

City of Bishop



Specifications for Domestic Water and Sanitary Sewer Systems 1991

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GENERAL PROVISIONS

SECTION 1 – DEFINITIONS, TERMS AND ABBREVIATIONS

1-1 DEFINITIONS

Whenever the following terms or abbreviations occur in these specifications, the meaning shall be interpreted as follows:

CITY – The City of Bishop, California. Where the word “City” is used in a sense requiring action, such as, approving, inspecting, making a decision, etc., the Public Services Director shall be understood as the person having authority to take the required action.

CITY COUNCIL – The City Council of the City of Bishop, California.

CITY ENGINEER – The City Engineer of the City of Bishop, his authorized representative, or other such person as may be designated by the City.

CONTRACT – The agreement executed between the Developer and the City covering the water and/or sanitary sewer system improvements to be constructed and to become a part of the City’s facilities. Said improvements to be described in the Contract.

CONTRACTOR – The person, firm, or corporation constructing the improvements for the Developer. In some instances, the Contractor and Developer may be one in the same.

DAYS – When used to designate a period of time, shall be in reference to consecutive calendar days.

DEVELOPER – The person, firm, or corporation signatory to the Contract constructing the improvements to become a part of the City’s facility. In some instances, the Developer and the Contractor may be one in the same.

FINAL ACCEPTANCE – That formal action by the City accepting the work as fully completed after approval by the Public Services Director.

INSPECTOR – The Inspector employed by the City to perform inspection during construction of the work undertaken by the Developer.

LABORATORY – A laboratory approved by the City to test materials and work involved in the contract.

LEGAL ADDRESS OF DEVELOPER – The address given on the Developer’s permit is hereby designated as the place which all notices, letters, or other communications to the Developer shall be mailed or delivered.

PERMIT – Authorization by the City in writing allowing the Developer to do, or have done, work within the City on water and/or sewer facilities described in the Contract. The Developer shall have the Permit present at the job site and shall present it if demanded by any City representative.

PLANS – The official plans, profiles, typical cross-sections, working drawings, detail drawings and supplemental drawings, or reproductions thereof, approved by the City, which show the locations, character, dimensions and details of the work to be done.

PROJECT, THE WORK – The entire public improvement proposed by the Developer to be constructed in whole or in part pursuant to the Contract.

PUBLIC SERVICES DIRECTOR – The Public Services Director of the City of Bishop, his authorized representative, or other such person as may be designated by the City.

RULES AND REGULATIONS – Rules and Regulations for Water Distribution and Sewage Collection, Treatment and Disposal adopted by the City and as amended from time to time.

SPECIFICATIONS – The directions, provisions, and requirements approved by the City, pertaining to the method and manner of performing the work shown on the Plans. The specifications include these Specifications for Domestic Water and Sanitary Sewer Systems as adopted by the City, and amended from time to time.

STATE SPECIFICATIONS – The Standard Specifications, State of California, Department of Transportation, latest edition.

SURETY – The party or parties who guarantee the fulfillment of the Work or a portion of the Work, by bonds, and whose signatures are attached to the bond.

1-2 TERMS

Whenever in the specifications or upon the plans the words directed, required, permitted, ordered, designated, prescribed or words of like import are used, it shall be understood that the direction, requirements, permission, order, designation, or prescription of the City is intended and similarly the words approved, acceptable, satisfactory, or words of like import, shall mean approved by, or acceptable to, or satisfactory to the City, unless otherwise expressly stated.

If the Developer and the Contractor are not one in the same, it will be the responsibility of the Developer to see that all provisions of these specifications are met either by the Developer himself or by his Contractor.

1-3 ABBREVIATIONS

Whenever the following abbreviations are used, they shall have the meanings indicated:

ACI	American Concrete Institute
ANSI	American National Standards Institute (formerly USASI, USAS, ASA)
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association

1-4 APPLICABILITY

In those cases when, in the opinion of the City, circumstances require the design and construction of water and/or sewer improvements not adequately covered by these specifications, the City may set different design criteria, require use of other materials, and/or special construction techniques.

SECTION 2 – DESCRIPTION OF THE WORK

The Developer shall furnish all transportation, materials, equipment, labor and supplies to complete the construction of the water and sewer system improvements in conformance with the Plans and Specifications.

SECTION 3 – DESIGN CRITERIA, PLAN PREPARATION AND EASEMENTS

3-1 PRELIMINARY INVESTIGATION

The Developer shall meet with the City at the earliest possible date to determine whether or not the property to be developed is within the City boundaries. At this time, the availability of existing sewer and waterlines may also be reviewed. It shall be the responsibility of the City to determine whether or not the City can serve the proposed area. In some cases, a preliminary feasibility report may be necessary to establish whether or not the City can serve the proposed development. The Developer shall pay the City for such a study and report if deemed necessary by the City.

3-2 WATER SYSTEM DESIGN CRITERIA

The minimum pipe size for water mains shall be 8 inches in diameter unless specified written approval is given by the City for such special conditions as may arise. All line sizing shall be based on maximum day demand plus fire flow.

As a general rule, there should be three valves on tees and four valves on crosses. On long blocks, intermediate valves should be installed so that not more than 600 feet of line will have to be shut off at any one time. Valves shall be flanged to fittings.

When water mains are in easements outside traveled streets, a valve shall be located at each end of the easement. The final determination of valves and location shall be approved by the City.

Combination air release valves or other means to allow air to enter and leave a pipeline shall be installed at all high points in line as directed by the City. Blowoffs shall be installed at ends of mains and low points where sediment may settle in the line.

Distribution system improvements required to serve a project or development which will be dedicated to the City shall have at least two connections to waterlines in different streets to form a looped (interconnected) water system.

The water system shall be designed base on the following:

<u>System Demand</u>	<u>Description</u>
Residential-Domestic (3.5 persons per dwelling unit)	
AVERAGE	185 gpd per capita
MAXIMUM DAY	250% of average daily demand
PEAK HOUR	350% of average daily demand
Commercial	Developer to submit design flows based upon proposed occupancy to City for review and approval.

In residential areas line sizing shall be based on maximum day demand plus a fire flow demand of 1,500 gpm at a minimum residual main pressure of 20 psi for a 2 hour minimum duration. Pipeline pressure losses will be calculated using Hazen-Williams formula using C=130.

In all other areas, line sizes, hydrant location and fire protection systems shall be based on a maximum day demand plus fire flow based upon I.S.O. and City requirements that will provide a rate of water at a residual pressure of 20 psi, for a specified duration necessary to control a major fire. In any case, the minimum flow rate shall be 2,000 gpm.

Water pipelines shall be constructed of minimum Class 350 ductile iron cement lined pipe per AWWA/ANSI C151/A21.51-96. Fittings shall be cement lined ductile iron or gray cast iron per AWWA C104. Minimum pressure class shall be 250 psi. Final determination of pipe type and class will be made by City.

Water pipelines in streets are normally located 15 feet from and parallel to, centerline as designated by the City.

Minimum cover over the top of pipe shall be 36 inches. The City may require more than this minimum cover if, in the opinion of the City, 36 inches is insufficient.

Fire hydrants shall be installed at the location specified by the City. All hydrants shall be dry barrel type, Mueller Centurion, Catalog No. A423 with one 4-inch pumper nozzle and two 2-1/2 inch hose nozzles.

3-3 SEWER SYSTEM DESIGN CRITERIA

The City shall accept flows from the following plumbing fixtures, unless unusual circumstances prevent the City from doing so:

Toilets, urinals, bidets, sinks for domestic faucets, showers, bathtubs, connections for dishwashers, drinking fountains, domestic washing machines and garbage disposals.

Flows which are not acceptable to the City are flows other than sewage, and include, but are not limited to, any and all liquid or solid waste substance not sewage, from any producing, manufacturing, processing, commercial, or institutional operation of whatever nature. Plumbing fixtures or sources hereafter set forth shall not be discharged into the City's sewer system without specific written permission from the City.

All piping from commercial-industrial processing to the sewers.
All flow or stall drains, other than domestic showers.
Swimming pools, ponds, etc., which empty into the sewer system.
Bleeders from any water system.

Establishments included under the above requirements include, but are not limited to:

Gas stations, car washes, garages, laundromats, etc.
Restaurants, hotels, motels and shopping areas.
Sewage dump stations.

The City may require traps, interceptors, pretreatment, or other devices on all outlets which may discharge grease, oil, sand or waste material of any kind of a composition or quality deemed harmful by the City.

Sewers shall be constructed of Vitrified Clay Pipe per ASTM C-700 and specifications of the National Pipe Institute.

Pipeline design shall be based on peak flows and on Manning's formula using coefficient of "N" = 0.013. Flows shall be based upon an average of 100 gallons per person per day.

"Peaking factor" for sewer design shall be not less than 3.0 and shall be approved by the City.

Design peak flows in pipelines 12 inches in diameter and smaller shall be limited to an approximate liquid depth to pipe diameter ratio of 0.50.

Design peak flows in pipelines 15 inches in diameter and larger shall be limited to an approximate liquid depth to pipe diameter ratio of 0.75.

Minimum pipeline diameter shall be 8 inches.

Minimum pipeline grades:

Pipe size – Inches	Minimum Grade - %
8	0.40
10	0.28
12	0.22
15	0.16
18	0.12
21	0.10
24	0.08

As a general rule, sewers shall run in a straight line between manholes. All alignments shall be approved by the City.

Sewer pipelines in streets are normally located 5 feet from and parallel to, centerline as designated by the City.

Minimum depth from finish street grade to top of sewer main pipe shall be 6 feet. Special circumstances will be considered by the City.

Sewer manholes are required at:

- Changes of slope in sewers.
- Changes of direction of sewers.
- Junction of sewers.
- Junction of sewer and lateral if lateral is same size as sewer.
- Termination of sewers, except at locations approved by the City.
- Change of pipe size in sewers.
- Other locations specified by the City.

Maximum manhole spacing shall be 300 feet.

Allowable head losses in manholes:

- Straight run through manholes based on 0.00 foot loss.
- Right angle turn in manholes based on 0.5 velocity head loss, or 0.10 foot, whichever is greater.
- No change of flow direction within a manhole shall exceed 90 degrees.

Invert elevation at manhole shall be calculated and shown projected to the center of the manhole. Should there be any drop in elevation, the invert elevation “IN” and the direction N, S, E or W, and invert elevation “OUT” and the direction shall be shown. Should a pipeline be joining a trunk sewer of larger diameter, the smaller pipe shall have its crown elevation equal to or higher than the crown elevation of the larger sewer.

The City in accordance with State of California, Department of Health Services regulations, requires a 10-foot horizontal, minimum separation between sewer and water mains.

Whenever a sanitary sewer, including house laterals does not meet the 10-foot separation requirement, or must cross a pressure water main, the water main shall be at least one foot above the sanitary sewer.

If the sewer is above the water main, one of the following special construction procedures shall extend a sufficient distance on the sewer where they are closer than 10 feet, or on both sides of the crossing to provide 10 feet of horizontal clearance from the water main. If the sewer is located below the water main and within a vertical distance of 1 foot clearance distance, the special construction shall extend a sufficient distance on both sides of the crossing to provide 4 feet of horizontal clearance with the water main.

1. PVC pipe within a continuous steel casing which shall have a minimum thickness of ¼ inch and all voids between sewer pipe and casing pressure grouted with sand-cement grout.
2. Class 50 or heavier ductile iron pipe with hot dip bituminous coating and approved mechanical joints.

3-4 PLAN PREPARATION

All Plans must be prepared under the direct supervision of a registered civil engineer licensed to practice in the State of California. This requirement must be attested to by the Developer's engineer's seal and signature on the Plans. The Plans will be prepared in ink on polyester film (24"x36"). Unless approved by City, water and sewer plans shall be prepared separately and not combined with other improvement plans.

3-5 RECORD DRAWINGS

During construction of the improvements, the Developer's Engineer shall note deviations from the Plans on a set of Plans specifically set aside for this purpose. Any such changes shall be made to the originals (reproducibles) of the Plans with a suitable note stating that the originals are the "Record Drawings." The originals shall then be filed with and become the property of the City prior to Final Acceptance by the City of the Work.

3-6 EASEMENTS AND PERMITS

In case an easement(s) is required for construction and/or maintenance of pipelines, the minimum width shall be 20 feet unless otherwise agreed to in writing by the City. However, there may be instances where easements of a greater width are required as determined by the City. Easements shall be granted and executed prior to approval of the improvement plans. The form of the grant of easement document shall be approved by the City. Easements shall be shown on the Plans.

If a permit is required from another agency, such as the U.S. Forest Service, it is the Developer's responsibility to acquire any such permit with the City named as the permittee. All such permits are to be delivered to the City at the time the proposed final Plans and Specifications are submitted to the City for review.

SECTION 4 – CONSTRUCTION AND INSPECTION

4-1 GOVERNING SPECIFICATIONS

All construction shall be in accordance with these Specifications and Rules and Regulations of the City. The Rules and Regulations, as adopted from time to time, are hereby made a part of this Specification for Domestic Water and Sanitary Sewer Systems by reference as though set forth in full in this document.

4-2 CITY PERMIT

The Owner shall not commence construction until the Permit is issued by the City. The Permit shall not be issued until after approval by the City of the Plans and Specifications, bond and insurance forms, grant of easement(s), if any, and until after receipt of a check made payable to the City to cover the Water Development and/or Sewer Connection Charges, if any, and the Inspection Fee Deposit.

4-3 CONNECTION TO EXISTING FACILITIES

No connection shall be made to existing facilities of the City without prior approval and inspection by the Public Services Director.

4-4 NOTICE

Notice shall be given to the City at least seven working days in advance of commencement of work. Prior to any excavation, the Developer, or his Contractor, shall notify Underground Alert at 1-800-227-2600 (or current number).

4-5 OTHER PERMITS

The Developer shall secure all encroachment permits and all licenses, pay all charges and fees, and give all notices as necessary and required for the work by other agencies having jurisdiction. These shall be filed with the City at least two weeks prior to commencement of work.

4-6 CONSTRUCTION WATER

Water used for construction, testing and dust control shall be arranged for and furnished by the Developer at his expense. The Developer shall comply with all regulations of the City relative to connection to a standpipe and secure written permission from the City if water from a City owned source is to be used. Developer shall not connect to fire hydrants.

4-7 INSPECTION

All work shall be subject to inspection by the City and shall be left open and uncovered until the installation is approved by the City.

The City shall at all times have access to the work during construction and shall be furnished with every reasonable facility workmanship and character of materials used and employed in the work.

No pipe, fittings or other materials shall be installed until inspected and approved by the City. Installations which are to be backfilled shall be inspected and approved by the City prior to backfilling, and the Developer shall give due notice in advance of backfilling to the City so that proper inspection may be provided.

Inspection of the work by the City shall not relieve the contractor of his obligation to complete the work as prescribed by the Plans and Specifications approved by the City. Defective work shall be made good, and unsuitable materials may be rejected notwithstanding the fact that such defective work and unsuitable materials have been previously overlooked by the City and accepted. The installation and inspection of unsuitable materials shall not be construed as acceptable and modification to these specifications shall only be made by the City in writing.

The City shall have the authority to suspend the work wholly or in part for such time as it may deem necessary due to the failure on the part of the Developer to carry out orders given or to perform any provisions of the City approved Plans and Specifications. The Developer shall immediately comply with the order of the City to suspend the work wholly or in part. The work shall be resumed when methods or defective work are corrected as ordered by the City. Failure to comply with requests of the City may prevent the Final Acceptance of the entire project which may postpone occupancy of the development.

All construction shall be done in compliance with the standards as established by the Occupational Health and Safety Act (OSHA) and appropriate State of California regulations.

The Developer shall bear all costs of construction inspection. The Developer shall also bear the cost of traffic regulations lawfully exacted by the Federal Government, the State of California, County of Inyo or City of Bishop, during the time of performing work affecting the property of said Government, State, County or City.

SECTION 5 – CONTROL OF MATERIAL

5-1 QUALITY OF MATERIALS

All equipment, materials and supplies to be incorporated in the work shall be new unless otherwise specified and shall conform to the requirements stated in the Plans and Specifications approved by the City.

5-2 DEFECTIVE MATERIALS

All materials not conforming to the requirements of the approved Plans and Specifications shall be considered as defective and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the site of the work unless otherwise permitted by the City. No rejected material, the defects of which have been subsequently corrected, shall be used until approved in writing by the City. Upon failure on the part of the Developer to comply with any order of the City made under the provisions of this article, the City shall have authority to remove and replace defective material at the expense of the Developer.

