervals.
- B. Reclaimed Water Pipelines: Lettering shall be purple and worded: "CAUTION: RECLAIMED WATER - DO NOT DRINK" in 5/8-inch letters repeated at 1-foot intervals. Pipe color shall contrast with lettering. For PVC pipe see below.

## **2.3 PURPLE PVC PIPE FOR RECLAIMED WATER PIPELINES**

PVC pipe shall be purple, and shall be marked on both sides of the pipe with the wording: "CAUTION: RECLAIMED WATER - DO NOT DRINK." Lettering shall be a minimum of 1/2-inch high black letters, and shall be repeated every 12 inches. The purple pipe color shall be achieved by adding pigment to the PVC material as the pipe is being manufactured.

## **2.4 WARNING LABELS AND TAGS**

Labels shall be inert plastic film specifically formulated for prolonged exposure. The minimum thickness shall be 4 mils for adhesive backed labels and 10 mils for tag type labels. Tag type labels shall have reinforced tie holes and shall be attached with heavy-duty nylon fasteners. The size, type of label and location shall be dictated by each individual application and subject to acceptance by the Engineer.

- A. Potable Water Identification: Prepare labels on a blue field, and shall have the words: "POTABLE WATER" printed on the field in black letters. Minimum letter height shall be 1/2 inch.
- B. Reclaimed Water Identification: Prepare labels on a purple field, and shall have the words: "CAUTION: RECLAIMED WATER - DO NOT DRINK" printed on the field in black letters. Minimum letter height shall be 1/2 inch.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION OF PIPE WARNING TAPE AND LOCATOR TAPE**

- A. Warning Tape: Install warning tapes directly on the top of the pipe longitudinally and center. Install the warning tape continuously for the entire length of the pipe and fasten to each pipe length by plastic adhesive tape banded around the pipe and warning tape at no more than 5-foot intervals. Taping attached to the sections of pipe before laying in the trench shall have 5-foot minimum overlap for continuous coverage. Install all risers between the main line and control valves with warning tape. Do not allow backfilling to move tape more than 2 inches.
- B. Locator Tape: Over non-metallic pipelines, install locator tape directly on top of the pipe zone backfill layer, and center. Do not allow further backfilling to move tape more than 2 inches.

### **3.2 INSTALLATION OF WARNING LABELS AND SIGNS**

- A. Method of Attachment: Firmly attach warning labels using heavy-duty nylon fasteners, and size and install them at locations as shown on the Drawings.
- B. Equipment Requiring Labels or Tags: Install warning labels on all appurtenances in vaults, such as, but not limited to, air release valves, blowoffs, and meters, and on designated facilities, such as, but not limited to, controller panels and wash down or blowoff hydrants on water trucks and temporary construction services. Identify pumps and pipe with a painted label. Within a fenced area, post at least one sign on the fence which can be readily seen.
- C. Painted Labels: Painted labels may, at the Engineer's discretion, be acceptable in lieu of plastic labels.

#### **PART 4 - PAYMENT**

The unit price for installation of pipe includes full compensation for furnishing the labor, materials, tools and equipment and doing all Work involved to complete the pipeline, including the Work in this Section. Work in this Section not appurtenant to pipe installation will be compensated in the lump sum or unit price bid amount for the item the Work is appurtenant to, and no additional compensation will be made.

**END OF SECTION**

## **SECTION 15154: METER BOXES**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

This Section describes the materials and installation of meter boxes.

#### **1.2 RELATED WORK SPECIFIED ELSEWHERE**

Refer to the following Specification Section(s) for additional requirements:

- A. Submittals: Section 01300
- B. Water Meters: Section 15150

#### **1.3 SUBMITTALS**

Furnish submittals in accordance with the requirements of Section 01300, Submittals. The following submittals are required:

Submit Shop Drawings, manufacturer's catalog data and detail construction sheets showing all meter box parts and describing material of construction by material and specification (such as AISI, ASTM, SAE, or CDA). Submittal shall include meter box dimensions including laying lengths and dimensions. Submittals shall also indicate lid materials of construction and load ratings.

### **PART 2 - MATERIALS**

#### **2.1 GENERAL**

The meter boxes will be used to house and protect the underground installation of water meters from  $\frac{3}{4}$ -inch to 2-inch size and other water appurtenances, as may be required.

#### **2.2 Meter Boxes and Covers**

- A. Materials: Meter boxes and covers shall be manufactured of reinforced polymer/plastic mortar.
- B. Meter Box Covers: Meter box covers with reading lid shall be manufactured of reinforced polymer/plastic mortar in two separate rectangular pieces.
- C. Traffic Covers: Meter box covers within roadways or driveways shall be one lipped cast-iron or steel lid piece, designed to withstand H-20 highway

loading, and may only be used where specifically specified on the plan or approved by the City.

D. Meter Box Size:

Meter Size(s) Nominal Inside Dimensions

1" Meter:	13"W x 24"L x 12"D
1-1/2" and 2" Meters:	17"W x 30"L x 12"D

E. Manufacturers: Meter boxes shall be manufactured of reinforced polymer concrete by Armorcast Products Company or approved equal.

## **2.4 METER BOX COVERS AND LIDS**

Meter box covers and lids for use in areas not subject to traffic loads shall be of polymer concrete with fiberglass reinforced, 20,800 pounds load rated, with checkered polymer concrete lids. The 20,800 loading is not appropriate for areas subjected to continuous traffic such as streets and highways.

Include standard "water" labeling on the top of the meter box lid.

## **PART 3 - EXECUTION**

### **3.1 INSPECTION**

Inspection and acceptance of the meter boxes shall be made after installation. Neither inspection, waiving of inspection or City acceptance shall relieve the Contractor of the obligation to furnish the products according to these Specifications.

### **3.2 GUARANTEE**

Guarantee the materials and workmanship of the products from defects. Make repairs and modifications to the products, as necessary, within 30 calendar days after notification by Owner or shall replace promptly, without cost to Owner, all products developing defects within a period of one year after delivery and acceptance by the City.

### **3.3 REMOVAL AND INSTALLATION**

Remove and dispose of existing meter boxes and install new meter boxes at the locations directed by the Owner in the field in accordance with City Standard Drawings. Perform surface repair as necessary to repair damage to adjacent asphalt concrete, Portland cement concrete, lawn, landscaping, or other improvements damaged as a result of the Work to remove a existing meter box and install a new meter box.

### **PART 4 - PAYMENT**

Payment for the Work in this Section shall be included as part of the lump sum or unit price bid for which such Work is appurtenant thereto, and no additional payment will be made specifically for Work in this Section. The Contractor pays for the cost of soil compaction testing.

**END OF SECTION**

**PART V**  
**RECYCLING OF MATERIALS**

## RECYCLING OF MATERIALS

**The Contractor shall complete the Construction and Demolition Debris Waste Reduction Recycling Plan by filling the attached Construction and Demolition Debris Form, of these specifications. Contractor is required to obtain the services of WASTE MANAGEMENT under the exclusive franchise agreement with the City and will be responsible to pay any additional charges for the appropriate disposal of Construction and Demolition (C&D) recycling.**

### **Construction & Demolition Debris Waste Reduction & Recycling Plan [WRRP]**



This form must be completed for the following types of projects:

- All New Construction (non-residential and residential).
- Demolition (non-residential and apartment house).
- Addition/Alteration (non-residential and apartment house) with construction valuation \$50,000 or greater or 1,000 sq. ft. or greater

**NOTE:** Building Permits for listed projects will not be issued without an approved WRRP. Allow 3-5 business days for processing your WRRP. A separate WRRP is required for each building permit issued.

**Submit with Permit Application to: Department of Community Development, 8650 California Avenue, South Gate or Fax to (323) 563-9571. If you have questions, please call (323) 563-9515.**

Permit # \_\_\_\_\_

Project Address (include floor, suite, etc.): \_\_\_\_\_

Contact Name: \_\_\_\_\_ Title: \_\_\_\_\_

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

Contact Mailing Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

1. Type of Project:     New Construction     Addition/Alteration     Demolition

2. Type of Building:     Commercial Single     Family Residence     Apartment

3. Tenant Improvement:     Yes     No

4. Size of Project \_\_\_\_\_ sq. ft.    Construction Valuation \$ \_\_\_\_\_

5. Estimated Start Date \_\_\_\_/\_\_\_\_/\_\_\_\_    Estimated Completion Date \_\_\_\_/\_\_\_\_/\_\_\_\_

Briefly state how waste materials will be handled at your job site to ensure salvage/reuse or recycling. Also explain how you will inform your workers/sub-contractors of your Waste Reduction and Recycling Plan requirements and ensure their participation.

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



For City Use Only

Permit No: _____ _____/_____/_____	Applic. Filed: ____/____/____	WRRP Submitted: _____
Project Name: _____	Permit Counter Staff Initials: _____	<input type="checkbox"/> OT: _____
Received: ____/____/____	Approved: ____/____/____	Type of Assistance: _____
DB: ____/____/____	Applicant Contacted: ____/____/____	Time Spent: _____
<input type="checkbox"/> 50% Diversion:	<input type="checkbox"/> Good Cause:	<input type="checkbox"/> Non-Attainment Hold Placed: ____/____/____
<input type="checkbox"/> Approved:	<input type="checkbox"/> Condition Approval:	<input type="checkbox"/> Not Approved Hold Removed: _____

**Requirement:** Reduce quantity of materials disposed at landfills by 50% or greater (determined by weight).

**Column A:** List Actual Quantities of waste for each material type (in tons). To convert yards to tons, use the Materials Conversion Worksheet provided in your packet.

**Column B, C, D:** List actual quantities reused, recycled, or disposed.

**Column E:** State the name of all vendors or facilities used to reuse, recycle or dispose of material listed. See example below for cases where more than one facility was used for a particular material type.

**Column Totals:** Add up all quantities listed in Column A. Do the same for Column B, C and D.

**Recycled Mixed Debris:** This category is only for mixed debris loads that were taken to a recognized facility for recycling (see list of Mixed Debris Recycling Facilities insert in your C & D Packet). Use the Materials Conversion Worksheet to calculate quantity of materials that can be credited as recycled.

Receipts must be provided with your Summary Report to receive recycling credit.

Application/Permit # \_\_\_\_\_ Project Address: \_\_\_\_\_

Material Handling Methods - Indicate quantities (in tons only) for each material listed.					
Material Type	A Total Quantity Discarded	B Salvage Or Reuse	C Recycling	D Disposal	E Actual Destination (s)
Example: Cardboard	2 Tons		1.5	0.5	(Recycle) Davis St. Recycling Center (Outdoor) Davis St. Transfer Station
Asphalt & Concrete					
Brick/Masonry/Tile					
Building Materials (doors, windows, fixtures, etc.)					
Carpet					
Carpet Padding/Foam					
Cardboard					
Ceiling Tile (acoustic)					
Drywall (Used)					
Drywall (New, unpainted)					
Landscape Debris (brush, trees, stumps, etc.)					

Scrap Metal					
Unpainted wood & pallets					
Garbage/Trash					
Other (do not include dirt)					
Recycled Mixed Debris (see Instructions above)					
<b>Column Totals</b>					

7. Fill in the blanks below to determine if you met the City's requirement to reduce project waste by 50% or more.

Column Totals B \_\_\_\_\_ + C \_\_\_\_\_ - A \_\_\_\_\_ = \_\_\_\_\_ x 100 = \_\_\_\_\_ %

8. Is the percentage listed in question # 7 greater than or equal to 50%?  YES  NO  
If NO, explain why:

8. Print Name: \_\_\_\_\_

9. Signature \_\_\_\_\_

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

# **EXHIBITS**

**EXHIBIT A – CITY OF SOUTH GATE NOISE  
ORDINANCE**

## Chapter 11.29 NOISE EMISSIONS

Sections:

- 11.29.010 Declaration of policy.
- 11.29.020 Terminology.
- 11.29.030 Definitions.
- 11.29.040 Powers and duties of the noise control officer.
- 11.29.050 Departmental responsibility.
- 11.29.060 Departmental cooperation.
- 11.29.070 Compliance with other laws.
- 11.29.080 Project approval.
- 11.29.090 Right of review.
- 11.29.100 Contracts.
- 11.29.110 Low noise emission products.
- 11.29.120 General noise regulation.
- 11.29.130 Noise measurement procedure.
- 11.29.140 Decibel measurement criteria.
- 11.29.150 Designated noise zones.
- 11.29.160 Maximum permissible sound levels by receiving land use.
- 11.29.170 Noise level measurement.
- 11.29.180 Specific prohibitions.
- 11.29.210 Exemptions.
- 11.29.220 Violations and enforcement.
- 11.29.230 Variance procedures.
- 11.29.240 Appeals.
- 11.29.250 Severability.

### **11.29.010 Declaration of policy.**

---

(1) In order to control unnecessary, excessive and annoying noise and vibrations in the city of South Gate, it is hereby declared to be the policy of the City to prohibit such noise and vibration generated from or by all sources as specified in this part. It shall be the policy of the city to maintain quiet in those areas which exhibit low noise levels and to implement programs aimed at reducing noise in those areas within the city where noise levels are above accepted levels.

(2) It is determined that certain noise levels and vibrations are detrimental to the public health, welfare, and safety, and are contrary to the public interest. Therefore, the city council does ordain and declare that creating, maintaining, causing or allowing to be created, caused or maintained any noise or vibration in a manner prohibited by or not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such.

(Ord. 1627 § 3 (part), 8-27-84)

### **11.29.020 Terminology.**

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All terminology used in this chapter, if not defined below, shall have the same meaning as defined by applicable publications of the American National Standards Institute (ANSI), or its successor body.

(Ord. 1627 § 3 (part), 8-27-84)

### **11.29.030 Definitions.**

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For the purposes of this chapter, unless otherwise apparent from the context, certain words and phrases used in this chapter are defined as follows:

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- (1) "A-weighted sound level" means the sound pressure level in decibels as measured on a sound level meter using the A-weighting network. The level so read is designated dB (A) or dBA.
- (2) "Ambient noise level" means the composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location. For a comparison of ambient noise with sounds from an identifiable source at a location and time of day selected for the comparison, the ambient noise level is the equivalent A-weighted sound level measured on slow meter response, averaged over a period of fifteen minutes without inclusion of the sounds from the source(s) in question, or randomly occurring intermittent noises from any other isolated identifiable source.
- (3) "Commercial area" means any area occupied by businesses which sell, rent, trade, or store goods, or which provide a service.
- (4) "Commercial purpose" means the use, operation or maintenance of any sound amplifying equipment for the purpose of advertising any business, goods, or services, or for the purpose of attracting the attention of the public, or soliciting patronage of customers to any performance, show, entertainment, exhibition, or event, or for the purpose of demonstrating such sound equipment.
- (5) "Construction" means any site preparation, assembly, erection, substantial repair, alteration, or similar action, but excluding demolition.
- (6) "Cumulative period" means an additive period of time composed of individual time segments which may be continuous or interrupted.
- (7) "Decibel (dB)" means a unit for measuring the amplitude of a sound, equal to twenty times the logarithm to the base ten of the ratio of the pressure of the sound measured to the reference pressure, which is twenty micropascals (twenty micronewtons per square meter).
- (8) "Demolition" means any dismantling, intentional destruction or removal of structures, utilities, public or private right-of-way surfaces or similar property.
- (9) "Emergency" means any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate action.
- (10) "Emergency work" means any work performed for the purpose of preventing or alleviating the physical trauma or property damage threatened or caused by an emergency.
- (11) "Equivalent A-weighted sound level (Leq)" means the constant sound level that, on a given situation and time periods, conveys the same sound energy as the actual time-varying A-weighted sound level.
- (12) "Fixed noise source" means a stationary device which creates sound while fixed or motionless, including but not limited to, residential, agricultural, industrial, and commercial machinery and equipment, pumps, fans, compressors, air conditioners, and refrigeration equipment.
- (13) "Gross vehicle weight rating (GVWR)" means the value specified by the manufacturer as the recommended maximum loaded weight of a single motor vehicle. In cases where trailers and tractors are separable, the gross combination weight rating, which is the value specified by the manufacturer as the recommended maximum loaded weight of the combination vehicle, shall be used.
- (14) "Impulsive sound" means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples of sources of impulsive sound include explosions, drop forge impacts, and the discharge of firearms.

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- (15) "Industrial area" means any area occupied by land uses whose primary operation involves manufacturing, assembling, processing, or otherwise treating raw materials, semi-finished products, or finished products, for packaging and distribution to either wholesale or retail markets.
- (16) "Intrusive noise" means that noise which intrudes over and above the existing ambient noise at receptor property.
- (17) "Licensed" means the issuance of a formal license or a permit by a city authority; or, where no permits or licenses are issued, the sanctioning of the activity by the city as noted in the public record.
- (18) "Mobile noise source" means any noise source other than a fixed noise source.
- (19) "Motor carrier vehicle engaged in interstate commerce" means any vehicle for which regulations apply pursuant to Section 18 of the Federal Noise Control Act of 1972 (P.L. 92-574), as amended, pertaining to motor carriers engaged in interstate commerce.
- (20) "Motor vehicle" shall include any and all self-propelled vehicles as defined in the California Motor Vehicle Code, including all on-highway type motor vehicles subject to registration under said Code, and all off-highway type motor vehicles subject to identification under said Code.
- (21) "Muffler or sound dissipative device" means a device for abating the sound of escaping gases of an internal combustion engine.
- (22) "Noise" means any sound which annoys or disturbs humans or which causes or tends to cause an adverse psychological or physiological effect on humans.
- (23) "Noise control officer" means the city official appointed by the chief administrative officer to direct the noise control office.
- (24) "Noise disturbance" means an alleged intrusive noise which violates an applicable noise standard as set forth in this chapter.
- (25) "Noise sensitive zone" means any area designated pursuant to Section 11.29.150 of this chapter for the purpose of insuring exceptional quiet.
- (26) "Noise source" means a disturbance-causing operation which originates from a single unit or noise generating mechanism which operates simultaneously. Example of a single noise source is the combination of motor, pump, and compressor; oil drilling rig; or a power plant with several boilers.
- (27) "Noise zone" means defined areas wherein the ambient noise levels are generally similar (within a range of 5 dB). Typically, most sites within any given noise zone will be of comparable proximity to major noise sources.
- (28) "Noncommercial purpose" means the use, operation or maintenance of any sound equipment for other than a "commercial purpose," including, but not limited to, philanthropic, political, patriotic, and charitable purposes.
- (29) "Person" means any individual, association, partnership or corporation, and includes any officer, employee, department, agency or instrumentality of a state or any political subdivision of a state.
- (30) "Powered model vehicle" means any self-propelled airborne, waterborne, or landborne plane, vessel, or vehicle, which is not designed to carry persons, including, but not limited to, any model airplane, boat, car or rocket.
- (31) "Public right-of-way" means any street, avenue, boulevard, highway, sidewalk or alley or similar place which is owned or controlled by a governmental entity.

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- (32) "Public space" means any real property or structures thereon which are owned or controlled by a governmental entity.
- (33) "Pure tone" means any sound which can be distinctly heard as a single pitch or a set of single pitches. For the purposes of this chapter, a pure tone shall exist if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the sound pressure levels of the two contiguous one-third octave bands by five dB for center frequencies of five hundred Hz and above and by eight dB for center frequencies between one hundred sixty and four hundred Hz and by fifteen dB for center frequencies less than or equal to one hundred twenty-five Hz.
- (34) "Real property boundary" means an imaginary line along the ground surface, and its vertical extension, which separates the real property owned by one person from that owned by another person, but not including intra-building real property divisions.
- (35) "Residential area" means any area wherein the dominant land use is devoted to maintenance, preservation, or propagation of residential dwelling units.
- (36) "RMS sound pressure" means the square root of the time averaged square of the sound pressure, denoted prms.
- (37) "Sound" means an oscillation in pressure, particle displacement, particle velocity or other physical parameter, in a medium with internal forces that causes compression and rarefaction of that medium. The description of sound may include any characteristic of such sound, including duration, intensity and frequency.
- (38) "Sound level" means the weighted sound pressure level obtained by the use of a sound level meter and frequency weighting network, such as A, B or C, as specified in American National Standards Institute specifications for sound level meters (ANSI S1.4-1971 or the latest approved revision thereof). If the A-weighting shall apply.
- (39) "Sound level meter" means an instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurements of sound levels, which satisfies the requirements pertinent for type S2A meters in American National Standard Institute specifications for sound level meters, S1.4-1971, or the most recent revision thereof.
- (40) "Sound pressure" means the instantaneous difference between the actual pressure and the average or barometric pressure at a given point in space, as produced by sound energy.
- (41) "Sound pressure level" means twenty times the logarithm to the base ten of the ratio of the RMS sound pressure to the reference pressure of twenty micropascals ( $20 \times 10^{-6}$  N/M<sup>2</sup>). The sound pressure level is denoted Lp or SPL and is expressed in decibels.
- (42) "Sound amplifying equipment" means any machine or device for the amplification of the human voice, music, or any other sound, excluding standard automobiles when used and heard only by the occupants of the vehicle in which the device is installed and, as used in this chapter, warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes.
- (43) "Sound truck" means any motor vehicle or any other vehicle, regardless of motive power, whether in motion or stationary, having mounted thereon, or attached thereto, any sound amplifying equipment.
- (44) "Vibration" means mechanical motion of the earth or ground, building, or other type of structure, induced by the operation of any mechanical device or equipment located upon or affixed thereto. For purposes of this chapter, the magnitude of the vibration shall be stated as the acceleration in "g" units (1 g is equal to 32.2 ft/sec<sup>2</sup>, 9.31 meters/sec<sup>2</sup>).



(45) "Weekday" means any day, Monday through Friday, which is not a federal holiday.

(Ord. 1627 § 3 (part), 8-27-84)

**11.29.040 Powers and duties of the noise control officer.**

The noise control program established by this chapter shall be administered by the director of building, or his delegate, who when acting to enforce or monitor the provisions of this chapter shall be deemed the noise control officer.

- (1) In order to implement and enforce this chapter and for the general purpose of noise abatement and control, the noise control officer shall have, in addition to any other authority vested in it, the power to:
  - (a) Delegate functions, where appropriate under this chapter to personnel and to other departments, subject to the approval of the chief administrative officer;
  - (b) Investigate and pursue violations of this chapter;
  - (c) Conduct, or cause to be conducted, studies, research, and monitoring related to noise, including joint cooperative investigation with public or private agencies, and make application for and accept grants;
  - (d) Conduct programs of public education regarding noise abatement;
  - (e) Provide for training of field inspectors and other technical personnel concerned with noise abatement. (In conformance with standards for technical qualifications as established by the State Office of Noise Control.);
  - (f) Coordination and Cooperation:
    - (i) Coordinate the noise control activities of all municipal departments;
    - (ii) Cooperate where practicable with all appropriate state and federal agencies;
    - (iii) Cooperate where practicable with appropriate county and municipal agencies;
    - (iv) Advise on the availability of low noise emission products for replacement or retrofit of existing or planned city owned or operated equipment.
    - (v) Recommend to the city council the approval of contracts for the provision of technical and enforcement services;
  - (g) Request any other department or agency responsible for a proposed or final standard, regulation or similar action to consult on the advisability of revising the action, if there is reason to believe that the action is not consistent with this chapter;
  - (h) On all public and private projects which are likely to cause sound in violation of this chapter and which are subject to mandatory review or approval by other departments or agencies, or which under the environmental review process are judged to be likely to violate these regulations:
    - (i) Review to determine compliance with the intent and provisions of this chapter;
    - (ii) Recommend sound analysis which identify existing and projected noise sources and associated sound levels;

- (iii) Recommend usage of adequate measures to avoid violation of any provisions of this chapter;
- (i) Upon presentation of proper credentials, enter and/or inspect any private property, place, report, or records at any time when granted permission by the owner, or by some other person with apparent authority to act for the owner. When permission is refused or cannot be obtained, a search of inspection warrant may be obtained from a court of competent jurisdiction upon showing a probable cause to believe that a violation of this chapter may exist. Such inspection may include administration of any necessary tests;
- (j) Develop and recommend (to the city council or other city agency) provisions regulating the use and operation of any product, including the description of maximum sound emission levels of such product, but not in such a manner as to conflict with federal or state new product regulations;
- (k) Prepare recommendations, to be approved by the city council, for the designation of noise sensitive activities and to enforce the provisions of sections on city council designated noise sensitive zones;
- (l) Prepare recommendations, based upon noise survey data and analytical studies, to be approved by the city council, for the designation of zones of similar ambient environmental noise within regions of generally consistent land use. These zones shall be identified in terms of their day and nighttime ambient noise levels by the classifications given in Section 11.29.160;
- (m) Prior to the approval of any zoning change:
  - (i) Review the noise impact of the zoning change by identifying existing and projected noise sources and the associated sound levels;
  - (ii) Require usage of adequate measures on noise sources identified in Section 11.29.040(M)(1) which will be in violation of any provision of this chapter.

(Ord. 1627 § 3 (part), 8-27-84)

#### **11.29.050 Departmental responsibility.**

All departments shall, to the fullest extent consistent with their authorities under other ordinances administered by them, carry out their programs in such a manner as to further the policies stated in Section 11.29.010 of this chapter.

(Ord. 1627 § 3 (part), 8-27-84)

#### **11.29.060 Departmental cooperation.**

All departments shall cooperate with the noise control officer to the fullest extent enforcing the noise regulations of this chapter.

(Ord. 1627 § 3 (part), 8-27-84)

#### **11.29.070 Compliance with other laws.**

All departments engaged in any activities which result or may result in the emission of noise, shall comply with federal and state laws and regulations, as well as the provisions of this chapter, respecting the control and abatement of noise to the same extent that any person is subject to such laws and regulations.

(Ord. 1627 § 3 (part), 8-27-84)

**11.29.080 Project approval.**

Each department whose duty it is to review and approve new projects or changes to existing projects that result, or may result in the emission of noise, shall consult with the noise control officer prior to any such approval.

(Ord. 1627 § 3 (part), 8-27-84)

**11.29.090 Right of review.**

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If at any time the noise control officer has reason to believe that a standard, regulation, or action or proposed standard, regulation, or action or proposed standard, regulation or action of any department respecting noise does not conform to the intent of Section 11.29.010 of this chapter, he may request such department to review and report to him on the advisability of revising such standard or regulation to conform.

(Ord. 1627 § 3 (part), 8-27-84)

**11.29.100 Contracts.**

Any written agreement, purchase order, or instrument whereby the city is committed to the expenditure of funds in return for work, labor, services, supplies, equipment, materials, or any combination of the foregoing, may not be entered into unless such agreement, purchase order, or instrument contains provisions requiring that any equipment or activities which are subject to the provisions of this chapter will be operated, constructed, conducted, or manufactured without causing violation of this part.

(Ord. 1627 § 3 (part), 8-27-84)

**11.29.110 Low noise emission products.**

---

Any product which has been certified by the Administrator of the United States Environmental Protection Agency pursuant to Section 15 of the Noise Control Act of 1972 as a low noise emission product and which is determined to be suitable for use as a substitute, shall be used in preference to any other product where economically feasible.

(Ord. 1627 § 3 (part), 8-27-84)

**11.29.120 General noise regulation.**

---

It shall be unlawful for any person to willfully make or continue, cause or to allow on his property to be made or continued, a loud, unnecessary or unusual noise (including animal noises, e.g., dog barking) which disturbs the peace and quiet of any neighborhood or which causes any discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

The standards which shall be considered in determining whether a violation of the provisions of this section exist shall include, but not be limited to the following:

- (1) The sound level of the objectionable noise;
- (2) The sound level of the ambient noise;
- (3) The proximity of the noise to residential dwellings or other noise sensitive facilities such as hospitals, schools, nurseries, nursing homes, as appropriate;
- (4) The nature zoning and land use of the area within which the noise emanates;
- (5) The density of the inhabitation of the area within which the noise emanates;
- (6) The time of day or night the noise occurs;

- (7) The duration of the noise and its tonal, informational or musical content;
- (8) Whether the noise is continuous, recurrent, or intermittent;
- (9) Whether the noise is produced by a commercial or noncommercial activity.

(Ord. 1627 § 3 (part), 8-27-84)

**11.29.130 Noise measurement procedure.**

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The measurement procedure presented below assumes that personnel performing the noise measurements have been trained in the use of the instruments and in interpretation of measured data. Upon receipt of a complaint from a citizen, the noise control officer, or his agent, equipped with sound level measurement equipment satisfying the requirements specified in Section 11.29.140, shall investigate the complaint. The investigation shall consist of a measurement and the gathering of data to adequately define the noise problem as specified in the California Office of Noise Control Model Enforcement Manual.

(Ord. 1627 § 3 (part), 8-27-84)

**11.29.140 Decibel measurement criteria.**

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Any decibel measurement made pursuant to the provision of this chapter shall be based on a reference sound pressure of twenty micropascals as measured with a sound level meter using the "A" weighted network (scale) at slow response or at the fast response when measuring impulsive sound levels and vibrations.

(Ord. 1627 § 3 (part), 8-27-84)

**11.29.150 Designated noise zones.**

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Receptor properties hereinafter described are hereby assigned to the following noise zones:

**TABLE 1**

NOISE ZONE I	Noise Sensitive Area
NOISE ZONE II	Residential properties
NOISE ZONE III	Commercial properties
NOISE ZONE IV	Industrial properties

(Ord. 1627 § 3 (part), 8-27-84)

**11.29.160 Maximum permissible sound levels by receiving land use.**

---

No person shall operate or cause to be operated on property owned, leased, occupied or otherwise controlled by such person, any source of sound in such manner as to create a sound level which exceeds by 5 decibels or more, inclusive of the ambient, the higher of the following: (1) the limits set forth for the receiving land use category in Table I, as adjusted by using the duration correction adjustment set forth in the succeeding paragraph; or, (2) the actual measured ambient noise level, when measured at property boundary of the closest adjoining parcel of land occupied by human beings at the time of the noise emission.

**Table I**

<b>Receiving Land Use Category</b>	<b>Time</b>	<b>Sound Level Limit (dBA)</b>
Noise Zone I (Noise Sensitive Area)	Anytime	45
Noise Zone II (Residential)	7:00 am - 10:00 pm 10:00 pm - 7:00 am	50 40
Noise Zone III (Commercial)	Anytime	55
Noise Zone IV (Industrial)	Anytime	65

**Duration Correction Adjustment**

The time duration allowances shown below shall be added to the limiting levels above, for sound levels lasting less than one hour.

**Duration (less than) Allowance**

30 min./hour (50%)	+ 3 dBA
15 min./hour (25%)	+ 6 dBA
10 min./hour (16%)	+ 8 dBA
5 min./hour (8%)	+ 11 dBA
2 min./hour (3%)	+ 15 dBA

(Ord. 1627 § 3 (part), 8-27-84)

**11.29.170 Noise level measurement.**

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Utilizing the "A" weighting scale of the sound level meter and the "slow" meter response (use "fast" response for impulsive type sounds), the noise level shall be measured at a position or positions at any point on the receiver's property.

In general, the microphone shall be located four-to-five feet above the ground; ten feet or more from the nearest reflective surface, where possible. However, in those cases where another elevation is deemed appropriate, the latter shall be utilized.

Interior noise measurements shall be made within the affected residential unit. The measurements shall be made at a point at least four feet from the wall, ceiling, or floor nearest the noise source, with windows in the normal seasonal configuration. Calibration of the measurement equipment, utilizing an acoustic calibrator, shall be performed immediately prior to recording any noise data.

(Ord. 1627 § 3 (part), 8-27-84)

**11.29.180 Specific prohibitions.**

---

Notwithstanding any other provisions of this chapter, the following acts, and the causing or permitting thereof, are declared to be in violation of this chapter;

- (1) Street Sales. Offering for sale, selling anything, or advertising by shouting, outcry, music, or noise to attract attention within any residential or commercial area or noise sensitive zone of the city. The

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provisions of this section shall not be construed to prohibit the selling by outcry of merchandise, food, and beverages at licensed sporting events, parades, fairs, circuses, or other similar licensed public entertain events.