5-3 STORAGE OF MATERIALS

All materials for use in the work shall be stored in such a manner as to prevent damage from exposure to the elements, admixture of foreign materials or from any other cause. The Developer shall be fully responsible for any damage incurred to the materials for the work while being stored, including damage resulting from storing of material in public right-of-way and City acquired easements. The Developer shall also be fully responsible for the preservation of public and private property while storing materials for the work.

SECTION 6 – USE OF COMPLETED PORTIONS

When the work or any portion of it is sufficiently complete to be utilized or placed into service, the City shall have the right upon written notification to the Developer to utilize such portions of the work and to place the operable portions into service and to operate same.

Upon said notice and commencement of utilization or operation by the City, the Developer shall be relieved of the duty of maintaining the portions so utilized or placed into operation; provided, however, that nothing in this article shall be construed as relieving the Developer of the full responsibility for completing the work in its entirety, for making good defective work and materials, for protecting the work from damage, and for being responsible for damage and such action shall not relieve the Developer, his surety, or insurers of the provisions of the section on **INSURANCE REQUIREMENTS**.

SECTION 7 – LEGAL RELATIONS AND RESPONSIBILITIES

7-1 OBSERVING LAWS AND ORDINANCES

The Developer shall at all times observe and comply with and shall cause his Contractor, if different from the Developer, agents, employees, subcontractors and suppliers to observe and comply with all such existing and future laws, ordinances, regulations, orders and decrees and shall hold harmless indemnify and defend the City, the City Engineer, and each of their directors, officers, employees and agents against any claim or

liability arising from or based on the violation of any such law, ordinance, regulation, order or decree by the Contractor, his employees, agents, subcontractors or suppliers.

7-2 PERMITS AND LICENSES

The Developer shall procure all permits and licenses, pay all charges and fees, and give all notices necessary and incidental to the due and lawful prosecution of the work.

7-3 INVENTIONS, PATENTS AND COPYRIGHTS

The Developer shall pay all royalties and assume all costs arising from the use of any invention, design, process, materials, equipment, product or device which is the subject of patent rights or copyrights.

The Developer shall hold harmless, indemnify and defend the City, the City's Engineer, and their consultants, all other City consultants and each foregoing directors, officers, employees and agents from and against all claims, damages, losses, expenses and other costs, including costs of defense and attorney's fees, arising out of any infringement of patent rights or copyrights incident to the use in the performance of the work resulting from the incorporation in the work of any invention, design, process, materials, equipment, product or device and shall defend all such claims in connection with any alleged infringement of such rights.

7-4 PUBLIC CONVENIENCE AND SAFETY

The Developer shall so conduct his operations as to offer the least possible obstruction and inconvenience to the public, and he shall have under construction no greater length or amount of work than he can prosecute properly with due regard to the rights of the public.

Convenient access to driveways, houses and buildings along the line of work shall be maintained and temporary crossings shall be provided and maintained in good condition. Not more than one crossing or intersecting street or road shall be closed at any one time.

The Developer shall provide and maintain such fences, barriers, directional signs, lights and flagmen as are necessary to give adequate warning to the public at all times of any dangerous conditions to be encountered as a result of the construction work and to give directions to the public.

7-5 RESPONSIBILITY FOR LOSS, DAMAGE OR INJURIES

The Developer shall be responsible for all claims, demands or liability from any cause arising out of or resulting from or in connection with the performance of the work, excepting only those as may be caused solely and exclusively by the fault or negligence of the City, the City Engineer, or their consultants, all other City consultants and each foregoing directors, officers, employees and agents. Such responsibility shall extend to

claims, demands, or liability for loss, damage or injuries occurring after completion of the work as well as during the progress of the work.

7-6 DEVELOPER'S RESPONSIBILITY FOR THE WORK

Until the acceptance of the work, the Developer shall have the responsible charge and care of the work and of the materials to be used therein (including materials which have been furnished by the City) and shall bear the risk of injury, loss or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work.

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

In an emergency affecting the safety of life of property, including adjoining property, the Developer, without special instructions or authorizations, is authorized to act at his discretion to prevent such threatened loss or injury.

7-7 PRESERVATION OF PROPERTY

The Developer shall exercise due care to avoid injury to existing improvements or facilities, utility facilities, adjacent property, and trees and shrubbery that are not to be removed.

All trees, shrubbery and landscaping that are not to be removed, and pole lines, fences, signs, survey markers and monuments, building and structures, conduits, pipelines under or above ground, sewer and waterlines, all highway or street facilities, and any other improvements or facilities within or adjacent to the work shall be protected from injury or damage, and the Developer shall provide and install suitable safeguards to protect such objects from injury or damage. If such objects are injured or damaged by reason of the Developer's operation, they shall be replaced or restored at the Developer's expense to a condition as good as when the Developer entered upon the work or as good as required by the plans and specifications if any such objects are a part of the work being performed.

The fact that any such pipe or other underground facility is not shown on the plans shall not relieve the Developer of his responsibility under this article.

In addition to any requirements imposed by law, the Developer shall shore up, brace, underpin and protect as may be necessary, all foundations and other parts of all existing structures adjacent to and adjoining the site of the work which are in any way affected by the excavations or other operations connected with the performance of the work. Whenever any notice is required to be given by the Developer to any adjacent or

adjoining landowner or other party before commencement of any work, such notice shall be given by the Developer.

In an emergency affecting the safety of life or property, including adjoining property, the Developer, without special instructions or authorizations, is authorized to act at his discretion to prevent such threatened loss or injury.

7-8 SAFETY

The Developer shall be solely and completely responsible for conditions of the jobsite, including safety of all persons and property during performance of the work, and the Developer shall fully comply with all state, federal and other laws, rules, regulations and others relating to the safety of the public and workers.

The right of the City to conduct construction review or observation of the work will not include review or observation of the adequacy of the City's safety measurers in, on or near the construction site.

7-9 PERSONAL LIABILITY

Neither the City Council of the City of Bishop, the City Administrator, the Public Services Director, their consultants, all other City consultants, nor any other officers or agents of the City shall be personally responsible for any liability arising under or by virtue of the Contract.

7-10 INDEMNITY

To the fullest extent permitted by law, the Developer shall indemnify and hold harmless the City, the City's Engineer, their consultants, all other City consultants and each of their directors, officers, agents and employees from the against all claims, damages, losses, expenses and other costs, including costs of defense and attorney's fees, arising out of or resulting from or in connection with the performance of the work, both on and off the jobsite, provided that any of the foregoing (1) is attributable to personal injury, bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself), including the loss of use resulting therefrom and (2) is caused in whole or in part by any act or omission of the Developer, the Contractor, if different from the Developer, any subcontractor, any supplier, anyone directly or indirectly employed by any of them or anyone for whose acts or omission any of them may be liable, regardless of whether or not it is caused in part by any act or omission (active, passive or comparative negligence included), of a party indemnified hereunder.

In any and all claims against the indemnified parties by any employee of the Developer, the Contractor, if different from the Developer, any subcontractor, any supplier, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under the first and fourth paragraphs in this article on **INDEMNITY** shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Developer, the

Contractor, if different from the Developer, or any subcontractor, or any supplier or other person under workers' compensation acts, disability benefit acts or other employee acts.

The obligations of the Developer under the first and fourth paragraphs in this article on **INDEMNITY** shall not extend to the liability of the City, the City's Engineer, their consultants, all other City consultants and each of their directors, officers, employees and agents, arising out of or resulting from or in connection with the preparation or approval of maps, drawings, opinions, reports, surveys, designs or specifications, providing that the foregoing was the sole and exclusive cause of the loss, damage or injury.

The Developer shall also indemnify and hold harmless the City, the City's Engineer, their consultants, all other City consultants and each of their officers, employees and agents from and against all losses, expenses, damages (including damages to the work itself), attorney's fees and other costs, including all costs of defense, which any of them may incur with respect to the failure, neglect, or refusal of the Developer to faithfully perform the work and all of the Developer's obligations under the contract. Such costs, expenses and damages shall include any cost, including attorney's fees, incurred by the indemnified parties in any lawsuit to which they are a party.

7-11 WARRANTY OF TITLE

No materials, supplies, or equipment for the work under this contract shall be purchased subject to any chattel mortgage or under a conditional sales contract or other agreement which an interest therein or any part thereof is retained by the seller or supplier. The Developer warrants clear and good title to all materials, supplies and equipment installed and incorporated in the work and agrees upon completion of all work to deliver the premises together with all improvements and appurtenances constructed or placed thereon by him to the City free from any claims, liens, encumbrances or charges and further agrees that neither he nor any person, firm or corporation furnishing any material or labor for any work covered by the Contract shall have any right to a lien upon the premises or any improvement or appurtenances thereon, provided that this shall not preclude the Developer from installing metering devices or other equipment of utility companies or of municipalities, the title of which is commonly retained by the utility company or the municipality. Nothing contained in this article, however, shall defeat or impair the right of such persons furnishing materials or labor under any bond given by the Developer for their protection, or any right under any law permitting such persons to look to funds due the Developer in the hands of the City. The provisions of this article shall be inserted in all subcontracts and materials contracts, and notices of its provision shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

7-12 TERMINATION FOR BREACH

If the Developer refuses or fails to prosecute the work or any separable part thereof with such diligence as will insure its completion within the time specified in the Permit, or any extension thereof, or fails to complete such work within such time, or if the Developer should be adjudged a bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he,

his Contractor, if different from the Developer or any of his subcontractors should violate any of the provisions of the Permit, the City may serve written notice upon the Developer and his surety of its intention to terminate the Permit, said notice to contain the reasons for such intention to terminate the Contract, and unless within ten (10) days after the service of such notice such violations shall cease and satisfactory arrangements for the corrections thereof be made, the Permit shall, upon the expiration of said ten (10) days, cease and terminate.

In the event for any such termination, the City shall immediately serve written notice thereof upon the Surety, the Developer, and the Surety shall have the right to take over and perform the Contract, providing, however, that the surety within fifteen (15) days after the serving upon it of a notice of termination does not give the City written notice of its intension to take over and perform the Contract, or does not commence performance thereof within (30) days from the date of serving said notice, the City may take over the work and prosecute the same to completion by contract or by any other method it may deem advisable for the account and at the expense of the Developer, and his Surety shall be liable to the City for any excess cost or other damage occasioned the City hereby, and in such event the City may, without liability for so long, take possession of and utilize in completing the work such materials, appliances, plants and other property belonging to the City that may be on the site of the work and be necessary therefore.

The foregoing provisions are in addition to and not in limitation of any other rights or remedies available to the City.

7-13 NOTICE AND SERVICE THEREOF

Any notice required or given under the Contract shall be in writing, be dated and signed by the party giving such notice or his duly authorized representative, and be served as follows:

If to the City, by personal delivery or by deposit in the United States mail.

If to the Developer, by personal delivery to the Developer or to his authorized representative or by deposit in the United States mail.

If to the Surety or any other person, by personal delivery to said Surety or other person or by deposit in the United States mail.

All mailed notices shall be in sealed envelopes, shall be sent by certified mail with postage prepaid and shall be addressed to the addresses in the Contract documents or such substitute addresses which a party designates in writing.

SECTION 8 – INSURANCE REQUIREMENTS

8-1 GENERAL

Construction shall not commence, or continue, until or unless there is in full force and effect all required insurance. The Developer shall not permit any work to be done unless and until the Worker's Compensation Insurance and Liability Insurance requirements have been complied with.

The types of insurance the Developer's Contractor shall obtain and maintain are Worker's Compensation Insurance and Liability Insurance, all as set forth herein.

Worker's Compensation Insurance and Liability Insurance shall be maintained in full force and effect for the full warranty period of one year from the date of Final Acceptance.

Insurers must be authorized to do business and have an agent for service of process in California and have an "A" policyholder's rating and a financial rating of at least Class XI in accordance with the most current Best's Rating.

As evidence of specified insurance coverage, the Developer shall provide certificates of insurance and endorsements on the forms provided as part of these Specifications. No alteration or substitution of said forms will be allowed.

8-2 WORKER'S COMPENSATION INSURANCE

The Developer shall provide a certificate(s) of insurance certifying that his Contractor has obtained for the period of the Contract full Worker's Compensation Insurance coverage for all persons whom he employs or may employ in carrying out the work under the Contract. This insurance shall be in strict accordance with the requirements of the most current and applicable state Worker's Compensation Insurance laws.

8-3 LIABILITY INSURANCE

The Developer shall provide a certificate(s) of insurance showing his contractor has the Liability Insurance coverage stated in the Contract.

Included in such insurance shall be contractual coverage sufficiently broad to insure the matters set forth in the article entitled "**INDEMNITY**" in the General Provisions except whose matters set forth in the fourth paragraph thereof.

Included in such insurance shall be a "Cross Liability" or "Severability of Interest" clause.

The Liability Insurance coverage shall include each of the following types of insurance:

- A. General Liability
 - 1. Comprehensive Form
 - 2. Premises-Operations
 - 3. Explosion and Collapse Hazard
 - 4. Underground Hazard
 - 5. Products/completed Operations Hazard
 - 6. Contractual Insurance
 - 7. Broad Form Property Damage Including Completed Operations
 - 8. Independent Contractors
 - 9. Personal Injury

- B. Automobile Liability
 - 1. Comprehensive Form Including Loading and Unloading
 - 2. Owned
 - 3. Hired
 - 4. Non-Owned

The Liability Insurance shall include as additional insureds: The City, the City's Engineer, their consultants, all other City consultants and each of their directors, officers, agents and employees. The insurance afforded to these additional insureds shall be primary insurance. If the additional insureds have other insurance which might be applicable to any loss, the amount of the insurance provided under this article on **LIABILITY INSURANCE** shall not be reduced or prorated by the existence of such other insurance.

SECTION 9 – CONSTRUCTION SECURITY

9-1 GENERAL

Performance and Payment Bonds or a Guarantee Bond shall be secured from a surety company, or companies, satisfactory to the City and is an approved and financially sound surety company, authorized to transact business in this state. The City shall provide the bond forms to be used. No alteration or substitution of said forms shall be allowed. If development is part of a land division then security shall be in accordance with State and Local laws and City requirement.

The bonds shall meet all of the requirements and contain all of the conditions required by Section 4200 to 4205, inclusive, of the Government Code of the State of California.

The bonds shall also warrant all work performed under the Contract to be free from defects in material and/or workmanship for a period of one year from the date of Final Acceptance by the City.

The bonds shall be delivered to the City prior to issuance of the Permit.

The Developer shall submit copies of proposals received from Contractors bidding on constructing the improvements or other evidence satisfactory to the City to establish the project construction costs for purposes of bonding.

9-2 PERFORMANCE BOND

The Developer may furnish a surety bond in the amount of one hundred percent (100%) of the Project construction cost to the benefit of the City, a security for the faithful performance of the Work or Contract in compliance with the City Ordinances, Rules and Regulations, and the Plans and Specifications.

9-3 PAYMENT BOND

The Developer may furnish a separate bond in an amount of one hundred (100%) of the Project construction cost to the benefit of the City, as security for the payment of all persons performing labor and furnishing materials in connection with the Contract.

9-4 GUARANTEE BOND

The City may at its sole discretion waive the requirements for Performance and Payment Bonds and require instead of Guarantee Bond guaranteeing the Work will be free from defects as a result of faulty workmanship and materials for a period of one year from the date of Final Acceptance by the City of the Work. The amount of any such Guarantee Bond will be determined by the City.

SECTION 10 – FINAL ACCEPTANCE OF THE WORK BY THE CITY

Following final testing and inspection of the facilities constructed under the Contract, and after payment to the City for that portion of the City’s plan check and inspection costs exceeding the sums previously deposited with the City to cover such costs, the City will accept, in writing, from the Developer the completed facilities as described in the Contract. If the total amount deposited with the City by the Developer for plan check and inspection fees exceeds the total costs incurred by the City, the difference between the total paid by the Developer and the total costs incurred by the City will be refunded to the Developer with the written Final Acceptance of the Work by the City. If the total amount deposited with the City by the Developer for plan check and inspection is less than the total costs incurred by the City, the difference shall be paid to the City by the Developer upon presentation of a statement and prior to acceptance of the work.