- (2) Radios, Television Sets and Similar Devices Use Restricted. Playing or operating radio set, musical instrument, phonograph, tape recorder, television set, or other machine or device for producing or reproducing or amplifying sound (between the hours of 10 p.m. and 7 a.m. of the following day) in such a manner as to disturb peace, quiet, and comfort of neighboring residents or any reasonable person of normal sensitiveness residing in Area II (residential). Any noise exceeding the ambient noise at the property line of any property (or if a condominium or apartment house, within any adjoining apartment) by more than five decibels shall be deemed to be prima facie evidence of a violation of the provision of this section.
- (3) Vibration. Operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of an individual situated on adjacent or abutting property which is zoned for any use other than manufacturing. The vibration perception threshold shall be deemed to be a motion velocity of 0.01 inches per second over a range of 1 to 100 Hertz. (Ord. 1870 § 2, 5-28-91).
- (4) Vehicle and Motorboat Repair and Testing. Repairing, testing or rebuilding or permitting the repair, testing or rebuilding any motor vehicle, and/or motorboat in any residential area of the city, between the hours of 10:00 p.m. of one day and 7:00 a.m. of the next day, in such a manner that would cause the noise level at the property line to exceed the ambient noise level by more than five decibels.
- (5) Powered Model Vehicles. Operating or permitting the operation of powered model vehicles so as to create a noise disturbance across a residential real property boundary, or within a noise sensitive zone between the hours of 10:00 p.m. and 7:00 a.m. the following day.
- (6) Stationary Nonemergency Signaling Devices. Sounding or permitting the sounding of any electronically amplified signal from any stationary bell, chime, siren, whistle, or similar device, intended primarily for nonemergency purposes, from any place, for more than 10 consecutive seconds in any hourly period.

Houses of religious worship shall be exempt from the operation of this provision.

- (7) Emergency Signaling Devices.
  - (a) The intentional sounding or permitting the sounding outdoors of any emergency signaling device including fire, burglar, or civil defense alarm, siren, whistle, or similar stationary emergency signaling device except for emergency purposes or for testing, as provided in subsection (i) and (ii).
    - (i) Testing of a stationary emergency signaling device shall not occur before 7:00 a.m. or after 10:00 p.m. Any such testing shall use only the minimum cycle test time. In no case shall such test time exceed sixty seconds.
    - (ii) Testing of the complete emergency signaling system, including the functioning of the signaling device, and the personnel response to the signaling device, shall not occur more than once in each calendar month. Such testing shall not occur before 7:00 a.m. or after 10:00 p.m. and will last no longer than ten minutes. The time limit specified in subsection (B) shall not apply to such complete system testing.
  - (b) Sounding or permitting the sounding of any exterior burglar or fire alarm or any motor vehicle burglar alarm except in an emergency unless such alarm is terminated within thirty minutes of activation.

(8) Refuse Collection Vehicles.

- (a) On or after three years following the effective date of the ordinance codified in this chapter, operating or permitting the operation of the compacting mechanism of any motor vehicle which compact refuse and which creates, during the compacting cycle, a sound level in excess of eighty-six dBA when measured at fifty feet from any point on the vehicle;
- (b) Operating or permitting the operation of the compacting mechanism or any motor vehicle which compacts refuse, between the hours of 10:00 p.m. and 6:00 a.m. the following day in a residential area or noise sensitive zone; or within five hundred feet thereof;
- (c) Collecting refuse with collection vehicle between the hours of 10:00 p.m. and 6:00 a.m. the following day in a residential area or noise sensitive zone or within 50 feet thereof;
- (d) In the case of a conflict between this chapter and Chapter 6.52 (Garbage) of Title 6 (Health and Sanitation) of the Municipal Code of the city of South Gate regulating refuse collection, the provisions of Chapter 6.52 (Garbage) of said Title 6 (Health and Sanitation) regulating refuse collection shall control.

(9) Noise Sensitive Zones.

- (a) Creating or causing the creation of any noise disturbance within any noise sensitive zone, as designated by the noise control officer, provided that conspicuous signs are displayed indicating the presence of the zone.
- (b) Noise sensitive zones must be indicated by the display of conspicuous signs in at least three separate locations within six hundred feet of the institution or facility.

(10) Domestic Power Tools. Operating or permitting the operation of any mechanically powered saw, sander, drill, grinder, lawn or garden tool, leaf blower, or similar devices used outdoors in residential areas between the hours of 10:00 p.m., and 7:00 a.m. the following day so as to cause a noise disturbance across a residential real property boundary.

(11) Explosives, Firearms, and Similar Devices. The use or firing of explosives, firearms, or similar devices which create impulsive sound so as to cause a noise disturbance across a real property boundary or on a public space or right-of-way without first obtaining a special variance issued, pursuant to Section 11.24.230.

(12) Animal Noise Emissions. Owning or maintaining any animal who, or permitting any animal to emit noise in or into a residential land use between the hours of 10:00 p.m. and 7:00 a.m. such as to disturb the peace and quiet of any person in proximity thereto.

(13) Loud Parties or Gatherings. Generating any noise from a party or gathering of two or more people that can be heard at a distance of thirty feet from the boundary of the property where such party or gathering is held.

(Ord. 1951 § 4, 6-22-93; Ord. 1870 § 2, 5-28-91; Ord. 1627 § 3 (part), 8-27-84)

**11.29.210 Exemptions.**

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The following activities shall be exempted from the provisions of this chapter:

- (1) The emission of sound for the purpose of alerting persons to the existence of an emergency, or the emission of sound in the performance of emergency work;

City of South Gate  
Municipal Code Title 11 – Zoning  
Chapter 11 29 - Noise Emissions

- (2) Warning devices necessary for the protection of public safety or self-defense, as for example, police, fire and ambulance sirens and train horns;
- (3) Activities conducted on public playgrounds and public or private school grounds including but not limited to school athletic and school entertainment events;
- (4) Any activity to the extent preempted from regulation by state or federal law;
- (5) Bells, chimes, or carillons while being used in conjunction with religious services.

(Ord. 1627 § 3 (part), 8-27-84)

**11.29.220 Violations and enforcement.**

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- (a) The noise control officer shall have primary responsibility, with such assistance of the police department as may be necessary or desirable, for the enforcement of the noise regulations contained herein. The noise control officer shall make all noise level measurements required for the enforcement of this chapter. Nothing in this chapter shall preclude the noise control officer from seeking to obtain voluntary compliance by way of warning, notice or informational materials.
- (b) Upon an initial violation of the provisions of this chapter, a written notice of violation shall be given the alleged violator specifying the time within which the condition shall be corrected or, if applicable, the time within which an application for a permit or variance shall be submitted to the noise control officer. The noise control officer shall take no further action in the event the condition causing the violation has been removed, abated or fully corrected within the time period specified in the written notice.
- (c) Any person violating any of the provisions of this chapter shall be deemed guilty of misdemeanor and, upon conviction thereof, shall be punished as provided for in Chapter 1.56 of Title 1 of this code. Each hour such violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such.
- (d) In addition to the foregoing penalties, when a party or gathering of two or more people occurs on private property and is determined by a noise control officer or police officer at the scene to constitute a violation of the California Penal Code or the South Gate Municipal Code, or is otherwise a threat to the public peace, health, safety or welfare due to the magnitude of the crowd, noise, disturbance or unruly behavior generated by the party or gathering, or excessive traffic, or destruction of property, then the noise control officer or police officer shall take such actions and give such direction as is necessary to abate the violation or condition and shall advise the responsible person orally and in writing that, if additional law enforcement personnel are required to respond to abate the condition, the responsible person and the owner or occupant of the property shall be held liable for the cost of providing such services. Such direction and advice shall be given to the person responsible for the party or gathering or to the owner or occupant of the property involved. If the condition is not voluntarily abated and if additional city personnel, including law enforcement officers, are required in order to disperse the party or gathering, quell any disturbance, direct traffic, cite illegally parked vehicles or otherwise respond, then the cost of such additional city services, including law enforcement services, shall be reimbursed to the city as provided in subsection (e) of this section.
- (e) The person or persons responsible for a party or gathering described in subsection (d) of this section, or the owner or occupant of the property on which the party or gathering is held, or, if any such person is a minor, the parents or legal guardians of the minor, shall be jointly and severally liable for the following costs incurred by the city:
  - (1) The actual cost to the city of law enforcement services excluding the initial response provided by a noise control officer or police officer in order to abate any of the conditions described in subsection (d) of this section;



- (2) Damage to public property resulting from such law enforcement response; and
- (3) Injuries to any noise control officer or law enforcement personnel involved in such law enforcement response.
  - (f) The police department or the noise control officer shall calculate all costs and shall advise the director of finance. The person or persons specified above in subsection (e) of this section shall be billed by the finance director following receipt of the total cost from the noise control officer or the police department, and payment shall be due and payable within fifteen days of the billing date. If the amount due is not paid, the city may collect the debt, as well as any fees and costs incurred in its collection, pursuant to all applicable provisions of law.

(Ord. 1951 § 5, 6-22-93; Ord. 1627 § 3 (part), 8-27-84)

### **11.29.230 Variance procedures.**

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- (1) The owner or operator of a noise source which violates any of the provisions of this chapter, may file an application with the noise control officer for a variance from the revisions thereof, wherein said owner or operator shall set forth all actions taken to comply with said provisions, the reasons why immediate compliance cannot be achieved, a proposed method of achieving compliance, and a proposed time schedule for its accomplishment. The application shall be accompanied by a fee in the amount of two hundred dollars. A separate application shall be filed for each noise source: provided, however, that several mobile sources under common ownership, or several fixed sources on a single property may be combined into one application. Upon receipt of said application and fee, the noise control officer shall refer it with his recommendations thereon within sixty days to the planning commission for action thereon in accordance with the provisions of this chapter.
- (2) An applicant for a variance shall remain subject to prosecution under the terms of this chapter until a variance is granted.
- (3) The city planning commission shall hold a public hearing in accordance to the provisions of Chapter 11.42 and evaluate all applications for variance from the requirements of Chapter 11.29 and Chapter 11.38 and may grant said variances with respect to time for compliance, subject to such terms, conditions and requirements as it may deem reasonable to achieve maximum compliance with the provisions of this chapter. Said terms, conditions and requirements may include, but shall not be confined to limitations on noise levels and operating hours. Each such variance shall set forth in detail the approved method of achieving maximum compliance and a time schedule for its accomplishment. In its determinations, said commission shall consider the following:
  - (a) The magnitude of nuisance caused by the offensive noise;
  - (b) The uses of property within the area of impingement by the noise;
  - (c) The time factors related to study, design, financing, and construction of remedial work;
  - (d) The economic factors related to age and useful life of the equipment;
  - (e) The general public interest, welfare and safety.
- (4) Any variance granted by the city planning commission shall be transmitted to the noise control officer for administration. Any violations of the terms of said variance shall be unlawful.
- (5) The provisions of this section do not apply to loud parties or gatherings as they are defined in Section 11.29.180(13).

(Ord. 1951 § 6, 6-22-93; Ord. 1627 § 3 (part), 8-27-84)

### **11.29.240 Appeals.**

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- (1) Within ten calendar days following the decision of the city planning commission on an application, the applicant or any other interested person may appeal the decision through the city council by filing a notice of appeal with the city clerk. In the case of an appeal for a variance, the notice of appeal shall be accompanied by a fee of seventy-five dollars.
- (2) Upon receipt by the city clerk of a written appeal from the applicant or opponent, or interested party, as provided in this chapter, the city clerk shall advise the secretary of the city planning commission who shall transmit to the city clerk a copy of the city planning commission's record of the case. In addition, any person may file with the city council written argument supporting or opposing the decision of the city planning commission.
- (3) Within and not to exceed forty-five days following the receipt of the written appeal, the city council shall conduct a public hearing, public notice of which shall be given as provided in Chapter 11.42.
- (4) If the city council proposes an action that is in any way contrary to the recommendations of the city planning commission, the city council shall set forth its findings and proposed change or changes to the city planning commission's recommendation and the findings and proposed change or changes shall automatically be referred back to the city planning commission and a further report requested of the city planning commission on the matter.

Failure of the city planning commission to report to the city council within forty days after reference may be deemed to be approval by the city planning commission of any proposed change.

(Ord. 1627 § 3 (part), 8-27-84)

### **11.29.250 Severability.**

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If any provision, clause, sentence, or paragraph of this ordinance or the application thereof to any person or circumstances shall be held invalid, such invalidity shall not affect the other provisions or applications of the provisions of this ordinance which can be given effect without the invalid provisions or applications; and to this end, the provisions of this ordinance are hereby declared to be severable.

(Ord. 1627 § 3, 8-27-84)

# **EXHIBIT B – REGIONAL PHASE I MS4 NPDES PERMIT**

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LOS ANGELES REGION**

320 W. 4<sup>th</sup> Street, Suite 200, Los Angeles, California, 90013  
(213) 576 - 6600; [MS4stormwaterRB4@waterboards.ca.gov](mailto:MS4stormwaterRB4@waterboards.ca.gov)  
<http://www.waterboards.ca.gov/losangeles>

**REGIONAL PHASE I MS4 NPDES PERMIT**

**ORDER NO. R4-2021-0105  
NPDES PERMIT NO. CAS004004**

**WASTE DISCHARGE REQUIREMENTS AND NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) DISCHARGES WITHIN THE COASTAL WATERSHEDS OF LOS ANGELES AND VENTURA COUNTIES**

The Los Angeles County Flood Control District, County of Los Angeles, 85 incorporated cities within the coastal watersheds of Los Angeles County, Ventura County Watershed Protection District, County of Ventura, and 10 incorporated cities within Ventura County (hereinafter referred to separately as Permittees and jointly as Dischargers) are subject to waste discharge requirements (WDRs) for their municipal separate storm sewer system (MS4)<sup>1</sup> discharges originating from within their jurisdictional boundaries composed of stormwater and non-stormwater as set forth in this Order.

**Table 1. Discharger Information**

<b>Dischargers</b>	The Los Angeles County Flood Control District, County of Los Angeles, 85 incorporated cities within the coastal watersheds of Los Angeles County, Ventura County Watershed Protection District, the County of Ventura, and 10 incorporated cities within Ventura County (see Table 2 and Table 3).
<b>Name of Facility</b>	Municipal Separate Storm Sewer Systems (MS4s) per 40 CFR § 122.26(b)(8) within the Los Angeles Region
<b>Facility Contacts, Titles, Addresses, and Phone Numbers</b>	Available through the Stormwater Multiple Application and Report Tracking System (SMARTS) <sup>2</sup> at <a href="https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.xhtml">https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.xhtml</a>
The U.S. Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, Los Angeles Region (Los Angeles Water Board) have classified the MS4s located in the Los Angeles Region as a large phase I municipal separate storm sewer system (MS4) pursuant to 40 CFR section 122.26(b)(4) and a major facility pursuant to 40 CFR section 122.2.	

**Table 2. Facility Information for Ventura County Permittees**

<b>Permittee (SMARTS WDID)</b>	<b>Physical Address</b>
Ventura County Watershed Protection District	800 S. Victoria Ave.

<sup>1</sup> See Attachment A for definitions of terms, acronyms, and abbreviations used in the Order and all other attachments.

<sup>2</sup> SMARTS provides a platform where dischargers, regulators, and the public can enter, manage, and view stormwater data including permit applications and compliance and monitoring data associated with NPDES permits for stormwater discharges issued by the State of California. SMARTS is compliant with U.S. EPA’s Cross-Media Electronic Reporting Rule, which sets requirements for electronic reporting of NPDES permit-related submittals.

<b>Permittee (SMARTS WDID)</b>	<b>Physical Address</b>
(4 56M1000326)	Ventura CA, 93009
Ventura County (4 56M1000183)	800 S. Victoria Ave. Ventura CA, 93009
Camarillo (4 56M1000173)	601 Carmen Drive Camarillo, CA 93010
Fillmore (4 56M1000174)	250 Central Ave. Fillmore, CA 93015
Moorpark (4 56M1000175)	799 Moorpark Ave, Moorpark, CA 93021
Ojai (4 56M1000176)	408 South Signal Street Ojai, CA 93023
Oxnard (4 56M1000177)	305 West Third Street Oxnard, CA 93030
Port Hueneme (4 56M1000178)	250 North Ventura Road Port Hueneme, CA 93041
Santa Paula (4 56M1000179)	970 Ventura Street Santa Paula, CA 93060
Simi Valley (4 56M1000180)	2929 Tapo Canyon Road Simi Valley, CA 93063
Thousand Oaks (4 56M1000181)	2100 Thousand Oaks Boulevard Thousand Oaks, CA 91362
Ventura <sup>3</sup> (4 56M1000182)	501 Poli Street Ventura, CA 93001

**Table 3. Facility Information for Los Angeles County Permittees**

<b>Permittee (SMARTS WDID)</b>	<b>Physical Address</b>
Los Angeles County Flood Control District (4 19M1000134)	900 South Fremont Avenue Alhambra, CA 91803
County of Los Angeles (4 19M1000133)	900 South Fremont Avenue Alhambra, CA 91803
Agoura Hills (4 19M1000086)	30001 Ladyface Court Agoura Hills, CA 91301
Alhambra (4 19M1000087)	111 South First Street Alhambra, CA 91801
Arcadia (4 19M1000088)	11800 Goldring Road Arcadia, CA 91066-6021
Artesia (4 19M1000089)	18747 Clarkdale Avenue Artesia, CA 90701
Azusa (4 19M1000090)	213 East Foothill Boulevard Azusa, CA 91702

<sup>3</sup> Formerly referred to as San Buenaventura.

<b>Permittee (SMARTS WDID)</b>	<b>Physical Address</b>
Baldwin Park (4 19M1000091)	14403 East Pacific Avenue Baldwin Park, CA 91706
Bell (4 19M1000092)	6330 Pine Avenue Bell, CA 90201
Bell Gardens (4 19M1000093)	8327 Garfield Avenue Bell Gardens, CA 90201-3293
Bellflower (4 19M1000094)	16600 Civic Center Drive Bellflower, CA 90706
Beverly Hills (4 19M1000095)	455 North Rexford Drive Beverly Hills, CA 90210
Bradbury (4 19M1000096)	600 Winston Avenue Bradbury, CA 91008
Burbank (4 19M1000097)	275 East Olive Avenue Burbank, CA 91502
Calabasas (4 19M1000098)	100 Civic Center Way Calabasas, CA 91302
Carson (4 19M1000099)	701 East Carson Street Carson, CA 90745
Cerritos (4 19M1000100)	18125 Bloomfield Avenue Cerritos, CA 90703-3130
Claremont (4 19M1000102)	207 Harvard Avenue Claremont, CA 91711
Commerce (4 19M1000103)	2535 Commerce Way Commerce, CA 90040
Compton (4 19M1000104)	205 South Willowbrook Avenue Compton, CA 90220
Covina (4 19M1000105)	125 East College Street Covina, CA 91723
Cudahy (4 19M1000106)	5220 Santa Ana Street Cudahy, CA 90201
Culver City (4 19M1000107)	9770 Culver Boulevard Culver City, CA 90232
Diamond Bar (4 19M1000108)	21810 East Copley Drive Diamond Bar, CA 91765
Downey (4 19M1000109)	11111 Brookshire Avenue Downey, CA 90241
Duarte (4 19M1000110)	1600 Huntington Drive Duarte, CA 91010
El Monte (4 19M1000111)	11333 Valley Boulevard El Monte, CA 91731
El Segundo (4 19M1000112)	350 Main Street El Segundo, CA 90245
Gardena	1700 West 162 <sup>nd</sup> Street

<b>Permittee (SMARTS WDID)</b>	<b>Physical Address</b>
(4 19M1000113)	Gardena, CA 90247-3732
Glendale (4 19M1000114)	Engineering Section 633 East Broadway, Room 209 Glendale, CA 91206
Glendora (4 19M1000115)	116 East Foothill Boulevard Glendora, CA 91741
Hawaiian Gardens (4 19M1000116)	21815 Pioneer Boulevard Hawaiian Gardens, CA 90716
Hawthorne (4 19M1000117)	4455 West 126 <sup>th</sup> Street Hawthorne, CA 90250
Hermosa Beach (4 19M1000118)	1315 Valley Drive Hermosa Beach, CA 90254
Hidden Hills (4 19M1000119)	6165 Spring Valley Road Hidden Hills, CA 91302
Huntington Park (4 19M1000120)	6550 Miles Avenue Huntington Park, CA 90255
Industry (4 19M1000101)	15625 East Stafford Street, Suite 100 Industry, CA 91744
Inglewood (4 19M1000121)	1 W. Manchester Boulevard, 3rd Floor Inglewood, CA 90301-1750
Irwindale (4 19M1000122)	5050 North Irwindale Avenue Irwindale, CA 91706
La Cañada Flintridge (4 19M1000123)	One Civic Center Dr. La Cañada Flintridge, CA 91011
La Habra Heights (4 19M1000124)	1245 North Hacienda Road La Habra Heights, CA 90631
La Mirada (4 19M1000125)	13700 La Mirada Boulevard La Mirada, CA 90638
La Puente (4 19M1000126)	15900 East Main Street La Puente, CA 91744
La Verne (4 19M1000127)	3660 "D" Street La Verne, CA 91750
Lakewood (4 19M1000128)	5050 Clark Avenue Lakewood, CA 90712
Lawndale (4 19M1000129)	14717 Burin Avenue Lawndale, CA 90260
Lomita (4 19M1000130)	24320 Narbonne Avenue Lomita, CA 90717
Long Beach (4 19M1000131)	333 West Ocean Boulevard, 9 <sup>th</sup> Floor Long Beach, CA 90802
Los Angeles (4 19M1000132)	1149 S. Broadway, 10 <sup>th</sup> Floor Los Angeles, CA 90015
Lynwood	11330 Bullis Road

<b>Permittee (SMARTS WDID)</b>	<b>Physical Address</b>
(4 19M1000135)	Lynwood, CA 90262
Malibu (4 19M1000136)	23825 Stuart Ranch Road Malibu, CA 90265-4861
Manhattan Beach (4 19M1000137)	1400 Highland Avenue Manhattan Beach, CA 90266
Maywood (4 19M1000138)	4319 East Slauson Avenue Maywood, CA 90270
Monrovia (4 19M1000139)	415 South Ivy Avenue Monrovia, CA 91016
Montebello (4 19M1000140)	1600 West Beverly Boulevard Montebello, CA 90640
Monterey Park (4 19M1000141)	320 West Newmark Avenue Monterey Park, CA 91754
Norwalk (4 19M1000142)	12650 East Imperial Highway Norwalk, CA 90650
Palos Verdes Estates (4 19M1000143)	340 Palos Verdes Drive West Palos Verdes Estates, CA 90274
Paramount (4 19M1000144)	16400 Colorado Avenue Paramount, CA 90723
Pasadena (4 19M1000145)	100 North Garfield Avenue Pasadena, CA 91101
Pico Rivera (4 19M1000146)	6615 Passons Boulevard Pico Rivera, CA 90660
Pomona (4 19M1000147)	505 South Garey Avenue Pomona, CA 91766
Rancho Palos Verdes (4 19M1000148)	30940 Hawthorne Boulevard Rancho Palos Verdes, CA 90275
Redondo Beach (4 19M1000149)	415 Diamond Street Redondo Beach, CA 90277
Rolling Hills (4 19M1000150)	2 Portuguese Bend Road Rolling Hills, CA 90274
Rolling Hills Estates (4 19M1000151)	4045 Palos Verdes Drive North Rolling Hills Estates, CA 90274
Rosemead (4 19M1000152)	8838 East Valley Boulevard Rosemead, CA 91770
San Dimas (4 19M1000153)	245 East Bonita Avenue San Dimas, CA 91773
San Fernando (4 19M1000154)	117 Macneil Street San Fernando, CA 91340
San Gabriel (4 19M1000155)	425 South Mission Drive San Gabriel, CA 91776
San Marino (4 19M1000156)	2200 Huntington Drive San Marino, CA 91108



<b>Permittee (SMARTS WDID)</b>	<b>Physical Address</b>
Santa Clarita (4 19M1000157)	23920 Valencia Boulevard, Suite 300 Santa Clarita, CA 91355
Santa Fe Springs (4 19M1000158)	11710 East Telegraph Road Santa Fe Springs, CA 90670
Santa Monica (4 19M1000159)	1685 Main Street Santa Monica, CA 90401
Sierra Madre (4 19M1000160)	232 West Sierra Madre Boulevard Sierra Madre, CA 91024
Signal Hill (4 19M1000161)	2175 Cherry Avenue Signal Hill, CA 90755-3799
South El Monte (4 19M1000162)	1415 North Santa Anita Avenue South El Monte, CA 91733
South Gate (4 19M1000163)	8650 California Avenue South Gate, CA 90280
South Pasadena (4 19M1000164)	1414 Mission Street South Pasadena, CA 91030
Temple City (4 19M1000165)	9701 Las Tunas Drive Temple City, CA 91780
Torrance (4 19M1000166)	3031 Torrance Boulevard Torrance, CA 90503
Vernon (4 19M1000167)	4305 South Santa Fe Avenue Vernon, CA 90058
Walnut (4 19M1000168)	21201 La Puente Road Walnut, CA 91789
West Covina (4 19M1000169)	1444 West Garvey Avenue South West Covina, CA 91790
West Hollywood (4 19M1000170)	8300 Santa Monica Boulevard West Hollywood, CA 90069
Westlake Village (4 19M1000171)	31200 Oak Crest Drive Westlake Village, CA 91361
Whittier (4 19M1000172)	13230 Penn Street Whittier, CA 90602

**Table 4. Administrative Information**

This Order was adopted on:	<b>July 23, 2021</b>
This Order shall become effective on:	<b>September 11, 2021</b>
This Order shall expire on:	<b>September 11, 2026</b>
In accordance with Title 23, Division 3, Chapter 9 of the California Code of Regulations and to Title 40, Part 122 of the Code of Federal Regulations (CFR), each Discharger shall file a Report of Waste Discharge as an application for reissuance of waste discharge requirements (WDRs) and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than:	<b>March 15, 2026</b>
<b>In accordance with Section 2235.4 of Title 23 of the California Code of Regulations, the terms and conditions of an expired permit are automatically continued pending issuance of a new permit if all requirements of the federal NPDES regulations on continuation of the expired permit are complied with. Accordingly, if a new Order is not adopted by the expiration date above, then the Permittees shall continue to implement the requirements of this Order until a new one is adopted.</b>	

I, Renee Purdy, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on **July 23, 2021**.



\_\_\_\_\_  
Renee Purdy, Executive Officer

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## I. FACILITY INFORMATION

The 99 entities listed in Table 2 and Table 3 of this Order are the owners and/or operators<sup>4</sup> of Municipal Separate Storm Sewer Systems within the Los Angeles Region (hereinafter MS4 or Facility). References to the “discharger,” “permittee,” “co-permittee,” or “municipality” in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Dischargers or Permittees herein. Information describing the Permittees’ MS4 within the Los Angeles Region (Facility) is summarized in Table 1, Table 2, and Table 3 of this Order and in the Fact Sheet (Attachment F). The Fact Sheet also includes information regarding the Permittees’ permit applications. Attachment A lists definitions of terms, abbreviations, and acronyms used in this Order and all other attachments.

## II. FINDINGS

The California Regional Water Quality Control Board, Los Angeles Region (hereinafter Los Angeles Water Board or Board), finds:

### A. Legal Authorities – Federal Clean Water Act and California Water Code.

This Order serves as WDRs pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit authorizing the Dischargers to discharge into waters of the U.S. within the Los Angeles Region subject to the WDRs in this Order.

### B. Background and Rationale for Requirements

The Los Angeles Water Board developed the requirements in this Order based on information submitted as part of the Permittees’ reapplication packages, through monitoring and reporting programs, and other available information. In accordance with federal regulations at 40 CFR section 124.8, the Fact Sheet (Attachment F), which contains background information and the legal, policy and technical rationale for the requirements in this Order, is hereby incorporated into and constitutes Findings for this Order. Attachments A through E and G through S are also incorporated into this Order.

### C. This Order, Regional MS4 Permit

This Order supersedes the previous Orders for the City of Long Beach, 86 Permittees in the coastal watersheds of Los Angeles County, and 12 Permittees in Ventura County to cover 99 Permittees within the coastal watersheds of the Los Angeles Region with one region-wide Phase I MS4 Permit (Regional MS4 Permit). This Order implements the federal Phase I NPDES Stormwater Program requirements. These federal requirements include three fundamental elements: (i) a requirement to effectively prohibit non-stormwater discharges through the MS4, (ii) requirements to implement controls to reduce the discharge of pollutants in stormwater to the maximum extent practicable (MEP), and (iii) other provisions the Los Angeles Water Board has determined appropriate for the control of such pollutants.

### D. Delegation of Authority to the Executive Officer

The Los Angeles Water Board by prior resolution has delegated broad authority to its Executive Officer to act on the Los Angeles Water Board’s behalf pursuant to Water Code sections 7 and 13223. Therefore, the Los Angeles Water Board Executive Officer is authorized to act on the Los Angeles Water Board’s behalf on all matters within this Order that have been delegated

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<sup>4</sup> Owner or operator means the owner or operator of any facility or activity subject to regulation under the NPDES program (40 CFR § 122.2).

unless such delegation is unlawful under Water Code section 13223 or this Order explicitly states otherwise.

The Board authorizes the Executive Officer to make non-substantive changes to this Order to correct typographical errors, including correcting misspellings/grammar, ensuring correct cross-references, correcting formatting/numbering, and conforming changes made during the development and adoption of this Order that were inadvertently not carried through the entire Order. The Executive Officer shall provide public notice of any non-substantive changes.

**E. Notification of Interested Parties**

In accordance with state and federal laws and regulations, the Los Angeles Water Board has notified the Permittees and interested agencies and persons of its intent to prescribe WDRs for the discharges authorized by this Order and has provided them with an opportunity to submit their written and oral comments. Details of the notification, as well as the meetings and workshops held on the working proposal and drafts of the permit, are provided in the Fact Sheet (Attachment F) of this Order.

**F. Consideration of Public Comment**

The Los Angeles Water Board, in a public meeting, heard and considered all oral and written comments pertaining to the discharges authorized by this Order and the requirements contained herein. The Los Angeles Water Board has prepared written responses to all timely comments on the draft permit, which are included in the Administrative Record for this Order. Details of the public hearing are provided in the Fact Sheet (Attachment F) of this Order.

**THEREFORE, IT IS HEREBY ORDERED** that this Order supersedes Order No. R4-2010-0108, Order No. R4-2012-0175, and Order No. R4-2014-0024 except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Dischargers shall comply with the requirements in this Order. This action in no way prevents the Los Angeles Water Board from taking enforcement action for violations of the previous Orders.

In compliance with the judgment and writ of mandate in *Natural Resources Defense Council, Inc. and Los Angeles Waterkeeper v. State Water Resources Control Board and California Regional Water Quality Control Board, Los Angeles Region*, Los Angeles County Superior Court, Case No. BS156962, the issuance of this Order has the effect of setting aside Order No. R4-2012-0175 upon the effective date of this Order. This action to supersede Order No. R4-2012-0175 is not retroactive. Order No. R4-2012-0175 remains valid while it is still in effect, and violations are therefore subject to enforcement. This action also does not impact or affect any prior actions or determinations by the Los Angeles Water Board or its Executive Officer that implemented Order No. R4-2012-0175 including, but not limited to, actions or determinations related to watershed management programs (subject to State Water Board Order WQ 2020-0038), monitoring programs, and alternative biofiltration designs.

### III. DISCHARGE PROHIBITIONS

#### A. Prohibitions – Non-Stormwater Discharges

1. **Prohibition of Non-Stormwater Discharges.** Each Permittee for the portion of the MS4 for which it is an owner or operator shall prohibit non-stormwater discharges through the MS4 to receiving waters.
2. **Exceptions to Prohibition of Non-Stormwater Discharges.** The following authorized and conditionally exempt non-stormwater discharges are not prohibited:
  - a. Authorized non-stormwater discharges separately regulated by an individual or general NPDES permit;
  - b. Authorized non-stormwater discharges separately regulated by a conditional waiver or WDRs for agricultural lands;
  - c. Temporary non-stormwater discharges authorized pursuant to sections 104(a) or 104(b) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that either: (i) will comply with water quality standards as applicable or relevant and appropriate requirements (“ARARs”) under section 121(d)(2) of CERCLA; or (ii) are subject to either (a) a written waiver of ARARs pursuant to section 121(d)(4) of CERCLA or (b) a written determination that compliance with ARARs is not practicable considering the exigencies of the situation pursuant to 40 CFR. section 300.415(j)<sup>5</sup>;
  - d. Authorized non-stormwater discharges from emergency firefighting activities (i.e., discharges resulting from water use necessary for the protection of life or property from fire)<sup>6</sup>;
  - e. Natural flows including:
    - i. Natural springs;
    - ii. Flows from riparian habitats and wetlands;
    - iii. Diverted stream flows, authorized by the State Water Board or Los Angeles Water Board;
    - iv. Uncontaminated ground water infiltration<sup>7</sup>;
    - v. Rising ground waters, where ground water seepage is not otherwise covered by a NPDES permit<sup>8</sup>;
  - f. Conditionally exempt non-stormwater discharges in accordance with Parts III.A.3 and III.A.4 below.

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<sup>5</sup> These typically include short-term, high volume discharges resulting from the development or redevelopment of groundwater extraction wells, or federal or State-required compliance testing of potable water treatment plants, as part of an authorized groundwater remediation action under CERCLA.

<sup>6</sup> Discharges from vehicle washing, building fire suppression system maintenance and testing (e.g., sprinkler line flushing), fire hydrant maintenance and testing, and other routine maintenance activities are not considered emergency firefighting activities.

<sup>7</sup> Uncontaminated ground water infiltration is water other than wastewater that enters the MS4 (including foundation drains) from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow. (See 40 CFR § 35.2005(20).)

<sup>8</sup> A NPDES permit for discharges associated with ground water dewatering is required within the Los Angeles Region.

- 3. Conditional Exemptions from Non-Stormwater Discharges Prohibition.** The following categories of non-stormwater discharges are exempt from the non-stormwater discharge prohibition, if (1) the Permittee ensures that all required conditions specified below, including in Table 5 of this Order, or other conditions specified and/or approved by the Los Angeles Water Board Executive Officer are met, and (2) the discharge is not a direct discharge into an Area of Special Biological Significance (ASBS) within the Los Angeles Region unless otherwise allowed in Part III.A.4 of this Order.
- a. Conditionally Exempt Essential Non-Stormwater Discharges.** The following non-stormwater discharges are directly or indirectly required by other state or federal statutes and/or regulations, and are exempt from the discharge prohibition in Part III.A.1 of this Order:
- i. Discharges from essential *non-emergency* firefighting activities<sup>9</sup>;
  - ii. Discharges from drinking water systems that are not otherwise regulated by NPDES Permit No. CAG674001, NPDES Permit No. CAG140001, or another separate NPDES permit<sup>10</sup>;
- b. Conditionally Exempt Non-Essential Non-Stormwater Discharges.** The following non-stormwater discharges are exempt from the discharge prohibition in Part III.A.1 of this Order, provided that the discharge is not a source of pollutants that will cause or contribute to an exceedance of applicable limitations in Part IV, Part V, and Attachments K through S of this Order:
- i. Dewatering of lakes<sup>11</sup>;
  - ii. Landscape irrigation;
  - iii. Dechlorinated/debrominated swimming pool/spa discharges<sup>12</sup> not otherwise regulated by a separate NPDES permit;
  - iv. Dewatering of decorative fountains<sup>13</sup>;
  - v. Non-commercial car washing by residents or by non-profit organizations;
  - vi. Street/sidewalk wash water<sup>14</sup>;

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<sup>9</sup> This includes firefighting training activities, which simulate emergency responses, and routine maintenance and testing activities necessary for the protection of life and property, including building fire suppression system maintenance and testing (e.g., sprinkler line flushing) and fire hydrant testing and maintenance. Discharges from vehicle washing are not considered essential and as such are not conditionally exempt from the non-stormwater discharge prohibition.

<sup>10</sup> Drinking water system discharges means short-term or seasonal discharges from a drinking water system of water that has been dedicated for drinking water purposes. Discharges from drinking water systems include sources of flows from drinking water storage, supply and distribution systems (including flows from system failures), pressure releases, system maintenance, distribution line testing, and flushing and dewatering of pipes, reservoirs, and vaults, and minor non-invasive well maintenance activities not involving chemical addition(s).

<sup>11</sup> Dewatering of lakes does not include dewatering of drinking water reservoirs. Dewatering of drinking water reservoirs is addressed in Part III.A.3.a.ii of this Order.

<sup>12</sup> Conditionally exempt dechlorinated/debrominated swimming pool/spa discharges do not include swimming pool/spa filter backwash or swimming pool/spa water containing bacteria, detergents, wastes, or algaecides, or any other chemicals (including salts from pools commonly referred to as "saltwater pools").

<sup>13</sup> Conditionally exempt discharges from dewatering of decorative fountains do not include fountain water containing bacteria, detergents wastes, or algaecides, or any other chemicals.

<sup>14</sup> Conditionally exempt non-stormwater discharges of street/sidewalk wash water only include those discharges resulting from use of high pressure, low volume spray washing using only potable water with no cleaning agents



- vii. Short-term releases of potable water with no additives or dyes for filming purposes;
  - viii. Potable wash water used to clean reservoir covers.
- 4. Additional Provisions for Non-Stormwater Discharges to an ASBS.** The following non-stormwater discharges to an MS4 with a direct discharge to an ASBS are allowed pursuant to the California Ocean Plan, provided that:
- a. The non-stormwater discharge falls within any of the following categories:
    - i. One of the conditionally exempt essential non-stormwater discharge categories in Part III.A.3.a of this Order;
    - ii. Essential for emergency response purposes, structural stability, and slope stability, which may include but are not limited to the following discharges:
      - (a) Discharges associated with emergency firefighting operations (i.e., discharges resulting from water use necessary for the protection of life or property from fire)<sup>15</sup>;
      - (b) Foundation and footing drains;
      - (c) Water from crawl space or basement pumps;
      - (d) Hillside dewatering.
    - iii. Naturally occurring discharges as follows:
      - (a) Naturally occurring groundwater seepage via a MS4;
      - (b) Non-anthropogenic flows from a naturally occurring stream via a culvert or MS4, as long as there are no contributions of anthropogenic runoff.
  - b. The non-stormwater discharge shall not cause or contribute<sup>16</sup> to an exceedance of applicable limitations in Part IV, Part V, and Attachments K through S of this Order or the water quality objectives in Chapter II of the Ocean Plan, or an undesirable alteration in natural ocean water quality in an ASBS.
- 5. Permittee Requirements.** For conditionally exempt non-stormwater discharges, each Permittee shall:
- a. Develop and implement procedures to ensure that a discharger, if not a named Permittee in this Order, fulfills the following for conditionally exempt non-stormwater discharges to the Permittee's MS4:
    - i. Notifies Permittee of the planned discharge in advance, where required in Table 5 of this Order or consistent with recommendations pursuant to the applicable BMP manual;
    - ii. Obtains any local permits required by the MS4 owner(s) and/or operator(s);

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at an average usage of 0.006 gallons per square feet of sidewalk area in accordance with Los Angeles Water Board Resolution No. 98-08. Conditionally exempt non-stormwater discharges of street/sidewalk wash water do not include hosing of any sidewalk or street with a garden hose with a high pressure high volume nozzle.

<sup>15</sup> Discharges from vehicle washing, building fire suppression system maintenance and testing (e.g., sprinkler line flushing), fire hydrant maintenance and testing, and other routine maintenance activities are not considered emergency firefighting activities.

<sup>16</sup> Based on the water quality characteristics of the conditionally exempt non-stormwater discharge itself.

- iii. Provides documentation that it has obtained any other necessary permits or water quality certifications<sup>17</sup> for the discharge;
  - iv. Conducts monitoring of the discharge, if required by the Permittee;
  - v. Implements BMPs and/or control measures as specified in Table 5 of this Order or in the applicable BMP manual(s) as a condition of the approval to discharge into the Permittee's MS4; and
  - vi. Maintains records of its discharge to the MS4, consistent with requirements in Table 5 of this Order or recommendations pursuant to the applicable BMP manual. For lake dewatering, the Permittee shall require that the following information is maintained by the lake owner / operator: name of discharger, date and time of notification, method of notification, location of discharge, discharge pathway, receiving water, date of discharge, time of the beginning and end of the discharge, duration of the discharge, flow rate or velocity, total number of gallons discharged, type(s) of sediment controls used, pH of discharge, type(s) of volumetric and velocity controls used, and field and laboratory monitoring data. These records shall be made available upon request by the Permittee or Los Angeles Water Board.
- b. Maintain records of all conditionally exempt non-stormwater discharges greater than 100,000 gallons in an electronic database consistent with Table 5 of this Order.
  - c. Evaluate monitoring data collected pursuant to the Monitoring and Reporting Program (MRP) of this Order (Attachment E), and any other associated data or information, and determine whether any of the authorized or conditionally exempt non-stormwater discharges identified in Parts III.A.2-4 above are a source of pollutants that may be causing or contributing to an exceedance of applicable limitations in Part IV, Part V, and Attachments K through S of this Order. Based on non-stormwater outfall-based monitoring as implemented through the MRP, if monitoring data show exceedances of applicable limitations at the outfall, the Permittee shall take further action to determine whether the discharge is causing or contributing to exceedances of applicable limitations in the receiving water.
6. If the Permittee determines that any of the conditionally exempt non-essential non-stormwater discharges identified in Part III.A.3.b of this Order is a source of pollutants that causes or contributes to an exceedance of applicable limitations in Part IV, Part V, and Attachments K through S of this Order, the Permittee(s) shall report its findings to the Los Angeles Water Board in its annual report. Based on this determination, the Permittee(s) shall also either:
- a. Effectively prohibit<sup>18</sup> the non-stormwater discharge into the MS4; or
  - b. Impose conditions in addition to those in Table 5 of this Order, subject to approval by the Los Angeles Water Board Executive Officer, on the non-stormwater discharge such that it will not be a source of pollutants; or
  - c. Require diversion of the non-stormwater discharge to the sanitary sewer; or
  - d. Require treatment of the non-stormwater discharge prior to discharge to the receiving water.

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<sup>17</sup> Pursuant to the Federal Clean Water Act § 401.

<sup>18</sup> To "effectively prohibit" means to not allow the non-stormwater discharge into the MS4 unless the discharger obtains coverage under a separate NPDES permit prior to discharge into the MS4.

7. If the Permittee effectively prohibits the non-stormwater discharge to the MS4, as per Part III.A.6.a above, then the Permittee shall implement procedures developed under Part VIII.I of this Order (Illicit Discharge Detection and Elimination Program) to eliminate the discharge to the MS4 unless the non-stormwater discharge is regulated by a separate NPDES permit prior to the next discharge.
8. If the Permittee determines that any of the authorized or conditionally exempt essential non-stormwater discharges is a source of pollutants that causes or contributes to an exceedance of applicable limitations in Part IV, Part V, and Attachments K through S of this Order, the Permittee shall notify the Los Angeles Water Board within 30 days of any such determination.
9. Notwithstanding the above, the Los Angeles Water Board, based on an evaluation of monitoring data and other relevant information including TMDLs and antidegradation policies, may require that a discharger obtain coverage under a separate individual or general State Water Board or Los Angeles Water Board NPDES permit for the non-stormwater discharge or may require that the Permittee ensures that the discharger implements additional conditions specified or approved by the Executive Officer to ensure that the discharge is not a source of pollutants.

**Table 5. Required Conditions for Conditionally Exempt Non-Stormwater Discharges**

<b>Discharge Category</b>	<b>General Conditions for Exempt MS4 Discharges</b>	<b>Requirements/Required BMPs Prior to Discharge through the MS4</b>
All Discharge Categories	See discharge specific conditions below.	<p>Ensure conditionally exempt non-stormwater discharges avoid potential sources of pollutants in the flow path to prevent introduction of pollutants to the MS4 and receiving water.</p> <p>Whenever there is a discharge of 100,000 gallons or more into the MS4, Permittees shall require advance notification by the discharger to the potentially affected MS4 Permittees, including at a minimum either the VCWPD or the LACFCD, and the Permittee with jurisdiction over the land area from which the discharge originates.</p>
Discharges from essential <i>non-emergency</i> firefighting activities	Discharges allowed after implementation of specified BMPs.	Implement appropriate BMPs based on the CAL FIRE, Office of the State Fire Marshal's <i>Water-Based Fire Protection Systems Discharge Best Management Practices Manual</i> (September 2011) for water-based fire protection system discharges, and based on <i>Riverside County's Best Management Practices Plan for Urban Runoff Management</i> (May 1, 2004), or equivalent BMP manual for fire training activities and post-emergency firefighting activities.
Discharges from drinking water systems that are not otherwise regulated by NPDES Permit No. CAG674001, NPDES Permit No. CAG140001, or another	Discharges allowed after implementation of specified BMPs.	<p>Implement appropriate BMPs based on the American Water Works Association (California-Nevada Section) <i>Guidelines for the Development of Your Best Management Practices (BMP) Manual for Drinking Water System Releases</i> (2005) or equivalent industry standard BMP manual.</p> <p>Chlorine residual in the discharge shall not exceed 0.1 mg/L. Additionally, each Permittee shall work with drinking water system owners/operators that may discharge to the Permittee's MS4 to ensure the following for all discharges greater than 100,000 gallons: (1) notification at least 72 hours prior to a planned discharge and as soon as possible after an unplanned discharge; (2) monitoring of any pollutants of concern<sup>19</sup> in the drinking water system discharge; and (3) record keeping.</p>

<sup>19</sup> Pollutants of concern in drinking water distribution system discharges may include trash and debris, including organic matter, total suspended solids (TSS), residual chlorine, pH, and any pollutant for which there is a limitation in Parts IV, Part V, and Attachments K through S of this Order applicable to discharges from the MS4 to the receiving water. Determination of the pollutants of concern for a particular discharge shall be based on an evaluation of the potential for the constituent(s) to be present in the discharge at levels that may cause or contribute to exceedances of applicable limitations in Parts IV, Part V, and Attachments K through S of this Order.

<p>separate NPDES permit</p>		<p>Permittees shall ensure that the following information is maintained for all drinking water system discharges to the MS4 (planned and unplanned) greater than 100,000 gallons: name of discharger, date and time of notification (for planned discharges), method of notification, location of discharge, discharge pathway, receiving water, date of discharge, time of the beginning and end of the discharge, duration of the discharge, flow rate or velocity, total number of gallons discharged, type of dechlorination equipment used, type of dechlorination chemicals used, concentration of residual chlorine, type(s) of sediment controls used, pH of discharge, type(s) of volumetric and velocity controls used, and field and laboratory monitoring data.</p> <p>Records shall be retained for five years and made available upon request by the Permittee or Los Angeles Water Board.</p>
<p>Potable wash water discharges associated with reservoir cover cleaning</p>	<p>Per the Operations and Maintenance Plan approved by the California Department of Public Health (CDPH)</p>	<p>Create a list of the total number of reservoir covers that must be cleaned to comply with operations and maintenance requirements for reservoir covers; the list should also include the annual cleaning frequency, the address where the reservoirs are located; and the type and size (surface area) of the reservoir covers.</p> <p>The cleaning of the reservoirs shall be done in such a way that minimizes the amount of water used to clean the cover.</p> <p>Wastewater from the cleaning of the reservoir covers shall be discharged to a sanitary sewer or allowed to percolate into the ground; and the discharge shall not cause or contribute to erosion in the area where there will be percolation.</p> <p>If wastewater from the cleaning of the reservoir covers is percolated into the ground, the wash water shall not contain solvents, or other contaminants that might migrate into and contaminate the groundwater supplies.</p>
<p>Lake Dewatering</p>	<p>Discharge allowed only if all necessary permits/water quality certifications for dredge and fill activities, including water diversions, are obtained prior to discharge.</p>	<p>Ensure procedures for advanced notification by the lake owner/operator to the Permittee(s) no less than 72 hours prior to the planned discharge.</p> <p>Immediately prior to discharge, visible trash on the shoreline or on the surface of the lake shall be removed and disposed of in a legal manner.</p> <p>Immediately prior to discharge, the discharge pathway and the MS4 inlet to which the discharge is directed, shall be inspected and cleaned out of all pre-existing trash and debris.</p>

		<p>Discharges shall be volumetrically and velocity controlled to minimize re-suspension of sediments.</p> <p>Measures shall be taken to stabilize lake bottom sediments.</p> <p>Ensure procedures for water quality monitoring for pollutants of concern<sup>20</sup> in the lake.</p> <p>Ensure record-keeping of lake dewatering by the lake owner/operator as described in Part III.A.5.a.vi of this Order.</p>
<p>Landscape irrigation using potable water</p>	<p>Discharge allowed if runoff due to potable landscape irrigation is minimized through the implementation of an ordinance specifying water efficient landscaping standards, as well as an outreach and education program focusing on water conservation and landscape water use efficiency.</p>	<p>Implement BMPs to minimize runoff and prevent introduction of pollutants to the MS4 and receiving water, including landscape water use efficiency requirements for existing landscaping, use of drought tolerant, native vegetation, and the use of less toxic options for pest control and landscape management.</p> <p>Implement water conservation programs to minimize discharge by using less water.</p>
<p>Landscape irrigation using reclaimed or recycled water</p>	<p>Discharge of reclaimed or recycled water runoff from landscape irrigation is allowed if the discharge is in compliance with the producer and distributor operations and management (O&amp;M) plan, and all relevant portions thereof, including the Irrigation Management Plan.</p>	<p>Discharges must comply with applicable O&amp;M Plans, and all relevant portions thereof, including the Irrigation Management Plan.</p>

<sup>20</sup> Pollutants of concern include, at a minimum, trash and debris, including organic matter, TSS, and any pollutant for which there is an limitation in Parts IV, Part V, and Attachments K through S of this Order for the lake and/or receiving water.

<p>Dechlorinated / debrominated swimming pool / spa discharges</p>	<p>Discharges allowed after implementation of specified BMPs.</p> <p>Pool or spa water containing copper-based algaecides is not allowed to be discharged to the MS4.</p> <p>Discharges of cleaning wastewater and filter backwash allowed only if authorized by a separate NPDES permit.</p>	<p>Implement BMPs and ensure discharge avoids potential sources of pollutants in the flow path to prevent introduction of pollutants prior to discharge to the MS4 and receiving water.</p> <p>Swimming pool water must be de-chlorinated or de-brominated using holding time, aeration, and/or sodium thiosulfate. Chlorine residual in the discharge shall not exceed 0.1 mg/L.</p> <p>Swimming pool water shall not contain any detergents, wastes, or algaecides, or any other chemicals (including salts from pools commonly referred to as “salt water pools”) in excess of applicable water quality objectives.<sup>21</sup></p> <p>Swimming pool discharges are to be pH adjusted, if necessary, and be within the range of 6.5 and 8.5 standard units.</p> <p>Swimming pool discharges shall be volumetrically and velocity controlled to promote evaporation and/or infiltration.</p> <p>Ensure procedures for advanced notification by the pool owner to the Permittee(s) at least 72 hours prior to planned discharge for discharges of 100,000 gallons or more.</p> <p>For discharges of 100,000 gallons or more, immediately prior to discharge, inspect and clean out of all pre-existing trash and debris the discharge pathway and the MS4 inlet to which the discharge is directed to.</p>
<p>Dewatering of decorative fountains</p>	<p>Discharges allowed after implementation of specified BMPs.</p> <p>Fountain water containing copper-based algaecides may not be discharged to the MS4.</p> <p>Fountain water containing dyes may not be discharged to the MS4.</p>	<p>Implement BMPs and ensure discharge avoids potential sources of pollutants in the flow path to prevent introduction of pollutants prior to discharge to the MS4 and receiving water.</p> <p>Fountain water must be de-chlorinated or de-brominated using holding time, aeration, and/or sodium thiosulfate. Chlorine residual in the discharge shall not exceed 0.1 mg/L.</p> <p>Fountain discharges are to be pH adjusted, if necessary, and be within the range of 6.5 and 8.5 standard units.</p> <p>Fountain discharges shall be volumetrically and velocity controlled to promote evaporation and/or infiltration.</p>

<sup>21</sup> Applicable mineral water quality objectives for surface waters are contained in Chapter 3 of the Basin Plan for the Los Angeles Region.

		<p>Ensure procedures for advanced notification by the fountain owner to the Permittee(s) at least 72 hours prior to planned discharge for discharges of 100,000 gallons or more.</p> <p>For discharges of 100,000 gallons or more, immediately prior to discharge, the discharge pathway and the MS4 inlet to which the discharge is directed to shall be inspected and cleaned out of all pre-existing trash and debris.</p>
<p>Non-commercial car washing by residents or by non-profit organizations</p>	<p>Discharges allowed after implementation of specified BMPs.</p>	<p>Implement BMPs and ensure discharge avoids potential sources of pollutants in the flow path to prevent introduction of pollutants prior to discharge to the MS4 and receiving water.</p> <p>Minimize the amount of water used by employing water conservation practices such as turning off nozzles or kinking the hose when not spraying a car and using a low volume pressure washer.</p> <p>Encourage use of biodegradable, phosphate free detergents and non-toxic cleaning products.</p> <p>Where possible, wash cars on a permeable surface where wash water can percolate into the ground (e.g. gravel or grassy areas).</p> <p>Empty buckets of soapy or rinse water into the sanitary sewer system (e.g., sinks or toilets).</p>
<p>Street/sidewalk wash water</p>	<p>Discharges allowed after implementation of specified BMPs.</p>	<p>Sweeping should be used as an alternate BMP whenever possible and sweepings should be disposed of in the trash.</p> <p>Remove trash, debris, and free standing oil/grease spills/leaks (use absorbent material if necessary) from the area before washing.</p> <p>Use high pressure, low volume spray washing using only potable water with no cleaning agents at an average usage of 0.006 gallons per square foot of sidewalk area.</p> <p>In areas of unsanitary conditions (e.g., areas where the congregation of transient populations can reasonably be expected to result in a significant threat to water quality), whenever practicable, Permittees shall collect and divert street and alley wash water from the Permittee's street and sidewalk cleaning activities to the sanitary sewer.</p>



<p>Potable water discharges for filming activities</p>	<p>Discharges allowed after implementation of specified BMPs.</p>	<p>Prior to discharging the water, the storm drain to the receiving water where the discharge will occur as well as the area in the immediate vicinity of the outlet to the receiving water, and the adjacent downstream portion of the channel that will be influenced by the discharge must be cleaned of all pre-existing trash and debris, and kept free of trash and debris during filming.</p> <p>No trash or debris from the filming activities shall be allowed to remain in the storm drain or channel.</p> <p>Each day, prior to water discharge for the movie scenes, a walk-through of the filming area (including the targeted storm drain and receiving water) shall be conducted by the discharger to ensure that all trash and debris has been removed and no illicit discharges are observed.</p> <p>The source of the water that will be discharged will be de-ionized, chlorine free water.</p> <p>In receiving waters where scour of the channel is a concern, the water must be discharged at a steady, low velocity to minimize scour.</p> <p>Upon the completion of the discharges and associated filming, the discharger shall visually inspect the storm drain and channel downstream of the storm drain outlet to remove any possible trash or debris related to the discharge and filming activities.</p>
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## B. Prohibitions – Trash

The discharge of trash to surface waters of the State or the deposition of trash where it may be discharged into surface waters of the State is prohibited. Compliance with this prohibition of discharge shall be achieved as follows:

1. **For areas addressed by a trash TMDL.** Each Permittee shall comply with the appropriate trash WQBELs as specified in Part IV.B.3 of this Order.
2. **For areas not addressed by a trash TMDL.** Permittees with regulatory authority over Priority Land Uses (PLUs),<sup>22</sup> designated land uses,<sup>23</sup> and equivalent alternate land uses<sup>24</sup> shall comply with the following requirements:
  - a. **Compliance Methods**<sup>25</sup>: The Permittee shall install, operate, and maintain either:
    - i. **Track 1:** A *full capture system (FCS)*<sup>26</sup> for all storm drains that capture runoff from the PLUs, designated land uses, and equivalent alternate land uses in the Permittee’s jurisdiction; or
    - ii. **Track 2:** Any combination of *full capture systems, multi-benefit projects,*<sup>27</sup> other *treatment controls,* and/or *institutional controls* within either the Permittee’s jurisdiction or within the jurisdiction of the Permittee and contiguous Permittees. The Permittee may determine the locations or land uses within its jurisdiction to implement any combination of controls. The Permittee shall demonstrate that such combination achieves Full Capture System Equivalency (FCSE).<sup>28</sup> The Permittee may determine which controls to implement to achieve compliance with Full Capture System Equivalency.

The Permittee may change its compliance method by submitting a written request to the Los Angeles Water Board for approval of a modified Implementation Plan and/or Jurisdictional Map consistent with the requirements specified in subparts b and c below<sup>29</sup>:

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<sup>22</sup> Priority Land Uses as defined in Attachment A of this Order.

<sup>23</sup> If the Los Angeles Water Board determines that specific land uses or locations (e.g., parks, stadia, schools, campuses, or roads leading to landfills) generate a substantial amount of trash, a Permittee may be required to comply with Part III.B.2 of this Order. These specific land uses and locations are defined as designated land uses.

<sup>24</sup> Equivalent alternate land uses as defined in Attachment A of this Order. A Permittee may request authorization from the Executive Officer to substitute one or more PLUs with equivalent alternate land uses that generate rates of trash equivalent to or greater than the PLU(s) being substituted.

<sup>25</sup> Permittees selected a compliance method in response to the Los Angeles Water Board’s August 18, 2017, Water Code Section 13383 Order to Submit Method to Comply With Statewide Trash Provisions; Requirements For Phase I Municipal Separate Storm Sewer System (MS4) Permittees In The Los Angeles Region. Refer to the Fact Sheet (Attachment F) for Permittees’ selected tracks.

<sup>26</sup> A list of Full Capture System Trash Treatment Control Devices Certified by the State Water Board is available on the State Water Board’s Stormwater Program - Trash Implementation Program page at [https://www.waterboards.ca.gov/water\\_issues/programs/stormwater/trash\\_implementation.html](https://www.waterboards.ca.gov/water_issues/programs/stormwater/trash_implementation.html)

<sup>27</sup> Defined as treatment control projects designed to achieve any of the benefits set forth in section 10562, subdivision (d) of the Water Code.

<sup>28</sup> Full capture system equivalency as defined in Attachment A of this Order.

<sup>29</sup> In no case shall the Permittee receive a time extension to meet final compliance. The Permittee shall meet full compliance per Part III.B.2.d of this Order.

- b. Implementation Plan (For Track 2 Only):** The Permittee shall maintain and implement a Trash Implementation Plan. At a minimum, the Trash Implementation Plan shall include the following:
- i. Locations of proposed and existing certified *full capture systems*, the drainage area served, design specifications and treatment capacity treated by each *full capture system*;
  - ii. In drainage areas without certified *full capture systems*, the combination of controls selected by the Permittee and the rationale for the selection; discussion of how the combination of controls is designed to achieve Full Capture System Equivalency;
  - iii. How Full Capture System Equivalency will be demonstrated, including calculation of baseline trash load using the methodology per the Visual Trash Assessment Approach or other equivalent trash assessment methodology, for all PLUs as well as any designated land uses, and equivalent alternate land uses<sup>30</sup>;
  - iv. Monitoring of annual trash load using the same methodology that was used to calculate the baseline load for all PLUs as well as any designated land uses, and equivalent alternate land uses to track progress towards achieving Full Capture System Equivalency;
  - v. If using a methodology other than the Visual Trash Assessment Approach to determine trash levels, a description of the methodology used and rationale of how the alternative methodology is equivalent to the Visual Trash Assessment Approach; and
  - vi. If proposing equivalent alternate land uses, a rationale demonstrating that any alternative land uses generate trash at rates that are equivalent to or greater than the PLUs.
- c. Jurisdictional Map:** The Permittee shall maintain and update, at least annually, a Jurisdictional Map identifying the following:
- i. All PLUs, designated land uses and equivalent alternate land uses discharging to the storm drain network;
  - ii. Any drainage areas addressed by existing trash TMDLs;
  - iii. The corresponding storm drain network;
  - iv. Proposed locations of all certified *full capture systems* and where any combination of controls will be implemented that will achieve Full Capture System Equivalency;
- d. Implementation Schedule:** The Permittee shall achieve full compliance as follows:
- i. **Interim Compliance Deadline:** Within 5 years from the effective date of this Order, 50 percent of all PLUs and equivalent alternate land uses must meet Full Capture or Full Capture System Equivalency.
  - ii. **Final Compliance Deadline:** By no later than December 2, 2030, except in designated land uses that have been issued a time schedule by the Los Angeles

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<sup>30</sup> Refer to the “Recommended Trash Assessment Minimum Level of Effort for Establishing Baseline Trash Generation Levels” document that was included as an enclosure to the Los Angeles Water Board’s August 18, 2017, Water Code Section 13383 Order.

Water Board. In no case may the final compliance date in a time schedule for a designated land use be longer than ten years from the determination by the Los Angeles Water Board to designate a land use or location as a designated land use.

#### IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

##### A. Effluent Limitations

1. **Technology Based Effluent Limitations.** Each Permittee shall reduce pollutants in stormwater discharges from the MS4 to the maximum extent practicable (MEP).
2. **Water Quality-Based Effluent Limitations.** Each Permittee shall comply with applicable water quality-based effluent limitations (WQBELs) as set forth in Attachments K through S of this Order, pursuant to applicable compliance schedules. The WQBELs in this Order are consistent with the assumptions and requirements of the TMDL waste load allocations (WLAs) assigned to discharges from the MS4.<sup>31</sup>

##### B. Total Maximum Daily Load Provisions

###### 1. General

- a. The provisions of this Part IV.B implement and are consistent with the assumptions and requirements of available WLAs established in TMDLs applicable to the Permittees.
- b. The provisions in this Part IV.B are designed to ensure that Permittees achieve WLAs and meet other requirements of TMDLs covering receiving waters impacted by the Permittees' MS4 discharges. TMDL provisions are grouped by WMA in Attachments K through S of this Order.
- c. Permittees subject to each TMDL are identified in Attachment J of this Order.
- d. Permittees shall comply with the applicable WQBELs and/or receiving water limitations contained in Attachments K through S of this Order, consistent with the assumptions and requirements of the WLAs established in the TMDLs, including programs of implementation and schedules, where provided for in the State adoption of the TMDL (40 CFR §122.44(d)(1)(vii)(B); Cal. Wat. Code §13263(a)).
- e. Permittees may comply with WQBELs and receiving water limitations in Attachments K through S of this Order using any lawful means.

###### 2. U.S. EPA Established TMDLs

- a. For U.S. EPA promulgated TMDLs that have Los Angeles Water Board adopted programs of implementation pursuant to Water Code sections 13240 and 13242, Permittees shall comply with the applicable WQBELs and/or receiving water limitations contained in Attachments K through S of this Order, including the programs of implementation and schedules adopted by the Los Angeles Water Board. These TMDLs are the *TMDLs for Nutrients in the Malibu Creek Watershed; Malibu Creek and Lagoon TMDL for Sedimentation and Nutrients to Address Benthic Community Impairments; TMDLs for Metals and Selenium in the San Gabriel River and Impaired Tributaries; and Los Cerritos Channel TMDLs for Metals.*
- b. For U.S. EPA promulgated TMDLs where the WLAs are equivalent to existing loads or, where Permittees' data reported under the previous MS4 permits indicates they are complying with WLAs; Permittees shall comply with the applicable WQBELs and/or receiving water limitations contained in Attachments K through S as of the effective date of this Order. These TMDLs are the *TMDL for Chloride in the Santa*

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<sup>31</sup> According to 40 CFR § 130.2, waste load allocations constitute a type of water quality-based effluent limitation. Pursuant to 40 CFR § 122.2, effluent limitation means any restriction imposed by the permitting authority on quantities, discharge rates, and concentrations of pollutants that are discharged from point sources.