SECTION 11 – GRANT DEED

A grant deed transferring title of the water and/or sewer facilities from the Developer to the City will be executed by the Developer and delivered to the City prior to Final Acceptance. The City will record the grant deed.

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TECHNICAL SPECIFICATIONS
FOR
EARTHWORK

SECTION 1 - GENERAL

Earthwork shall consist of performing operations necessary to complete all excavation, preparation of subgrade, ditching, structural excavation, trenching, backfill compacting, sloping, trimming the subgrade, and finish grading. These specifications designate the requirements for earthwork in connection with construction of pipelines, manholes, valves, and all other appurtenances required and approved by the City.

Earthwork shall also include all clearing and grubbing, removal and disposal of paving, removal of water, excavation of all classes of earth and rock regardless of character and subsurface conditions and disposal of all excess excavation.

1-1 EARTHWORK IN STATE AND COUNTY RIGHTS-OF-WAY

Earthwork within the rights-of-way of the State of California, Department of Transportation and the County Road Department shall be done in accordance with requirements and provisions of the permits issued by those agencies for the construction within their respective rights-of-way. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of the specifications contained herein if more restrictive.

1-2 SAFETY PRECAUTIONS

All excavations shall be performed, protected and supported as required for safety and in the manner set forth in the operating rules, orders and regulations prescribed by the Division of Industrial Safety of the State of California. Barriers shall be placed at each end of all excavations and at such places as may be necessary along excavations to warn all pedestrian and vehicular traffic of such excavations.

1-3 BRACING EXCAVATIONS

All excavations shall be properly supported in the manner prescribed by the rules, orders and regulations of the Division of Industrial Safety of the State of California. Excavations shall be so braced, sheeted and supported that they will be safe and the ground alongside the excavation will not slide or settle, and all existing improvements of any kind, either on public or private property, will be fully protected from damage. If any damage does result to such improvements, the Developer, at his own expense, shall make the necessary repairs or reconstruction required as directed by the City.

Excavations shall be so braced or sheeted so as to provide conditions under which workmen may work safely and efficiently at all times. The sheeting, shoring and bracing shall be so arranged as not to place any stress on portions of the completed work until the general construction thereof has proceeded far enough to provide ample strength. Any

damage to structures occurring through settlements, water or earth pressures, slides, cave-ins or other causes shall be repaired before acceptance by the City.

Where timber sheeting extends below the invert of the pipe, it shall be cut off at the top of the pipe and the upper portion removed without harming the support conditions. This requirement will not be necessary where steel sheeting is used for shoring below the invert of the pipe.

Care shall be exercised in the drawing or removing of sheeting, shoring, bracing and timbering to prevent the caving or collapsing of the excavation faces which are being supported.

1-4 OPEN EXCAVATIONS AND STOCKPILING

Open excavations and stockpiles shall be controlled in a manner to prevent water running into excavations. Obstruction of surface drainage shall be avoided and means shall be provided whereby storm and wastewater can flow uninterrupted in existing or established flowage courses, other surface drains or temporary drains. Material for backfill or for protection of excavation in public roads from surface drainage shall be neatly placed and kept shaped so as to cause the least possible interference with public travel. Free access must be provided to all fire hydrants, water valves, meters, private drives, roads or existing access routes.

1-5 SAND

If sand is to be used for pipe bedding or pipe zone, it shall be free from foreign materials such as rocks, sticks, vegetation, etc., and shall meet the following gradation:

Sieve Size – Inches	Percentage Passing (by weight)
3/8 inch	100
No. 4	75 - 100
No. 30	12 - 50
No. 100	5 - 20
No. 200	0 - 10

1-6 AGGREGATE FOR PIPE BEDDING FOUNDATION

If aggregate is required for pipe bedding foundation, it shall conform to the sieve sizes for 1” rock and shall be free from foreign and organic matter.

1-7 DECOMPOSED GRANITE (D.G.)

Decomposed granite (D.G.) may be used for the trench zone. D.G. shall be free of rocks, sticks and other deleterious matter and shall be from a source approved by the City.

1-8 SELECTED NATIVE MATERIAL FOR TRENCH BACKFILL

Selected native material approved by the City for trench backfill shall be selected native material free from clods, sticks, vegetation, chunks of asphalt paving, or other deleterious materials, shall be free of rocks and stones which are larger than $\frac{3}{4}$ inch in greatest dimension, and shall be free of clay or cohesive material.

1-9 OBSTRUCTIONS

All underground improvements shall be preserved and protected. Where it is necessary to remove and replace or to relocate such improvements in order to prosecute the work, they shall be removed, maintained in operation, and permanently replaced as directed by the Owner of the discovered obstruction or as directed by the City.

1-10 COMPACTION TESTS

Compaction in the street zone for City streets shall be a minimum 95% relative compaction in accordance with the methods specified by the ASTM D1557. Material shall be A.C. on Class II aggregate base on D.G. as determined by the City based upon the native conditions, traffic index and other pertinent items.

Backfill of excavations within the rights-of-way of County streets and State highways shall be done in accordance with the requirements and to the satisfaction of the Road Department of the County and Caltrans, respectively.

Compaction in area not in State, County or City rights-of-way shall be tested at locations selected by the City and in accordance with the methods specified by the ASTM D1557.

1-11 CORRECTION OF FAULTY GRADES

Where excavation is inadvertently carried below subgrade and/or foundation elevations, suitable provision shall be made for adjustment of the subgrade. The subgrade or foundation shall be restored to a condition similar to the condition existing prior to the over-excavation and by means acceptable to the City.

1-12 CLEARING AND GRUBBING

All trees, brush, roots and other perishable and objectionable material shall be removed from the project.

The ground surface of all areas where material is to be excavated or where embankments, stockpiles, fills or structures are to be placed, shall be cleared of all vegetation and rubbish, and all brush, roots and tree roots shall be grubbed and removed from such areas. All cleared and grubbed areas shall be maintained free from vegetal growth.

Organic material from clearing and grubbing operations will not be incorporated in pipe backfill.

1-13 BLASTING AND EXPLOSIVES

Blasting is normally not permitted in the City. Written permission of the City shall be obtained prior to any blasting or use of explosives. Explosives, if used, shall be of such quantity and power and shall be used in such locations so as to minimize opening of seams and disturbing of the material outside the prescribed limits of excavation. As excavation approaches its final limits, the depths of holes for blasting and the quantity of explosives used for each hole shall be reduced so that the underlying or adjacent material will be disturbed or shattered as little as possible.

Extreme care shall be exercised when blasting in the vicinity of existing structures, utilities or construction facilities of others.

All blasting shall be done in conformance with the provisions of the Construction Safety Orders of the California Department of Industrial Safety, California Administrative Code, Article 5, Title 8.

1-14 DEWATERING

There shall be provided and maintained at all times during construction ample means and devices with which to promptly remove and properly dispose of all water from any source entering the excavations or other parts of the work. Dewatering shall be accomplished by methods which will ensure a dry excavation and preservation of the final lines and grades of the bottoms of excavations. Said methods may include well points, sump pumps, suitable rock or gravel placed below the required bedding for drainage and pumping purposes, temporary pipelines and other means, all subject to the approval of the City.

Dewatering for structures and pipelines shall commence when groundwater is first encountered and shall be continuous until such times as water can be allowed to rise in accordance with the provisions of this section. No concrete footings or floors shall be laid in water nor shall water be allowed to rise over them until the concrete or mortar has set at least eight hours. Water shall not be allowed to rise unequally against walls for a period of 28 days.

Water from the work shall be disposed of in a suitable manner without damage to adjacent property. No water shall be drained into work built or under construction. Water shall be disposed of in such a manner as not to be a menace to the public health.

SECTION 2 – PIPELINE AND TRENCH EARTHWORK

2-1 GENERAL

Work in connection with pipelines and trench earthwork shall include but not be limited to any or all of the following described operations: clearing; excavation of all classes and whatever substance encountered; backfilling; fine grading; preparation of right-of-way; subgrade for pipe and structures; and paving and performing any other similar, incidental,

or appurtenant earthwork operation which may be necessary to properly complete the work indicated. Trenching and backfilling requirements are shown in the Standard Drawings.

2-2 EXCAVATION FOR PIPE TRENCHES

Trenches for pipelines shall be excavated to the lines and grades required and as approved by the City.

2-3 TRENCH WIDTH

The overall trench width shall not be more than 16 inches nor less than 12 inches wider than the largest outside diameter of the pipe to be laid therein, measured at a point 12 inches above the top of the pipe. Excavating 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. For the purpose of this article, the largest outside diameter shall be the outside diameter of the bell, on bell and spigot pipe, the outside diameter of coupling for sleeve coupling pipe.

Where the trench width, measured at a point 12 inches above the top of the bell or sleeve of the pipe is wider than the maximum set forth above, the trench area around the pipe shall be reworked to restore a trench condition acceptable to the City. The reworking may result in one or more of the following operations, subject to the approval of the City: (1) Shaping the bottom of the trench to fit the pipe; (2) Placing sand around the pipe and to a point 6 inches above the top of the pipe; (3) Lowering the grade of the pipe until the trench condition can be met; (4) Installing a concrete cradle for the pipe; and (5) Providing concrete encasement for the pipe to a point 3 inches above the top of the pipe.

2-4 LIMIT OF EXCAVATION

Except by special permission of the City, the maximum length of open trench shall not exceed 200 feet in the aggregate at any one location including excavation, construction, pipe laying and backfilling. In addition, at locations where access may be somewhat limited, requiring rerouting of traffic unnecessarily, the City may reduce the maximum length of open trench permitted.

2-5 TRENCH BOTTOM FOR PIPE

The trench bottom shall be graded to provide a smooth, firm foundation at every point throughout the length of the pipe.

In suitable material, the trench shall be excavated to a depth 6 inches below the established grade line of the outside bottom of the pipe. The bottom of the trench shall then be backfilled with sand and uniformly graded to produce a firm but yielding subgrade which will provide uniform support of the pipe along the full length of each section. The sand bedding material so prepared throughout a minimum depth of 6 inches shall meet the requirements of these specifications.

If it becomes necessary to excavate below the established grade line in order to remove boulders or other interfering objects, the voids shall be filled with material densified in the manner specified for bedding materials.

Where excavation is in rock, hardpan, shale, or other similar hard and unyielding materials, the trench shall be excavated to a depth at least 12 inches below the established grade line of the outside bottom of the pipe and filled with sand as specified in these specifications to grade line. The subgrade shall then be completed as previously stated. The material so placed shall be compacted to 90% relative compaction.

When excavation is in soft, unstable or excessively wet material which is unsuitable as a foundation for the pipe, such material shall be removed as directed by the City and replaced with sand to a depth approximately 18 inches below the grade line.

At each joint in the pipe, the bottom of the trench shall be recessed in such a manner as to relieve the bell of the pipe or the pipe coupling of all load and to ensure continuous bearing along the pipe barrel upon the bedding material.

2-6 TRENCH BACKFILL

All trenches shall be backfilled after pipe, fittings and appurtenances have been installed. Whenever a relative compaction requirement value is specified herein, it shall be a percentage of the maximum density. Optimum moisture content and maximum density shall be determined in accordance with ASTM D1557 and density of soil in place shall be determined using methods approved by the City.

All wood and waste material shall be removed from excavation preparatory to backfilling. Backfill material shall be approved in all cases by the City and shall be free of trash, wood, large rock, or other objectionable debris. Backfilling shall include the refilling and compaction of the fill in trenches of excavations up to the subgrade of the street or to the existing ground surface.

2-7 PIPE BEDDING

The pipe shall be carefully bedded during initial pipe zone backfill operations by hand placing, slicing with a shovel and tamping or “walking in” the material under the lower sector of the pipe to produce firm support for the full length of the barrel with full bearing to the horizontal centerline of the pipe.

2-8 PROCEDURE AT PIPE ZONE

Subsequent backfill in the pipe zone shall consist of placing material as specified in these specifications simultaneously on each side of the pipe for the full width of the trench and compacting said material to a relative compaction of 90% within the limits of the pipe zone. The pipe zone shall be considered to extend 12 inches above the top of the outside diameter of the pipe.

The pipe shall be carefully bedded by hand placing and compacting clean imported sand as provided herein from the pipe foundation and/or subgrade to the horizontal centerline

of the pipe prior to backfilling above the pipe within the “pipe zone.” Clean imported sand shall be used for the pipe bedding.

The pipe bedding, using clean imported sand, shall be compacted by approved methods to a relative compaction of 90%. The pipe bedding backfill shall be brought to optimum moisture content and shall be placed in layers not exceeding 6 inches in thickness and each layer shall be solidly tamped with the proper tools so as not to injure, damage or disturb the pipe. Backfilling shall be carried on simultaneously on each side of the pipe to assure proper protection of the pipe.

2-9 PROCEDURE ABOVE PIPE ZONE

The remaining portion of the trench to within 2-1/2 feet of the finished roadway surface or ground surface, as the case may be, shall be backfilled, compacted and/or consolidated to obtain a relative density of 90%. Backfilling may be done with native trench material provided that no oil cake, bituminous pavement, concrete, rock, clay or other lumpy material is in the backfill. Material of perishable, spongy, or otherwise improper nature shall not be used in backfilling and no material greater than ¾ inch in any dimension shall be placed within 12 inches of any pipe, manhole or structure.

2-10 COMPACTION IN OPEN FIELDS

In open field, where paving or structures will not be above the excavated area, backfill and compaction shall extend to the top of the trench, leaving the top slightly mounded.

2-11 PROCEDURE AT STREET ZONE

The top 2-1/2 feet of the trench within roadbed areas shall be compacted in horizontal layers not exceeding 6 inches in thickness, using approved hand, pneumatic or mechanical type tampers to obtain a relative density of 95% with a moisture content within 2% of optimum. Flooding and jetting will not be permitted within roadbed area. Compaction requirements in the street zone may be modified by the backfill requirements of other government agencies in areas where these agencies have jurisdiction.

The roadbed area as used herein shall be considered as extending five feet beyond the curbs, gutters or paved shoulders.

From existing street grade to 2-1/2 feet below street grade, the material for backfill shall be minimum 4” A.C. on minimum 8” Class II aggregate base on D.G. as determined by the City. Pavement shall be in accordance with these specifications on resurfacing streets.

2-12 EXCESS EXCAVATED MATERIAL

All surplus material not required for backfill shall be disposed of by Developer outside the limits of the public rights-of-way and/or easements.

No excavated material shall be deposited on private property, unless written permission is secured by the Developer. Before the City will accept the work as being completed, the Developer shall file a written, notarized release signed by all property owners with whom

he has entered into agreements for disposal of excess excavated material, absolving the City from any liability connected therewith.

2-13 IMPORTED PIPE BACKFILL MATERIAL

Whenever the excavated material is not suitable for backfill, in the opinion of the City, suitable imported material shall be used for pipe backfill.

SECTION 3 – STRUCTURES EARTHWORK

3-1 GENERAL

Structure excavation shall include the removal of all material of whatever nature necessary for the construction of structures and foundations required and as approved by the City.

The sides of excavations for structures where all vertical surfaces are formed shall be sufficient to leave at least 2 feet in the clear as measured from the extreme outside of formwork or the structure, as the case may be. Where excavation is carried below designated elevations, suitable provision shall be made for adjustment of construction, as directed by the City, to meet requirements incurred by the deeper excavation beneath structures, and overdepth excavation in such locations shall be rectified by backfilling with sand, graded gravel, or concrete as directed by the City. All overdepth excavation for footings shall be backfilled with Class C concrete, as defined in the Technical Specifications for Concrete Construction.

3-2 SUBBASE FOR STRUCTURES

Where required and as approved by the City, a crushed rock subbase shall extend from firm ground undisturbed by construction operations to the structure base slab for all concrete structures. Any remaining disturbed or loose material shall be removed before the crushed rock subbase is placed. The subbase shall be compacted to the specified compaction, 90% minimum or as approved by the City, by means of a vibratory compactor.

3-3 SUBBASE MATERIALS

Mineral aggregate shall conform with the following gradation requirements:

Sieve Size	Percent Passing Sieves
¾ inch	90 – 100
No. 4	40 – 60
No. 30	13 – 23
No. 200	0 – 2

3-4 BACKFILLING

After compaction of foundation footings and walls of the structure and of other construction below the elevation of the final grade and prior to backfilling, all forms shall be removed, and the excavation shall be cleared of debris. Backfilling shall not be commenced until the structure and excavation involved shall have been inspected and approved by the City. Material for backfilling shall consist of selected excavation material, imported sand, gravel or other material approved by the City and shall be free of trash, lumber or other debris. No material of a perishable or spongy nature and no stone or piece of rock greater than 1 inch in the greatest dimension shall be used in backfilling.

Compaction shall be obtained by means of mechanical tamping. Backfill of excavated material shall be placed in horizontal layers not exceeding 9 inches in thickness and shall have a moisture content such that the required degree of compaction may be obtained. Each layer shall be compacted by hand or machine tampers or by other suitable equipment or means to the specified relative compaction, 90% minimum or as approved by the City.

Where backfill or fill is against only one side of a concrete structure, no fill shall be placed until the concrete in place has obtained an acceptable seven-day strength based upon a concrete cylinder test, unless otherwise directed by the City.

Particular care shall be exercised when backfilling at the various structures to obtain adequate compaction beneath pipes connected thereto and to avoid injury or displacement of such pipes or projections of the structures.

TECHNICAL SPECIFICATIONS
FOR
DUCTILE IRON WATER PIPE AND FITTINGS

SECTION 1 – GENERAL

These specifications designate the requirements for furnishing and installation of ductile iron pipe and fittings to be used for potable water pipelines.

SECTION 2 - MATERIALS

2-1 PIPE

All pipe shall be Class 350 ductile iron manufactured in accordance with AWWA (ANSI A21.51).

2-2 PIPE ENDS AND WALL THICKNESS

Pipe ends (flange, mechanical joint, etc.) and wall thickness shall be as approved by the City.

2-3 FITTINGS

Fittings shall be cast or ductile iron in accordance with AWWA C110 and shall have a minimum 250 psi pressure rating. Fitting ends (flange, mechanical joint, plain end, etc.) shall be specified on the Plans and approved by the City.

Where flanges are required, gaskets shall be full-face, 1/8 inch thick, per AWWA C115 and C207. Bolts and nuts shall be corrosion resistant steel A320, Grade B8M, and 8M (A151 316) stainless steel.

2-4 INTERIOR LINING

Fittings and pipe shall be cement mortar lined per AWWA C104.

SECTION 3 – INSTALLATION

3-1 GENERAL

Trenching, pipe bedding, and backfill shall conform to the Standard Specification for Earthwork, Section 2.

All pipes, valves and fittings shall be encased with polyethylene in accordance with AWWA C105/A21.5, Method A or B.

3-2 PIPE HANDLING

Pipe shall be thoroughly cleaned then carefully lowered into the trench using suitable means that will prevent disturbing the prepared bedding or getting dirt inside the pipe or fittings. All pipe and fitting ends shall be thoroughly cleaned again before final assembly of the joint.

3-3 RESTRAINED JOINTS

Restrained joints approved by the City shall be installed at all tees, crosses and changes in direction (horizontal & vertical). Restrained joints shall be installed on a minimum of three (3) full pipe joints in all directions from subject fitting.

3-4 CONCRETE THRUST BLOCKS

Concrete thrust blocks shall be placed as shown on the Standard Details and shall be Class A concrete in accordance with the Technical Specifications for concrete Construction. All thrust blocks shall have the minimum bearing areas shown on the Standard Details. The concrete shall be so placed that the pipe and fitting joints will be accessible to repairs and free to move flexibly and axially. Concrete shall not be permitted on joints, fittings, bolts, etc.

3-5 PREVENTING FOREIGN MATTER FROM ENTERING THE PIPE

At times when the pipe laying is not in progress, the open end of the pipe shall be closed by a secured, vermin-proof plug or cap.

SECTION 4 – HYDROSTATIC TESTING

After completion of the pipeline installation, the line shall be tested under a hydrostatic pressure test of at least 150 psi, as measured at the low point of the pipeline, for a period of not less than 4 hours for each section of pipe tested. The pressure shall be maintained by restoring the test pressure whenever it falls an amount of 25 psi. At the conclusion of the 4 hours, the test pressure shall be restored and all water used during the tests shall be accurately measured to determine the actual leakage.

The Developer shall provide suitable calibrated tanks for measurement of leakage and shall furnish the necessary bulkheads, piping, calibrated gages, pumps, power, labor and other means, and shall do everything necessary for filling the pipeline and for obtaining and maintaining the required water pressure.

The Developer, at this own expense, shall do all excavating necessary to locate and repair leaks or other defects which may develop under test, including removal of backfill already placed. He shall make all repairs necessary to secure the required watertightness and shall replace excavated material, following which the test shall be repeated until the pipe is found satisfactory.

The City shall approve the test pressure and procedure. A test pressure of more than 150 psi may be required by the City in some cases.

4-1 ALLOWABLE LEAKAGE RATE

The leakage per inch of internal pipe diameter for a 24-hour period at the pressure specified shall be as follows:

For ductile iron pipe and fittings – a rate of 20 gallons per day per inch diameter per mile.

Regardless of the rate of leakage, all detectable leaks shall be repaired.

SECTION 5 – DISINFECTION OF WATER LINES

After pressure testing and prior to acceptance of the work, the entire pipeline, including all valves, fittings, hydrants and other accessories shall be disinfected in accordance with AWWA C601 and as follows:

Chlorine residual shall be determined in accordance with the method specified in the Appendix to AWWA 601 with amounts of supplied chlorine to produce a dosage of 40-50 ppm and a residual of not less than 5 ppm in all parts at the line after a 24-hour period has elapsed. The Contractor shall provide and keep chlorine residual testing and indicating apparatus available on the site during the disinfection period.

During the chlorination process, all valves and accessories shall be operated. After chlorination, the water shall be flushed from the line at its extremities until the replacement water tests are equal, chemically and bacteriologically, to those of the permanent supply.

Following the flushing of the line, the City may require the Developer to have a qualified laboratory perform a bacteriological test. Such a test shall meet the California Department of Health Services requirements for domestic water purposes prior to acceptance by the City for integration and use in the system.

The disinfection of lines and any laboratory testing shall be entirely at the Developer's expense.

TECHNICAL SPECIFICATIONS
FOR
CONNECTIONS TO EXISTING DOMESTIC WATER SYSTEM

SECTION 1 – WATER MAINS

All tie-ins, taps, saddles and connections to existing City mains shall be made by the City. Extensions to the City's water system shall be constructed by the Developer in the presence of the City. Any water system shutoffs by the Developer shall be scheduled to cause the least inconvenience to the public and shall be approved in writing by the City. The Developer shall give a minimum of 48 hours written notice to every effected water customer, and the Bishop Fire Department, prior to any water shutoff.

SECTION 2 – VALVES AND HYDRANTS

Installation of valves and hydrants to existing mains may be made by use of tapping sleeves, tapping crosses and tapping valves provided that their locations are shown in the plans and/or specifications. The tapping sleeves and crosses must be ROMAC or equal, subject to approval by the City. The tapping valve must be a resilient seat gate valve as specified in the Technical Specifications for Resilient Seat Gate Valves.

SECTION 3 – CROSS-CONNECTION CONTROL REQUIREMENTS

Cross-connection of any type that permit a backflow condition from any source or system other than that of the City's potable water mains are prohibited. A connection constituting a potential or actual backflow hazard is not permissible unless a backflow device or air gap which is approved by the California State Department of Health Services and complies with Title 17 of the California State Administrative Code, is installed. Such an installation shall at all times be subject to inspection and regulation by the City for the purpose of avoiding possibility of backflow.

The City will not provide any water service to any premises or continue to serve water unless the public water supply is protected as required by State, County and City regulations.

Backflow preventive devices shall be approved by the City and shall be installed by and maintained at the expense of the property owner.

The City will regularly test (at least once a year) such devices. The water user shall maintain them in satisfactory operating condition and shall overhaul or replace such devices if they are found defective.

Service of water to any premises may be discontinued by the City if a backflow prevention device required by the City is not installed; if any defect is found in an installed backflow preventive device; if it is found that the backflow preventive device has been removed, disabled or bypassed; or if unprotected cross-connections exist on the premises; and service will not be restored until such conditions or defects are corrected.

Additional reference for guidelines to when, why and what types of backflow and cross-connection control devices are approved may be found in:

1. Regulations Relating to Cross-Connections, California Administrative Code – Title 17 – Public Health.
2. City of Bishop Municipal Code, Chapter 16.03.

Water users which have multiple water systems shall abide by the requirements specified in Title 17 for marking safe and unsafe water lines, and have a designated water supervisor, if required by the City.

TECHNICAL SPECIFICATIONS
FOR
DOMESTIC WATER SERVICES

Water services shall be installed by the Developer using the type of materials, fittings, valves and appurtenances as shown on the Standard Drawings. The water services shall be terminated at a curb stop with valve box. One water service shall be provided to each property.

Water services to residences shall be Type K copper, $\frac{3}{4}$ inch in diameter.

TECHNICAL SPECIFICATIONS
FOR
RESILIENT SEAT GATE VALVES

SECTION 1 – GENERAL

These specifications designate the requirements for the furnishing and installation of resilient seat gate valves.

SECTION 2 – MATERIALS AND WORKMANSHIP

Resilient seat gate valves shall conform to the requirements of AWWA C509 and the requirements set forth herein.

Resilient seat gate valves, unless otherwise indicated, shall be the same size as the main in which they are installed and shall be flange connected to cast iron fittings. All valves shall be non-rising stem, counterclockwise opening. Valves shall have the same type ends as the pipe or fitting on which they are installed. Valves are to have 2-inch square cast iron operating nuts. Valves shall be marked with raised lettering cast on the body indicating manufacturer and working pressure. Minimum water working pressure to be 200 psig.

Valves shall be iron bodied, bronze mounted, with modified wedge disc or parallel faced disc with replaceable resilient seats. The bronze stem nut shall be solid bronze conforming to ASTM B62 (4-5% zinc). The bronze stem shall be cast bronze or forged bronze bar stock containing a maximum of 2% zinc. Valves shall be manufactured by Mueller, Clow or equal approved by the City.

2-1 INTERIOR COATING

The interior of the valve body and wedge shall be coated at the place of manufacturer. Surfaces shall be sandblasted in accordance with SSPC-SP-5 (white metal blast cleaning). Interior coating shall consist of two coats of epoxy resin, Keysite 740 or equal, applied to a minimum dry-film thickness of 10 mils.

2-2 EXTERIOR COATING

For buried service, valve bodies and cast iron portions of the operator housings and extensions shall be coated at the place of manufacturer. Surfaces shall be sandblasted in accordance with SSP-SP-6 (commercial blast cleaning). One coat of heavy-duty coal-tar (Kippers Bitumastic 505 or approved equal) shall be applied to all minimum dry-film thickness of 15 mils. The paint manufacturer's application recommendations shall be followed.

TECHNICAL SPECIFICATIONS
FOR
VITRIFIED CLAY SEWER PIPE AND FITTINGS

SECTION 1 – GENERAL

These specifications designate the requirements for furnishing, installing and testing of vitrified clay pipe (VCP), fittings and appurtenances to be used for gravity flow sewer systems. Pipe shall not be stored on the roadways or parkways of residential streets for more than ten days or upon business streets for more than three days.

Excavation and backfill, including the pipe bedding, shall conform to provisions of the Technical Specifications for Earthwork.

SECTION 2 – MATERIALS

All VCP and fittings shall be of one class designated extra strength; of the best quality; vitrified; homogeneous in structure; thoroughly burned throughout their entire thickness; impervious to moisture; sound and free from cracks, checks, blisters, broken extremities, or other imperfections; and must give a metallic ring when struck with a hammer. 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 the National Clay Pipe Institute, 14700 East Firestone Boulevard, Suite 111, La Mirada, California 90638, and to the applicable provisions of ASTM C700 for the size of pipe used. All pipe and special fittings shall comply with the applicable provisions of the VCP specifications of the National Clay Pipe Institute with respect to the hydrostatic pressure test, size, shape, three-edge bearing load test and all other requirements of said specifications, unless otherwise specified herein.

2-1 IDENTIFICATION MARKS

All pipe fittings shall be clearly marked with the name of the manufacturer or with a trademark of a size and type.

2-2 CAUSES FOR PIPE REJECTION

The following imperfections in a pipe or special fitting will be considered injurious and cause for rejection:

A single crack in the barrel of the pipe extending through the entire thickness, regardless of the length of such crack. A single crack which extends through one-fifth of the barrel thickness and is over 3 inches long. Any surface fire crack which is more than 1/32 inch wide at its widest point.

Lumps, blisters, pits or flakes on the interior surface of a pipe or fittings.

When the bore or socket of the pipe varies from a true circle more than 3% of its nominal diameter.

When a pipe or fitting designated to be straight deviates from a straight line more than 1/16 inch per linear foot. The deviation shall be measured from a straight edge at a point midway between the ends of the pipe.

A point broken from either the socket or spigot end.

Tramp clays, grog or other foreign matter that have fused permanently to the exterior or interior surfaces of the pipe or fittings.

If, when placed in a vertical position, the pipes do not give a metallic ring when struck with a hammer.

SECTION 3 – FITTINGS

VCP fittings shall include branches of every type and stoppers. Fittings shall be furnished and installed in conformance with these specifications.

3-1 BRANCHES

Branches of type shown on the plans shall be furnished with connections of the sizes specified and shall be securely and completely fastened to the barrel of the pipe in the process of manufacture. This shall be accomplished by fusion during vitrification. In the case of pipe 15 inches or greater in diameter, fusion during vitrification will not be required, but if not fused, in addition to other fastening materials of approved quality, there shall be a reinforcing collar of cement mortar on the interior surface of the pipe. Tee branches shall have their axes perpendicular to the longitudinal axis of the pipe. Wye branches shall have their axes 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 sufficient length to permit making a proper joint when the connecting pipe is inserted in the branch socket.

The quality of VCP fittings and the joints for fittings shall conform to the applicable provisions of these specifications.

Installation of branches: VCP wyes, tees and other types of branches shall be furnished and installed along with VCP sewer. Wyes shall be installed for all sewer house connections including foreseeable future sewer house connections. Tees shall be installed for chimneys where applicable. 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 said sewer. Installation, earthwork and bedding for branches shall conform to the applicable provisions set forth for pipe. Unless otherwise specified, the branch of wye fittings shall be inclined upward at an angle not greater than 45 degrees from a horizontal line. No wye or tee for sewer house connection branch shall be placed closer than 5 feet in the downstream side to the centerline of any structure.

3-2 STOPPERS

Vitrified clay stoppers shall be ¾ inch in thickness and shall have a factory-made plasticized polyvinyl chloride compound joint material cast and bonded to the pipe, such as Wedge-Lock, Speed Seal, or approved equal. The material shall be molded and cured to a uniform hardness and compressibility and form a tight compression coupling when assembled. The material used for the compression joint shall conform to ASTM C425.

Neoprene (synthetic rubber) stoppers shall be of the type manufactured by Pacific Clay Products, Interpace Corporation, or approved equal. The joint formed by the stopper and clay pipe shall be a tight compression coupling when assembled.

All joints for toppers shall be adequate to withstand the internal pressure of the leakage and/or infiltration test; however, joints shall be made in such a manner that they may be removed without injury to the socket.

3-3 VCP AT MANHOLES OR STRUCTURES

Two 1-foot VCP joints shall be placed in inlets and outlets to each manhole or structure to be constructed as shown on Standard Details.

3-4 SANITARY “WYE” OR “TEE” BRANCHES

“Wye” or “tee” branches for 4-inch and 6-inch sewer laterals shall be furnished and installed or the type and size and at the locations required and as approved by the City. Branches are those fittings used to fasten or affix a sewer lateral to a clay pipe sanitary sewer main. Where sewer house connections are not built, the branch socket shall be plugged with a stopper as per the Standard Details.

SECTION 4 – INSTALLATION

4-1 VCP JOINTS

All VCP and fittings shall be furnished with mechanical compression joints equal to Wedge-Lock, as manufactured by Pacific Clay; Speed Seal, as manufactured by Interpace Corporation; or Calder Couplings for plain end pipe. The compression joint on the spigot and bell ends of the pipe shall be factory made of polyurethane 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 or compression joints shall conform to ASTM C425. An approved lubricant shall be used in the assembling of the pipe, and no further sealing element will be required. Joints shall be made watertight and root tight.