*Clara River Reach 3; Santa Monica Bay TMDLs for DDTs and PCBs; Ballona Creek Wetlands TMDLs for Sediment and Invasive Exotic Vegetation; Echo Park Lake Nutrient and Trash TMDLs; and Peck Road Park Lake Nutrient and Trash TMDLs.*<sup>32</sup>

- c. For U.S. EPA promulgated TMDLs where load reductions are required to meet the WLAs and there is no program of implementation pursuant to Water Code section 13240 and 13242, this Order allows Permittees to propose and implement BMPs that will be effective in achieving compliance with U.S. EPA established WLAs. These TMDLs are the *Pesticides, PCBs, and Sediment Toxicity in Oxnard Drain 3 TMDL; Long Beach City Beaches and Los Angeles River Estuary Indicator Bacteria TMDL; Legg Lake System Nutrient TMDL; Lake Calabasas Nutrient TMDL; Echo Park Lake Chlordane, Dieldrin, and PCBs TMDLs; Peck Road Park Lake Chlordane, Dieldrin, DDTs, and PCBs TMDLs; and Puddingstone Reservoir Nutrient, Mercury, Chlordane, Dieldrin, DDTs, and PCBs TMDLs.*<sup>33</sup>
- i. Each Permittee, individually or collaboratively, shall propose BMPs to achieve the applicable numeric WQBELs and/or receiving water limitations contained in Attachments K through S of this Order and a schedule for implementing the BMPs that is as short as possible, in a Watershed Management Program.
  - ii. At a minimum, each Permittee shall include the following information in its Watershed Management Program, relevant to each applicable U.S. EPA established TMDL:
    - (a) Available data demonstrating the current quality of the Permittee's MS4 discharge(s) in terms of concentration and/or load of the target pollutant(s) to the receiving waters subject to the TMDL.
    - (b) A detailed description of BMPs that have been implemented, and/or are currently being implemented by the Permittee to achieve the TMDL WLA(s), if any.
    - (c) A detailed time schedule of specific actions the Permittee will take in order to achieve compliance with the applicable TMDL WLA(s).
    - (d) A demonstration that the time schedule requested is as short as possible. The time schedule requested should take into account the time since U.S. EPA establishment of the TMDL, and technological, operation, and economic factors that affect the design, development, and implementation of the control measures that are necessary to comply with the applicable numeric WQBELs contained in Attachments K through S of this Order.
      - (1) For the *Long Beach City Beaches and Los Angeles River Estuary Indicator Bacteria TMDL* the time schedule to achieve the WQBELs and receiving water limitations shall be as follows:
        - (i) During dry weather, for the Long Beach City Beaches no later than the effective date of this Order<sup>34</sup>;

<sup>32</sup> The Echo Park Lake Nutrient and Trash TMDLs and the Peck Road Park Lake Nutrient and Trash TMDLs are part of the *Los Angeles Area Lakes TMDLs for Nitrogen, Phosphorus, Mercury, Trash, Organochlorine Pesticides and PCBs* (Los Angeles Area Lakes TMDLs).

<sup>33</sup> The Legg Lake System Nutrient TMDL; Lake Calabasas Nutrient TMDL; Echo Park Lake Chlordane, Dieldrin, and PCBs TMDLs; Peck Road Park Lake Chlordane, Dieldrin, DDTs, and PCBs TMDLs; and Puddingstone Reservoir Nutrient, Mercury, Chlordane, Dieldrin, DDTs, and PCBs TMDLs are part of the Los Angeles Area Lakes TMDLs.

<sup>34</sup> Deadline is established per the City of Long Beach MS4 Permit, Order No. R4-2014-0024, Part VIII.G.1.c.iv.(1).

- (ii) During wet weather, for the Long Beach City Beaches a time schedule as short as possible per Part IV.B.2.c.i of this Order;
  - (iii) During dry weather, for the Los Angeles River Estuary no later than the schedule for Segment A (Rosecrans Avenue to Willow Street) in Table Q – 1 within Attachment Q of this Order;
  - (iv) During wet weather, for the Los Angeles River Estuary no later than March 23, 2037; and
  - (v) For the geometric mean WQBELs and receiving water limitations, no later than the time schedule proposed for wet weather for the Long Beach City Beaches and the Los Angeles River Estuary.
- (e) If the requested time schedule exceeds one year, the proposed schedule shall include interim requirements and the dates for their achievement.
- iii. Each Permittee subject to WQBELs and/or receiving water limitations contained in Attachments K through S of this Order for U.S. EPA established TMDL(s), individually or collaboratively, may submit a Watershed Management Program to the Los Angeles Water Board for approval per the schedule in Parts IX.F and G of this Order.
  - iv. If a Permittee submits a Watershed Management Program that is not approved, then the Permittee shall be required to directly demonstrate compliance with the applicable numeric WQBELs and/or receiving water limitations immediately upon notification of the Los Angeles Water Board's disapproval.
  - v. If a Permittee does not submit a Watershed Management Program, then the Permittee shall be required to directly demonstrate compliance with the applicable numeric WQBELs and/or receiving water limitations as of the effective date of the Order.

### 3. Water Quality-Based Effluent Limitations for Trash

Permittees assigned a WQBEL for a trash TMDL shall comply as set forth below.

- a. **Effluent Limitations.** Permittees shall comply with the interim and final WQBELs for the following trash TMDLs:
  - i. Ventura River Estuary Trash TMDL (Attachment K)
  - ii. Lake Elizabeth Trash TMDL (Attachment M)
  - iii. Revolon Slough and Beardsley Wash Trash TMDL (Attachment N)
  - iv. Santa Monica Bay Nearshore and Offshore Debris TMDL (Attachment O)
  - v. Malibu Creek Watershed Trash TMDL (Attachment O)
  - vi. Ballona Creek Watershed Trash TMDL (Attachment O)
  - vii. Machado Lake Trash TMDL (Attachment P)
  - viii. Los Angeles River Watershed Trash TMDL (Attachment Q)
  - ix. Legg Lake Trash TMDL (Attachment Q)
  - x. Echo Park Lake Trash TMDL (Attachment Q)
  - xi. Peck Road Park Lake Trash TMDL (Attachment Q)

- b. Compliance.** Pursuant to California Water Code section 13360(a), Permittees may comply with the trash effluent limitations using any lawful means. Such compliance options are broadly described below. Any combination of these, as allowed by the applicable TMDL, may be employed to achieve compliance:

**i. Full Capture Systems (FCS) Compliance Approach**

- (a) Certified Full Capture Systems.** *Full capture systems* are systems that meet the operating and performance requirements described in Attachment A of this Order. The Los Angeles Water Board recognizes the *full capture systems* certified by the State Water Board Executive Director as well as the systems previously certified by the Los Angeles Water Board Executive Officer: nine Los Angeles Water Board Executive Officer-certified *full capture systems*, including Vortex Separation Systems (VSS), specific types or designs of trash nets; two gross solids removal devices (GSRDs); catch basin brush inserts and mesh screens; vertical and horizontal trash capture screen inserts; a connector pipe screen device; and a nutrient separating baffle box.<sup>35</sup>
- (b)** Permittees are authorized to comply with their effluent limitations through certified *full capture systems* provided the requirements of subpart (c), immediately below, and any conditions in the certification, continue to be met.
- (c)** Permittees may comply with their effluent limitations through progressive installation of *full capture systems* throughout their jurisdictional areas until all areas draining to the waterbody associated with the trash TMDL are addressed. For purposes of this Order, attainment of the effluent limitations shall be conclusively presumed for any drainage area to the waterbody associated with the trash TMDL where certified *full capture systems* treat all drainage from the area, provided that the *full capture systems* are adequately sized and maintained, and that maintenance records are up-to-date and available for inspection by the Los Angeles Water Board.
- (1) Final Effluent Limitations.** A Permittee shall be in compliance with its final effluent limitation if all drainage areas under its jurisdiction and/or authority are serviced by appropriate certified *full capture systems*.
- (2) Interim Effluent Limitations.** A Permittee shall be in compliance with its interim effluent limitations, where applicable:
- (i)** By demonstrating that *full capture systems* treat the percentage of drainage areas in the watershed that corresponds to the required trash abatement.
- (ii)** Alternatively, a Permittee may propose a schedule for installation of *full capture systems* in areas under its jurisdiction and/or authority within a given watershed, targeting first the areas of greatest trash generation, for the Los Angeles Water Board Executive Officer's approval. Any such schedule shall result in timely compliance with the final effluent limitations, consistent with the established TMDL implementation schedule and applicable State policies. A Permittee shall be in compliance with its interim

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<sup>35</sup> See August 3, 2004 Los Angeles Water Board Memorandum titled "Procedures and Requirements for Certification of a Best Management Practice for Trash Control as a Full Capture System".



effluent limitations provided it is fully in compliance with any such approved schedule.

(d) **Full Capture System Technical Infeasibility.** In drainage areas where the vast majority of catch basins are retrofitted with *full capture systems*; the *full capture systems* are properly sized, operated, and maintained; and retrofit of remaining catch basins is technically infeasible; a Permittee may submit a written request that the Los Angeles Water Board Executive Officer make a determination that the Permittee is in full compliance with its final effluent limitation if all of the following criteria are met:

- (1) 98% of all catch basins within the Permittee's jurisdictional land area in the watershed are retrofitted with *full capture systems* (or, alternatively, 98% of the jurisdiction's drainage area is addressed by *full capture systems*) and at least 97% of the catch basins (or, alternatively, drainage area) within the Permittee's jurisdiction in the subwatershed (the smaller of the HUC-12 equivalent area or tributary subwatershed) are retrofitted with *full capture systems*; and
- (2) The Permittee submits to the Los Angeles Water Board a report for Executive Officer concurrence, detailing the technical infeasibility of *full capture system* retrofits in the remaining catch basins and evaluating the feasibility of *partial capture devices*, and the potential to install *full capture systems* or *partial capture devices* along the storm drain or at the MS4 outfall downgradient from the catch basin; and
- (3) The Permittee submits to the Los Angeles Water Board a report for Executive Officer approval, detailing the *partial capture devices and institutional controls* that are currently and will continue to be implemented in the affected subwatershed(s), including an assessment of the effectiveness of the *partial capture devices and institutional controls* using existing data and representative studies.

In addition, if significant land use changes occur in the affected subwatershed (based on permits for new development and significant re-development) or if there is a significant change in the suite of implemented *partial capture devices and/or institutional controls* (e.g., reduced frequency of implementation, reduced spatial coverage of implementation, change in technology employed), the Permittee shall re-evaluate the effectiveness of *institutional controls* and *partial capture devices* and report the findings to the Los Angeles Water Board for confirmation or change to the determination. Such re-evaluation shall occur within one year of the identification of the significant changes.

(e) **Exceptions for Malibu Creek Watershed and Revolon Slough and Beardsley Wash Trash TMDLs.** Permittees subject to the Malibu Creek Watershed and Revolon Slough and Beardsley Wash Trash TMDLs, in Attachments O and N of this Order respectively, may comply with trash WQBELs through the installation of *full capture systems*, or any lawful manner to achieve Full Capture System Equivalency, in Priority Land Uses (PLUs) consistent with implementation of Part III.B.2.a of this Order.

ii. **Mass Balance Compliance Approach.** Permittees may comply with their interim and final effluent limitations through a combination of *full capture*

*systems, partial capture devices*, and the application of *institutional controls*.<sup>36</sup> In this approach, a Permittee shall demonstrate compliance by calculating its annual trash discharge and comparing this estimate to applicable interim and/or final effluent limitations. To calculate the annual trash discharge, the Permittee shall conduct a study to determine how much trash is accumulating within its jurisdiction between storm events to calculate a Daily Generation Rate (DGR).

**(a) Intermediate Calculations**

- (1) Daily Generation Rate (DGR).** The DGR is the average amount of litter deposited to land or surface water during a 24-hour period, as measured in a specified drainage area. Permittees shall conduct a study to estimate the DGR for the applicable trash TMDL area. The DGR will be used in the mass balance calculation to determine the trash discharged during storm events.
  - (i) Study Area:** The DGR study area(s) shall be representative of the land uses and activities within the Permittee’s authority. The DGR for the applicable area under the Permittee’s jurisdiction and/or authority shall be extrapolated from the representative drainage area(s) analyzed during the study.
  - (ii) Study Time Period:** The DGR shall be determined from direct measurement of trash deposited in the drainage study area during any 30-day period between June 22<sup>nd</sup> and September 22<sup>nd</sup> exclusive of rain events.<sup>37</sup>
  - (iii) Recalculation Frequency:** The DGR shall be re-calculated every year unless a less frequent period for recalculation is approved by the Los Angeles Water Board Executive Officer. Upon achieving compliance with final water quality-based effluent limitations, Permittees may reduce the frequency of DGR recalculation to every five years (no Executive Officer approval necessary).

**Daily Generation Rate**

$$DGR = \sum \left( \frac{A_i}{A_i^{study}} \right) \left( \frac{m_i}{t_i} \right)$$

where:

- $A_i$  = total area within jurisdiction represented by land use  $i$
- $A_i^{study}$  = representative area used in DGR study for land use  $i$
- $m_i$  = amount of trash collected during the DGR study collection period for land use  $i$  [gal or lbs]
- $t_i$  = number of days of DGR study collection period for land use  $i$  (should be at least 30 days) [days]

- (2) Partial Capture Devices.** Trash discharges from areas serviced solely by *partial capture devices* may be estimated based on demonstrated

<sup>36</sup> While interim effluent limitations may be complied with using *partial capture devices*, compliance with final effluent limitations cannot be achieved with the exclusive use of *partial capture devices*.

<sup>37</sup> Provided no special events are scheduled that may affect the representative nature of that collection period.

performance of the device(s) in the implementing area. Performance shall be demonstrated under different conditions (e.g. low to high trash loading). That is, trash reduction is equivalent to the *partial capture devices'* trash removal efficiency multiplied by the percentage of drainage area serviced by the devices. For automatic retractable screens (ARS), Permittees may use an 86% removal efficiency.<sup>38</sup>

- (3) **Certified Full Capture Systems.** Areas serviced by properly sized, operated, and maintained *full capture systems* are considered to have no trash discharge.
- (b) **Mass Balance Calculation.** A mass balance equation shall be used to estimate the amount of trash discharged during a storm event.<sup>39</sup>
  - (1) **Storm Event Trash Discharge.** The *Storm Event Trash Discharge* for a given rain event in the Permittee's drainage area shall be calculated by multiplying the number of days since the last street sweeping<sup>40</sup> by the DGR and subtracting the amount of any trash recovered in the catch basins. For each day of a storm event that generates greater than 0.25 inch of rain, the Permittee shall calculate a *Storm Event Trash Discharge*. In cases where the calculated *Storm Event Trash Discharge* is negative, the *Storm Event Trash Discharge* will be equivalent to zero gallons or pounds of trash.

**Storm Event Trash Discharge**

$$\text{Storm Event Trash Discharge} = (t * DGR) - m_{\text{recovered}}$$

where:

*t* = days since last street sweeping [days]  
*DGR* = Daily Generation Rate [gal/day or lbs/day]  
*m<sub>recovered</sub>* = trash recovered from catch basins [gal or lbs]

- (2) **Total Storm Year Trash Discharge.** The sum of the *Storm Event Trash Discharges* for the storm year shall be the Permittee's calculated annual trash discharge.

<sup>38</sup> City of Los Angeles Technical Report: Assessment of Catch Basin Opening Screen Covers. June 2016.

<sup>39</sup> Amount of trash shall refer to the uncompressed volume (in gallons) or drip-dry weight (in pounds) of trash collected.

<sup>40</sup> If the Permittee's jurisdiction is not swept all in one day but on multiple days of the week, the weighted average of days since the last street sweeping shall be used, using the "Weighted Average of Days Since Last Street Sweeping" spreadsheet in Attachment I of this Order.

### Total Storm Year Trash Discharge

$$\text{Total Storm Year Trash Discharge} = \sum_i^n D_i$$

where:

$D_i$  = the *Storm Event Trash Discharge* for storm event day  $i$

$n$  = the number of storm event days with precipitation greater than 0.25 inch

(c) **Interim Effluent Limitations.** Permittees employing a mass balance compliance approach shall be in compliance with interim effluent limitations if the calculated Total Storm Year Trash Discharge is less than the applicable interim water quality-based effluent limitation. This can also be expressed as an equivalent percent reduction relative to the Permittee's baseline load in the applicable TMDL.

(d) **Final Effluent Limitations.**

(1) Permittees using a *mass balance compliance approach* shall be in compliance with the final effluent limitations when the reduction of trash from the jurisdiction's baseline load is 99% or greater as calculated using the approach, and *partial capture devices* are properly sized, operated, and maintained; or

(2) **Mass Balance Equivalency.** A Permittee may request that the Los Angeles Water Board Executive Officer make a determination that a 97% to 98% reduction of the baseline load, as calculated using a mass balance approach, constitutes full compliance with the final effluent limitation if the Permittee submits a report to the Los Angeles Water Board for Executive Officer approval including:

(i) Two or more consecutive years of data showing that the Permittee's compliance was at or above a 97% reduction in its baseline trash load; and

(ii) An evaluation of *institutional controls* in the jurisdiction demonstrating continued effectiveness and any potential enhancements; and

(iii) Demonstration that opportunities to implement *partial capture devices* have been fully exploited.

iii. **Scientifically Based Alternative Compliance Approach.** A Permittee may comply with their interim and final effluent limitations using a scientifically based alternative compliance approach wherein the Permittee conducts effectiveness studies of *institutional controls* and *partial capture devices* for their particular subwatershed(s) and/or demonstrates that existing studies are representative and transferable to their implementing area. Permittees must request approval from the Los Angeles Water Board Executive Officer prior to conducting any studies and/or reporting compliance using this approach. In any such request to use an scientifically based alternative compliance approach, the Permittee shall provide a schedule for periodic compliance effectiveness demonstration and evaluation.

**iv. Minimum Frequency of Assessment and Collection Compliance Approach.**

If allowed in a trash TMDL<sup>41</sup> and approved by the Executive Officer, a Permittee may alternatively comply with its final effluent limitations by implementing a program for *minimum frequency of assessment and collection* (MFAC) in conjunction with BMPs. To the satisfaction of the Executive Officer, the MFAC/BMP program must meet the following criteria:

- (a) The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or nonstructural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the receiving water and shoreline. Permittees shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to the water body.
- (b) The MFAC/BMP Program includes reasonable assurances that it will be implemented by the responsible Permittees.
- (c) MFAC protocols may be based on Surface Water Ambient Monitoring Program (SWAMP) protocols for rapid trash assessment, or alternative protocols proposed by Permittees and approved by the Los Angeles Water Board Executive Officer.
- (d) Implementation of the MFAC/BMP program should include a Health and Safety Program to protect personnel. The MFAC/BMP program shall not require Permittees to access and collect trash from areas where personnel are prohibited.
- (e) The Los Angeles Water Board Executive Officer may approve or require a revised assessment and collection frequency and definition of the critical conditions under the MFAC:
  - (1) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections;
  - (2) To reflect the results of trash assessment and collection;
  - (3) If the amount of trash collected does not show a decreasing trend, where necessary, such that a shorter interval between collections is warranted; or
  - (4) If the amount of trash collected is decreasing such that a longer interval between collections is warranted.
- (f) At the end of the implementation period, a revised MFAC/BMP program may be required if the Los Angeles Water Board Executive Officer determines that the amount of trash accumulating between collections is causing nuisance or otherwise adversely affecting beneficial uses.
- (g) With regard to subparts (iv)(e)(1), (iv)(e)(2), or (iv)(e)(3) above, the Los Angeles Water Board Executive Officer is authorized to allow responsible Permittees to implement additional structural or non-structural BMPs in lieu of modifying the monitoring frequency.

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<sup>41</sup> The Lake Elizabeth Trash TMDL (Attachment M), Legg Lake Trash TMDL (Attachment Q), Machado Lake Trash TMDL (Attachment P), Ventura River Estuary Trash TMDL (Attachment K), and Revolon Slough and Beardsley Wash Trash TMDL (Attachment N) allow Permittees to comply with WQBELs by implementing an MFAC program in conjunction with BMPs.

- c. Los Angeles County Flood Control District and Ventura County Watershed Protection District Compliance for Trash TMDLs.** For all trash TMDLs where the LACFCD and VCWPD are named as a responsible Permittee per Attachment J of this Order, the following shall apply:
- i.** The LACFCD and VCWPD are responsible for performing storm drain operation and maintenance, including but not limited to: catch basin labeling, catch basin label inspections, and open channel signage; open channel maintenance that includes removal of trash and debris; and implementation of activity specific BMPs, including those related to litter/debris/graffiti in compliance with this Order.
  - ii.** The LACFCD and VCWPD may be held responsible with a Permittee for non-compliance with water quality-based effluent limitations where it has either:
    - (a)** Without good cause denied entitlements or other necessary authority to a responsible jurisdiction or agency for the timely installation and/or maintenance of *full and/or partial capture trash control devices* for purposes of TMDL compliance in parts of the MS4 physical infrastructure that are under its authority, or
    - (b)** Not fulfilled its obligations regarding proper BMP installation, operation, and maintenance for purposes of TMDL compliance within the MS4 physical infrastructure under its authority, thereby causing or contributing to a responsible jurisdiction and/or agency to be out of compliance with its interim or final water quality-based effluent limitation.
  - iii.** Under these circumstances, the LACFCD and VCWPD's responsibility shall be limited to non-compliance related to the drainage area(s) within the jurisdiction where the LACFCD and VCWPD has authority over the relevant portions of the MS4 physical infrastructure.

## V. RECEIVING WATER LIMITATIONS

- A. Discharges from the MS4 that cause or contribute to the violation of receiving water limitations are prohibited.
- B. Discharges from the MS4 of stormwater, or non-stormwater, for which a Permittee is responsible,<sup>42</sup> shall not cause or contribute to a condition of nuisance.
- C. The Permittee shall comply with Parts V.A and V.B through timely implementation of control measures and other actions to reduce pollutants in the discharges in accordance with their stormwater management program and its components and other requirements of this Order including any modifications. The Permittees' stormwater management program and its components shall be designed to achieve compliance with receiving water limitations. If exceedances of receiving water limitations persist, notwithstanding implementation of the Permittees' stormwater management program and its components and other requirements of this Order, the Permittee shall ensure compliance with discharge prohibitions and receiving water limitations by complying with the following procedure:
  - 1. Upon a determination by either the Permittee or the Los Angeles Water Board that discharges from the MS4 are causing or contributing to an exceedance of an applicable Receiving Water Limitation, the Permittee shall promptly notify the Los Angeles Water Board and thereafter submit a Receiving Water Limitations Compliance Report (as described in the Reporting Requirements, Part XIV.C of the Monitoring and Reporting Program, Attachment E) to the Los Angeles Water Board for approval. The Receiving Water Limitations Compliance Report shall describe the BMPs that are currently being implemented by the Permittee and additional BMPs, including modifications to current BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedances of receiving water limitations. The Receiving Water Limitations Compliance Report shall include an implementation schedule. This Receiving Water Limitations Compliance Report shall be submitted per Attachment E Part XIV.C unless the Los Angeles Water Board directs an earlier submittal. The Los Angeles Water Board may require modifications to the Receiving Water Limitations Compliance Report.
  - 2. The Permittee shall submit any modifications to the Receiving Water Limitations Compliance Report required by the Los Angeles Water Board within 30 days of notification.
  - 3. Within 30 days following the Los Angeles Water Board Executive Officer's approval of the Receiving Water Limitations Compliance Report, the Permittee shall revise its stormwater management program and its components and monitoring program to incorporate the approved modified BMPs that have been and will be implemented, an implementation schedule, and any additional monitoring required.
  - 4. The Permittee shall implement its revised stormwater management program and its components and monitoring program according to the approved implementation schedule in the Receiving Water Limitations Compliance Report.
- D. So long as the Permittee has complied with the procedures set forth in Part V.C above and is implementing its revised stormwater management program and its components, the Permittee does not have to repeat the same procedure for continuing or recurring exceedances of the same receiving water limitations unless directed by the Los Angeles Water Board to modify current BMPs or develop additional BMPs.

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<sup>42</sup> Pursuant to 40 CFR § 122.26(a)(3)(vi), a Permittee is only responsible for discharges of stormwater and non-stormwater from the MS4 for which it is an owner or operator. MS4 is defined in Attachment A of this Order and 40 CFR § 122.26(b)(8).

## VI. STANDARD PROVISIONS

Permittees shall comply with the following provisions. If there is any conflict, duplication, or overlap between provisions specified by this Order, the more stringent provision shall apply:

### A. Federal Standard Provisions

Each Permittee shall comply with all Standard Provisions included in Attachment D of this Order, in accordance with 40 CFR sections 122.41 and 122.42.

### B. Legal Authority

1. Each Permittee must establish and maintain adequate legal authority, within its respective jurisdiction, to control pollutant discharges into and from its MS4 through ordinance, statute, permit, contract or similar means. This legal authority must, at a minimum, authorize or enable the Permittee to:
  - a. Control the contribution of pollutants to its MS4 from stormwater discharges associated with industrial and construction activity and control the quality of stormwater discharged from industrial and construction sites. This requirement applies both to industrial and construction sites with coverage under an NPDES permit, as well as to those sites that do not have coverage under an NPDES permit.
  - b. Prohibit all non-stormwater discharges into the MS4 to receiving waters not otherwise authorized or conditionally exempt pursuant to Part III.A of this Order;
  - c. Prohibit and eliminate illicit discharges and illicit connections to the MS4;
  - d. Control the discharge of spills, dumping, or disposal of materials other than stormwater to its MS4;
  - e. Require compliance with conditions in Permittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows);
  - f. Utilize enforcement mechanisms to require compliance with applicable ordinances, permits, contracts, or orders;
  - g. Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements among Permittees;
  - h. Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other owners of the MS4 such as the State of California Department of Transportation;
  - i. Carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with applicable municipal ordinances, permits, contracts and orders, and with the provisions of this Order, including the prohibition of non-stormwater discharges into the MS4 and receiving waters. This means the Permittee must have authority to enter, monitor, inspect, take measurements, review and copy records, and require regular reports from entities discharging into its MS4;
  - j. Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards/receiving water limitations;
  - k. Require that structural BMPs are properly operated and maintained; and
  - l. Require documentation on the operation and maintenance of structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4.



2. Each Permittee must submit a statement certified by its chief legal counsel that the Permittee has the legal authority within its jurisdiction to implement and enforce each of the requirements contained in 40 CFR § 122.26(d)(2)(i)(A-F) and this Order. Each Permittee shall submit this certification annually as part of its Annual Report beginning with the first Annual Report required under this Order. These statements must include:
  - a. Citation of applicable municipal ordinances or other appropriate legal authorities and their relationship to the requirements of 40 CFR § 122.26(d)(2)(i)(A)-(F) and of this Order; and
  - b. Identification of the local administrative and legal procedures available to mandate compliance with applicable municipal ordinances identified in subpart a above and therefore with the conditions of this Order, and a statement as to whether enforcement actions can be completed administratively or whether they must be commenced and completed in the judicial system.

**C. Fiscal Resources**

1. Each Permittee shall conduct a fiscal analysis of the annual capital and operation and maintenance expenditures necessary to implement the requirements of this Order. The analysis shall include the following: costs incurred to comply with this Order and an estimate of the costs for the upcoming permit year. See Attachment E for Annual Report requirements.
2. Each Permittee shall also enumerate and describe in its Annual Report the source(s) of funds used in the past year, and proposed for the coming year, to meet necessary expenditures to implement the requirements of this Order.

**D. Responsibilities of the Permittees**

Each Permittee is required to comply with the requirements of this Order applicable to its discharges. Permittees are not responsible for the implementation of the provisions applicable to other Permittees. Each Permittee shall:

1. Comply with the requirements of this Order including attachments and any modifications thereto.
2. Inform the Los Angeles Water Board of instances of non-compliance pursuant to the MRP (Attachment E).
3. Submit complete and timely reports including but not limited to non-compliance reporting, annual reports, monitoring reports, and the report of waste discharge.
4. Consider facilitating coordination among internal departments and agencies, as necessary, to achieve the implementation of the requirements of this Order applicable to such Permittees in an efficient and cost-effective manner.
5. Consider participating in intra-agency coordination (e.g., Planning Department, Fire Department, Building and Safety, Code Enforcement, Public Health, Parks and Recreation, and others) and inter-agency coordination (e.g., other Permittees under this Order, other NPDES permittees) necessary to successfully implement the provisions of this Order.

**E. Public Review**

1. All documents submitted by the Permittee to the Los Angeles Water Board in compliance with the terms and conditions of this Order shall be made available to members of the public pursuant to the Freedom of Information Act (5 U.S.C. § 552 (as amended)) and the Public Records Act (Cal. Government Code § 6250 et seq.).

2. All documents submitted by the Permittee to the Los Angeles Water Board Executive Officer for approval shall be made available by the Permittee to the public for a 30-day period to allow for public comment, unless otherwise specified.

**F. Los Angeles Water Board Review**

1. An approval of a document by the Los Angeles Water Board or the Executive Officer per their delegated authority, may include conditions that must be met by the Permittee. If the conditions are not met, the approval may be revoked.
2. Any formal determination or approval made by the Los Angeles Water Board Executive Officer pursuant to the provisions of this Order may be reviewed by the Los Angeles Water Board. A Permittee(s) or a member of the public may request such review upon petition within 30 days of the effective date of the notification of such decision to the Permittee(s) and interested persons on file at the Los Angeles Water Board.

**G. Reopener and Modification**

1. This Order may be modified, revoked, reissued, or terminated in accordance with the provisions of 40 CFR sections 122.44, 122.62, 122.63, 122.64, 124.5, 125.62, and 125.64. Causes for taking such actions include, but are not limited to:
  - a. Endangerment to human health or the environment resulting from the permitted activity, including information that the discharge(s) regulated by this Order may have the potential to cause or contribute to adverse impacts on water quality and/or beneficial uses;
  - b. Acquisition of newly obtained information that would have justified the application of different conditions if known at the time of Order adoption;
  - c. To address changed conditions identified in required reports or other sources deemed significant by the Los Angeles Water Board;
  - d. To incorporate provisions as a result of future amendments to the Basin Plan, such as a new or revised water quality objective or the adoption or reconsideration of a TMDL, including the program of implementation and time schedule for implementation. As soon as possible after the effective date of a revised TMDL, where the revisions warrant a change to the provisions of this Order, the Los Angeles Water Board may modify this Order consistent with the assumptions and requirements of the revised WLA(s), including the program of implementation;
  - e. To incorporate provisions as a result of new or amended statewide water quality control plans or policies adopted by the State Water Board;
  - f. To incorporate provisions as a result of the promulgation of new or amended federal or state laws or regulations, U.S. EPA guidance concerning regulated activities, or judicial decisions that becomes effective after adoption of this Order.
  - g. To incorporate effluent limitations for toxic constituents determined to be present in significant amount in the discharge through a more comprehensive monitoring program included as part of this Order;
  - h. To include new Reporting Levels (RLs), in accordance with the provisions set forth in 40 CFR Parts 122 and 124; and/or
  - i. To include provisions or modifications to WQBELs in Part IV and Attachments K through S of this Order prior to the final compliance deadlines, if practicable, that would allow an action-based, BMP compliance demonstration approach with regard to final WQBELs for stormwater discharges. Such modifications shall be based on the

Los Angeles Water Board's evaluation of whether Watershed Management Programs in Part IX of this Order have resulted in attainment of interim WQBELs for stormwater and review of relevant research, including but not limited to data and information provided by Permittees and other stakeholders, on stormwater quality and the efficacy and reliability of stormwater control technologies. Provisions or modifications to WQBELs in Part IV and Attachments K through S of this Order shall only be included in this Order where there is evidence that stormwater control technologies can reliably achieve final WQBELs.

2. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:
    - a. Violation of any term or condition contained in this Order;
    - b. Obtaining this Order by misrepresentation, or failure to disclose all relevant facts; or
    - c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
  3. The filing of a request by a Permittee for a modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any condition of this Order.
  4. Upon the consent of the Permittee(s), this Order may be modified to make corrections or allowances for changes in the permitted activity, following the procedures at 40 CFR section 122.63, if processed as a minor modification.<sup>43</sup> Minor modifications may only:
    - a. Correct typographical errors;
    - b. Require more frequent monitoring or reporting by a Permittee; or
    - c. Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement.
- H. Any discharge of waste to any point(s) other than specifically described in this Order is prohibited and constitutes a violation of this Order.
- I. A copy of this Order shall be maintained by each Permittee so as to be available during normal business hours to Permittee employees responsible for implementation of the provisions of this Order and members of the public.
- J. This Order does not exempt any Permittee from compliance with any other laws, regulations, or ordinances that may be applicable.
- K. The provisions of this Order are severable. If any provision of this Order or the application of any provision of this Order to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Order shall not be affected thereby.

## **VII. MONITORING AND REPORTING PROGRAM (MRP) REQUIREMENTS**

Permittees shall comply with the MRP, and future revisions thereto, in Attachment E of this Order and Standard Provisions relating to monitoring, reporting, and record keeping in Attachment D of this Order.

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<sup>43</sup> This provision does not apply to Watershed Management Programs, Integrated Monitoring Programs, or Coordinated Integrated Monitoring Programs.

## VIII. STORMWATER MANAGEMENT PROGRAM MINIMUM CONTROL MEASURES

### A. General

1. Each Permittee shall implement the requirements in Parts VIII.D through VIII.I below or may in lieu of the requirements in Parts VIII.D through VIII.I, implement customized actions within each of these general categories of control measures as set forth in an approved Watershed Management Program per Part IX of this Order. Implementation shall be consistent with the requirements of 40 CFR § 122.26(d)(2)(iv).
2. **Timelines for Implementation.** Unless otherwise noted in this Part VIII, each Permittee that does not elect to develop or continue to implement a Watershed Management Program per Part IX shall implement the requirements contained in this Part VIII as of the effective date of this Order unless it is a new or modified requirement as compared to the Permittee's prior permit. Permittees shall have up to 6 months from the effective date of this Order to incorporate new or modified requirements into their existing stormwater management program unless otherwise specified below.
3. **Municipal Employee and Contractor Training**
  - a. Each Permittee shall ensure all employees in targeted positions (whose interactions, jobs, and activities affect stormwater quality) are trained on an annual basis on the requirements of the overall stormwater management program in this Order, and shall ensure contractors performing privatized/contracted municipal services are appropriately trained to:
    - i. Promote a clear understanding of the potential for activities to pollute stormwater.
    - ii. Identify opportunities to require, implement, and maintain appropriate BMPs in their line of work.
  - b. Each Permittee shall ensure all employees and contractors who use or have the potential to use pesticides and/or fertilizers (whether or not they normally apply these as part of their work) are trained on an annual basis. Training programs shall address:
    - i. The potential for pesticide-related surface water toxicity;
    - ii. Proper use, handling, and disposal of pesticides;
    - iii. The least toxic methods of pest prevention and control, including Integrated Pest Management (IPM); and
    - iv. Reduction of pesticide use.
  - c. Outside contractors can self-certify, providing they certify they have received all applicable training to implement the requirements in this Order and have documentation to that effect.
  - d. New Permittee staff members must be provided with stormwater training applicable to their position within 180 days of starting employment. Each Permittee must create and maintain a list of applicable positions and contractors which require specific MS4 Permit compliance training.
  - e. Each Permittee must continue to annually implement a training program regarding the identification of illicit discharges through an illicit discharges detection and elimination (IDDE) program for all municipal field staff, who, as part of their normal job responsibilities (including but not limited to street sweeping, storm drain maintenance, solid waste management, sanitary sewer collection system maintenance, road maintenance), may come into contact with or otherwise observe an illicit discharge or

illicit connection to the MS4. The IDDE training program should address, at a minimum, the following:

- i. Illicit connection and discharge identification, including definitions and examples,
  - ii. investigation,
  - iii. elimination,
  - iv. cleanup,
  - v. reporting, and
  - vi. documentation.
- f. Each Permittee shall ensure that all staff whose primary job duties are related to implementing the construction stormwater program in Part VIII.G of this Order are adequately trained on an annual basis. Training shall be provided to pertinent staff to ensure appropriate knowledge of:
- i. The General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), including its SWPPP, monitoring and reporting program, and BMP requirements.
  - ii. Local requirements, including any applicable ordinances and BMP standards.
  - iii. Appropriate structural and non-structural BMPs.
  - iv. Post-construction and runoff reduction requirements.
- g. Each Permittee shall ensure that all staff whose primary job duties are related to implementing the industrial and commercial facilities program in Part VIII.E of this Order are adequately trained on an annual basis. Training shall be provided to pertinent staff to ensure appropriate general knowledge of:
- i. The General Permit for Storm Water Discharges Associated with Industrial Activities (Industrial General Permit), including its SWPPP, monitoring and reporting program, and BMP requirements.
  - ii. Local requirements, including any applicable ordinances and BMP standards.
  - iii. Appropriate structural and non-structural BMPs.
- h. Each Permittee shall maintain documentation of municipal employee and contractor training activities.

## **B. Progressive Enforcement and Interagency Coordination**

1. Each Permittee shall develop and implement a Progressive Enforcement Policy to ensure that (1) regulated Industrial/Commercial facilities, (2) construction sites, (3) new development and redevelopment sites with post-construction controls, and (4) illicit discharges are each brought into compliance with all stormwater and non-stormwater requirements within a reasonable time period as specified below.
  - a. **Follow-up Inspections.** In the event that a Permittee determines, based on an inspection or illicit discharge investigation, that a facility or site operator has failed to adequately implement all necessary BMPs, that Permittee shall take progressive enforcement actions which, at a minimum, shall include a follow-up inspection within 4 weeks from the date of the initial inspection and/or investigation.
  - b. **Enforcement Action.** In the event that a Permittee determines that a facility or site operator has failed to adequately implement BMPs after a follow-up inspection, that

Permittee shall take enforcement action as established through authority in its municipal code and ordinances, through the judicial system, or refer the case to the Los Angeles Water Board, per the Interagency Coordination provisions below.

- c. **Records Retention.** Each Permittee shall maintain records, per their existing record retention policies, and make them available on request to the Los Angeles Water Board, including inspection reports, warning letters, notices of violations, and other enforcement records, demonstrating a good faith effort to bring facilities into compliance.
- d. **Referral of Violations of Municipal Ordinances and California Water Code § 13260.** A Permittee may refer a violation(s) of its municipal stormwater ordinances and/or California Water Code section 13260 by industrial and commercial facilities and construction site operators not subject to the Industrial and/or Construction General Permits to the Los Angeles Water Board (via telephone or electronically<sup>44</sup>) provided that the Permittee has made a good faith effort of applying its Progressive Enforcement Policy to achieve compliance with its own ordinances. At a minimum, a Permittee's good faith effort must be documented with:
  - i. Two follow-up inspections; and
  - ii. Two warning letters or notices of violation.
- e. **Referral of Violations of the Industrial and Construction General Permits, including Requirements to File a Notice of Intent or No Exposure Certification.** For those facilities or site operators in violation of municipal stormwater ordinances and subject to the Industrial and/or Construction General Permits, Permittees may escalate referral of such violations to the Los Angeles Water Board (promptly via telephone or electronically<sup>45</sup>) after one inspection and one written notice of violation (copied to the Los Angeles Water Board) to the facility or site operator regarding the violation. In making such referrals, Permittees shall include, at a minimum, the following documentation:
  - i. Name of the facility or site,
  - ii. Facility or site physical address (or GPS coordinates if a physical address is not available),
  - iii. Contact information of the Owner and Operator of the facility or site (i.e., name, address, phone number, email),
  - iv. WDID Number (if applicable),
  - v. Records of communication with the facility/site operator regarding the violation, which shall include at least one inspection report,
  - vi. The written notice of violation (copied to the Los Angeles Water Board),
  - vii. For industrial sites, the industrial activity being conducted at the facility that is subject to the Industrial General Permit and the corresponding SIC code (if available), and
  - viii. For construction sites, site acreage and site risk level.

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<sup>44</sup> Email to [MS4stormwaterRB4@waterboards.ca.gov](mailto:MS4stormwaterRB4@waterboards.ca.gov).

<sup>45</sup> Ibid.

- 2. Investigation of Complaints Transmitted by the Los Angeles Water Board Staff.** Each Permittee shall initiate, within one business day,<sup>46</sup> investigation of complaints from facilities within its jurisdiction. The initial investigation shall include, at a minimum, a limited inspection of the facility to confirm validity of the complaint and to determine if the facility is in compliance with municipal stormwater ordinances and, if necessary, to oversee corrective action. Each Permittee shall report their findings of their investigation to the Los Angeles Water Board within 3 weeks of receiving the complaint.
- 3. Assistance with Los Angeles Water Board Enforcement Actions.** As directed by the Los Angeles Water Board Executive Officer, Permittees shall assist Los Angeles Water Board enforcement actions by:
  - a. Assisting in identification of current owners, operators, and lessees of properties and sites.
  - b. Providing staff, when available, for joint inspections with Los Angeles Water Board inspectors.
  - c. Appearing to testify as witnesses in Los Angeles Water Board enforcement hearings.
  - d. Providing copies of inspection reports and documentation demonstrating application of its Progressive Enforcement Policy.

**C. Modifications/Revisions**

Each Permittee shall modify its stormwater management programs, protocols, practices, and municipal codes to make them consistent with the requirements in this Order.

**D. Public Information and Participation Program**

**1. General Provisions**

- a. Each Permittee shall continue to include public participation in their stormwater management program consistent with the requirements of 40 C.F.R. section 122.26(d)(2)(iv).
- b. Each Permittee shall develop and implement the requirements listed in Part VIII.D.3 and Part VIII.D.4 below using one or more of the following approaches:
  - i. Collaboratively (i.e., multiple Permittees, County-wide or Region-wide, or one or more Watershed Groups)
  - ii. State or national partnerships with stormwater member agencies (e.g., CASQA)
  - iii. Individually within its jurisdiction.
- c. Each Permittee shall adapt its Public Information and Participation Program (PIPP) over time to address new information, water quality priorities, and stormwater management program priorities as they arise.

**2. Objectives**

- a. Reach the general population and involve the range of socioeconomic groups and ethnic communities that make up the Los Angeles Region in Permittees' stormwater management programs to facilitate:

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<sup>46</sup> Permittees may comply with the Permit by taking initial steps (such as logging, prioritizing, and tasking) to "initiate" the investigation within that one business day. However, the Los Angeles Water Board would expect that the initial investigation, including a site visit, to occur within four business days.

- i. Increased understanding about the importance of stormwater management to public health/community health, environmental quality and local water resiliency; and
- ii. Increased support for stormwater management programs and stormwater projects among residents in the region.
- b. Facilitate pollution prevention through the proper management and disposal of used oil, toxic materials, and targeted pollutants as potential sources of water quality impacts associated with discharges into the MS4.
- c. Use effective strategies to educate and involve residents and population subgroups through culturally effective methods.<sup>47</sup>

### 3. Program Requirements

- a. Permittee(s) shall create opportunities for public engagement in stormwater planning and program implementation and shall raise public awareness of stormwater program benefits and needs. The Permittee may build upon programs/activities such as Caltrans' *Protect Every Drop* campaign and the Measure W campaign, which featured many educational events conducted by multiple stakeholders and MS4 Permittees.
- b. Permittee(s) shall conduct educational activities and public information activities to facilitate stormwater and non-stormwater pollution prevention and mitigation. Activities should be focused on priority water quality issues as identified by the Permittee(s).
  - i. The Permittee(s) shall identify and select targeted pollutants for public information/education topics and materials. In selecting targets, the Permittee(s) shall consider the proper management and disposal of:
    - (a) Vehicle wastes (e.g., used oil, used tires);
    - (b) Household waste materials (i.e., trash and household hazardous waste, including personal care products, pharmaceuticals, and household cleaners);
    - (c) Pesticides, herbicides, and fertilizers;
    - (d) Green waste;
    - (e) Animal wastes; and/or
    - (f) Other materials as determined by the Permittee(s).
  - ii. Public informational/educational materials shall be distributed using the method(s) that the Permittee(s) chooses to most effectively reach the public and promote behavioral change and achieve the objectives in Part VIII.D.2 above. Such methods may include, but are not limited to the following:
    - (a) Internet-based platforms (e.g., stormwater websites, social media websites and applications);
    - (b) Commercial points-of-purchase (e.g., automotive parts stores, home improvement centers / hardware stores / paint stores, landscape / gardening centers, pet shops);

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<sup>47</sup> Culturally effective methods require Permittees to identify audiences based on demographics, language and/or cultural attributes and behaviors and then identify and select outreach activities that will best align with the identified audiences.



- (c) Schools;
- (d) Radio/television; and/or
- (e) Community events.

#### **4. Documentation and Tracking**

- a. Permittee(s) shall develop metrics for measuring the effectiveness in achieving each objective listed in Part VIII.D.2 above.
- b. Each Permittee shall, at a minimum, document and track the following information on Public Information and Participation activities implemented:
  - i. Activity;
  - ii. Date(s) of activity;
  - iii. Method of Dissemination;
  - iv. Targeted Behavior;
  - v. Targeted Pollutant;
  - vi. Targeted Audience;
  - vii. Culturally Effective Method(s); and
  - viii. Other information necessary for the metrics identified in Part VIII.D.4.a above
  - ix. Metric for measuring effectiveness.

#### **E. Industrial/Commercial Facilities Program**

This Part VIII.E is applicable to all Permittees except LACFCD and VCWPD.

- 1. **General.** Each Permittee except LACFCD and VCWPD shall implement an Industrial / Commercial Facilities Program that meets the requirements of this Part VIII.E. Through policies, procedures, and/or ordinances, the Industrial / Commercial Facilities Program shall be designed to prevent illicit discharges to the MS4 and receiving waters, reduce industrial / commercial discharges of stormwater to the maximum extent practicable, and prevent industrial / commercial discharges from the MS4 from causing or contributing to a violation of receiving water limitations. Minimum program components shall include the following:
  - a. Inventory and track Critical Industrial/Commercial Sources;
  - b. Educate, assist, and inspect Critical Industrial/Commercial Sources; and
  - c. Ensure compliance with municipal policies, procedures, and/or ordinances at industrial and commercial facilities that are critical sources of pollutants in stormwater.
- 2. **Industrial/Commercial Sources Inventory / Electronic Tracking System**
  - a. Each Permittee shall maintain an updated watershed-based inventory or database of all industrial and commercial facilities within its jurisdiction that are critical sources of stormwater pollution. The inventory or database shall be maintained in electronic format and incorporation of facility information into a Geographical Information System (GIS) is recommended. Critical Sources to be tracked are summarized below:
    - i. U.S. EPA "Phase I" Facilities [as specified in 40 CFR §122.26(b)(14)(i)-(xi)]
    - ii. Other federally mandated facilities [as specified in 40 CFR §122.26(d)(2)(iv)(C)]:
      - (a) Municipal landfills;



- a. **Outreach.** At least once during the five-year period of this Order, each Permittee shall notify the owner/operator of each of its inventoried sites of the BMP requirements applicable to the site/source.
  - b. **Business Assistance Program.** Each Permittee shall implement a Business Assistance Program to provide technical information to businesses to facilitate their efforts to reduce the discharge of pollutants in stormwater. Assistance shall be targeted to select business sectors or small businesses upon a determination that their activities may be contributing substantial amounts of pollutants to the MS4 or receiving water. Assistance may include technical guidance and provision of educational materials. The Program may include:
    - i. On-site technical assistance, telephone, or e-mail consultation regarding the responsibilities of business to reduce the discharge of pollutants, procedural requirements, and available guidance documents.
    - ii. Distribution of stormwater pollution prevention educational materials to operators of auto repair shops; car wash facilities; restaurants and mobile sources including automobile/equipment repair, washing, or detailing; power washing services; mobile carpet, drape, or upholstery cleaning services; swimming pool, water softener, and spa services; portable sanitary services; and commercial applicators and distributors of pesticides, herbicides and fertilizers, if present.
  - c. **Inspection.** Each Permittee shall inspect all facilities identified in Parts VIII.E.2.a.ii through iv of this Order in accordance with the frequency and scope stated below:
    - i. **Frequency of Inspections.** Each Permittee shall inspect the facilities every two years, ensuring that the first mandatory compliance inspection occurs no later than 2 years after the effective date of this Order. A minimum interval of 6 months between the compliance inspections is required.
    - ii. **Scope of Inspections.** Each Permittee shall inspect these facilities to confirm that stormwater and non-stormwater BMPs are being effectively implemented in compliance with municipal ordinances. At each facility, inspectors shall verify that the operator is implementing effective source control BMPs for the pollutants generated by the commercial activity. Likewise, for those BMPs that are not adequately protective of water quality, a Permittee may require additional site-specific controls. Each inspection shall be documented by an inspection report that includes a summary of the inspection, conclusion, and photos.
4. **Requirements for Industrial Sources.** The provisions contained in this Part VIII.E.4 apply to all facilities listed in Part VIII.E.2.a.i of this Order. The Industrial General Permit is the primary regulating permit for these facilities. Requirements for Permittees are as follows:
- a. **Business Assistance Program.** Each Permittee shall implement a Business Assistance Program to provide technical information to businesses to facilitate their efforts to comply with the requirements of the Industrial General Permit.<sup>48</sup> Assistance shall be targeted to select business sectors or small businesses upon a determination that their activities may be contributing substantial amounts of pollutants to the MS4 or receiving water. Assistance may include technical guidance and provision of educational materials. The Program may include on-site technical assistance, telephone, or e-mail consultation regarding the responsibilities of business and

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<sup>48</sup> Permittees may use information and tools available at the Los Angeles Water Board and State Water Board websites respectively at [www.waterboards.ca.gov/losangeles/water\\_issues/programs/stormwater/sw\\_index.html](http://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/sw_index.html) and [www.waterboards.ca.gov/water\\_issues/programs/stormwater/industrial.html](http://www.waterboards.ca.gov/water_issues/programs/stormwater/industrial.html).

techniques to reduce the discharge of pollutants, procedural requirements, and available guidance documents. Permittees may also refer businesses to the Los Angeles Water Board or State Water Board to provide further technical assistance.

- b. Inspection.** Each Permittee shall inspect all facilities identified in Part VIII.E.2.a.i of this Order in accordance with the frequency and scope stated below:
  - i. Frequency of Inspections.** Each Permittee shall inspect the facilities every two years for facilities that have exposure to stormwater and every five years for facilities that do not have exposure to stormwater. Permittees shall ensure that the first mandatory compliance inspection occurs no later than 2 years after the effective date of this Order. A minimum interval of 6 months between the compliance inspections is required.
  - ii. Scope of Inspections.** Each Permittee shall inspect these facilities to confirm that:
    - (a)** The facility is either enrolled in the Industrial General Permit (i.e. has an active WDID number) or has submitted a NONA application to the Los Angeles Water Board.
    - (b)** A Storm Water Pollution Prevention Plan (SWPPP) is developed and available at the facility.
    - (c)** BMPs are being effectively implemented at the facility for all pollutants of concern.
    - (d)** Each inspection shall be documented by an inspection report that includes a summary of the inspection, conclusion, and if possible, photos.
  - iii. Exclusion of Industrial Facility Inspection.** The Permittee is exempt from performing the inspection requirements listed in Parts VIII.E.4.b.i and ii above if the facility has been inspected by the Los Angeles Water Board within the past 2 years.<sup>49</sup>
- 5. Source Control BMPs for All Facilities Listed Under Part VIII.E.2.a.i – iv.** Effective source control BMPs for the activities listed in Table 6 of this Order shall be implemented at all facilities listed under Part VIII.E.2.a.i – iv of this Order unless the pollutant generating activity does not occur or occurs in areas where there is no exposure to stormwater discharges:

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<sup>49</sup> History of inspections may be verified by contacting the Los Angeles Water Board or through SMARTS at <https://smarts.waterboards.ca.gov>.

**Table 6. Source Control BMPs for Industrial and Commercial Facilities**

<b>Pollutant-Generating Activity</b>	<b>BMP Narrative Description</b>
Unauthorized Non-Stormwater Discharges	Effective elimination of unauthorized non-stormwater discharges
Accidental Spills/Leaks	Implementation of effective spills/leaks prevention and response procedures
Vehicle/Equipment Fueling	Implementation of effective fueling source control devices and practices
Vehicle/Equipment Cleaning	Implementation of effective equipment/vehicle cleaning practices and appropriate wash water management practices
Vehicle/Equipment Repair	Implementation of effective vehicle/equipment repair practices and source control devices
Outdoor Liquid Storage	Implementation of effective outdoor liquid storage source controls and practices
Outdoor Equipment Operations	Implementation of effective outdoor equipment source control devices and practices
Outdoor Storage of Raw Materials	Implementation of effective source control practices and structural devices
Storage and Handling of Solid Waste	Implementation of effective solid waste storage/handling practices and appropriate control measures
Building and Grounds Maintenance	Implementation of effective facility maintenance practices
Parking/Storage Area Maintenance	Implementation of effective parking/storage area designs and housekeeping/maintenance practices
Stormwater Conveyance System Maintenance Practices	Implementation of proper conveyance system operation and maintenance protocols
<b>Pollutant-Generating Activity</b>	<b>BMP Narrative Description from Los Angeles Water Board Resolution No. 98-08</b>
Sidewalk Washing	<ol style="list-style-type: none"> <li>1. Remove trash, debris, and free-standing oil/grease spills/leaks (use absorbent material, if necessary) from the area before washing; and</li> <li>2. Use high pressure, low volume spray washing using only potable water with no cleaning agents at an average usage of 0.006 gallons per square feet of sidewalk area.</li> </ol>
Street Washing	Collect and divert wash water to the sanitary sewer. Note: Approval from the applicable sanitary sewer collection agency may be needed.

**6. Progressive Enforcement.** Each Permittee shall implement its Progressive Enforcement Policy to ensure that Industrial / Commercial facilities are brought into compliance with all stormwater requirements within a reasonable time period. See Part VIII.B for requirements for the development and implementation of a Progressive Enforcement Policy.

**F. Planning and Land Development Program**

This Part VIII.F is applicable to all Permittees except LACFCD and VCWPD. Each Permittee except LACFCD and VCWPD must use their land use and planning authorities to implement a Planning and Land Development Program.

1. **Priority Development Projects.** Priority Development Projects are land development projects that fall under the Permittee’s planning and building authority for which the Permittee must impose specific requirements, including the implementation of structural BMPs to meet the performance requirements described in Part VIII.F.4 of this Order.
  - a. **Definition of Priority Development Projects.** Priority Development Projects include the following:
    - i. New development projects that are in any of the following categories:
      - (a) Projects equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet or more of impervious surface area (collectively over the entire project site)
      - (b) Industrial parks of 10,000 square feet or more of surface area
      - (c) Commercial malls of 10,000 square feet or more of surface area
    - ii. Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site) on any of the following:
      - (a) Existing sites of 10,000 square feet or more of impervious surface area
      - (b) Industrial parks 10,000 square feet or more of surface area
      - (c) Commercial malls 10,000 square feet or more of surface area
    - iii. New development and redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site) and support one or more of the following uses:
      - (a) Restaurants (SIC 5812)
      - (b) Parking lots
      - (c) Automotive service facilities (SIC 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539)
      - (d) Retail gasoline outlets
    - iv. New development and redevelopment projects that create and/or replace 2,500 square feet or more of impervious area; discharge stormwater that is likely to impact a sensitive biological species or habitat; and are located in or directly adjacent to or are discharging directly to an ASBS, “Sensitive Ecological Area” in Los Angeles County,<sup>50</sup> or “Environmentally Sensitive Area” in Ventura County.<sup>51</sup>
    - v. Street and road construction of 10,000 square feet or more of impervious surface area shall follow U.S. EPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable. Street and road construction applies to standalone streets, roads, highways, and freeway projects. Temporary access roads are not subject to this requirement. Projects under this category are exempt from the

<sup>50</sup> As identified by the County of Los Angeles’ Significant Ecological Areas Program. (<http://planning.lacounty.gov/site/sea/home/>)

<sup>51</sup> As identified by Ventura County Permittees using the definition of an “Environmentally Sensitive Area” in Order No. R4-2010-0108.

Priority Development Structural BMP Performance Requirements in Part VIII.F.4 of this Order.

**b. Considerations for Redevelopment Projects**

- i. The structural BMP performance requirements of Part VIII.F.4 of this Order are applicable to redevelopment Priority Development Projects, as defined in Part VIII.F.1.a of this Order, as follows:
  - (a) Where redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development the entire project must be mitigated.
  - (b) Where redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development only the alteration must be mitigated, and not the entire development.
- ii. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

**c. Exemptions.** Permittees can exempt themselves from the Priority Development Project Structural BMP Performance Requirements in Part VIII.F.4 of this Order if they implement one of the following:

- i. **Local Ordinance Equivalence.** A Permittee that has adopted a local LID ordinance prior to the adoption of this Order, and which includes a retention requirement numerically equal to the 0.75-inch, 24-hour rain event or the 85th percentile, 24-hour rain event, whichever is greater, may submit documentation to the Los Angeles Water Board that the alternative requirements in the local ordinance will provide equal or greater reduction in stormwater discharge pollutant loading and volume as would have been obtained through strict conformance with Part VIII.F.4 of this Order and, if applicable, Part VIII.F.2 of this Order.
  - (a) The Los Angeles Water Board shall provide public notice of the proposed equivalency determination and a minimum 30-day period for public comment. After review and consideration of public comments, the Los Angeles Water Board Executive Officer will determine whether implementation of the local ordinance provides equivalent pollutant control to the applicable provisions of this Order. Local ordinances that do not strictly conform to the provisions of this Order must be approved by the Los Angeles Water Board Executive Officer as being “equivalent” in effect to the applicable provisions of this Order in order to substitute for the requirements in Part VIII.F.4 of this Order and, where applicable, Part VIII.F.2 of this Order.
  - (b) Where the Los Angeles Water Board Executive Officer determines that a Permittee’s local LID ordinance does not provide equivalent pollutant control, the Permittee shall either:





- a. **Definition of Natural Drainage Systems.** Natural drainage systems that are subject to the hydromodification assessments and control include all drainages that have not been modified using engineering controls or drainages that are tributary to a natural drainage system. Examples of engineering modifications to a drainage include channelization, armoring with concrete, and application of rip-rap. The clearing or dredging of a natural drainage system does not constitute a “modification” for purposes of these provisions.
- b. **Exemptions to Hydromodification Controls.** Permittees may exempt the following New Development and Redevelopment projects from implementation of hydromodification controls where assessments of downstream channel conditions and proposed discharge hydrology indicate that adverse hydromodification effects to beneficial uses of Natural Drainage Systems are unlikely:
  - i. Projects that are replacement, maintenance or repair of a Permittee’s existing flood control facility, storm drain, or transportation network.
  - ii. Redevelopment Projects in the Urban Core that do not increase the effective impervious area or decrease the infiltration capacity of pervious areas compared to the pre-project conditions.
  - iii. Projects that have any increased discharge directly or via a storm drain to a sump, lake, area under tidal influence, into a waterway that has a 100-year peak flow (Q100) of 25,000 cfs or more, or other receiving water that is not susceptible to hydromodification impacts.
  - iv. Projects that discharge directly or via a storm drain into concrete or otherwise engineered (not natural) channels (e.g., channelized or armored with rip rap, shotcrete, etc.), which, in turn, discharge into receiving water that is not susceptible to hydromodification impacts (as in Parts VIII.F.2.b.i-iii above).
  - v. LID BMPs implemented on single family homes are sufficient to comply with Hydromodification criteria.
- c. **Hydromodification Management Control Criteria**
  - i. Projects disturbing an area less than or equal to 1 acre must implement controls meeting applicable performance requirements in Part VIII.F.4 of this Order.
  - ii. Projects disturbing an area greater than 1 acre, but less than 50 acres will be presumed to meet pre-development hydrology if one of the following demonstrations are made:
    - (a) The project is designed to retain onsite the runoff of the 95<sup>th</sup> percentile, 24-hour storm; or
    - (b) The runoff flow rate, volume, velocity, and duration for the post-development condition do not exceed the pre-development condition for the 2-year, 24-hour storm event. This condition may be substantiated by simple screening models, including those described in Hydromodification Effects on Flow Peaks and Durations in Southern California Urbanizing Watersheds or other models acceptable to the Executive Officer of the Los Angeles Water Board; or
    - (c) The Erosion Potential (Ep) in the receiving water is approximately 1. Ep is determined as follows: The total *effective work* done on the channel boundary is derived and used as a metric to predict the likelihood of channel adjustment given watershed and stream hydrologic and geomorphic

variables. The index under urbanized conditions is compared to the index under pre-urban conditions expressed as a ratio ( $E_p$ ). The effective work index ( $W$ ) can be computed in several different ways including simplistic work equations, material specific sediment transport equations, or more complex functions based on site calibrated sediment rating curves. One such work equation, which represents the total work done on the channel boundary, includes the following:

$$\text{Equation 1: } W = \sum_{i=1}^n (\tau_i - \tau_c)^{1.5} \cdot V \cdot \Delta t_i$$

Where:  $W$  = effective work,  $\tau_c$  = critical shear stress that initiates bed mobility or erodes the weakest bank layer,  $\tau_i$  = applied hydraulic shear stress,  $\Delta t$  = duration of flows (in hours),  $V$  = mid-channel flow velocity, and  $n$  = length of flow record. The effective work index for presumed stable stream channels under pre-urban conditions ( $W_{post}$ ) is compared to stable and unstable channels under current urbanized conditions ( $W_{pre}$ ). The comparison, expressed as a ratio, is defined as the Erosion Potential ( $E_p$ )<sup>52</sup> (McRae (1992, 1996)).

$$\text{Equation 2: } E_p = \frac{W_{post}}{W_{pre}}$$

where:

$W_{post}$  = work index estimated for the post-urban condition

$W_{pre}$  = work index estimated for the pre-urban condition

Alternatively, Permittees can demonstrate that an  $E_p$  of approximately 1 has been achieved in the receiving water as determined by a Hydromodification Analysis Study or opt to use other work equations to demonstrate that an  $E_p$  of approximately 1 has been achieved for Los Angeles Water Board Executive Officer approval. Additionally, Permittees can use a sediment transport function such as the Brownlie equation or the Meyer-Peter and Muller equation (*US Department of Agriculture, Natural Resources Conservation Service, 2007. Part 654 Stream Restoration Design, National Engineering Handbook, August 2007*) to demonstrate appropriate Hydromodification control.

- iii. Projects disturbing 50 acres or more will be presumed to meet pre-development hydrology based on the successful demonstration of one of the following conditions:
  - (a) The site infiltrates onsite the runoff from a 2-year, 24-hour storm event; or
  - (b) The runoff flow rate, volume, velocity, and duration for the post-development condition does not exceed the pre-development condition for the 2-year,

<sup>52</sup> MacRae, C.R. 1992. The Role of Moderate Flow Events and Bank Structure in the Determination of Channel Response to Urbanization. Resolving conflicts and uncertainty in water management: Proceedings of the 45th Annual Conference of the Canadian Water Resources Association. Shrubsole, D, ed. 1992, pg. 12.1-12.21; MacRae, C.R. 1996. Experience from Morphological Research on Canadian Streams: Is Control of the Two-Year Frequency Runoff Event the Best Basis for Stream Channel Protection. Effects of Watershed Development and Management on Aquatic Ecosystems, ASCE Engineering Foundation Conference, Snowbird, Utah, pg. 144-162.

24-hour storm event. These conditions must be substantiated by hydrologic modeling acceptable to the Los Angeles Water Board Executive Officer; or

(c) The Erosion Potential (Ep) in the receiving water is approximately 1.

**d. Alternative Criteria**

i. **Low Impact Development Manual.** Permittees may satisfy hydromodification requirements by implementing the hydromodification requirements in the current County of Los Angeles Low Impact Development Manual and/or Ventura County Hydromodification Control Plan for all projects disturbing an area greater than 1 acre within natural drainage systems.

ii. **Hydromodification Control Plans.** Permittees may alternatively develop and implement watershed specific Hydromodification Control Plans (HCPs). Such plans shall be developed no later than one year after the effective date of this Order for Los Angeles Water Board Executive Officer approval. The HCP shall be deemed in effect upon approval.