4-2 LAYING VCP

Trenches shall be kept free of water during the laying operation. All pipe shall be laid without break, upgrade from structure to structure, with the socket ends of the pipe

upgrade. Pipe shall be laid in such a manner as to form a close concentric joint with the adjoining pipe and prevent sudden offsets of the flow line. The interior of the sewer pipe shall be cleaned of all dirt and superfluous materials of all description as the work progresses. The provisions of Technical Specifications for Earthwork shall apply to the installation of the pipe.

4-3 PREVENTING FOREIGN MATTER FROM ENTERING THE PIPE

At times when the pipe laying is not in progress, the open end of the pipe shall be closed with a vermin-proof cap or plug and secured to prevent tampering by children. In no event shall the sewers be used as drains for removing water which has infiltrated into the trenches.

SECTION 5 – TEST FOR LEAKAGE AND INFILTRATION

It is the intent of these specifications that the completed sewer pipes of all types, along with manholes and other appurtenances, shall be watertight.

Each section of sewer between two successive manholes shall be tested for leakage and/or, at the option of the City, for infiltration. Where groundwater is encountered, the infiltration test shall be made.

Even though a section may have previously passed the leakage or infiltration test, each section of sewer shall be tested subsequent to the last backfill compaction operating in connection therewith, wherein, in the opinion of the City, heavy compaction equipment used in any of the operations may have damaged or affected the required watertight integrity of the pipe, structure and appurtenances. The Developer or his Contractor shall furnish all materials required for the tests and bear all costs in connection therewith. Tests shall be made in the presence of the City.

If the leakage and/or infiltration rate, as shown by the tests specified herein, is greater than the amount specified, the pipe joints shall be repaired or, if necessary, the pipe shall be removed and re-laid at the Developer's expense. The sewer will not be considered acceptable until the leakage and/or infiltration rate, as determined by test, is less than the allowable.

Prior to testing, all service laterals shall be installed and shall be tested simultaneously with the main line.

5-1 LEAKAGE TEST

The Developer may, at his option, air test or water test for leakage, except where the difference in elevation between the invert of the upper structure and the invert of the lower structure is more than 10 feet where the air test shall be made.

Water Test: Each section of sanitary sewer between two successive structures shall be tested by closing the lower end of the sewer to be tested and the inlet sewer of the upper structure with plugs or stoppers and filling the pipe and structure with water to a point 4

feet above the invert of the open sewer in the upper structure or to a height of 10 feet above the invert of the sewer in the lower structure, whichever gives the least hydrostatic pressure on the lower structure.

The total leakage shall be the decrease in volume of water in the upper structure. The leakage shall not exceed 0.1 gallon per minute per inch of nominal diameter of pipe per 1,000 feet of sewer pipe being tested. The length of house connections shall not be used in computing the length of sewer main being tested.

If the leakage, as shown by the test, is greater than allowed, the pipe shall be overhauled and, if necessary, replaced and re-laid until the joints and pipe shall hold satisfactorily under the test. All tests must be completed before street or trench is resurfaced, unless otherwise determined by the City. The developer or his Contractor shall furnish all labor and materials for making the tests required at his own expense.

Air Test Procedure: Each section of sewer between two successive manholes shall be tested by plugging all pipe outlets with suitable test plugs. Air shall be slowly added 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. The internal pressure of 4 psig shall be maintained for at least two minutes to allow the air temperature to stabilize, after which the air supply shall be disconnected and the pressure allowed to decrease to 3.5 psig. The time required for the internal air pressure to drop from 3.5 psig to 2.5 psig shall be measured and the results compared with the values tabulated below:

Pipe Dia. (Inches)	Test Time		Minimum Distance Between Manholes (Feet)	K Value
	(Min.)	(Sec.)		
8	3	46	300	.704
10	4	43	260	1.10
12	5	40	215	1.58
15	7	5	170	2.47
18	8	30	145	3.56
21	9	55	125	4.85
24	11	20	105	6.34
27	12	45	95	8.02
30	14	10	85	9.90
33	15	35	75	12.0
36	17	0	70	14.3
39	18	25	65	16.7
42	19	50	60	19.4

The above-tabulated values shall be used for the respective diameter pipes, except where the distance between successive manholes is less than the above-tabulated values, in which case the following formula will be used to determine the test time:

$T = KL$, Where T = time in seconds, L = distance between successive manholes in feet, and K = appropriate value from above table.

If the pressure drop from 3.5 psig to 2.5 psig occurs in less time than the above-tabulated or calculated values, the pipe shall be overhauled and, if necessary, replaced and re-laid until the joints and pipe shall hold satisfactorily under this test.

5-2 TEST FOR INFILTRATION

If, in the construction of a section of the sewer between structures, groundwater is encountered, the end of the sewer at the upper structure shall be closed sufficiently to prevent the entrance of water and pumping of groundwater shall be discontinued for at least three days after which the section shall be tested for infiltration. The infiltration shall not exceed 0.1 gallon per minute per inch of diameter per 1,000 feet of mainline sewer being tested and does not include the length of house laterals entering that section. Where any infiltration in excess of this amount is discovered before completion and acceptance of the sewer, the sewer shall be immediately uncovered and the amount of infiltration reduced to a quantity within the specified amount of infiltration, before the sewer is accepted, at the expense of the Developer. Should, however, the infiltration be less than the specified amount, the Developer or his Contractor shall stop any individual leaks that may be observed when ordered to do so by the City. The Developer shall furnish all labor and materials for making the tests required at his own expense. All tests must be completed before street or trench is resurfaced, unless otherwise determined by the City.

5-3 TESTS FOR ALIGNMENT AND GRADE, AND DAMAGED OR DEFECTIVE PIPE IN PLACE

After the pipe has been installed, tested or leakage and/or infiltration, backfilled to existing grade, manholes raised to grade and resurfaced, the pipe shall be “balled” from the manhole to manhole with a sewer scrubbing ball of type and size to be approved by the City. In addition to and after balling the pipe, all straight sewers and inlet/out ends of curvilinear sewers shall be “mirrored” by the City with the assistance of the Developer or his Contractor. All balling and mirroring shall be done in the presence of the City and shall constitute tests for alignment, grade, damaged or defective pipe in place, or any other type of faulty installation. Should balling and mirroring indicate any faulty installation of the pipe, repairs or replacements shall be made at the Developer’s expense as determined by the City.

TECHNICAL SPECIFICATIONS
FOR
POLYVINYL CHLORIDE SEWER PIPE AND FITTINGS

SECTION 1 – GENERAL

These specifications designate the requirements for furnishing and installation of Polyvinyl Chloride (PVC) plastic pipe and fittings to be used for sewer laterals and house connections with gravity flow sewer systems.

Unplasticized PVC pipe may be used on residential house laterals only to sizes not exceeding six (6) inches in diameter. Use of PVC for main line sewers on industrial, commercial, and medical installations will not be permitted.

The maximum design deflection for plastic sewer pipe shall be 3%.

Pulling of joints or beveling pipe ends to achieve curvature will not be permitted.

SECTION 2 – MATERIALS

Unplasticized PVC pipe, fittings, couplings, and joints shall conform to the requirements of ASTM D 3034, SDR 35, and shall have gasketed joints.

2-1 IDENTIFICATION MARKS

All pipe, fittings, and couplings shall be clearly marked at an interval not to exceed 5 feet as follows:

- (1) Nominal pipe diameter
- (2) PVC cell classification
- (3) Company, plant, short, ASTM, SDR and date designation
- (4) Service designation or legend

For fittings and couplings, the SDR designation is not required.

2-2 CELL CLASSIFICATION

Pipe shall be made of PVC plastic having a cell classification of 12454-B, 12454-C, or 13364-B as defined in ASTM D 1784. The fittings shall be made of PVC plastic having a cell classification of 12454-B, 12454-C, or 13343-C per ASTM D 1784.

2-3 TEST REQUIREMENTS

Pipe, fittings, and couplings shall meet the requirements of the section titled “Requirements” of ASTM D3034. During production of the pipe, the manufacturer shall perform the specified tests for each pipe marking. A certification by the manufacturer

indicating compliance with specification requirements shall be delivered with the pipe. The certification shall include the test result data.

The basis for acceptance shall be the inspection of pipe, fittings, and couplings the tests specified above; and compliance with the specifications. When the pipe is delivered to the jobsite, the City may require additional testing to determine conformance with the requirements of pipe flattening, impact resistance, pipe stiffness and extrusion quality. Also, pipe which is not installed within 120 days of the latest test shall not be used without prior written approval of the City.

When testing is required by the City, one test pipe shall be selected at random by the City from each 1,200 feet or fraction thereof of each size of pipe delivered to the jobsite but no less than one test pipe per lot. A lot shall be defined as pipe having the same identification marking. The length of specimen for each selected pipe shall be a minimum of 8 feet.

2-4 GASKETS

Gaskets shall conform to ASTM F 477. A single rubber gasket shall be installed in each bell end of a joint of pipe or fitting.

SECTION 3 – INSTALLATION

3-1 LAYING PVC PLASTIC PIPE

Trenches shall be kept free of water during the laying operation. All pipe shall be laid without break, upgrade from structure to structure, with the bell ends of the pipe upgrade. Pipe shall be laid 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. The interior of the sewer pipe shall be cleaned of all dirt and superfluous materials of all description as the work progresses. During any interruption in work, the open pipe end shall be capped or plugged.

3-2 JOINING SYSTEMS

All pipes shall have a home mark on the spigot end to indicate proper penetration when the joint is made.

The socket and spigot configurations for the fittings and couplings shall be compatible to those used for the pipe.

Pipe shall be joined with elastomeric gasketed joints manufactured with a socket configuration which will preclude improper installation of the gasket and will ensure the gasket remains in place during the joining operation.

Joining of pipe shall be in accordance with the manufacturer's printed instructions, which shall be furnished to the City. The spigot end shall be inserted to the proper depth of the socket as indicated by the home mark.

3-3 SHORT JOINTS AT MANHOLES AND STRUCTURES

A 2-foot joint of PVC shall be placed at inlets and outlets to each manhole or structure to be constructed as shown on the Standard Details.

SECTION 4 – TESTING

4-1 TEST FOR DAMAGED OR DEFECTIVE PLASTIC SEWER PIPE IN PLACE

Following the placement and densification of backfill and prior to the placing of permanent pavement, all main line pipe shall be cleaned and then mandrelled to measure for obstructions (deflections, joint offsets, and lateral pipe intrusions). A rigid mandrel shall be pulled through the pipe by hand. The mandrel shall have a cross section equivalent to a circle having a diameter of at least 95% of the average inside diameter for PVC pipe. The minimum length of the circular portion of the mandrel shall be equal to the nominal diameter of the pipe.

Obstructions encountered by the mandrel shall be corrected by the Contractor.

All material, equipment, and labor to perform the test shall be provided by the Owner and/or Contractor.

4-2 TEST FOR LEAKAGE AND INFILTRATION (GENERAL)

It is the intent of these specifications that the completed sewer pipes of all types, along with manholes and other appurtenances, shall be watertight. The test shall be the same as for VCP.

4-3 LEAKAGE TEST

The Owner may, at his option, air test or water test for leakage, except where the difference in elevation between the invert of the upper structure and the invert of the lower structure is more than 10 feet where the air test shall be made. The test standard shall be the same as for VCP.

4-4 TEST FOR INFILTRATION

If, in the construction of a section of the sewer between structures, groundwater is encountered, the end of the sewer at the upper structure shall be closed sufficiently to prevent the entrance of water and pumping of groundwater shall be discontinued for at least three days after which the section shall be tested for infiltration. The infiltration shall be the same as for VCP.

4-5 TESTS FOR ALIGNMENT AND GRADE, AND DAMAGED OR DEFECTIVE PIPE IN PLACE

After the pipe has been installed, test for leakage and/or infiltration, backfilled to existing grade, manholes raised to grade and resurfaced, the pipe shall be “mirrored” by the City with the assistance of the Owner or his Contractor. All mirroring shall be done in the presence of the City and shall constitute tests for alignment, grade, damaged or defective pipe in place, or any other type of faulty installation. Should mirroring indicate any faulty installation of the pipe, repairs or replacements shall be made at the Owner’s expense as determined by the City.

TECHNICAL SPECIFICATIONS
FOR
CONNECTIONS TO EXISTING SEWER SYSTEM

SECTION 1 – TEMPORARY HANDLING OF SEWAGE

Certain work in connection with tying into existing sewers and manholes may require the temporary bypass lines, pumping, bulkheading at low flows, or other means to be approved by the City. Sewage so diverted shall be handled in a manner so as not to create a public nuisance or health hazard. The Developer shall be responsible for any costs related to making these connections.

SECTION 2 – REMODELING EXISTING MANHOLES

Where an existing manhole base has to be reworked, provision shall be made to keep pieces of concrete and debris out of the sewer. Where new flow-through channels have to be cut, they shall be cut so that the resulting section is smooth and conforms to the intended shape. Deviation from form and grade shall not be greater than ¼ inch. Where holes are required in existing manhole walls for new or revamped connections, the Developer will be required to use coring-type equipment if, in the opinion of the City, the Contractor's method of making holes will result in excessive damage to existing manholes. The hole shall have a maximum dimension of 4 inches larger than the outside diameter of the pipe and a minimum dimension of 2 inches larger than the outside diameter of the pipe. The annular space shall be filled with dry-pack mortar.

SECTION 3 – CONSTRUCTING NEW MANHOLES ON EXISTING SEWERS

Where a new manhole will be constructed in an existing main line sewer, the Developer shall engineer and submit to the City for approval a detail drawing and method of construction for approval.

TECHNICAL SPECIFICATIONS
FOR
SEWER LATERALS AND HOUSE CONNECTIONS

SECTION 1 – GENERAL

These specifications designate the requirements for furnishing and installing sewer laterals and house connections.

Sewer laterals shall be constructed of the type and size and at the locations required and as approved by the City and in conformance with these specifications. The term “sewer lateral” is used in these specifications and on the plans to designate a branch sewer laid from a sanitary sewer main to a point on a street or public right-of-way or easement boundary from which sewer service to an individual building unit can be obtained through proper sewer extension by the property owner and shall be constructed according to the form, dimensions and details shown on the Standard Details. Service, maintenance, repair and replacement of sewer laterals is the responsibility of the property owner.

House connections shall be constructed of the type and size and at the locations required and as approved by the City. The term “house connection” is used in these specifications to designate the sewer line extending from the house soil line 2 feet outside the building to and including its connection with the house lateral at the property line including all necessary fittings as shown on the Standard Details.

House connections shall be installed as specified by the most recent revision of the Uniform Plumbing Code adopted by the City.

SECTION 2 – MATERIALS AND WORKMANSHIP

2-1 EARTHWORK

Earthwork for sewer laterals and house connections shall conform to the provisions of the Technical Specifications for Earthwork.

2-2 QUALITY OF PIPE AND FITTINGS

House connections shall be constructed of the following materials subject to the approval of the City for the specific situation:

- A. Asphlatic-Coated (interior& exterior) Ductile Iron Pipe
- B. PVC, SDR 35, minimum
- C. V.C.P.

Sewer laterals shall be of the same material as the main sewer line unless a different material is approved in writing by the City.

2-3 SIZE OF PIPE

Sewer laterals or connections shall be not less than 4 inches internal diameter. If the number of persons to be served is more than ten (10), a pipe size of not less than 6 inches in diameter shall be installed.

2-4 DEPTH OF PIPE

Sewer laterals shall be placed at such depth to give a minimum of 48 inches of cover to the top of the bell at the property line or to edge of the easement. A minimum of 10 feet of clearance shall be maintained between the sewer lateral and any domestic water pipe.

House connections shall not be laid less than 12 inches below ground surface in open areas, nor less than 18 inches under driveways, porches and steps, whether covered or uncovered, breezeways, roofed portecocheres, carports, covered walks, covered driveways and similar structures or appurtenances.

SECTION 3 – INSTALLATION – SEWER LATERALS

Sewer laterals and sanitary “wye” or “tee” branch fittings shall be the diameter and of the form required and as approved by the City.

Each branch fitting shall have its barrel diameter equal to the diameter of the sanitary sewer main and the spur (or branch) diameter as necessary for connection to the sewer lateral. The spur pipe of branch fittings shall be inclined at an angle of 45 degrees from a horizontal line and shall be supported with compacted clean sand, pea gravel or other material approved by the City in accordance with the Standard Details. All branch fittings that are to be left unconnected shall be plugged in a manner approved by the City.