(a) An HCP shall identify:

- (1) Stream classifications
- (2) Flow rate and duration control methods
- (3) Sub-watershed mitigation strategies
- (4) Stream and/or riparian buffer restoration measures, which will maintain the stream and tributary Erosion Potential at 1 unless an alternative value can be shown to be protective of the natural drainage systems from erosion, incision, and sedimentation that can occur as the result of flow increases from impervious surfaces and prevent damage to stream habitat in natural drainage system tributaries.

(b) An HCP shall contain the following elements:

- (1) Hydromodification Management Standards
- (2) Natural Drainage Areas and Hydromodification Management Controls
- (3) Hydromodification Management Control Design Criteria
- (4) For flow duration control methods, the range of flows to control for, and goodness of fit criteria
- (5) Allowable low critical flow ( $Q_c$ ) which initiates sediment transport
- (6) Description of the approved Hydromodification Model
- (7) Any alternate Hydromodification Management Model and Design
- (8) Stream Restoration Measures Design Criteria
- (9) Monitoring and Effectiveness Assessment
- (10) Record Keeping

**3. Implementation Requirements**

a. **Project Coordination.** Each Permittee shall facilitate a process for effective approval of post-construction stormwater control measures. The process shall include:

i. Detailed LID site design and BMP review including BMP sizing calculations, BMP pollutant removal performance, and municipal approval; and



- (d) BMP Location (coordinates)
  - (e) Date of Acceptance
  - (f) Date of Maintenance Agreement
  - (g) Maintenance Records
  - (h) Inspection Date and Summary
  - (i) Corrective Action
  - (j) Date Certificate of Occupancy Issued
  - (k) Replacement or Repair Date
- ii. Inspect all development sites upon completion of construction and prior to the issuance of occupancy certificates to ensure proper installation of LID measures, structural BMPs, treatment control BMPs and hydromodification control BMPs. The inspection may be combined with other inspections provided it is conducted by trained personnel.
  - iii. Verify proper maintenance and operation of post-construction BMPs previously approved for new development and redevelopment and operated by the Permittee. The post-construction BMP maintenance inspection program shall incorporate the following elements:
    - (a) The development of a Post-construction BMP Maintenance Inspection checklist; and
    - (b) Inspection at least once every 2 years after project completion, of post-construction BMPs to assess operation conditions with particular attention to criteria and procedures for post-construction treatment control and hydromodification control BMP repair, replacement, or re-vegetation.
  - iv. For post-construction BMPs operated and maintained by parties other than the Permittee, the Permittee shall require the other parties to document proper maintenance and operations.
  - v. Undertake enforcement action per the established Progressive Enforcement Policy as appropriate based on the results of the inspection. See Part VIII.B of this Order for requirements for the development and implementation of a Progressive Enforcement Policy.

#### **4. Priority Development Project Structural BMP Performance Requirements**

##### **a. Water Quality / Flow Reduction / Resources Management Criteria**

- i. Except as provided in Part VIII.F.1.c, Part VIII.F.2, or Part VIII.F.4.b of this Order, each Permittee shall require Priority Development Projects to retain on-site the Storm Water Quality Design Volume (SWQDV). The SWQDV is defined the greater of the following:
  - (a) The runoff from the 0.75-inch, 24-hour rain event; or
  - (b) The runoff from the 85th percentile, 24-hour rain event.
- ii. When evaluating the potential for on-site retention, each Permittee shall consider the maximum potential for evapotranspiration from green roofs and rainfall harvest and use.

**b. Alternative Compliance**

- i. In instances of technical infeasibility or where a project has been determined to provide an opportunity to replenish regional ground water supplies at an offsite location within the same sub-watershed (HUC-12) as the new development or redevelopment project, each Permittee may allow projects to comply with this Order through the alternative compliance measures as described in Part VIII.F.4.c of this Order.
- ii. **Technical Infeasibility Demonstration.** Technical infeasibility may be determined by the Permittee or demonstrated to the Permittee by the project applicant. If a project applicant is demonstrating technical infeasibility, the project applicant must demonstrate that the project cannot reliably retain 100 percent of the SWQDV on-site, even with the maximum application of green roofs and/or rainwater harvest and use, and that compliance with the applicable postconstruction requirements would be technically infeasible by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from conditions including the following:
  - (a) The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDV on-site.
  - (b) Locations where seasonal high ground water is within 5 to 10 feet of the surface.
  - (c) Locations within 100 feet of a ground water well used for drinking water.
  - (d) Brownfield development sites where infiltration poses a risk of causing pollutant mobilization.
  - (e) Other locations where pollutant mobilization is a documented concern.<sup>53</sup>
  - (f) Locations with potential geotechnical hazards.
  - (g) Smart growth and infill or redevelopment locations where the density and/or nature of the project would create significant difficulty for compliance with the on-site volume retention requirement.
- iii. **Alternative Compliance for Groundwater Replenishment Opportunities.** To utilize alternative compliance measures to replenish groundwater at an offsite location, the project applicant shall demonstrate:
  - (a) Why it is not advantageous to replenish groundwater at the project site,
  - (b) That the offsite location is in the same subwatershed (HUC-12) as the Priority Development Project,
  - (c) That groundwater can be used for beneficial purposes at the offsite location, and

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<sup>53</sup> Pollutant mobilization is considered a documented concern at or near properties that are contaminated or store hazardous substances underground.

- (d) That the alternative measures shall also provide equal or greater water quality benefits to the receiving surface water than the Water Quality/Flow Reduction/Resource Management Criteria in Part VIII.F.4.a of this Order.

**c. Alternative Compliance Measures**

- i. **Onsite Biofiltration:** Projects can use biofiltration for 1.5 times the portion of the SWQDV that is not reliably retained onsite where  $R_v$  = volume reliably retained onsite and  $B_v$  is the biofiltration volume.

$$\text{Equation 3: } B_v = 1.5(SWQDV - R_v)$$

- (a) Biofiltration systems shall, at a minimum, meet design specifications consistent with those provided in the Los Angeles County LID Manual, Ventura County Technical Guidance Manual for Storm Water Quality Control Measures (July 2002 and its revisions), or equivalent LID Manual.
- (b) Biofiltration systems discharging to a receiving water that is included on the Clean Water Act section 303(d) list of water quality-limited (i.e., impaired) water bodies due to nitrogen compounds or related effects shall be designed and maintained to achieve enhanced nitrogen removal capacity.

- ii. **Onsite Flow-based BMPs:** If a Permittee determines that onsite biofiltration and offsite alternative compliance measures are not technically feasible, the Permittee may request the Executive Officer allow the use of onsite flow-based BMPs. In the request, Permittees must outline why none of the other alternative compliance measures are feasible. Approval will only be granted to areas where other alternative compliance measures are not feasible due to significant technical issues.

If approved, the Permittee may allow the Priority Development Project to utilize flow-through treatment control BMPs to treat runoff leaving the site, and mitigate for the design capture volume not reliably retained onsite pursuant to Part VIII.F.4.a of this Order. Flow-through treatment control BMPs must be sized and designed to:

- (a) Filter or treat either:
- (1) The maximum flow rate of runoff produced from a rainfall intensity of 0.2 inch of rainfall per hour, for each hour of a storm event; or
  - (2) The maximum flow rate of runoff produced by the 85<sup>th</sup> percentile hourly rainfall intensity (for each hour of a storm event), as determined from the local historical rainfall record, multiplied by a factor of two;
- (b) Be certified for “Enhanced Treatment” under the Washington State Department of Ecology’s TAPE Program; or an appropriate future BMP certification developed by the State of California.

- iii. **Off-site Infiltration:** Projects may use infiltration or bioretention BMPs to intercept a volume of stormwater runoff equal to the SWQDV, less the volume of stormwater runoff reliably retained onsite, at an approved offsite project located within the same subwatershed (HUC-12) as the Priority Development Project, and provide pollutant reduction (treatment) of the stormwater runoff discharged from the project site in accordance with the Water Quality Mitigation Criteria provided in Part VIII.F.4.d of this Order. The required offsite mitigation volume ( $M_v$ ) shall be calculated by the equation below:

**Equation 4:**  $M_v = SWQDV - R_v$

- iv. **Groundwater Replenishment Projects:** Permittees may propose regional projects to replenish regional groundwater supplies at offsite location, provided the groundwater supply has a designated beneficial use in the Basin Plan.
    - (a) Regional groundwater replenishment projects must use infiltration, groundwater replenishment, or bioretention BMPs to intercept a volume of stormwater runoff equal to the SWQDV for Priority Development Projects, within the approved project area, and
    - (b) Provide pollutant reduction (treatment) of the stormwater runoff discharged from Priority Development Projects, within the project area to mitigate stormwater pollution in accordance with the Water Quality Mitigation Criteria provided in Part VIII.F.4.d of this Order.
    - (c) Permittees implementing a regional groundwater replenishment project in lieu of onsite controls shall ensure the volume of runoff captured by the project shall be equal to the mitigation volume calculated using Equation 4 in Part VIII.F.4.c.iii of this Order.
    - (d) Regional groundwater replenishment projects must be located in the same sub-watershed (HUC-12) as the Priority Development Project(s) that did not fully retain the SWQDV. Permittees may consider locations outside of the HUC-12 but within the HUC-10 subwatershed area if there are no opportunities within the HUC-12 subwatershed or if greater pollutant reductions and/or groundwater replenishment can be achieved at a location within the larger HUC-10 subwatershed. The use of a mitigation, groundwater replenishment, or retrofit project outside of the HUC-12 subwatershed is subject to the approval of the Executive Officer of the Los Angeles Water Board.
  - v. **Off-site Project – Retrofit Existing Development:** Project proponents may use infiltration, bioretention, rainfall harvest and use and/or biofiltration BMPs to retrofit an existing development, with similar land uses or land uses associated with comparable or higher stormwater runoff event mean concentrations (EMCs) than the as the project which did not fully retain the SWQDV. Comparison of EMCs for different land uses shall be based on published data from studies performed in southern California.
    - (a) The retrofit land shall be designed and constructed to intercept a volume of stormwater runoff equal to the mitigation volume as described above in Equation 4, except biofiltration BMPs shall be designed to meet the biofiltration volume as described in Equation 3 and
    - (b) Provide pollutant reduction (treatment) of the stormwater runoff from the project site as described in the Water Quality Mitigation Criteria provided in Part VIII.F.4.d of this Order.
- d. **Water Quality Mitigation Criteria**
- i. Each Permittee shall require all Priority Development Projects that have been approved for offsite mitigation or ground water replenishment projects as defined in Part VIII.F.4.b through Part VIII.F.4.c of this Order to also provide treatment of stormwater runoff from the project site. Each Permittee shall require these projects to design and implement post-construction stormwater BMPs and



control measures to reduce pollutant loading as necessary to ensure that the controls implemented on the site are designed so that the discharge does not cause or contribute to an exceedance of receiving water limitations at the Permittee's downstream MS4 outfall.

- ii. Each Permittee may allow the project proponent to install flow-through modular treatment systems including sand filters, or other proprietary BMP treatment systems that are certified for "Basic Treatment" under the Washington State Department of Ecology's TAPE Program; or an appropriate future BMP certification developed by the State of California. The sizing of the flow through treatment device shall be based on a rainfall intensity of:
  - (a) 0.2 inch per hour, or
  - (b) The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County or Ventura County isohyetal map, whichever is greater.
- iii. In addition to the requirements for controlling pollutant discharges as described in Part VIII.F.4.c of this Order and the treatment benchmarks described above, each Permittee shall ensure that the new development or redevelopment will not cause or contribute to an exceedance of applicable limitations at the outfall established in Part IV.B and Attachments K through S of this Order.

#### **G. Construction Program**

1. **Construction Program Applicability.** The requirements contained in this part apply to all activities involving land disturbance with the exception of agricultural activities. Activities covered by this permit include construction or demolition activity, including, but not limited to clearing, grading, grubbing, soil compaction, excavation, paving or re-paving, linear underground/overhead projects (LUPs), or any other activity that results in a land disturbance.
2. Each Permittee shall develop, implement, and enforce a construction program that:
  - a. Prevents illicit construction-related discharges of pollutants into the MS4 and receiving waters.
  - b. Implements and maintains structural and non-structural BMPs to reduce pollutants in stormwater runoff from construction sites.
  - c. Reduces construction site discharges of pollutants to the MS4 to the maximum extent possible.
  - d. Prevents construction site discharges to the MS4 from causing or contributing to a violation of receiving water limitations.
  - e. Ensures that the pertinent provisions contained in Part VIII.F (Planning and Land Development Program) of this Order are incorporated in applicable construction projects.
3. Each Permittee shall establish for its jurisdiction an enforceable erosion and sediment control ordinance, or equivalent municipal code language, for all construction sites that disturb land.
4. **Construction Sites Less than One Acre.** The provisions contained in this Part VIII.G.4 apply exclusively to construction sites less than 1 acre that are not part of a common plan of development.
  - a. **BMP Implementation.** Through the use of the Permittee's erosion and sediment control ordinance and/or building permit, the Permittee shall require the

implementation of an effective combination of erosion and sediment control BMPs from Table 7 and/or Table 8 of this Order (where applicable) to prevent erosion and sediment loss, and the discharge of construction wastes.

**Table 7. Minimum Set of BMPs for All Construction Sites**

<b>Site Management</b>	Housekeeping
<b>Erosion Controls</b>	Scheduling
	Preservation of Existing Vegetation
	Wind erosion controls
<b>Sediment Controls</b>	Perimeter controls (e.g. Silt Fence, Sandbag Barriers, etc.)
	Stabilized Construction Site Entrance/Exit
<b>Non-Stormwater Management</b>	Water Conservation Practices
	Dewatering Operations
<b>Waste Management</b>	Material Delivery and Storage
	Stockpile Management
	Spill Prevention and Control
	Solid Waste Management
	Concrete Waste Management
	Sanitary/Septic Waste Management

**Table 8. Minimum Required BMPs for Roadway Paving or Repair Operation (For Private or Public Projects)**

<b>1</b>	Restrict paving and repaving activity to exclude periods of rainfall or predicted rainfall unless required by emergency conditions.
<b>2</b>	Install gravel bags and filter fabric or other equivalent inlet protection at all susceptible storm drain inlets and at manholes to prevent spills of paving products and tack coat.
<b>3</b>	Prevent the discharge of release agents including soybean oil, other oils, or diesel to the stormwater drainage system or receiving waters.
<b>4</b>	Minimize non stormwater runoff from water use for the roller and for evaporative cooling of the asphalt.
<b>5</b>	Clean equipment over absorbent pads, drip pans, plastic sheeting or other material to capture all spillage and dispose of properly.
<b>6</b>	Collect liquid waste in a container, with a secure lid, for transport to a maintenance facility to be reused, recycled or disposed of properly.
<b>7</b>	Collect solid waste by vacuuming or sweeping and securing in an appropriate container for transport to a maintenance facility to be reused, recycled or disposed of properly.
<b>8</b>	Cover the "cold-mix" asphalt (i.e., pre-mixed aggregate and asphalt binder) with protective sheeting during a rainstorm.
<b>9</b>	Cover loads with tarp before haul-off to a storage site, and do not overload trucks.
<b>10</b>	Minimize airborne dust by using water spray or other approved dust suppressant during grinding.
<b>11</b>	Avoid stockpiling soil, sand, sediment, asphalt material and asphalt grindings materials or rubble in or near stormwater drainage system or receiving waters.
<b>12</b>	Protect stockpiles with a cover or sediment barriers during a rain.

**b. Construction Site Inspection.** Inspect construction sites as needed based on the evaluation of the factors that are a threat to water quality. In evaluating the threat to

water quality, the following factors shall be considered: project start and estimated completion date; soil erosion potential; site slope; project size and type; sensitivity of receiving water bodies; proximity to receiving water bodies; non-stormwater discharges; past record of non-compliance by the operators of the construction site; and any water quality issues relevant to the watershed where the construction site is located.

- 5. Construction Sites One Acre or Greater.** The provisions contained in this Part VIII.G.5 apply exclusively to construction sites 1 acre or greater and construction sites less than 1 acre that are part of a common plan of development totaling 1 acre or greater. The Construction General Permit is the primary regulating permit for these sites. Requirements for Permittees are as follows:

**a. Construction Plan Review and Approval**

- i. Prior to the Permittee issuing a grading or building permit (or any pertinent permits), each Permittee shall verify that the construction site operators have existing coverage under applicable permits, including, but not limited to the Construction General Permit, and State Water Board 401 Water Quality Certification.
- ii. Prior to the Permittee issuing a grading or building permit (or any pertinent permits), each Permittee shall require each operator of a construction activity within its jurisdiction to prepare and submit a post-construction plan prior to the disturbance of land for the Permittee's review and written approval. Prior to approval, each Permittee shall verify that the post-construction plans comply with the applicable provisions listed in Part VIII.F (Planning and Land Development Program) of this Order.

**b. Construction Site Inventory / Electronic Tracking System**

- i. Each Permittee shall use an electronic system to inventory grading permits, encroachment permits, demolition permits, building permits, or construction permits (and any other municipal authorization to move soil and/ or conduct construction or destruction that involves land disturbance) issued by the Permittee. To satisfy this requirement, the use of a database or GIS is recommended.
- ii. Each Permittee shall continuously update the inventory as new sites are permitted and sites are completed. The inventory / tracking system shall contain, at a minimum:
  - (a) Relevant contact information for each project (e.g., name, address, phone, email, etc. for the owner and contractor);
  - (b) The latitude / longitude coordinates of the project;
  - (c) The basic site information including status, size of the project and area of disturbance;
  - (d) Site Risk Level (or Type for Linear Underground/Overhead projects);
  - (e) The current construction phase where feasible;
  - (f) Inspection date(s);
  - (g) The project start date and anticipated completion date;

- (h) Whether the project has submitted a Notice of Intent and obtained coverage under the Construction General Permit, and if so, the project's Waste Discharge Identification (WDID) number; and
      - (i) A brief description of the project's post-construction BMPs and a comparison of pre-construction stormwater runoff volume versus post-construction stormwater runoff volume.
  - c. **Construction Site Inspection.** Each Permittee shall inspect all construction sites 1 acre or greater and construction sites less than 1 acre that are part of a common plan of development totaling 1 acre or greater in accordance with the frequency and scope stated below:
    - i. **Frequency of Inspections**
      - (a) For construction sites that are determined to be a significant threat to water quality<sup>54</sup> and construction sites that discharge to a 303(d)-listed waterbody impaired for sediment or turbidity, the Permittee shall conduct an inspection:
        - (1) At least once every two weeks,
        - (2) When two or more consecutive days with greater than 50% chance of rainfall are predicted by National Oceanic and Atmospheric Administration (NOAA)<sup>55</sup>,
        - (3) And within 48 hours of a 0.5-inch rain event.
      - (b) For all other construction sites, the Permittee shall conduct monthly inspections.
      - (c) If following a site inspection, the Permittee deems the site in compliance with the requirements listed in Part VIII.G.5.c.ii below, the Permittee may reduce the inspection frequency as necessary to a minimum of once during wet weather and once during dry weather.
      - (d) Once the project is completed and prior to issuing a certificate of occupancy, the Permittee shall conduct a post-construction inspection.
    - ii. **Scope of Inspections.** Each Permittee shall inspect these sites to confirm that:
      - (a) The project is enrolled in the Construction General Permit (i.e. has an active WDID number).
      - (b) A SWPPP is developed and available at the site.
      - (c) An effective combination of erosion and sediment control BMPs from Table 7 or Table 8 of this Order (where applicable) are implemented to prevent erosion and sediment loss, and the discharge of construction wastes.
      - (d) During the Certificate of Occupancy inspection, or any type of post-construction inspection, each Permittee shall ensure post-construction BMPs have been implemented in accordance with the project's post-construction plans approved per Part VIII.G.5.a.ii above.

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<sup>54</sup> In evaluating the threat to water quality, the following factors shall be considered: soil erosion potential; site slope; project size and type; sensitivity of receiving water bodies; proximity to receiving water bodies; non-stormwater discharges; past record of non-compliance by the operators of the construction site; and any water quality issues relevant to the particular MS4.

<sup>55</sup> <https://www.nws.noaa.gov>

- iii. The requirements under Part VIII.G.5.c of this Order can be satisfied by inspections conducted by the project proponent's Qualified SWPPP Developer (QSD), Qualified SWPPP Practitioner (QSP), or other personnel/consultants who are Certified Professionals in Erosion and Sediment Control (CPESC), provided that the Permittee:
  - (a) Ensures all requirements under Part VIII.G.5.c are satisfied by the inspection,
  - (b) Verifies the inspection findings,
  - (c) Takes responsibility for the validity of the inspections, and
  - (d) Takes any follow-up or Progressive Enforcement Actions, if applicable.
- 6. **Progressive Enforcement.** Each Permittee shall implement its Progressive Enforcement Policy to ensure that construction sites are brought into compliance with all stormwater requirements within a reasonable time period. See Part VIII.B of this Order for requirements for the development and implementation of a Progressive Enforcement Policy.

#### H. Public Agency Activities Program

- 1. **General Provisions.** Each Permittee shall implement a Public Agency Activities Program consistent with the requirements specified in this Part VIII.H. The purpose of the program is to prevent or minimize impacts from MS4 discharges from Permittee-owned or operated facilities and activities. Requirements for Public Agency Facilities and Activities consist of the following components:
  - a. Public Facility and Activity Inventory;
  - b. Public Facility and Activity Management;
  - c. Vehicle and Equipment Wash Areas;
  - d. Landscape, Park, and Recreational Facilities Management;
  - e. Storm Drain Operation and Maintenance;
  - f. Road Reconstruction;
  - g. Streets and Road Pollutant Management;
  - h. Parking Facilities Maintenance; and
  - i. Emergency Procedures.
- 2. **Public Agency Facility and Activity Inventory.**
  - a. Each Permittee shall maintain an updated inventory or database of all Permittee-owned or operated (i.e., public) facilities and activities within its jurisdiction that the Permittee determines are potential sources of pollutants to the MS4. The inventory or database shall be maintained in electronic format and incorporation of facility information into a GIS is recommended. The Permittee shall consider the following facilities when determining sources to be inventoried:
    - i. Animal control facilities
    - ii. Chemical storage facilities
    - iii. Composting facilities

- iv.** Equipment storage and maintenance facilities (including landscape maintenance-related operations)
  - v.** Fueling or fuel storage facilities (including municipal airports)
  - vi.** Hazardous waste disposal facilities
  - vii.** Hazardous waste handling and transfer facilities
  - viii.** Incinerators
  - ix.** Landfills
  - x.** Materials storage yards
  - xi.** Pesticide storage facilities
  - xii.** Fire stations
  - xiii.** Public restrooms
  - xiv.** Public parking lots
  - xv.** Public golf courses
  - xvi.** Public swimming pools
  - xvii.** Public parks
  - xviii.** Public works yards
  - xix.** Public marinas
  - xx.** Recycling facilities
  - xxi.** Solid waste handling and transfer facilities
  - xxii.** Vehicle storage and maintenance yards
  - xxiii.** Stormwater management facilities (e.g., detention basins)
  - xxiv.** Streets and roads
  - xxv.** Catch basins
  - xxvi.** Stormwater capture, control, and treatment devices
  - xxvii.** All other Permittee-owned or operated facilities or activities that each Permittee determines may contribute a substantial amount of pollutants to the MS4.
- b.** Each Permittee shall include the following minimum fields of information for each Permittee-owned or operated facility in its inventory.
- i.** Name of facility;
  - ii.** Name of facility manager and contact information;
  - iii.** Address of facility (physical and mailing, or description if no address available or applicable);
  - iv.** A narrative description of activities performed and potential pollution sources;
  - v.** If applicable, coverage under the Industrial General Permit or other individual or general NPDES permits or any applicable waiver issued by the Los Angeles or State Water Board pertaining to stormwater discharges;

- vi. Activities listed in Table 9 of this Order that occur at the facility and a description of BMPs implemented for the activity. Treatment control BMPs<sup>56</sup> (i.e., BMPs that remove pollutants) and/or BMPs that involve stormwater capture (including infiltration or use) must also be noted; and
  - vii. For trash treatment control devices, indication of whether it is a *partial capture system* or a certified *full capture system*.
- c. Each Permittee shall verify the accuracy of their inventory once during the permit term. The update shall be accomplished through collection of new information obtained through field activities or through other readily available inter- and intra-agency informational databases (e.g., property management, land-use approvals, accounting and depreciation ledger account, and similar information).
- 3. Public Agency Facility and Activity Management**
- a. Where activities listed in Table 9 of this Order occur at Permittee-owned/leased facilities, including streets and roads, each Permittee must implement BMPs to control the discharge of pollutants to the MS4. The Permittee shall select BMPs that will reduce pollutants in discharges from the MS4 to the MEP and prevent discharges from public agency facilities and activities to the MS4 from causing or contributing to a violation of receiving water limitations.

**Table 9. Activities Requiring BMP Implementation**

<b>General Category</b>	<b>Specific Activity</b>
<b>Flexible Pavement</b>	Asphalt Cement Crack and Joint Grinding/Sealing
	Asphalt Paving
	Structural Pavement Failure (Digouts) Pavement Grinding and Paving
	Emergency Pothole Repairs
	Sealing Operations
<b>Rigid Pavement</b>	Portland Cement Crack and Joint Sealing
	Mudjacking and Drilling
	Concrete Slab and Spall Repair
<b>Slope/Drains/Vegetation</b>	Shoulder Grading
	Non-landscaped Chemical Vegetation Control
	Non-landscaped Mechanical Vegetation Control/Mowing
	Non-landscaped Tree and Shrub Pruning, Brush Chipping, Tree and Shrub Removal
	Fence Repair
	Drainage Ditch and Channel Maintenance
	Drain and Culvert Maintenance
	Curb and Sidewalk Repair
<b>Litter/Debris/Graffiti</b>	Sweeping Operations
	Litter and Debris Removal
	Emergency Response and Cleanup Practices
	Graffiti Removal

<sup>56</sup> Treatment control BMPs are defined as any engineered system designed to remove pollutants by simple gravity settling of particulate pollutants, filtration, biological uptake, media absorption or any other physical, biological, or chemical process.

General Category	Specific Activity
<b>Landscaping</b>	Chemical Vegetation Control
	Manual Vegetation Control
	Landscaped Mechanical Vegetation Control/ Mowing
	Landscaped Tree and Shrub Pruning, Brush Chipping, Tree and Shrub Removal
	Irrigation Line Repairs
	Irrigation (Watering), Potable and Non-potable
<b>Environmental</b>	Storm Drain Stenciling
	Roadside Slope Inspection
	Roadside Stabilization
	Stormwater Treatment Devices
	Traction Sand Trap Devices
<b>Bridges</b>	Welding and Grinding
	Sandblasting, Wet Blast with Sand Injection and Hydroblasting
	Painting
	Bridge Repairs
<b>Other Structures</b>	Pump Station Cleaning
	Tube and Tunnel Maintenance and Repair
	Tow Truck Operations
	Toll Booth Lane Scrubbing Operations
<b>Electrical</b>	Sawcutting for Loop Installation
<b>Traffic Guidance</b>	Thermoplastic Striping and Marking
	Paint Striping and Marking
	Raised/Recessed Pavement Marker Application and Removal
	Sign Repair and Maintenance
	Median Barrier and Guard Rail Repair
	Emergency Vehicle Energy Attenuation Repair
<b>Storm Maintenance</b>	Minor Slides and Slipouts Cleanup / Repair
<b>Management and Support</b>	Building and Grounds Maintenance
	Storage of Hazardous Materials (Working Stock)
	Material Storage Control (Hazardous Waste)
	Outdoor Storage of Raw Materials
	Vehicle and Equipment Fueling
	Vehicle and Equipment Cleaning
	Vehicle and Equipment Maintenance and Repair
	Aboveground and Underground Tank Leak and Spill Control

- b. Each Permittee shall ensure proper operation of all treatment control BMPs and maintain them as necessary for proper operation, including all post-construction treatment control BMPs.



- c. Any residual water<sup>57</sup> produced by a treatment control BMP and not being internal to the BMP performance when being maintained shall be:
  - i. Hauled away and legally disposed of,
  - ii. Applied to the land without runoff, or
  - iii. Discharged to the sanitary sewer system (with permits or authorization).
- d. Any contractors hired by the Permittee to conduct Public Agency Activities listed in Table 9 of this Order shall be contractually required to implement and maintain the activity specific BMPs as required by Part VIII.H.3.a and b of this Order. Each Permittee shall conduct oversight of contractor activities to ensure these BMPs are implemented and maintained.
- e. Each Permittee shall implement an inspection and maintenance program for all Permittee-owned treatment control BMPs, including post-construction treatment control BMPs. The inspection shall document whether the BMPs identified in the inventory are implemented in compliance with municipal ordinances. The Permittee shall use inspection results to target future inspection sites.
- f. If there is any storage of hazardous or toxic materials or hydrocarbons at a facility owned and/or operated by a Permittee and if the facility is not manned at all times, a 24-hour emergency response telephone number shall be prominently posted where it can easily be read from the outside.
- g. Permittee-owned or operated facilities that have obtained coverage under the Industrial General Permit shall implement and maintain BMPs consistent with the associated SWPPP in areas of industrial activity at the facility. The activity specific BMPs listed in Table 9 of this Order shall be implemented in the areas of non-industrial activity at the facility.

#### **4. Vehicle and Equipment Washing**

- a. Each Permittee shall implement and maintain appropriate activity specific BMPs as required by Part VIII.H.3.a of this Order for all fixed vehicle and equipment washing; including firefighting and emergency response vehicles.
- b. Each Permittee shall prevent discharges of wash waters from vehicle and equipment washing to the MS4 by implementing any of the following measures at existing facilities with vehicle or equipment wash areas:
  - i. Self-contain, and haul off for disposal;
  - ii. Equip with a clarifier or an alternative pre-treatment device and plumb to the sanitary sewer in accordance with applicable wastewater provider regulations;  
or
  - iii. Infiltrate with no discharge off-site.
- c. Each Permittee shall ensure that any municipal facilities constructed, redeveloped, or replaced shall not discharge wastewater from vehicle and equipment wash areas to the MS4 by plumbing all areas to the sanitary sewer in accordance with applicable wastewater provider regulations, or self-containing all wastewater / wash water and hauling to a point of legal disposal.

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<sup>57</sup> In the context of this Order, residual water is defined as water remaining in a structural BMP subsequent to the drawdown or drainage period. The residual water typically contains high concentration(s) of pollutants.

## 5. Landscape, Park, and Recreational Facilities Management

- a. Each Permittee shall implement and maintain appropriate activity specific BMPs as required by Part VIII.H.3.a of this Order for all Landscape, Park, and Recreational Facilities Management facilities.
- b. Each Permittee shall comply with pesticide regulations pertaining to the use, application, and disposal of Pesticides in California Code of Regulations (CCR), Chapter 4, Subchapters 3, 4, and 5 and shall implement an Integrated Pesticide Management (IPM) program that includes the following:
  - i. Pesticides are used only if monitoring indicates they are needed, and pesticides are applied according to applicable permits and established guidelines.
  - ii. Treatments are made with the goal of removing only the target organism.
  - iii. Pest controls are selected and applied in a manner that minimizes risks to human health, beneficial non-target organisms, and the environment.
  - iv. The use of pesticides, including organophosphates and pyrethroids, that does not threaten water quality.
  - v. Partner with other agencies and organizations to encourage the use of IPM.
  - vi. Adopt and verifiably implement policies, procedures, and/ or ordinances requiring the minimization of pesticide use and encouraging the use of IPM techniques (including beneficial insects) for Public Agency Facilities and Activities.
  - vii. Policies, procedures, and ordinances shall include commitments and a schedule to reduce the use of pesticides that cause impairment of surface waters by implementing the following procedures:
    - (a) Prepare and annually update an inventory of pesticides used by all internal departments, divisions, and other operational units.
    - (b) Quantify pesticide use by staff and hired contractors.
    - (c) Demonstrate implementation of IPM alternatives where feasible to reduce pesticide use.
- c. Each Permittee shall implement the following requirements:
  - i. Use a standardized protocol for the routine and non-routine application of pesticides (including pre-emergent), and fertilizers.
  - ii. Ensure there is no application of pesticides or fertilizers (1) when two or more consecutive days with greater than 50% chance of rainfall are predicted by NOAA,<sup>58</sup> (2) within 48 hours of a ½-inch rain event, or (3) when water is flowing off the area where the application is to occur. This requirement does not apply to the application of aquatic pesticides or pesticides which require water for activation.
  - iii. Ensure that no banned or unregistered pesticides are stored or applied.
  - iv. Ensure that all staff applying pesticides are certified in the appropriate category by the California Department of Pesticide Regulation or are under the direct supervision of a pesticide applicator certified in the appropriate category.