Sewer laterals shall be joined to “tee” branch fittings at the sanitary sewer main as set forth above by eighth bends. All sewer laterals shall be plugged with a stopper in the socket at the last joint of said sewer laterals which shall be securely joined and shall lie approximately at the public right-of-way boundary and/or property line.

3-1 LOCATION OF SEWER LATERALS

The location of each sewer lateral shall be marked at its upper end by chiseling a letter “S” 1-1/2 inches high on the top of the curb. If the terminal point of the sewer lateral is more than 8 feet beyond the curb line or curb improvements do not exist, the Contractor or Developer shall furnish and install a wood stake at the end of the sewer lateral in conformance with the Standard Details.

SECTION 4 – INSTALLATION – HOUSE CONNECTIONS

4-1 LAYING PIPE

All pipe shall be laid upgrade on an unyielding foundation true to line and grade and with a uniform bearing under the full length of the barrel of the pipe. Bell and spigot pipe shall be laid with sockets upgrade. Suitable excavations shall be made to receive the bells or collars of the pipe. All adjustments to bring the pipe to line and grade shall be made by scraping away or filling in under the body of the pipe and not by wedging or blocking. The grade of all sewers covered by this specification shall not be less than 2% (1/4 inch to the foot) towards the outlet except where otherwise permitted in writing by the City.

4-2 ALIGNMENT

The house connection shall leave the building in a straight and direct line to the sewer lateral or shall be run in such a manner that the house drain shall discharge into the house sewer at an angle of 45 degrees. All changes in direction shall be made by the use of “tees”, 1/16 bends, 1/8 bends, or by combination fittings that have the same relative sanitary curve and any change from one size of pipe to another size shall be made by the use of a reducer.

4-3 CLEANOUTS

The first section of the house connection laying upgrade from the house lateral shall be a cleanout as shown on the Standard Details. Cleanouts shall be placed in every house connection at the junctions with soil pipe, at the building, at changes in direction, and at intervals of not to exceed 50 feet in straight runs. The cleanout shall be the same diameter as the house connection line.

Cleanouts shall be installed at points where required by the City. Cleanouts shall be constructed according to the Standard Details

SECTION 5 – TESTING

All piping of house connections shall be tested in the presence of the City before the line is backfilled and before the Final Acceptance is issued. All openings in the pipe shall be tightly closed except at the highest point and the piping filled with water, but no part of its length shall be tested with not less than a 4 foot head of water. All dead ends shall be relieved of air during the process of filling. Under this test condition, the water pressure shall remain constant without showing any addition of water or showing any leaks. The Developer shall at his own expense furnish all materials for making the tests required under the direction of the City.

SECTION 6 – PRESERVATION OF PROPERTY

Any and all damages to private property which occurs as a result of the Contractor's or Developer's operation in connection with the installation of the house connection shall be repaired and/or restored to the original condition. Prior to final acceptance by the City, a signed release by the Developer is to be witnessed and filed with the City that all damages incurred have been restored to the original condition or repaired to his satisfaction.

TECHNICAL SPECIFICATIONS
FOR
PRECAST CONCRETE MANHOLES

SECTION 1 – GENERAL

These specifications designate the requirements for furnishing and installing concrete manholes.

Precast concrete sewer manholes shall be constructed in accordance with the design, size and details and at the locations required and as approved by the City. The manholes shall be constructed of precast eccentric or concentric manhole units in accordance with the Standard Details.

Manhole locations are fixed and cannot be moved to accommodate pipe manufacturing or laying. If necessary, special lengths will have to be provided to meet manhole location requirements.

SECTION 2 – MATERIALS AND WORKMANSHIP

2-1 EXCAVATION AND BACKFILL

Excavation and backfill shall be done in accordance with the Technical Specifications and Earthwork.

2-2 CONCRETE

All concrete used in the construction of manholes shall conform to the Technical Specifications for Concrete Construction.

2-3 PRECAST MANHOLES

Concrete for precast manhole units shall be Class A concrete. The precast cylinder units, the precast concrete taper sections and precast eccentric flat top sections shall meet the strength requirements for ASTM C478. Precast manholes shall be equal in all respects to those as manufactured by Associated Concrete Products or centrifugally spun manhole units as manufactured by Ameron or approved equal. The minimum allowable steel shall be hoops of No. 4 wire to be cast into each unit at equal places as a precautionary measure for handling. Each manhole section shall be set in grout. Kent-Seal, Mortite, or approved equal, to make a watertight joint and shall be neatly pointed on the inside and shall be set plumb. Sections of various heights shall be used in order to bring the top of the manhole ring and cover to the required elevation.

The precast concrete manhole rings shall be joined with a minimum thickness of ½ inch of the Portland cement grout, “Kent Seal”, or approved equal.

Manhole Bases: Manhole bases shall be constructed of Class A concrete. Said concrete bases shall be formed and poured on gravel subbase as required and as approved by the City. That portion of the base above the invert elevation of the sewer pipe shall be formed to provide a smooth channel section as shown on the plans. The forms shall be checked and approved by the City for accuracy of dimensions and relative smoothness prior to pouring the base. Channels shall vary uniformly in size and shape from inlet to outlet if required. The manhole base shall be poured as one monolithic unit.

2-4 MANHOLE FRAMES AND COVERS

Castings for frame and cover set shall conform to the requirements for gray iron castings in ASTM A48 for Class No. 30 castings. Before leaving the foundry, all castings shall be thoroughly cleaned and subjected to a hammer inspection, after which they shall be dipped twice in a preparation of asphalt or coal tar and oil applied at a temperature of not less than 290 F, nor more than 310 F and in such a manner as to form a firm and tenacious coating. Each cover shall be ground or otherwise worked so that it will fit in its frame without rocking, and frames and covers shall be match-marked in sets before shipping to the site. Covers shall have the word "SEWER" cast thereon as shown in the Standard Details. No other lettering on the topside will be permitted.

Setting Manhole Frames and Covers: The elevations at which manhole frames and covers are to be set shall conform to the requirements set forth as required and as approved by the City. Where the cover is in existing pavement or in the traveled way of the existing road shoulder, it is to be placed ¼ inch below the existing surface and encased in concrete in conformance with the Standard Details.

Where the cover is located in a new road or pavement area, it shall be left approximately 1 foot below the surface and covered with a steel plate to keep all dirt and debris out of the manhole. When paving has been completed, the cover shall be raised to the surface and encased in concrete in conformation with the Standard Details. Where the structure is outside the limits of the traveled shoulder but not in the roadside ditch, it should be placed 1/10 foot or more above the existing ground surface. Where the manhole cover falls in the existing roadside ditch or right-of-way, it is to be placed approximately 1 ½ feet above the existing ground surface or as directed by the City. Manhole frames shall be set at the required grade and shall be securely attached to the top precast manhole shaft unit with a grout bed and fillet as shown on the plans. After the frames are securely set in the place provided herein, covers shall be installed and all necessary cleaning and scraping of foreign materials from the frames and covers shall be accomplished to ensure a satisfactory fit.

2-5 DROP MANHOLES

Drop manholes shall be constructed at the location specified by the City, and in conformance with the Standard Details. Materials and construction of drop manholes shall conform in all respects to the applicable provisions of these specifications for standard precast manholes (including frames and covers), with modifications for the addition of drop inlets as set forth in the Standard Details. The inside diameter of the drop inlet pipe shall be the same diameter as the intercepted sewer, unless approved by the City.

2-6 STUBS AT MANHOLES

Pipe stubs shall be furnished and installed at manholes at the locations required and as approved by the City. All stubs shall be plugged in a manner approved by the City and the method to be used shall be detailed on the Plans.

2-7 SEWER PIPE AND FITTINGS

All sewer pipe and fittings, including installation at manholes, shall conform to the provisions of the Technical Specifications for V.C.P.

2-8 RESURFACING

Resurfacing of all excavations for construction of manholes shall conform to the provision of the Technical Specifications for Removal and Resurfacing of Street Pavement and Surfaces.

2-9 WATERTIGHTNESS OF MANHOLES

It is the intent of these specifications that manholes and appurtenances be watertight and free from infiltration. The adequacy of manholes and appurtenances as to watertightness shall be determined when ordered by the City by filling the manhole with water or by conducting a standard air test. When testing of the manhole is ordered, said test may be made in connection with the leakage test of the sanitary sewer. Any evidence of leakage as a result of testing shall be repaired to the satisfaction of the City at the sole expense of the Contractor or Developer.

2-10 RAISING OF MANHOLES WITHIN SURFACED STREETS

The Developer shall be responsible for raising manhole frames and covers to finish grade as shown on the Standard Details within 30 days after pavement placement has been completed. Temporary coverings over manholes shall be provided to keep dirt and other material out of the sewer. Temporary covers shall be subject to approval by the City.

2-11 RUNGS

Rungs shall be installed in manholes not to exceed 12 inches apart vertically. Rungs shall be constructed of 0.5 inch diameter. Grade 60, concrete reinforcing steel per ASTM A-615, covered with copolymer polypropylene plastic, Model PS2-PF, as manufactured by MA Industries, In., or equal.

TECHNICAL SPECIFICATIONS
FOR
REMOVAL AND RESURFACING OF STREET PAVEMENT
AND SURFACES

SECTION 1 – GENERAL

Street pavement and surfaces shall be removed and replaced in all areas of construction where excavation is required and as approved by the City. Resurfacing of existing pavement and surfaces damaged or removed in connection with the construction of improvements shall conform to the provisions of permits issued by the state or county agency for the work within the rights-of-way of the respective agency.

SECTION 2 – EARTHWORK

Earthwork shall conform to the provisions of the Technical Specifications for Earthwork.

SECTION 3 – PAVEMENT REMOVAL

Street pavement or existing road surfacing shall be removed within the limits of all construction excavations prior to proceeding with excavation operations of any nature. Surplus material shall be removed as provided in the Technical Specifications for Earthwork. Prior to removal of existing surfacing, full depth pavement cuts shall be made neat and straight along both sides of the trench and parallel to the alignment of the pipe to provide an unfractured and level pavement joint for bonding existing surfacing with pavement replacement. Where large irregular surfaces are removed, such trimming or cutting as hereinafter provided shall be parallel with roadway centerline or at right angles to the same. All cut edges shall provide clean, full depth, solid, vertical faces free from all loose material.

3-1 PORTLAND CEMENT CONCRETE SURFACES

Concrete pavement, including cross-gutters, curbs and gutters, sidewalks, driveways and concrete surfaces of whatever nature shall be saw cut to a minimum depth of 1-1/2 inches prior to removal. Said new cut shall be made at a point approximately 1 foot beyond the edge of the trench and/or excavation prior to surface replacement.

3-2 ASPHALT CONCRETE PAVEMENT

Streets and alleys surfaced with asphalt concrete pavement shall be initially cut by means of pneumatic pavement cutters or other approved equipment at the limits of the trench and/or excavation prior to removal of surfacing. After backfilling the excavation, asphalt concrete pavement shall be saw cut to a minimum depth of 2 inches at a point not less than 12 inches outside the limits of excavation or the previous pavement cut (made by

pneumatic tools), whichever limits are the greater. The additional surfacing saw cut shall be removed and disposed of prior to resurfacing.

SECTION 4 – RESURFACING

In all streets or alleys in which the surface is removed, broken or damaged by equipment or in which the ground has caved in or settled due to the installation of the improvements, the surface shall be restored to the original grade and crown section. Where the street has been improved with roadway surface, base material, curb, sidewalk or gutter, trenches or damaged sections shall be restored with the type of improvement conforming to that which existed prior to the work. Prior to resurfacing, the existing surfacing shall be removed as provided above. All broken and jagged edges of the trench edge shall be straight. If during the initial removal of the existing pavement a method of removal was used which disturbed the adjoining pavement or if during general construction the adjacent pavement was disturbed, then this adjoining pavement must also be removed and replaced. Where irregular surfaces are to be surfaced, existing pavement shall be cut parallel to the alignment of the pipe or to the centerline of the street. End cuts shall be perpendicular to the street alignment.

All work shall match the appearance of the existing improvements and finished pavement shall not deviate from existing grade by more than 1/8 inch in 10 feet and shall be free from ruts, depressions and irregularities. Asphaltic paint binder shall be applied to vertical surfaces against which asphalt is to be placed. The completed surface, when ready for acceptance, shall be thoroughly compacted, true to grade and cross section and shall be free from ruts, depressions and irregularities. Where the trench line is approximately parallel with the traveled way, the pavement shall be brought to the final grade with a paving machine or approved equal. The resulting edge of contact between the new and existing pavement on each side shall parallel the existing trench and be a straight and neat join line. New pavement shall not lap over existing pavement.

In the event that no pavement structural section requirements are specified by any other agency, the minimum pavement section for patches shall be 4 inches of asphalt pavement (Type B, 1/2 inch maximum aggregate, AR-4000 asphalt) over 8 inches of Class 2 aggregate base compacted to 95 percent (95%) relative compaction per the latest edition of the State Specifications.

SECTION 5 – TEMPORARY RESURFACING

In the event that it is necessary to construct a temporary patch, the materials used shall be approved by the City or other agency having jurisdiction. A permanent patch shall be constructed as soon as practical.

TECHNICAL SPECIFICATIONS
FOR
CONCRETE CONSTRUCTION

SECTION 1 – GENERAL

These specifications designate the requirements for furnishing and installing concrete.

All concrete construction shall conform to the provisions of Sections 40 and 90 of the State Specifications, except as herein modified. Unless otherwise specified, all concrete shall be Class A.

SECTION 2 – CONCRETE

2-1 CLASS A

Class A concrete shall contain not less than six sacks of Portland cement per cubic yard and have a minimum compressive strength of 3,000 psi in 28 days.

2-2 CLASS B

Class B concrete shall contain not less than five sacks of Portland cement per cubic yard and have a minimum compressive strength of 2,500 psi in 28 days.

2-3 CLASS C

Class C concrete shall contain not less than four sacks of Portland cement per cubic yard and have a minimum compressive strength of 2,000 psi in 28 days.

SECTION 3 – CONCRETE DESIGN AND MATERIALS

The City shall approve, prior to placing any concrete, the design of the mix proposed for use. Said mix design shall set forth weights of cement, sand, coarse aggregate and water to be used together with a grading analysis of sand and coarse aggregate. The source of supply of all materials entering into the mix shall also be given.

SECTION 4 – REINFORCING

Where reinforced concrete is required, reinforcing steel conforming to the applicable provisions of the State Specifications shall be furnished and installed.

TECHNICAL SPECIFICATIONS
FOR
STEEL CASING PIPE

SECTION 1 – GENERAL

This specification designates the requirements for the furnishing and installation of steel casing pipe.

All work shall conform to the specifications and requirements of the City, State or local County having jurisdiction. All necessary permits for the casing pipe installation must be obtained and copies submitted to the City prior to start of the work.

The Developer shall submit engineered details of the project for City's review and approval.

SECTION 2 – MATERIALS

Steel casing pipe shall be butt welded or sheets conforming to ASTM Specification A 570 or of plate conforming to ASTM Specification A 283, copper bearing. All field joints shall be butt welded full circumference or by other means approved by the City. Use of a jacking band to reinforce the end of the pipe receiving the jacking thrust will be required. Wall thickness of casing pipe shall be a minimum of 3/8 inch and the diameter shall be of the minimum size required and approved by the City.

SECTION 3 – INSTALLATION

Steel casing pipe of the minimum sizes and thicknesses shown in the approved details shall be installed in place by jacking and/or boring methods, without the use of water or air.

The carrier pipeline shall be installed in the casing as shown in the Standard Details. Filling of the annular space between the casing and the carrier pipe shall not be done.

3-1 EARTHWORK AND RESURFACING

Earthwork and resurfacing shall conform respectively to the provisions of the Technical Specifications for Earthwork and Removal and Resurfacing of Street Pavement and Surfaces.

TECHNICAL SPECIFICATIONS
FOR
USE OF COMPLETED FACILITIES

The City shall have the right upon ten days written notice to the Developer and his Surety to take possession of and use any completed or partially completed portion of the work notwithstanding that the time for completing the entire work may not have expired, but such taking possession and use and assumption of maintenance of any portion of the work shall not be deemed an acceptance of any work. It is the intent of this section to provide for the City placing into operation portions of the facilities as the work progresses.

When any section of the improvements has been completed in all respects, except for trench resurfacing, the City may so notify the Developer and his Surety in writing as provided herein. After such notice has been given, the City shall have the right to place such section of the facility into service and to operate same. The Developer will be relieved of the duty of maintaining and protecting said portion of the work except for any resurfacing, if required. When resurfacing is not required, the Developer shall be relieved of the responsibility and duty of maintaining and protecting portions of the roadway only after receiving written notice from the City.

However, nothing in this section shall be construed as relieving the Developer of the full responsibility for making good defective work or materials as specified in the General Provisions.

TECHNICAL SPECIFICATIONS
FOR
INSPECTION OF WORK

All work shall be subject to inspection and shall be left open and uncovered until the installation is inspected by the City.

The City shall at all times have access to the work during construction and shall be furnished with every reasonable facility for ascertaining full knowledge respecting the progress, workmanship and character of materials used and employed in the work.

The Developer shall submit a schedule to the City outlining the proposed construction operation including the hours of work. If any changes in the project schedule or hours of work are made, the Developer shall give at least two working days written notice to the City so that proper inspection may be provided.

No valves, fittings or other materials shall be installed until inspected and approved by the City. All installations which are to be backfilled shall be inspected and approved by the City prior to backfilling and due notice shall be given to the City in advance of backfilling so that proper inspection may be provided.

The inspection of the work shall not relieve the Developer of any of his obligations to complete the work as prescribed by the City Specifications. Defective work shall be made good and unsuitable materials may be rejected notwithstanding the fact that such defective work and unsuitable materials have been previously overlooked by the City and accepted.

The City shall have the authority to suspend the work wholly or in part for such time as it may deem necessary due to the failure to perform any provisions of City Specifications. The work shall be resumed when methods or defective work are corrected as ordered or approved in writing by the City.

The Developer shall bear all costs of construction inspection. The Developer shall also bear the cost of traffic regulations lawfully enacted by the Federal Government, the State of California, Inyo County or the City during the time of performing work affecting the property of said Government, State, County or City.

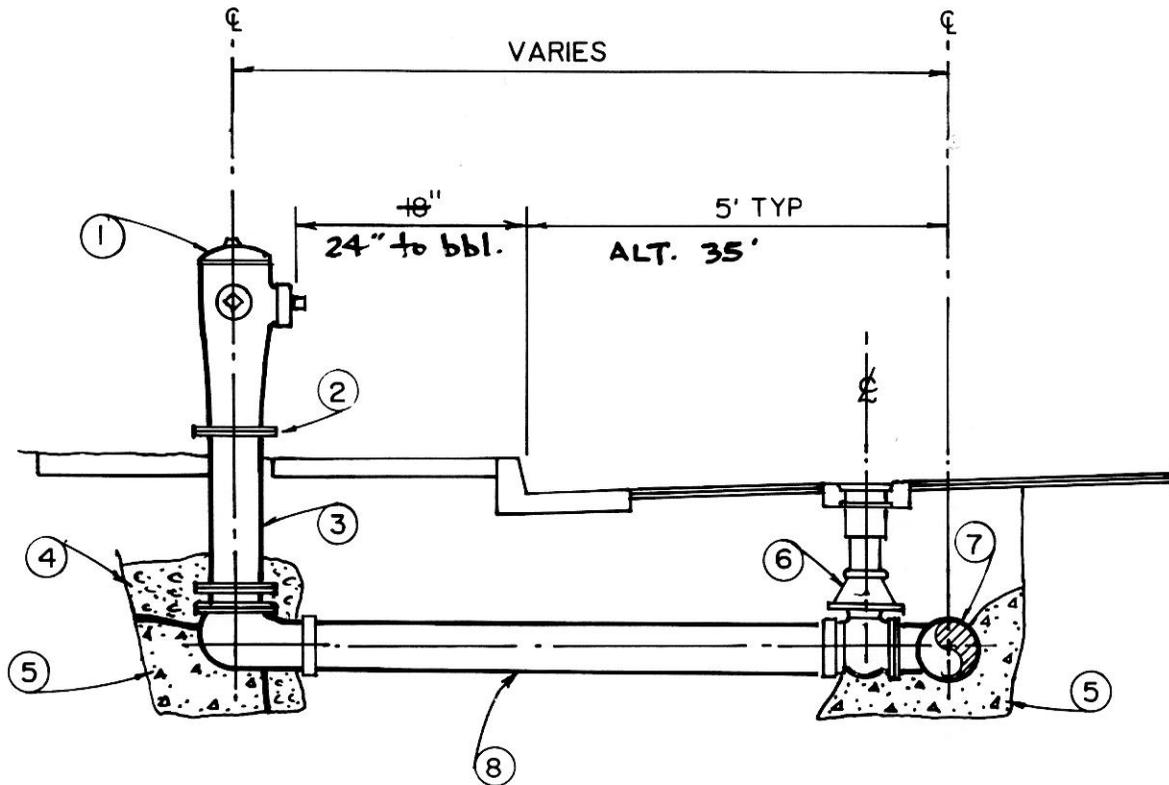
TECHNICAL SPECIFICATIONS
FOR
CLEAN-UP

During the progress of the work, the premises shall be kept free of any unsightly accumulation of rubbish and debris. Upon completion of the work and before final acceptance of the completed facility by the City, all unused materials, rubbish, concrete forms, surplus excavated material and other materials or equipment shall be removed from the work area.

If during the progress of the work any improvements, such as, fences, lawns, shrubs or other vegetation, whether on private or public property are damaged, they shall be restored to a condition equivalent to that which existed before work started before acceptance of the completed facilities by the City.

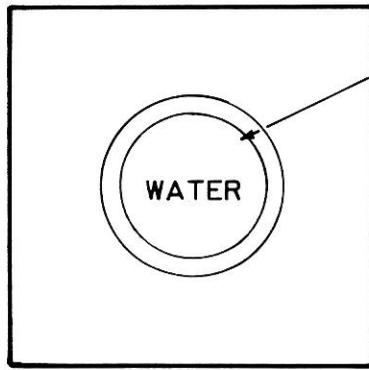
NOTES:

1. FIRE HYDRANT TO CONFORM WITH AWWA SPEC. # C-502, MULLER, CENTURION, MJ, 5/4" bbl., # A-423 (DRY BARREL) WITH TWO 2 1/2" AND ONE 4" NS THREADED NOZZLES. (SAFETY YELLOW)
2. SAFETY FLANGE, MINIMUM 3"^{to 6"} ABOVE SIDEWALK OR GROUND. PROVIDE GUARD POSTS IN AREAS WITHOUT CURBS.
3. BURY TO BE COATED WITH COAL TAR ENAMEL OR COAL TAR EPOXY.
4. MINIMUM ~~3~~⁷ CU. FT. OF GRAVEL AROUND DRAIN VALVES.
5. CONCRETE THRUST BLOCKS (SEE STANDARD DETAIL NO. W-3)
6. 6" HUB X FLANGE^{X MJ} GATE VALVE WITH BOX AND COVER. (SIGMA VB4680, 6"Ø PVC RISER)
7. MAIN LINE AND ^{MJ} HUB X ^{MJ} HUB X 6" FLANGE TEE.
8. 6" D I P ~~AND RETAINER GLANDS, OR SWIVEL BY SWIVEL ADAPTOR.~~ (RESTRAINED JOINTS)



NOTE: THIS DETAIL IS TO BE USED FOR BLOWOFFS WHERE REQUIRED BY THE CITY.

	Approved By City Administrator <i>Richard...</i> 5-3-91 Date	FIRE HYDRANT ASSEMBLY			Standard Detail No. <h1 style="margin: 0;">W-1</h1>
	Approved By City Engineer <i>A. Boyd</i> 5/2/91 Date	1 No.	9/04 B. Date	App.	Revision



TOP MARKED "WATER"
(CAST IRON)
TRAFFIC RATED.

PLAN

SAWCUT AC PAVEMENT
RECESS 1/4"

AC PAVEMENT

BASE

8"

GROUND

8"
MIN

IN ADDITION TO FURNISHED RING,
POUR CONCRETE AFTER PAVING.

AGGRAGATE BASE OR GRANULAR
MATERIAL (6" MIN).

VALVE BOX, TWO PIECE - TYLER
PIPE 6855 SERIES OR APPROVED
EQUAL. CENTER OVER VALVE
NUT AND SET VERTICAL

REDWOOD OR MASONRY BLOCK
(VALVE BOX SHALL NOT
TOUCH VALVE OR PIPE)

GATE VALVES-- MULLER, CLOW
OR APPROVED EQUAL

D.I.P.

SECTION - ELEVATION



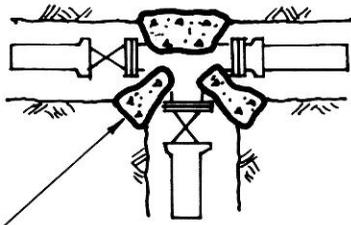
Approved By
City Administrator
A. Pucci
5-3-91
Date
Approved By
City Engineer
A. Boyd
5/2/91
Date

VALVE BOX ASSEMBLY

No.	Date	App.	Revision
1	9/64	OB	

Standard Detail No.

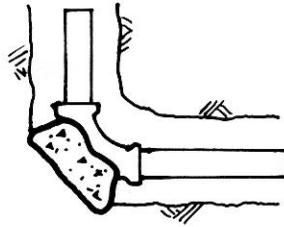
W-2



INSTALL THRUST BLOCK IF IN LINE VALVE IS USED (CONDITION 6)

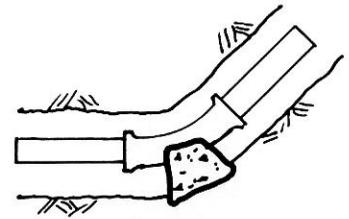
CONDITION 1

(OUTLET OR FIRE HYDRANT)



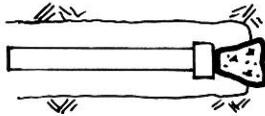
CONDITION 2

(ANGLE = 90°)



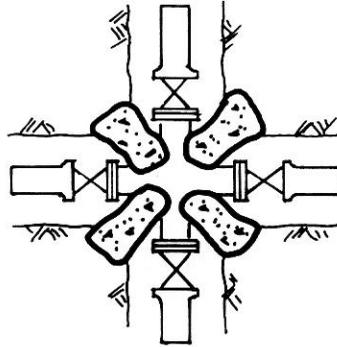
CONDITION 3

(ANGLE = 45°)



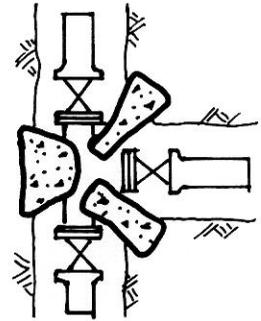
CONDITION 4

(END CAP)



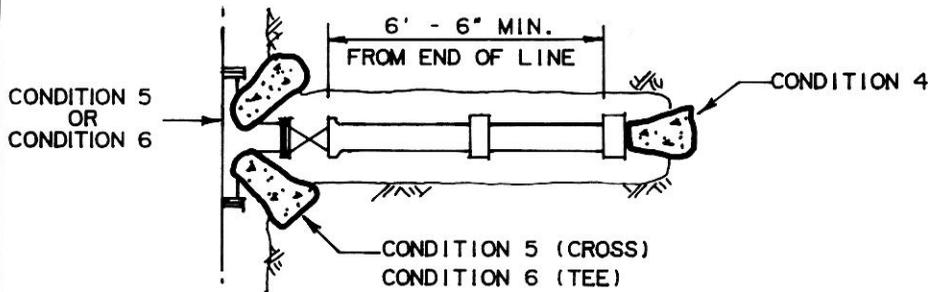
CONDITION 5

(MAINLINE CROSS)

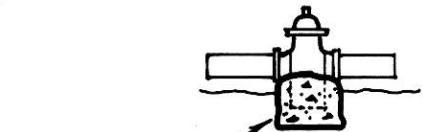


CONDITION 6

(MAINLINE TEE)



CROSS (OR TEE) AT END OF LINE



CONDITION 4

ANCHOR FOR IN LINE
12" VALVES OR LARGER

THRUST BLOCK BEARING AREA IN SQ.FT.						
PIPE SIZE	CONDITION					
	1	2	3	4	5 (EACH)	6 (EACH)
6"	3.0	4.0	2.5	3.0	1.5	2.5
8"	5.5	8.0	4.0	5.5	3.0	4.0
10"	9.0	12.0	6.5	9.0	4.5	6.5
12"	13.0	18.0	9.0	13.0	6.5	9.0

NOTES:

1. SIZE THRUST BLOCK ACCORDING TO THE LARGEST OUTLET DIAMETER ON TEE OR CROSS.
2. ALL THRUST BLOCK BEARING FACES SHALL BE POURED AGAINST UNDISTURBED SOIL OR APPROVED COMPACTED BACKFILL.
3. SEE SPECIFICATIONS FOR CONCRETE REQUIREMENTS.



Approved By
City Administrator
R. Pucci
5-3-91
Date

Approved By
City Engineer
A. Boyd
5/2/91
Date

TYPICAL THRUST BLOCK DETAILS

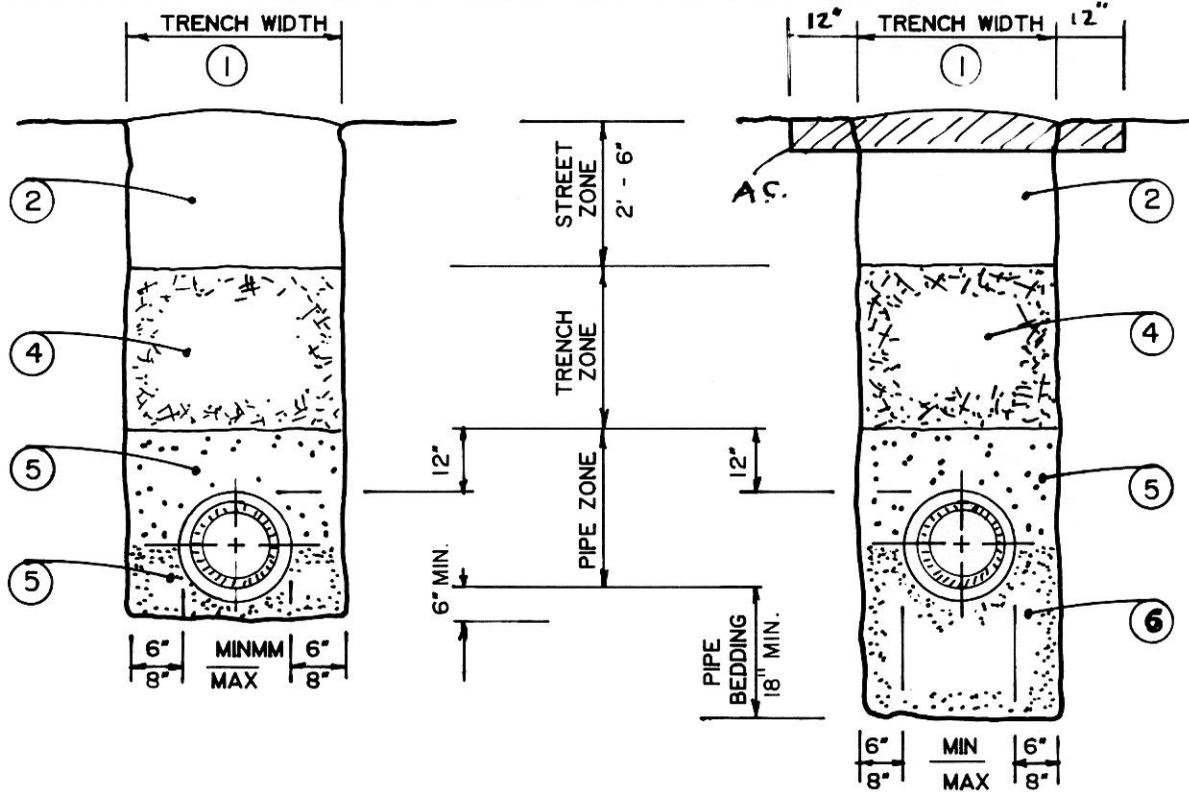
No.	Date	App.	Revision

Standard Detail No.