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<sup>58</sup> <https://www.nws.noaa.gov>

- v. Implement procedures to encourage the retention and planting of native vegetation to reduce water, pesticide and fertilizer needs; and
- vi. Store pesticides and fertilizers indoors or under cover on paved surfaces or use secondary containment.
- vii. Reduce the use, storage, and handling of hazardous materials to reduce the potential for spills.
- viii. Regularly inspect storage areas.

**6. Storm Drain Operation and Maintenance**

- a. Each Permittee shall implement and maintain activity specific BMPs as required in Part VIII.H.3.a of this Order.
- b. Each Permittee shall ensure that all material removed from the MS4 does not reenter the system. Solid material shall be dewatered in a contained area and liquid material shall be disposed in accordance with any of the following measures:
  - i. Self-contain, and haul off for legal disposal; or
  - ii. Applied to the land without runoff; or
  - iii. Equip with a clarifier or an alternative pre-treatment device; and plumb to the sanitary sewer in accordance with applicable wastewater provider regulations.
- c. **Catch Basin Labels and Open Signage**
  - i. Each Permittee shall label all storm drain inlets that they own with a legible “no dumping” message.
  - ii. Each Permittee shall inspect the legibility of the stencil or label nearest each inlet prior to the wet season every year.
  - iii. Each Permittee shall record all catch basins with illegible stencils and labels and re-stencil or re-label within 180 days of inspection.
  - iv. Each Permittee shall post signs, referencing local code(s) that prohibit littering and illegal dumping, at designated public access points to open channels, creeks, urban lakes, and other relevant water bodies.
- d. **MS4 Maintenance.** Each Permittee shall continue to implement a program for MS4 maintenance that includes the following:
  - i. Visual monitoring of Permittee-owned open channels<sup>59</sup> and other drainage structures for trash and debris at least annually.
  - ii. Removal of trash and debris from open channels<sup>60</sup> a minimum of once per year before the wet season.
  - iii. Reduce or eliminate of the discharge of contaminants during MS4 maintenance and clean outs.
  - iv. Proper disposal of debris and trash removed during MS4 maintenance.

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<sup>59</sup> Open channel excludes curbs, trenches in parking lots that lead to catch basins, etc.

<sup>60</sup> Ibid.

## 7. Road Reconstruction

- a. Each Permittee shall require that for any project that includes roadbed or street paving, repaving, patching, digouts, or resurfacing roadbed surfaces, that the following BMPs be implemented for each project.
- b. Restrict paving and repaving activity to exclude periods of rainfall or predicted rainfall<sup>61</sup> unless required by emergency conditions.
- c. Install sandbags or gravel bags and filter fabric at all susceptible storm drain inlets and at manholes to prevent spills of paving products and tack coat.
- d. Prevent the discharge of release agents including soybean oil, other oils, or diesel into the MS4 or receiving waters.
- e. Prevent non-stormwater runoff from water use for the roller and for evaporative cooling of the asphalt.
- f. Clean equipment over absorbent pads, drip pans, plastic sheeting or other material to capture all spillage and dispose of properly.
- g. Collect liquid waste in a container, with a secure lid, for transport to a maintenance facility to be reused, recycled or disposed of properly.
- h. Collect solid waste by vacuuming or sweeping and securing in an appropriate container for transport to a maintenance facility, or other appropriate facility, to be reused, recycled or disposed of properly.
- i. Cover the “cold-mix” asphalt (i.e., pre-mixed aggregate and asphalt binder) with protective sheeting during a rainstorm.
- j. Cover loads with tarp before haul-off to a storage site, and do not overload trucks.
- k. Minimize airborne dust by using water spray during grinding.
- l. Avoid stockpiling soil, sand, sediment, asphalt material and asphalt grindings materials or rubble in or near MS4 or receiving waters.
- m. Protect stockpiles with a cover or sediment barriers during a rain.

## 8. Streets and Road Pollutant Management

- a. Each Permittee shall designate streets and/or street segments within its jurisdiction as one of the following:
  - i. Priority A: Streets and/or street segments that are designated as consistently generating the highest volumes of trash and/or debris.
  - ii. Priority B: Streets and/or street segments that are designated as consistently generating moderate volumes of trash and/or debris.
  - iii. Priority C: Streets and/or street segments that are designated as generating low volumes of trash and/or debris.
- b. Each Permittee shall perform street sweeping of curbed streets according to the following schedule:
  - i. Priority A: Streets and/or street segments that are designated as Priority A shall be swept at least two times per month.

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<sup>61</sup> A probability of precipitation (POP) of 50% or more is required.

- ii. Priority B: Streets and/or street segments that are designated as Priority B shall be swept at least once per month.
  - iii. Priority C: Streets and/or street segments that are designated as Priority C shall be swept as necessary but in no case less than once per year.
- 9. Parking Facilities Maintenance.** Permittee-owned parking lots exposed to stormwater and meeting either criteria listed below, shall be inspected at least twice per month. If debris and/or oil is observed during the inspection, the parking lot shall be cleaned. At a minimum, parking lots must be cleaned once per month. For parking lots with a gravel/sediment base, Permittees shall also implement and maintain BMPs to prevent the discharge of gravel and sediment to the MS4.
- a. Facility parking lots greater than 1 acre; or
  - b. Facility parking lots used for heavy vehicle storage such as, construction vehicles, buses, refuse trucks, etc.
- 10. Emergency Procedures.** Each Permittee may conduct activities to restore essential public service systems and infrastructure in emergency situations with a self-waiver of the provisions of this Order as follows:
- a. The Permittee shall abide by all other regulatory requirements, including notification to other agencies as appropriate.
  - b. Where the self-waiver has been invoked, the Permittee shall submit to the Los Angeles Water Board Executive Officer a statement of the occurrence of the emergency, an explanation of the circumstances, and the measures that were implemented to reduce the threat to water quality, no later than 30 business days after the situation of emergency has passed.
  - c. Minor restorations of essential public service systems and infrastructure in emergency situations (that can be completed in less than 1 week) are not subject to the notification provisions. Appropriate BMPs to reduce the threat to water quality shall be implemented.

## I. Illicit Discharge Detection and Elimination Program

### 1. General

- a. Each Permittee shall continue to implement a program to detect and remove or require the dischargers to the MS4 to obtain a separate NPDES permit for, illicit discharges and improper disposal into the storm sewer as required by 40 C.F.R. section 122.26(d)(2)(iv)(B).
- b. Each Permittee shall maintain a written description, including a schedule and procedures, for its IDDE program<sup>62</sup> that addresses the required program elements in 40 C.F.R. section 122.26(d)(2)(iv)(B)(1-7).
- c. Once each permit term, each Permittee shall review, and update as necessary, all written program descriptions including procedures, that pertain to its IDDE program.
- d. Oil or oily material, chemicals, refuse, or other pollution causing materials shall not be stored or deposited in areas where they may be picked up by rainfall and carried off of the property and/or discharged to surface waters. Any such spill of such materials shall be contained and removed immediately.

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<sup>62</sup> Referred to as Illicit Connection and Illicit Discharge Elimination Program in previous Orders.

## **2. Illicit Discharge Source Investigation**

- a. Each Permittee shall conduct an investigation to identify the location and source of all reported illicit discharges. For non-stormwater discharges from outfalls, the Permittee shall follow procedures in Part VII of the MRP (Non-Stormwater Outfall-Based Screening and Monitoring Requirements).
- b. At a minimum, each Permittee shall initiate an investigation to identify and locate the source within 72 hours of becoming aware of the illicit discharges.

## **3. Illicit Discharge Elimination**

- a. Once the source of the illicit discharge is identified, the Permittee shall notify the responsible party and require the responsible party to conduct all necessary corrective actions to eliminate the illicit discharge or obtain a separate NPDES permit for the discharge.
- b. The Permittee shall conduct follow-up inspections as necessary until the illicit discharge is eliminated or permitted.
- c. If the Permittee determines that the source of the illicit discharge originates within an upstream jurisdiction, the Permittee shall notify the upstream jurisdiction and the Los Angeles Water Board within 30 days of such determination and provide all information collected regarding efforts to identify its source.
- d. In the event the Permittee is unable to eliminate an ongoing illicit discharge following full execution of its legal authority and in accordance with its Progressive Enforcement Policy, or other circumstances prevent the full elimination of an ongoing illicit discharge, including the inability to find the responsible party(ies), the Permittee shall provide for elimination of the illicit discharge through diversion to the sanitary sewer or, alternatively, provide treatment at the location of the identified discharge. In either instance, the Permittee shall notify the Los Angeles Water Board in writing within 30 days of such determination and shall provide a written description of the efforts that have been undertaken to eliminate the illicit discharge, the proposed action(s) to be undertaken, anticipated costs, and a schedule for completion.

## **4. Infiltration from Sanitary Sewer to MS4 – Preventive Maintenance**

- a. Each Permittee shall implement controls and measures to prevent and eliminate infiltration of seepage from sanitary sewers to MS4s through thorough, routine preventive maintenance of the MS4.
- b. Each Permittee that operates both a municipal sanitary sewer system and an MS4 must implement controls and measures to prevent and eliminate infiltration of seepage from the sanitary sewers to the MS4s that must include overall sanitary sewer and MS4 surveys and thorough, routine preventive maintenance of both. Implementation of a Sewer System Management Plan in accordance with the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems may be used to fulfill this requirement.
- c. Each Permittee shall implement controls to prevent infiltration of seepage from sanitary sewers to the MS4 where necessary. Such controls must include:
  - i. Adequate plan checking for construction and new development;
  - ii. Incident response training for its municipal employees that identify sanitary sewer spills;
  - iii. Code enforcement inspections;

- iv. MS4 maintenance and inspections;
- v. Interagency coordination with sewer agencies; and
- vi. Proper education of its municipal staff and contractors conducting field operations on the MS4 or its municipal sanitary sewer (if applicable).

**5. Spill Response**

- a. Each Permittee shall continue to implement a spill response plan that includes procedures to prevent, contain, and respond to all sewage and other spills that may discharge into the MS4.
- b. Each Permittee shall report spills that may endanger health or the environment in accordance with California Water Code § 13271.

**6. Public Reporting**

- a. Permittee(s) shall publicize and provide a means for public reporting of illicit discharges and other water quality impacts from stormwater and non-stormwater discharges into or from MS4s.
  - i. Permittee(s) may elect to use either an existing county-wide telephone hotline for Los Angeles County or Ventura County as the public reporting contact, or may establish its own hotline, if preferred.
  - ii. In lieu of a telephone hotline, the Permittee(s) may facilitate public reporting by providing an email address, Web-based form/reporting portal, or other Internet-based application.
- b. Permittee(s) shall maintain current contact information for staff assigned to the IDDE public reporting program.

**7. Progressive Enforcement.** Each Permittee shall implement its Progressive Enforcement Policy to ensure that illicit discharges are brought into compliance with all stormwater requirements within a reasonable time period. See Part VIII.B of this Order for requirements for the development and implementation of a Progressive Enforcement Policy.

**8. Documentation and Tracking**

- a. Public reports of illicit discharges shall be documented.
- b. Each Permittee shall track investigations of illicit discharges to document, at a minimum, the date(s) the illicit discharge was observed; the results of the investigation, including the corrective actions taken to eliminate the discharge; any follow-up inspections; and the date the investigation was closed.

## **IX. WATERSHED MANAGEMENT PROGRAMS**

### **A. General**

- 1.** The purpose of this Part IX is to allow Permittees the flexibility to individually or collaboratively develop Watershed Management Programs to implement the requirements of this Order on a watershed scale through customized strategies, control measures, and BMPs.
- 2.** Participation in a Watershed Management Program is voluntary and allows a Permittee to address its highest watershed priorities, including complying with the requirements of Part V (Receiving Water Limitations), Part IV and Attachments K through S (Total Maximum Daily Load Provisions), Part III (Discharge Prohibitions), and Part VIII (Minimum Control Measures) of this Order. This Part IX and other requirements in this Order pertaining to Watershed Management Programs do not apply to Permittees not participating in an approved Watershed Management Program.
- 3.** A Permittee's implementation of an approved Watershed Management Program does not constitute compliance with the non-stormwater discharge prohibition in Part III.A of this Order. However, a Permittee may use an approved Watershed Management Program to implement program elements and control measures to effectively eliminate prohibited non-stormwater discharges consistent with Part III.A and Part VIII.I (Illicit Discharge Detection and Elimination Program) of this Order as appropriate.
- 4.** The Permittee(s) may elect to develop a Watershed Management Program (WMP) using the Los Angeles Water Board's WMAs. Where appropriate, WMAs may be separated into subwatersheds to focus water quality prioritization and implementation efforts by receiving water. Each WMP shall:
  - a.** Be consistent with the provisions in Parts IX.B through IX.E of this Order,
  - b.** Identify and implement strategies, control measures, and BMPs for Water Body-Pollutant Combinations (WBPCs) addressed in the WMP to ensure that: (i) discharges from the Permittee's MS4 achieve any applicable WQBELs in Part IV and Attachments K through S of this Order pursuant to the corresponding compliance schedules, (ii) discharges from the Permittee's MS4 do not cause or contribute to exceedances of receiving water limitations in Part V, Part IV.B, and Attachments K through S of this Order, and (iii) non-stormwater discharges that are a source of pollutants are prohibited pursuant to Part III.A of this Order. The program shall also ensure that controls are implemented to reduce the discharge of pollutants to the MEP pursuant to Part IV.A.1 of this Order,
  - c.** Execute a monitoring and reporting program pursuant to Attachment E (MRP) of this Order to determine progress towards achieving applicable limitations,
  - d.** Modify strategies, control measures, and BMPs as necessary based on analysis of monitoring data collected pursuant to the MRP and other applicable information to ensure that applicable WQBELs, receiving water limitations, TMDL compliance schedules, and other milestones set forth in the WMP are achieved in the required timeframes.
  - e.** Provide appropriate opportunity for meaningful stakeholder and community input into the development or revision of the WMP.
  - f.** Maximize the effectiveness of available funds by leveraging the funds through partnerships and creative funding models that utilize multiple funding sources and through analysis of alternatives and the selection and sequencing of actions needed



to comply with WQBELs and receiving water limitations according to compliance schedules and, thus, to address human health and water quality related challenges;

- g.** Incorporate effective innovative technologies, approaches and practices, such as green infrastructure;
- h.** Ensure that actions to address existing requirements in this Order to comply with technology-based effluent limitations and core requirements (e.g., including elimination of non-stormwater discharges of pollutants through the MS4, and controls to reduce the discharge of pollutants in stormwater to the maximum extent practicable) are not interrupted or delayed;
- i.** Include an estimate of the capital and operation and maintenance costs of implementing the WMP and a financial strategy to fund those costs. Discuss which program costs have secured funding and the corresponding funding sources. If funding is not available for near-term watershed control measures (within 5 years from the effective date of this Order), discuss how Permittee(s) plan to obtain funding and what the anticipated funding sources are.
- j.** Implement structural watershed control measures such as multi-benefit regional projects. Permittees and other partners are encouraged to collaborate on multi-benefit regional projects.
- k.** Demonstrate that strategies, control measures, and BMPs cumulatively retain the runoff volume of the 85<sup>th</sup> percentile, 24-hour storm event for the drainage area tributary to the applicable receiving water. For drainage areas not addressed by retaining the runoff volume of the 85<sup>th</sup> percentile, 24-hour storm event, the WMP shall include a Reasonable Assurance Analysis (RAA) to demonstrate that applicable WQBELs and receiving water limitations shall be achieved through implementation of other watershed control measures.
- l.** Identify the group lead, if the WMP includes multiple Permittees, and provide names of all Permittees participating in the WMP. If the group lead or participants change, the group shall promptly notify the Los Angeles Water Board.

## **B. Program Development**

- 1. Water Quality Characterization.** The WMP shall include an evaluation of existing water quality conditions, including characterization of stormwater and non-stormwater discharges from the MS4 and receiving water quality, to support development of the source assessment, identification of water quality priorities and sequencing of management actions. The evaluation shall include, at a minimum, the routine water quality data collected over the last five years pursuant to the Permittee(s) monitoring and reporting program(s) and approved TMDL monitoring programs. The WMP should include an explanation of the process used to determine what available data was relevant, how information considered was used, and why any relevant available data was disregarded.
- 2. Source Assessment.** In identifying WBPCs in Categories 1 – 3 in subpart 3 below, Permittees shall identify known and suspected stormwater and non-stormwater pollutant sources in discharges to the MS4 and from the MS4 to receiving waters and any other stressors related to MS4 discharges causing or contributing to the water quality priorities.

  - a.** The identification of known and suspected pollutant sources shall consider the following information:

    - i.** All relevant, available water quality data;

- ii. Special studies conducted pursuant the Permittee(s) monitoring and reporting program or TMDLs; and
    - iii. Locations of the Permittees' MS4s, including, at a minimum, all MS4 major outfalls and major structural controls for stormwater and non-stormwater that discharge to receiving waters.
  - b. The source assessment shall include the following:
    - i. An explanation of how any information considered as part of the Source Assessment was ultimately used to inform development of the WMP (e.g., directly or via citations to the appropriate WMP or RAA section); and
    - ii. An explanation of why any relevant available data was disregarded.
- 3. **Water Body-Pollutant Combinations (WBPCs).** On the basis of the evaluation of existing water quality conditions, WBPCs addressed in the WMP shall be classified into one of the following three categories:
  - a. **Category 1 (Highest Priority):** Pollutants for which WQBELs and receiving water limitations are established in Part IV and Attachments K through S of this Order to implement TMDLs.
  - b. **Category 2 (High Priority):** Pollutants for which data indicate water quality impairment in the receiving water according to the State's Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (State Listing Policy) and for which MS4 discharges may be causing or contributing to the impairment.
  - c. **Category 3 (Medium Priority):** Pollutants for which there are insufficient data to indicate water quality impairment in the receiving water according to the State's Listing Policy, but which exceed applicable receiving water limitations contained in this Order and for which MS4 discharges may be causing or contributing to the exceedance within the last five years.
- 4. **Sequencing of Water Quality Priorities.** Permittees shall identify the water quality priorities within each WMA that will be addressed by the WMP. Permittees shall sequence management actions to address water quality priorities based on the water quality characterization, source assessment, WBPC prioritization, and compliance schedules. The following categories of WBPCs should be considered when determining the appropriate sequencing of management actions:
  - a. **TMDLs**
    - i. Controlling pollutants for which there are WQBELs and/or receiving water limitations with final compliance deadlines within the permit term, or TMDL compliance deadlines that have already passed, and limitations have not been achieved.
    - ii. Controlling pollutants for which there are WQBELs and/or receiving water limitations with interim deadlines within the term of this Order.
    - iii. Progress toward controlling pollutants for which there are WQBELs and/or receiving water limitations with interim and/or final compliance deadlines beyond the term of this Order.

**b. Other Receiving Water Considerations**

- i. Controlling pollutants for which data indicate impairment pursuant to the State's Listing Policy and the findings from the source assessment implicates discharges from the MS4.
- ii. Controlling pollutants for which data indicate exceedances of receiving water limitations in the receiving water within the last five years and the findings from the source assessment implicates discharges from the MS4.

**5. Selection of Watershed Control Measures.** Permittees shall identify strategies, control measures, and BMPs for WBPCs addressed in the WMP to implement through their jurisdiction-specific stormwater management programs, and collectively on a watershed or subwatershed scale, with the goal of creating a cost-effective program to focus individual and collective resources on water quality priorities.

**a.** The objectives of the Watershed Control Measures shall include:

- i. Prevent or eliminate non-stormwater discharges through the MS4 that are a source of pollutants to receiving waters.
- ii. Implement pollutant controls necessary to achieve applicable interim and final WQBELs and/or receiving water limitations pursuant to corresponding compliance schedules in Part IV.B and Attachments K through S of this Order.
- iii. Ensure that discharges from the MS4 do not cause or contribute to exceedances of receiving water limitations.

**b.** Watershed Control Measures may include but are not limited to:

**i.** Structural controls such as:

- (a) Vegetated nature-based solutions (e.g., bioretention, green roofs, constructed storm water wetlands, wet and dry detention basins);
- (b) Multi-benefit regional projects;
- (c) Stormwater retention basins/subsurface stormwater infiltration galleries or dry wells;
- (d) Other green infrastructure;
- (e) Low Impact Development (LID) design features such as cisterns and rooftop/impervious area disconnection; and
- (f) Diversions to sanitary sewer collection, treatment, and reclamation systems.

**ii.** Non-structural controls such as:

- (a) Operation and maintenance procedures; and
- (b) Source control, including but not limited to market-based solutions such as product replacement/substitution initiatives; human source management programs; and local ordinances prohibiting sources of pollutants (e.g., plastic bags, straws, Styrofoam containers)

**c.** Each Permittee shall ensure that all employees and contractors whose primary job duties are related to implementation of structural and non-structural BMPs are adequately trained to effectively implement, operate, and maintain such BMPs and are versed in factors affecting BMP effectiveness.

- 6. Watershed Management Program Provisions.** The following provisions of this Order shall be incorporated as part of the WMP:
- a. Stormwater Management Program Minimum Control Measures**
- i. Permittees shall assess the minimum control measures (MCMs) as defined in Parts VIII.D to VIII.I of this Order to identify opportunities for focusing resources on the water quality priorities in each watershed. For each of the following minimum control measures, Permittees shall propose modifications, if appropriate, that will address water quality priorities:
    - (a) Public Information and Participation Program (PIPP)
    - (b) Industrial/Commercial Facilities Program
    - (c) Planning and Land Development Program
    - (d) Development Construction Program
    - (e) Public Agency Activities Program
    - (f) Illicit Discharge Detection and Elimination Program (IDDE)
  - ii. At a minimum, the WMP shall include management programs consistent with 40 CFR section 122.26(d)(2)(iv)(A)-(D).
  - iii. If the Permittee(s) proposes to eliminate in their WMP a control measure identified in Parts VIII.D through VIII.I of this Order because that specific control measure is not applicable to the Permittee(s), the Permittee(s) shall provide a rationale and appropriate documentation for its elimination.
  - iv. Such modifications, once approved as part of the WMP, shall replace in part or in whole the requirements in Parts VIII.D through VIII.I of this Order for participating Permittees.
- b. Non-Stormwater Discharge Measures.** Where Permittees identify non-stormwater discharges from the MS4 as a source of pollutants that cause or contribute to exceedance of receiving water limitations and/or WQBELs addressed in the WMP, the Watershed Control Measures shall include strategies, control measures, and/or BMPs to effectively prohibit the source of pollutants consistent with Parts III.A (Prohibitions – Non-Stormwater Discharges) and VIII.I (IDDE) of this Order. Requirements in Part III.A of this Order apply to all Permittees regardless of whether a Permittee is implementing a Watershed Management Program or not.
- 7. Each program shall include the following components:**
- a. Documentation that Permittees have the necessary legal authority to independently or collaboratively implement the Watershed Control Measures identified in the program, or that other legal authority exists to compel implementation of the Watershed Control Measures.
  - b. Identification of watershed control measures to achieve WQBELs and receiving water limitations contained in this Part IV, V, and Attachments K through S of this Order to which the Permittee(s) is subject. The WMP shall clearly identify which watershed control measures are addressing which WQBELs and receiving water limitations;
  - c. For structural controls, the number, type, and locations of projects and/or the volume capture or target load reduction for a drainage area that will be met by structural controls;
  - d. For each non-structural control, the nature and scope of implementation;

- e. Interim milestones and dates for achievement to ensure that any applicable TMDL compliance deadlines will be met;
  - f. The program shall clearly identify the responsibilities of each participating Permittee for implementation of watershed control measures;
  - g. Identification of any unavailable but necessary information needed to support any analysis in the WMP, including but not limited to the Water Quality Characterization in Part IX.B.1 of this Order, the Source Assessment in Part IX.B.2 of this Order, and the Reasonable Assurance Analysis in Part IX.B.8 of this Order. The discussion of the missing information must include the assumptions made to substitute that information, and milestones for acquiring and incorporating that information into the WMP or RAA as appropriate; and
  - h. Expected volume capture, load reductions, or other compliance metric at regular milestones, and the methods by which these reductions will be measured and demonstrated for each WBPC. Interim milestones shall be no more than 5 years apart.
- 8. Reasonable Assurance Analysis.** Per Part IX.A.4.k of this Order, for drainage areas not addressed by retaining the runoff volume of the 85th percentile, 24-hour storm event, Permittees shall conduct a Reasonable Assurance Analysis (RAA) to demonstrate that implementation of the watershed control measures in the WMP will reasonably ensure that the Permittee's MS4 discharges achieve any applicable WQBELs and do not cause or contribute to exceedances of receiving water limitations. Permittees shall address all WBPCs addressed in the WMP in its RAA, except for those WBPCs in drainage areas addressed by retaining the runoff volume defined above.
- a. The RAA may be based on any available guidance documents to conduct an RAA such as: the Los Angeles Water Board's *Guidelines for Conducting Reasonable Assurance Analysis in a Watershed Management Program, Including an Enhanced Watershed Management Program* dated March 25, 2014 and any updates thereto;<sup>63</sup> and *Developing Reasonable Assurance: A Guide to Performing Model-Based Analysis to Support Municipal Stormwater Program Planning* dated February 2017 prepared by Paradigm Environmental for U.S. EPA Region 9.
  - b. The RAA shall be a quantitative analysis that is performed using a peer-reviewed model in the public domain where available. Examples of models that may be considered for use for the RAA include the Watershed Management Modeling System (WMMS) and the Structural BMP Prioritization and Analysis Tool (SBPAT). Where modeling is unavailable or inappropriate, a Permittee may consider alternative numeric analyses or other quantitative methods, including a non-modeling-based analysis (e.g., empirical data analysis) for its RAA. The quantitative reasoning for non-modeling based analysis may use one or more metrics such as magnitude of loading, frequency of exceedance, required percent reduction, or similar metric as compared to the modeled WBPCs and associated watershed control measures.
  - c. Permittees may rely on modeling in TMDL Implementation Plans approved by the Los Angeles Water Board to fulfill the requirements for the RAA for the WBPCs addressed by the TMDL Implementation Plan(s). If the Los Angeles Water Board, in its comments on the TMDL Implementation Plan(s), indicates that more information

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<sup>63</sup> The Los Angeles Water Board expressly delegates authority to its Executive Officer to revise, as necessary, the 2014 RAA Guidelines after an appropriate public notice and comment period. If any of the proposed revisions to the RAA Guidelines are significant or generate significant public controversy, then a quorum of the Los Angeles Water Board shall consider whether to approve the proposed revisions at publicly noticed meeting.

would be required to use the modeling as a basis for permit compliance, the additional information specified by the Board must be provided when the draft/revised WMP is submitted or in advance of submittal of the draft/revised WMP. If the Permittees identify a pollutant in a TMDL Implementation Plan to use as a limiting pollutant in the RAA, the Permittees must include justification for the limiting pollutant per Part IX.B.8.f of the Order.

- d.** Models utilized in the RAA shall be calibrated using available data that are relevant to the WMP's environmental setting and conditions. The WMP shall explain how the models were calibrated or explain why no further calibration was required (e.g., relied on WMMS default hydrology calibration).
- e.** Models utilized in the RAA shall be validated with relevant data that are independent of the data used for model calibration.
- f.** Where appropriate, Permittees may identify the "limiting" pollutant(s) in the RAA, which if controlled to achieve the applicable WQBEL and/or receiving water limitation will ensure that the applicable limitations for other pollutants are also achieved. If a limiting pollutant(s) is used in the RAA, the WMP must include a justification for the limiting pollutant(s). At a minimum, this justification must include:
  - i.** Identification of each limiting pollutant grouping and the waterbodies addressed (e.g., a table);
  - ii.** An explanation of why the limiting pollutant groupings can be addressed via similar control measures and schedules. This explanation should discuss (1) the similarities in fate and transport mechanisms or explain why any differences in fate and transport mechanisms are irrelevant, (2) the ability of the proposed control measures to address all pollutants in the limited pollutant grouping, and (3) how addressing the limiting pollutant will result in attainment of WQBELs and receiving water limitations for all WBPCs in the RAA within applicable compliance schedules, considering, where relevant, the sources of the different pollutants to be addressed; and
  - iii.** For WBPCs that are addressed by the limiting pollutant approach but not modeled, the RAA shall provide an alternative quantitative analysis for how control of the limiting pollutant(s) will address the identified non-modeled WBPCs and their applicable WQBELs and receiving water limitations consistent with the requirements in Part IX.B.8.a above.
- g.** The RAA shall involve the assembly of relevant data, including land use, hydrological, and pollutant loading data. Permittees shall review quality assurance/quality control (QA/QC) criteria for data and identify datasets that meet QA/QC criteria. A Permittee's use of WMMS shall satisfy this requirement.
- h.** Parameters or data relating to the performance of watershed control measures represented in a model utilized in the RAA shall be based on impartial, well accepted studies and sources. These data shall have been statistically analyzed to determine appropriate estimates of control measure performance.
- i.** Permittees shall demonstrate using the RAA that the activities and watershed control measures identified in the WMP will achieve applicable WQBELs and/or receiving water limitations in Part IV, Part V, and Attachments K through S of this Order for each water body-pollutant combination or limiting pollutant group.
- j.** Permittees may include other regulated point and nonpoint sources within the drainage area in the RAA. The RAA shall demonstrate, for the drainage area to the

compliance point, that the activities and watershed control measures identified in the WMP in conjunction with those identified to address other regulated point and nonpoint sources will, in combination, result in a total pollutant load equal to or less than the sum of the individual allowable pollutant loads established in the applicable TMDL and incorporated into the respective permit(s) and Board order(s).

- 9. Compliance Schedules.** Permittees shall incorporate any applicable compliance schedules in Part IV.B and Attachments K through S of this Order, or approved Time Schedule Order (TSO), for WBPCs addressed in the WMP and, where necessary develop interim requirements and dates for their achievement. Compliance schedules and interim requirements and dates for their achievement shall be used to measure progress towards addressing the highest water quality priorities and achieving applicable WQBELs and/or receiving water limitations.
- a. Schedules must be adequate for measuring progress on a watershed or subwatershed scale throughout the term of this Order.
  - b. Schedules must be developed for both the strategies, control measures and BMPs implemented by each Permittee within its jurisdiction and for those that will be implemented by multiple Permittees on a watershed scale.
  - c. Schedules shall incorporate the following:
    - i. Final compliance deadlines occurring within the permit term for any applicable WQBELs and/or receiving water limitations in Part IV.B and Attachments K through S of this Order, or approved TSO;
    - ii. Where WQBELs and/or receiving water limitations in Part IV.B and Attachments K through S of this Order have final compliance deadlines or time schedules in an approved TSO beyond the permit term, Permittees shall identify interim requirements and dates for their achievement that are within the permit term to ensure adequate progress toward achieving final compliance deadlines or time schedules in an approved TSO. Interim milestones shall be no more than 5 years apart.
    - iii. For water quality priorities related to addressing exceedances of receiving water limitations in Part V and not otherwise addressed by TMDLs in Part IV.B and Attachments K through S of this Order:
      - (a) Requirements based on measurable criteria or indicators, to be achieved in the receiving waters and/or MS4 discharges,
      - (b) A schedule with dates for achieving the requirements, and
      - (c) A final date for achieving the receiving water limitations as soon as possible,
      - (d) If the schedule extends beyond the permit term, interim milestones shall be no more than 5 years apart.
    - iv. Incorporation of the requirements and implementation schedule in subpart B.9 above into an approved WMP fulfills the requirements in Part V.C.1 of this Order to prepare an Receiving Water Limitations Compliance Report.

**C. Watershed Management Program Implementation**

1. Each Permittee shall begin implementing the WMP immediately upon approval of the program by the Los Angeles Water Board.
2. Notwithstanding Part IX.E (Adaptive Management) of this Order, Permittees may propose WMP modifications at any time during the term of this Order, as necessary. Permittees

shall provide written requests explaining the nature of the proposed modification and justification for consideration by the Los Angeles Water Board. Such justification may include the need to align the timing of implementation for a specific project with a project partner that is not regulated by the Regional MS4 Permit.

3. Through the process in Part IX.C.2, above, Permittees may request an extension of deadlines for achievement of interim requirements and final compliance deadlines established pursuant to Part IX.B.9 of this Order, with the exception of those final compliance deadlines established in a TMDL. Permittees shall provide requests in writing and shall include in the request the justification for the extension. Extensions are subject to approval by the Los Angeles Water Board.

#### **D. Integrated Watershed Monitoring and Assessment**

Permittees shall conduct monitoring as set forth in the MRP (Attachment E). The monitoring program shall assess progress toward achieving the WQBELs and/or receiving water limitations addressed in the WMP. The monitoring program shall assess progress toward addressing water quality priorities, per any applicable compliance schedules and approved TSOs as set forth in Part IX.B.9 of this Order.

#### **E. Adaptive Management Process**

1. Permittees shall implement an adaptive management process for each approved WMP. The purpose of the adaptive management process is to adapt the WMP so that the watershed control measures in the WMP become more effective, based on, but not limited to a consideration of the following:
  - a. Progress toward achieving interim and/or final WQBELs and/or receiving water limitations in Part IV and Attachments K through S of this Order, according to established compliance schedules set forth in Part IX.B.9 of this Order;
  - b. Progress toward achieving improved water quality in MS4 discharges and achieving receiving water limitations through implementation of the watershed control measures based on an evaluation of outfall-based monitoring data and receiving water monitoring data;
  - c. Re-evaluation of watershed control measures for the achievement of interim and final milestones for stormwater volume addressed (via capture, infiltration, diversion, etc.), load reduction, or other compliance metric;
  - d. Multi-year efforts that were not completed in the current permit term and will continue over the next 5 year(s);
  - e. Re-evaluation of the water quality priorities identified for the WMA based on more recent water quality data for discharges from the MS4 and the receiving water(s) and a reassessment of sources of pollutants in MS4 discharges;
  - f. Availability of new information and data from sources other than the Permittees' monitoring program(s) within the WMA that informs the effectiveness of the actions implemented by the Permittees;
  - g. Costs and available funding;
  - h. Los Angeles Water Board recommendations; and
  - i. Recommendations for modifications to the WMP solicited through a public participation process.
2. Based on the results of the adaptive management process, the Permittee(s) may propose WMP modifications necessary to improve the effectiveness of the WMP, including but not



limited to new compliance deadlines and interim requirements, with the exception of those final compliance deadlines established in a TMDL, and new or substitute watershed control measures. The Permittee(s) shall clearly identify any WMP modification proposals in their submittal.

3. The adaptive management process fulfills the requirements in Part V.D of this Order to address continuing exceedances of receiving water limitations.
4. **Reporting on the adaptive management process results.** The results of the adaptive management process shall be submitted with the Permittees' ROWD. Permittees shall report the following information to the Los Angeles Water Board concurrently with the submittal of the ROWD (180 days before Order expiration date) required pursuant to Part II.B of Attachment D (Standard Provisions):
  - a. On-the-ground structural control measures completed since approval of the WMP;
  - b. Non-structural control measures completed since approval of the WMP;
  - c. Monitoring data that evaluates the effectiveness of implemented control measures in improving water quality;
  - d. Comparison of the effectiveness of the control measures to the results projected by the RAA;
  - e. Assessment of the appropriateness of the assumptions used in the RAA (e.g. non-structural BMP implementation and corresponding reductions, rates of redevelopment, etc.);
  - f. Comparison of control measures completed to date with control measures projected to be completed to date pursuant to the WMP using equivalent metrics;
  - g. Control measures proposed to be completed in the next five years pursuant to the WMP and the schedule for completion of those control measures using metrics consistent with those in the approved WMP;
  - h. Status of funding and implementation for control measures proposed to be completed in the next five years; and
  - i. Identification of the most effective and least effective control measures and explain why those control measures were effective or least effective and how control measures will be optimized, modified, or terminated accordingly for WMP implementation in the next 5 years.
5. Subsequent to the first adaptive management submittal, the Los Angeles Water Board Executive Officer may require additional implementation of an adaptive management process and submittal of results at any time but no earlier than two years after the submittal of the ROWD.

#### **F. Ventura County Permittees**

1. Ventura County Permittees that opt to develop a Watershed Management Program shall implement requirements per the schedule specified in Table 10 below:

**Table 10. Ventura County WMP Implementation Schedule**

<b>Part</b>	<b>Provision</b>	<b>Due Date</b>
IX.F.2	Submit NOI to the Los Angeles Water Board electing to develop a WMP and/or stating its intent to join an existing WMP	3 months after Order effective date
IX.F.3	For Ventura County Permittees that elect to develop a WMP or join an existing WMP, submit the new or updated WMP to Los Angeles Water Board	24 months after Order effective date
IX.F.3	For Ventura County Permittees that elect to develop a WMP or join an existing WMP, submit the final WMP in response to comments from the Los Angeles Water Board	Within 3 months of receipt of comments from the Los Angeles Water Board or as otherwise directed by the Executive Officer
IX.F.5	Begin implementation of the WMP	Immediately upon Los Angeles Water Board approval of final program
IX.E	Submit results of WMP adaptive management process	With submittal of ROWD

2. Ventura County Permittees that elect to develop a WMP or join an existing WMP shall submit a Notice of Intent (NOI) to the Los Angeles Water Board no later than 3 months after the effective date of this Order. The NOI shall:
  - a. Identify all participating Ventura County Permittees and provide the program concept and geographical scope (county-wide and/or watershed/subwatershed scale).
  - b. Provide a letter of intent from each participating Permittee that is signed per the signatory requirements in Part V.B in Attachment D of this Order.
  - c. Identify which Water-Body Pollutant Combinations as defined in Part IX.B.3 of this Order will be addressed in the WMP.
3. A Ventura County Permittee(s) that elects to develop a WMP or join an existing WMP shall submit the new or updated WMP to the Los Angeles Water Board Executive Officer no later than 24 months after the effective date of this Order. Within 3 months of receipt of comments from the Los Angeles Water Board or as otherwise directed by the Executive Officer, Ventura County Permittee(s) shall submit the final WMP in response to comments.
4. Until the WMP is approved by the Los Angeles Water Board, Ventura County Permittees that elect to develop a WMP shall:
  - a. Continue to implement their existing stormwater management programs, including actions within each of the six categories of minimum control measures consistent with 40 CFR section 122.26(d)(2)(iv) in lieu of Part VIII.D through Part VIII.I in this Order;
  - b. Comply with all other Parts of this Order, including Parts III, IV, VI, VII, VIII.A and B and Attachments K through S; and
  - c. Comply with Part V of this Order for Water-Body Pollutant Combinations not identified in the NOI.
5. The Ventura County Permittee(s) shall implement their WMP immediately upon approval by the Los Angeles Water Board.

6. Ventura County Permittees that do not elect to develop a WMP shall be subject to all requirements in this Order except those requirements pertaining to Watershed Management Programs immediately upon the effective date of this Order.
7. Ventura County Permittees that do not have an approvable WMP shall be subject to all requirements in this Order except those requirements pertaining to Watershed Management Programs upon disapproval by the Los Angeles Water Board.
8. Ventura County Permittees may request an extension of the deadlines to submit an NOI to develop a WMP, submit a draft program, and submit a final program. The extension is subject to approval by the Executive Officer of the Los Angeles Water Board. If the extension is approved, Ventura County Permittees shall comply with Part VIII (Stormwater Management Program Minimum Control Measures) of this Order and shall demonstrate compliance with all receiving water limitations pursuant to Part V of this Order during any extension period.
9. For those Ventura County Permittees opting to discontinue participation in an approved Watershed Management Program, the Ventura County Permittee, immediately upon submittal of their notice shall be subject to all requirements of this Order except those requirements pertaining to Watershed Management Programs.

**G. Los Angeles County Permittees**

1. Los Angeles County Permittees with an approved Watershed Management Program<sup>64</sup> shall implement requirements per the schedule specified in Table 11 below:

**Table 11. Los Angeles County WMP Implementation Schedule**

<b>Part</b>	<b>Provision</b>	<b>Due Date</b>
IX.G.3.a	Submit revised RAA and WMP in response to comments from the Los Angeles Water Board	Within 3 months of receipt of comments from the Los Angeles Water Board or as otherwise directed by the Executive Officer
IX.G.3.c	Implement revised WMP	Upon Los Angeles Water Board approval of revised program
IX.E	Submit results of WMP Adaptive Management process	With submittal of ROWD

**2. Notifications Regarding WMP Participation**

- a. Within 30 days of withdrawing from participation in a WMP, a Los Angeles County Permittee currently participating in the implementation of an approved Watershed Management Program shall notify the Los Angeles Water Board that it is discontinuing its participation in the implementation of the Watershed Management Program.
- b. Los Angeles County Permittees that currently do not have an approved Watershed Management Program may opt to join an approved Watershed Management Program. In such case, the Los Angeles County Permittee seeking to join an already

<sup>64</sup> Reference to the term “approved Watershed Management Program or approved WMP” in this section includes Watershed Management Programs (WMPs) and Enhanced Watershed Management Programs (EWMPs) that were developed pursuant to the previous MS4 permits (Order Number R4-2012-0175 and Order Number R4-2014-0024).

approved program shall notify the Los Angeles Water Board as soon as possible. This Permittee remains subject to all requirements of this Order (except those requirements pertaining to Watershed Management Programs) until the Watershed Management Program has been modified and approved by the Los Angeles Water Board to add the Permittee to the Watershed Management Program and to update schedules and milestones accordingly.

- c. For those Los Angeles County Permittees opting to discontinue participation in an approved Watershed Management Program, the Los Angeles County Permittee, immediately upon submittal of their notice shall be subject to all requirements of this Order except those requirements pertaining to Watershed Management Programs.

**3. Revised WMP and RAA**

- a. Los Angeles County Permittee(s) that opt to continue implementing a Watershed Management Program shall update their Watershed Management Program and RAA to be consistent with the requirements of this Order as directed by the Executive Officer. In response to the Los Angeles Water Board’s comments on any WMP and RAA, Los Angeles County Permittee(s) shall submit a revised RAA and WMP within three months of receipt of comments or as otherwise directed by the Executive Officer.
- b. The Los Angeles Water Board, or the Executive Officer pursuant to their delegated authority, will approve or disapprove the updated WMP. The Executive Officer may waive the requirement for approval of the updated WMP, following the 60-day public review and comment period, if the Executive Officer determines that a Los Angeles County Permittee has adequately demonstrated using water quality monitoring data that the WMP as currently approved is meeting appropriate water quality targets in accordance with established deadlines.
- c. The Los Angeles County Permittee(s) shall implement revisions to their WMP immediately upon approval by the Los Angeles Water Board.
- d. Until the updated WMP is approved by the Los Angeles Water Board, the Los Angeles County Permittee(s) shall continue to implement the currently approved version of their Watershed Management Program as identified in Table 12 below:

**Table 12. Watershed Management Programs**

Los Angeles County Permittee / Group Name	Initial Approval Date
Upper Santa Clara River Watershed Group (Los Angeles County, LACFCD, and city of Santa Clarita)	4/7/2016
Upper Los Angeles River Watershed Group (Los Angeles County, LACFCD, and cities of Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Cañada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Fernando, San Gabriel, San Marino, South El Monte, South Pasadena, and Temple City)	4/20/2016
Los Angeles River Upper Reach 2 Sub Watershed Group (LACFCD and cities of Bell, Bell Gardens, Commerce, Cudahy, Maywood, and Huntington Park, and Vernon)	4/28/2015
Lower Los Angeles River Watershed Group (LACFCD and cities of Downey, Lakewood, Long Beach, Lynwood, Paramount, Pico Rivera, Signal Hill, and South Gate)	4/28/2015

<b>Los Angeles County Permittee / Group Name</b>	<b>Initial Approval Date</b>
Rio Hondo/San Gabriel River Water Quality Group (Los Angeles County, LACFCD, and cities of Arcadia, Bradbury, Duarte, Monrovia, and Sierra Madre)	4/21/2016 (Revised WMP approved 4/2/2019)
Upper San Gabriel River Group (Los Angeles County, LACFCD, and cities of Baldwin Park, Covina, Glendora, Industry, and La Puente, West Covina)	4/11/2016
East San Gabriel Valley Watershed Management Area Group (cities of Claremont, La Verne, Pomona, and San Dimas)	4/28/2015
Lower San Gabriel River Group (LACFCD, and cities of Artesia, Bellflower, Cerritos, Diamond Bar, Downey, Hawaiian Gardens, La Mirada, Lakewood, Long Beach, Norwalk, Pico Rivera, Santa Fe Springs, and Whittier)	4/28/2015
Los Cerritos Channel Watershed Group (LACFCD, and cities of Bellflower, Cerritos, Downey, Lakewood, Long Beach, Paramount, and Signal Hill)	4/28/2015
Malibu Creek Watershed Group (Los Angeles County, LACFCD, and Agoura Hills, Calabasas, Hidden Hills, and Westlake Village)	4/27/2016
Marina del Rey Group (Los Angeles County, LACFCD, and cities of Culver City and Los Angeles)	4/27/2016
North Santa Monica Bay Coastal Watersheds Group (Los Angeles County, LACFCD, and City of Malibu)	4/19/2016
Santa Monica Bay Watershed Jurisdictions 2 & 3 Group (Los Angeles County, LACFCD, and cities of El Segundo, Los Angeles, and Santa Monica)	4/21/2016
Beach Cities Watershed Management Group (LACFCD and cities of Hermosa Beach, Manhattan Beach, Redondo Beach, and Torrance) / Machado Lake Subwatershed Supplement (City of Torrance)	4/18/2016; 12/9/2016
Palos Verdes Peninsula Watershed Management Group (Los Angeles County, LACFCD, and cities of Palos Verdes Estates, Rancho Palos Verdes, and Rolling Hills Estates)	4/19/2016
Ballona Creek Group (Los Angeles County, LACFCD, Beverly Hills, Culver City, Inglewood, Los Angeles, Santa Monica, and West Hollywood)	4/20/2016
Dominguez Channel Watershed Management Area Group (Los Angeles County, LACFCD, and cities of Carson, El Segundo, Hawthorne, Inglewood, Lawndale, Lomita, and Los Angeles)	4/21/2016
Alamitos Bay/Los Cerritos Channel Group (Los Angeles County and LACFCD)	4/28/2015
Santa Monica Bay Watershed Jurisdiction 7 Group (LACFCD and City of Los Angeles)	4/28/2015
Nearshore Watersheds (City of Long Beach)	1/28/2016
City of El Monte	4/28/2015
City of La Habra Heights	12/12/2014
City of Walnut	4/28/2015

- Los Angeles County Permittees that do not have an approvable updated WMP shall be subject to all requirements in this Order except those requirements pertaining to Watershed Management Programs upon disapproval by the Los Angeles Water Board.

5. Los Angeles County Permittees may request an extension of the deadlines in Table 11. The extension is subject to approval by the Executive Officer of the Los Angeles Water Board. Part IX.G.3.d above applies until the Los Angeles County Permittee(s) has an approved revised WMP in place.

## **X. Compliance Determination for WQBELs and Receiving Water Limitations**

### **A. General**

#### **1. Compliance Points**

A Permittee shall demonstrate compliance with WQBELs and receiving water limitations in Part IV, Part V, and Attachments K through S of this Order, at the compliance monitoring locations identified in monitoring programs per Attachment E of this Order unless a Permittee is implementing a Watershed Management Program per Part IX of this Order. Compliance points may include outfalls and/or alternative access points, such as manholes or in channels at the Permittee's jurisdictional boundary, or locations in the receiving water.

#### **2. Compliance with Receiving Water Limitations**

Compliance with the procedure described in Part V.C of this Order does not constitute compliance with the receiving water limitation provisions of Part V.A and Part V.B of this Order.

#### **3. Compliance with Bacteriological Limitations During High Flow Suspension (HFS) Conditions**

WQBELs and receiving water limitations for protection of water contact recreation (REC-1) and non-contact recreation (REC-2) do not apply during a high flow suspension as defined in Attachment A of this Order.

### **B. WQBELs and Receiving Water Limitations for Pollutants other than Trash**

#### **1. Interim WQBELs and Receiving Water Limitations<sup>65</sup>**

##### **a. Direct Demonstration of Compliance with TMDL-Specific Requirements**

- i. A Permittee is in compliance with interim WQBELs and receiving water limitations associated with a TMDL, if the Permittee is implementing the requirements, including compliance schedules, outlined in Part IV.B and Attachments K through S of this Order applicable to the waterbody-pollutant combination(s) addressed by that TMDL.
- ii. A Permittee demonstrates compliance with interim WQBELs and receiving water limitations associated with a TMDL in the same manner as described in Part X.B.2 of this Order

##### **b. Alternative Demonstration of Compliance**

- i. A Permittee shall be deemed in compliance with interim WQBELs and receiving water limitations if it is implementing an approved Watershed Management Program, consistent with the actions and schedules therein, to address the applicable waterbody-pollutant combination pursuant to Part IX of this Order. For milestones proposed to be met entirely by implementation of strategies, control measures, or BMPs for which there is no quantitative analysis that satisfies the requirements in Part IX.B.8.b of this Order, Permittees may only be deemed in compliance with the interim WQBELs and receiving water limitations if the

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<sup>65</sup> In this Order all interim WQBELs are associated with TMDLs. Interim receiving water limitations are generally associated with TMDLs (i.e. an interim WLA expressed as a standard to be met in the receiving water), but may also include interim requirements incorporated into an approved Watershed Management Program to achieve compliance with final receiving water limitations in Part V of this Order for waterbody-pollutant combinations that are not addressed by a TMDL.

- Permittee demonstrates actual attainment of the associated water quality milestone.
- ii. Minor deviations from interim actions, requirements, and schedules in an approved Watershed Management Program are permitted under the following circumstances:
    - (a) Notification is provided to the Los Angeles Water Board in the Annual Report, including a clear description of the interim action or requirement in the Watershed Management Program, an explanation for the deviation, and the revised schedule, requirement, and/or action.
    - (b) The final deadline for project completion or program implementation will still be met.
    - (c) Any revised action or substituted action(s) will provide equivalent water quality improvement.
  - iii. A Permittee that fails to implement the actions and schedules in an approved Watershed Management Program for any waterbody-pollutant combination must either:
    - (a) Revise its Watershed Management Program per Parts IX.E.2, IX.F.3 or Part IX.G.3.a of this Order to maintain deemed compliance status unless the deviation is minor per Part X.B.1.b.ii of this Order; or
    - (b) Comply directly with the WQBELs and receiving water limitations in Part IV.B and Attachments K through S of this Order, or
    - (c) If there is no applicable TMDL, comply directly with the final receiving water limitations in Part V of this Order.

## 2. Final WQBELs and Receiving Water Limitations

- a. **Direct Demonstration of Compliance.** A Permittee is in compliance with final WQBELs and receiving water limitations in Part IV.B and Attachments K through S of this Order and/or in Part V of this Order, if the Permittee demonstrates any of the following:
  - i. There are no exceedances of the WQBEL for the specific pollutant in the discharge at the Permittee's compliance point(s), including an outfall to the receiving water that collects discharges from multiple Permittees' jurisdictions;
  - ii. There are no exceedances of the receiving water limitation for the specific pollutant in the receiving water(s) at, or downstream of, the Permittees' compliance point(s);
  - iii. There is no direct or indirect discharge from the Permittee's MS4 to the receiving water during the relevant time period; or
  - iv. The exceedance is the result of an authorized or exempt non-stormwater discharge specified in Part III.A.2 of this Order during a specific sampling event. The water quality characteristics must be based on the source specific water quality monitoring data from the authorized or conditionally exempt essential non-stormwater discharge or other relevant information documenting the characteristics of the specific non-stormwater discharge.



**b. Alternative Demonstration of Compliance**

- i. A Permittee shall be deemed in compliance with the receiving water limitations in Part V of the Order if it is implementing the applicable TMDL requirement(s) in Part IV.B and Attachments K through S of this Order; or
- ii. A Permittee shall be deemed in compliance with the WQBELs and receiving water limitations for the U.S. EPA TMDLs identified in Part IV.B.2.c of this Order and/or the receiving water limitations in Part V of the Order if it is implementing an approved Watershed Management Program, consistent with the actions and schedules therein, to address the applicable waterbody-pollutant combination pursuant to Part IX of this Order. A Permittee may only rely on this compliance path up until the final deadline for achievement of the relevant WQBEL and/or receiving water limitation; or
- iii. A Permittee shall be deemed in compliance with final WQBELs and receiving water limitations in Part IV.B and Attachments K through S of this Order if it has retained all conditionally exempt, non-essential non-stormwater as defined in Part III.A (Prohibitions – Non-Stormwater Discharges) of this Order and all stormwater runoff up to and including the volume equivalent to the 85th percentile, 24-hour event for the drainage area tributary to the applicable receiving water for that waterbody provided the Permittee is implementing all actions and schedules in an approved Watershed Management Program including, but not limited to the ongoing monitoring and adaptive management requirements in Parts IX.D and IX.E of this Order; or
- iv. Upon notification of a Ventura County Permittee's intent to develop a WMP or join an existing WMP and prior to approval of the new or updated WMP, a Permittee's full compliance with all requirements in Part IX.F of this Order shall constitute a Permittee's compliance with the receiving water limitations provisions in Part V.A of this Order. A Permittee will only be deemed in compliance for receiving water limitations for those pollutants that are listed in the NOI.

**C. WQBELs and Receiving Water Limitations for Trash**

**1. General**

- a. A Permittee may rely on another permittee or entity to implement trash controls or systems to achieve compliance with WQBELs or receiving water limitations for trash; however, a Permittee remains ultimately responsible for compliance with any WQBEL or receiving water limitation for trash applicable to its jurisdictional area.
- b. If a Permittee's compliance strategy includes the installation of full capture systems and/or partial capture devices and institutional controls in the area serviced by another public entity, then the Permittee is responsible for obtaining all necessary authorizations, including any permits, to do so.
- c. If a Permittee is unable to obtain the necessary authorizations to install a full capture system or partial capture device within another Permittee's MS4 infrastructure, either Permittee may request a dispute resolution conference with the Los Angeles Water Board. Nothing in this subsection shall be construed as relieving a Permittee of any liability that the Permittee would otherwise have under this Order.

## **2. Areas not addressed by a Trash TMDL**

- a.** A Permittee is in compliance with the receiving water limitation for trash in Part V of this Order if the Permittee demonstrates any one of the following:
  - i.** There are no exceedances of the trash receiving water limitation in the receiving water(s) at, or downstream of, the Permittees' outfall(s); or
  - ii.** There is no direct or indirect discharge from the Permittee's MS4 to the receiving water during the relevant time period.
- b.** Compliance with the Discharge Prohibition in Part III.B of this Order will be considered as evidence of whether a Permittee is causing or contributing to a violation of the receiving water limitation for trash in Part V of this Order in drainage areas within PLUs, equivalent alternative land uses, or designated land uses.

## **3. Areas Addressed by a Trash TMDL**

### **a. Full Capture System Compliance Option**

- i.** A Permittee is in compliance with the interim and final WQBELs for trash outlined in Part IV.B and Attachments K through S of this Order, as specified in Part IV.B.3.b.i of this Order.
- ii.** A Permittee violates its interim or final WQBELs for trash, if any of the following are true:
  - (a)** The Permittee fails to demonstrate that it has addressed all drainage areas within its jurisdiction with full capture systems,
  - (b)** The full capture systems for any drainage area(s) are not adequately sized and maintained,
  - (c)** Maintenance records are not up-to-date and available for inspection by the Los Angeles Water Board, or
  - (d)** It is not in compliance with any of the conditions of the certification of the specific full capture device.
- iii.** A Permittee that violates its interim or final WQBELs for trash is presumed to have discharged trash in an amount equal to the percentage of the baseline waste load allocation<sup>66</sup> represented by the drainage area within its jurisdiction not addressed with full capture systems. A Permittee may overcome this presumption by demonstrating that the actual or calculated discharge for that drainage area is fully or partially in compliance with the applicable interim or final effluent limitation.

### **b. Other Compliance Options**

- i.** A Permittee is in compliance with the interim or final WQBELs for trash outlined in Part IV.B and Attachments K through S of this Order, as specified in Part IV.B.3.b.ii-iv of this Order (Mass Balance, Scientifically Based Alternative, and Minimum Frequency of Assessment and Collection).
- ii.** A Permittee that violates its interim and/or final WQBEL is presumed to have violated the applicable limitation for each day of each storm event that generated precipitation greater than 0.25 inch during the applicable water year, except

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<sup>66</sup> Baseline Waste Load Allocation as defined in Attachment A of this Order.

those storm days on which it establishes that its trash discharges have not exceeded the applicable effluent limitation.

**D. Commingled Discharges**

1. Permittees that have commingled MS4 discharges are jointly responsible for meeting the requirements of this Order. However, Permittees are only responsible for discharges from the MS4 for which they are owners and/or operators.
2. Where Permittees have commingled MS4 discharges to the receiving water, compliance at the outfall discharging to the receiving water or compliance in the receiving water shall be determined for the group of Permittees as a whole unless an individual Permittee demonstrates that its discharge did not cause or contribute to the exceedance.
3. Permittees are responsible for demonstrating that their discharge did not cause or contribute to an exceedance of an applicable WQBEL or receiving water limitation.
4. A Permittee may demonstrate that its discharge did not cause or contribute to an exceedance of an applicable WQBEL or receiving water limitation in the manner described in Part X.B.2 of this Order.
5. A Permittee may also demonstrate that its discharge did not cause or contribute to an exceedance of an applicable receiving water limitation by demonstrating that there was an alternative source of a pollutant that is not typically associated with MS4 discharges that caused the exceedance, and that pollutant was not discharged from the Permittee's MS4. For any such demonstration, the Permittee shall use the most current source identification methodology(ies) for the applicable pollutant.

**E. Time Schedule Orders**

1. Unless a Permittee has selected, and is in compliance, with one of the alternative compliance options set forth in Part X.B of this Order, the Permittee must comply with any applicable interim and final WQBELs and receiving water limitations in accordance with the corresponding compliance schedule deadlines.
2. Where a Permittee believes that it needs additional time to comply with these WQBELs and/or receiving water limitations, a Permittee may request a TSO pursuant to California Water Code sections 13300 and/or 13385(j)(3) for the Los Angeles Water Board's consideration. A Permittee seeking an extension of a compliance deadline, other than a final TMDL deadline, in an approved Watershed Management Program does not need a TSO and may request the extension in accordance with the modification provisions in Part IX.C of this Order.
3. If a TSO is issued and the Permittee is in compliance with that TSO, the Los Angeles Water Board will not pursue further enforcement of violations involving the specific waterbody-pollutant combination(s) addressed in the TSO, including the mandatory minimum penalty provisions of section 13385(h) and (i) for violations of WQBELs in Part IV.B and Attachments K through S of this Order.
4. Permittees may either individually request a TSO or may jointly request a TSO with Permittees subject to the WQBELs and/or receiving water limitations.
5. At a minimum, a written request for a time schedule order must include the following:
  - a. Data demonstrating the current quality of the MS4 discharge(s) in terms of concentration and/or load of the target pollutant(s) to the receiving waters subject to the TMDL;

- b. A detailed description and chronology of structural controls and source control efforts, since the effective date of the TMDL, to reduce the discharge of the pollutant(s) from the MS4 to the receiving waters subject to the TMDL;
- c. Justification of the need for additional time to achieve the WQBELs and/or receiving water limitations which may include time to collaborate with other entities not regulated by the Regional MS4 Permit on a specific project(s) that will reduce discharges of the pollutant(s) from multiple sources;
- d. A detailed time schedule of specific actions the Permittee will take in order to achieve the water WQBELs and/or receiving water limitations;
- e. A demonstration that the time schedule requested is as short as possible, considering the technological, operation, and economic factors that affect the design, development, and implementation of the control measures that are necessary to comply with the WQBELs and/or receiving water limitation(s); and
- f. If the requested time schedule exceeds one year, the proposed schedule must include interim requirements and the date(s) for their achievement.

## **XI. ENFORCEMENT**

### **A. General**

1. With the caveat that only one kind of penalty may be applied for each kind of violation, violation of any of the provisions of this Order may subject the violator to any of the penalties described herein or in Attachment D of this Order, or any combination thereof, at the discretion of the prosecuting authority.
2. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges through the MS4 to receiving waters, may subject a Permittee to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject a Permittee to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.
3. Section 13385 of the California Water Code provides that any person who violates a waste discharge requirement or a provision of the California Water Code is subject to civil penalties of up to \$5,000 per day, \$10,000 per day, or \$25,000 per day of violation, or when the violation involves the discharge of pollutants, is subject to civil penalties of up to \$10 per gallon per day or \$25 per gallon per day of violation; or some combination thereof, depending on the violation, or upon the combination of violations.
4. California Water Code section 13385(h)(1) requires the Los Angeles Water Board to assess a mandatory minimum penalty of three-thousand dollars (\$3,000) for each serious violation. Pursuant to California Water Code section 13385(h)(2), a "serious violation" is defined as any waste discharge that violates the effluent limitations contained in the applicable waste discharge requirements for a Group II pollutant by 20 percent or more, or for a Group I pollutant by 40 percent or more. Appendix A of 40 CFR section 123.45 specifies the Group I and II pollutants. Pursuant to California Water Code section 13385.1(a)(1), a "serious violation" is also defined as "a failure to file a discharge monitoring report required pursuant to Section 13383 for each complete period of 30 days following the deadline for submitting the report, if the report is designed to ensure compliance with limitations contained in waste discharge requirements that contain effluent limitations."

5. California Water Code section 13385(i) requires the Los Angeles Water Board to assess a mandatory minimum penalty of three-thousand dollars (\$3,000) for each violation whenever a person violates a waste discharge requirement effluent limitation in any period of six consecutive months, except that the requirement to assess the mandatory minimum penalty shall not be applicable to the first three violations within that time period.
6. Pursuant to California Water Code section 13385.1(d), for the purposes of section 13385.1 and subdivisions (h), (i), and (j) of section 13385, “effluent limitation” means a numeric restriction or a numerically expressed narrative restriction, on the quantity, discharge rate, concentration, or toxicity units of a pollutant or pollutants that may be discharged from an authorized location. An effluent limitation may be final or interim and may be expressed as a prohibition. An effluent limitation, for these purposes, does not include a receiving water limitation, a compliance schedule, or a best management practice.
7. Unlike subdivision (c) of California Water Code section 13385, where violations of effluent limitations may be assessed administrative civil liability on a per day basis, the mandatory minimum penalties provisions identified above require the Los Angeles Water Board to assess mandatory minimum penalties for “each violation” of an effluent limitation. Some water quality-based effluent limitations in Attachments K through S of this Order (e.g., trash, as described immediately below) are expressed as annual effluent limitations. Therefore, for such limitations, there can be no more than one mandatory minimum penalty for each interim or final effluent limitation per year.

#### **B. Trash TMDLs**

For the purposes of discretionary enforcement under California Water Code section 13385, subdivisions (a), (b), and (c), not every storm event may result in trash discharges. In trash TMDLs adopted by the Los Angeles Water Board, the Los Angeles Water Board states that improperly deposited trash is mobilized during storm events of greater than 0.25 inch of precipitation. Therefore, violations of the effluent limitations are limited to the days of a storm event of greater than 0.25 inch. When a Permittee has violated the annual effluent limitation, any subsequent discharges of trash during any day of a storm event of greater than 0.25 inch during the same water year constitutes an additional day in which the violation of the effluent limitation occurs, unless the Permittee has established that its discharge has not exceeded the applicable effluent limitation for trash on the relevant storm days consistent with Part X.C.3.b.ii of this Order.