W-3

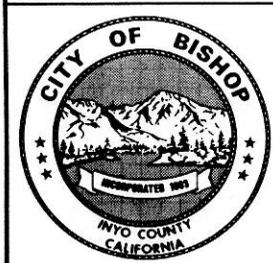
NOTES:

- 1.. SEE TECHNICAL SPECIFICATIONS FOR EARTHWORK IF TRENCH WIDTH EXCEEDS THE MAXIMUM SHOWN ON THIS DRAWING.
2. SEE STANDARD SPECIFICATIONS FOR EARTHWORK AND FOR STANDARD PAVEMENT SECTION..
3. BACKFILL COMPACTED TO 90% RELATIVE COMPACTION.
4. SELECT MATERIAL COMPACTED TO 90% RELATIVE COMPACTION (3/4" MAXIMUM GRADATION). SEE TECHNICAL SPECIFICATIONS FOR EARTHWORK.
5. SAND COMPACTED TO 90% RELATIVE COMPACTION. SEE TECHNICAL SPECIFICATIONS FOR EARTHWORK.
6. REMOVE UNSUITABLE MATERIAL TO A DEPTH OF 1' TO 2' AS DIRECTED BY THE CITY. BEDDING MATERIAL OR PIT RUN MATERIAL WITH ALL +1/4" MATERIAL REMOVED WITHIN 3" OF THE PIPE, COMPACTED TO 90% RELATIVE COMPACTION. REMOVE ALL UNSUITABLE MATERIAL FROM THE CONSTRUCTION SITE.



TYPE 1
~~NORMAL~~
SUITABLE NATIVE MTL.

TYPE 2
UNSUITABLE MATERIAL



Approved By
 City Administrator
A. Rucci
 5-3-91
 Date

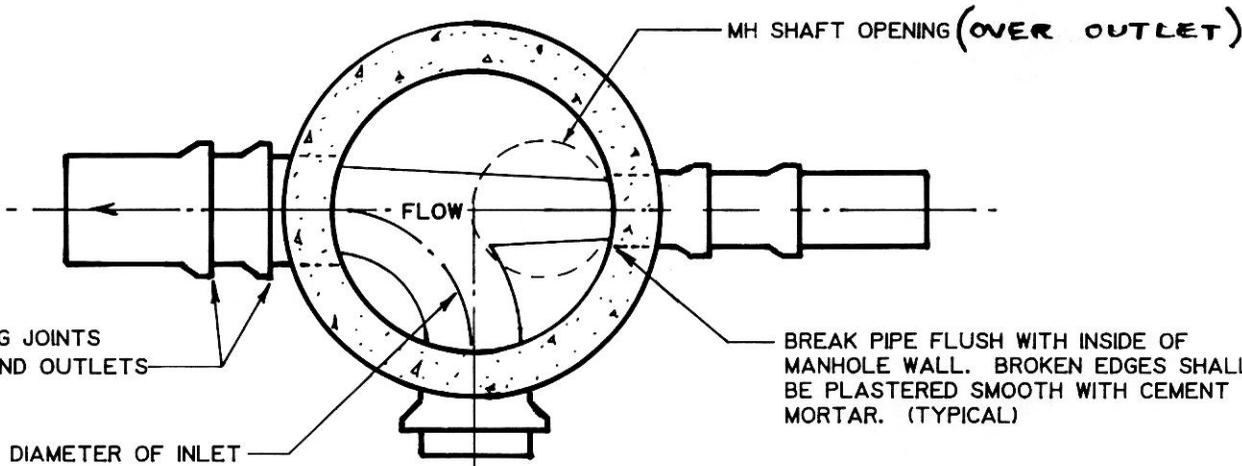
Approved By
 City Engineer
A. Boyd
 5/2/91
 Date

PIPE BEDDING AND BACKFILL

No.	Date	App.	Revision
1	5/4	AB	

Standard Detail No.

WS-1

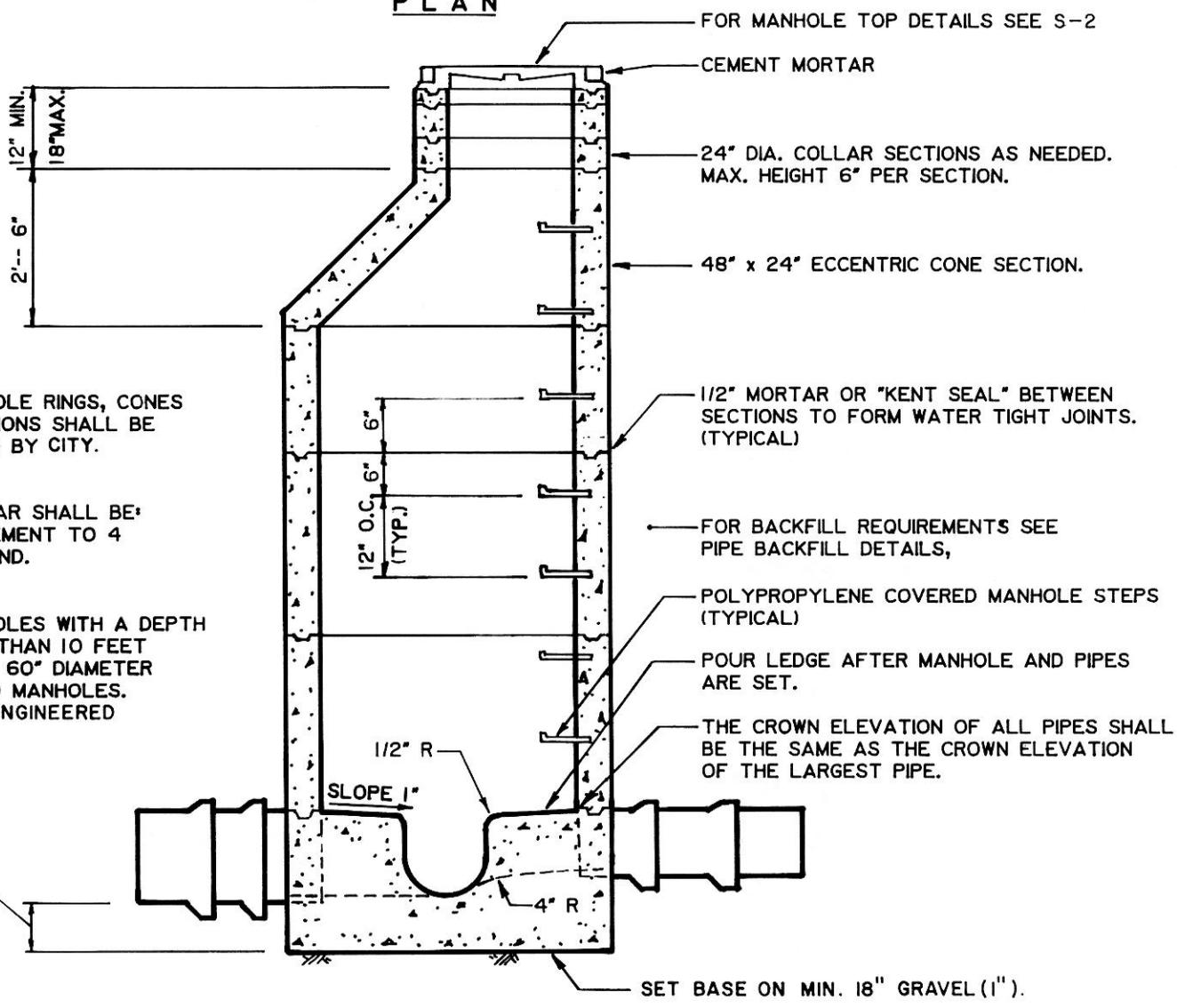


TWO 12" LONG JOINTS AT INLETS AND OUTLETS

RADIUS = 2 x DIAMETER OF INLET

BREAK PIPE FLUSH WITH INSIDE OF MANHOLE WALL. BROKEN EDGES SHALL BE PLASTERED SMOOTH WITH CEMENT MORTAR. (TYPICAL)

PLAN



FOR MANHOLE TOP DETAILS SEE S-2

CEMENT MORTAR

24" DIA. COLLAR SECTIONS AS NEEDED. MAX. HEIGHT 6" PER SECTION.

48" x 24" ECCENTRIC CONE SECTION.

1/2" MORTAR OR "KENT SEAL" BETWEEN SECTIONS TO FORM WATER TIGHT JOINTS. (TYPICAL)

FOR BACKFILL REQUIREMENTS SEE PIPE BACKFILL DETAILS,

POLYPROPYLENE COVERED MANHOLE STEPS (TYPICAL)

POUR LEDGE AFTER MANHOLE AND PIPES ARE SET.

THE CROWN ELEVATION OF ALL PIPES SHALL BE THE SAME AS THE CROWN ELEVATION OF THE LARGEST PIPE.

SET BASE ON MIN. 18" GRAVEL (1").

ELEVATION

NOTES:

1. MANHOLE RINGS, CONES AND SECTIONS SHALL BE APPROVED BY CITY.
2. MORTAR SHALL BE: 1 PART CEMENT TO 4 PARTS SAND.
3. MANHOLES WITH A DEPTH GREATER THAN 10 FEET SHALL BE 60" DIAMETER STANDARD MANHOLES. PROVIDE ENGINEERED DETAIL.

9" BELOW LARGEST PIPE



Approved By
City Administrator
R. Pucci
5-3-91
Date

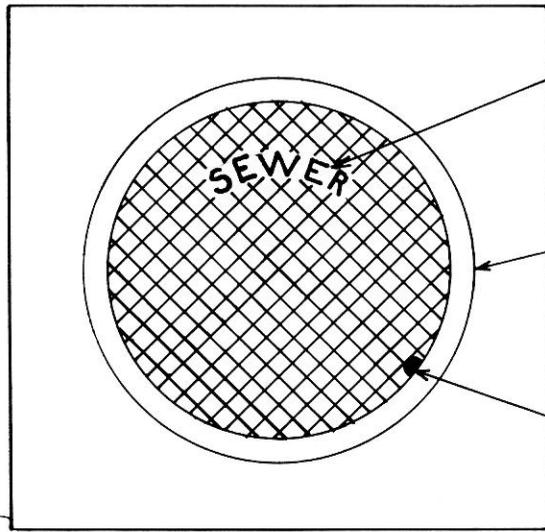
Approved By
City Engineer
A. Boyd
5/2/91
Date

48" I.D. STANDARD MANHOLE

No.	Date	App.	Revision
1	5/2/91	AB	

Standard Detail No.

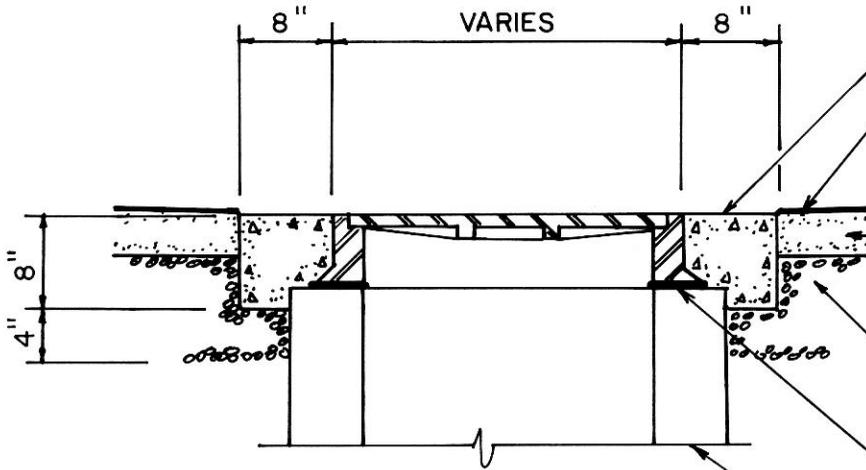
S-1



"SEWER" 2" HIGH LETTERING

MANHOLE FRAME & COVER, 24" OR 36" DIAMETER

PICKHOLE



CLASS "A" CONCRETE
PLACE CONCRETE 1/4" BELOW PAVEMENT

PAVEMENT

AGGREGATE BASE

1/2" CEMENT MORTAR

MANHOLE RINGS



Approved By
City Administrator
R. Lucci
5-3-91
Date

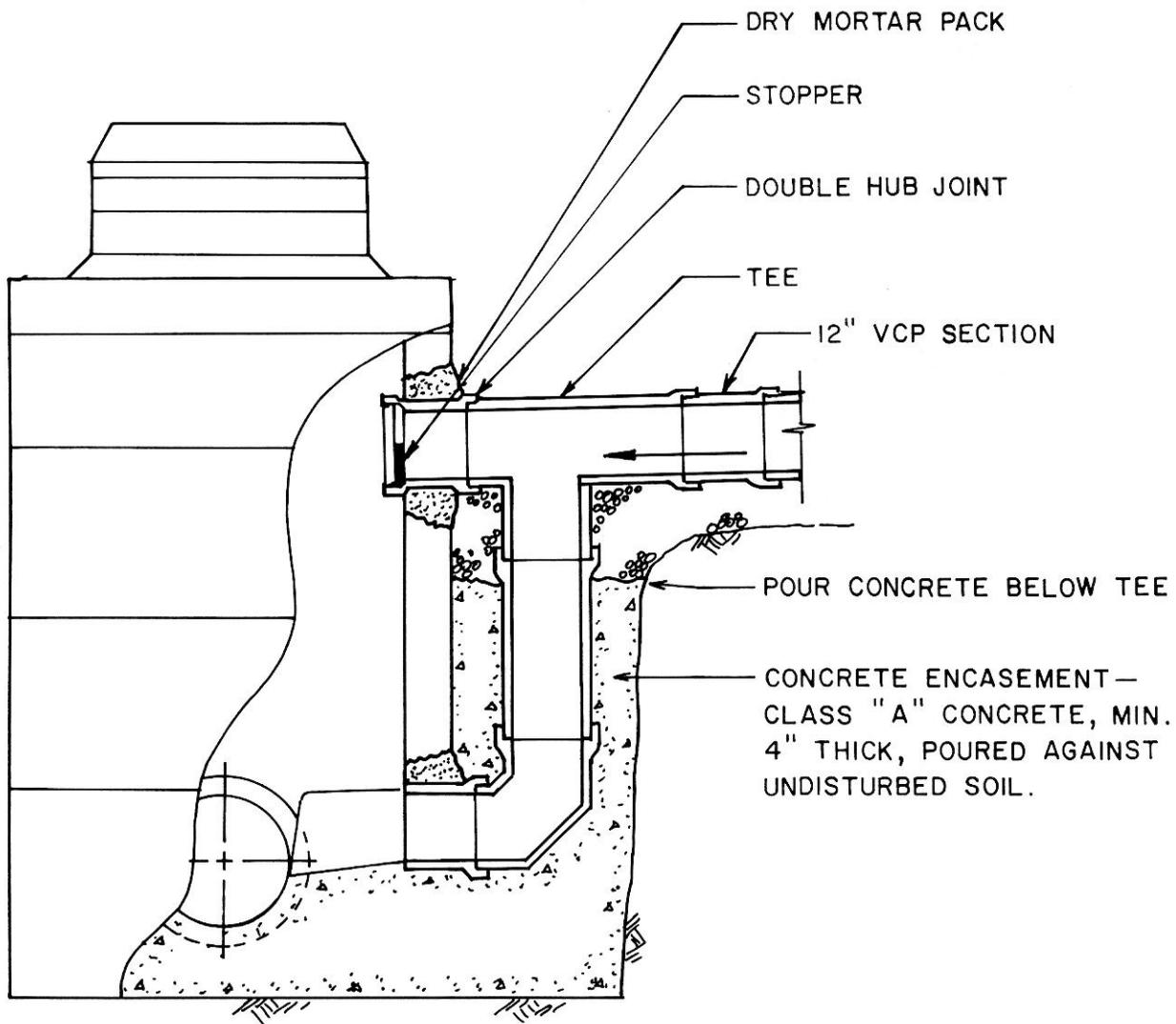
Approved By
City Engineer
A. Boyd
5/2/91
Date

MANHOLE FRAME AND COVER

No.	Date	App.	Revision

Standard Detail No.

S-2



Approved By
 City Administrator
R. Cusin
 5-3-91
 Date
 Approved By
 City Engineer
A. Boyd
 5/2/91
 Date

MANHOLE — DROP INLET

No.	Date	App.	Revision

Standard Detail No.

S-3

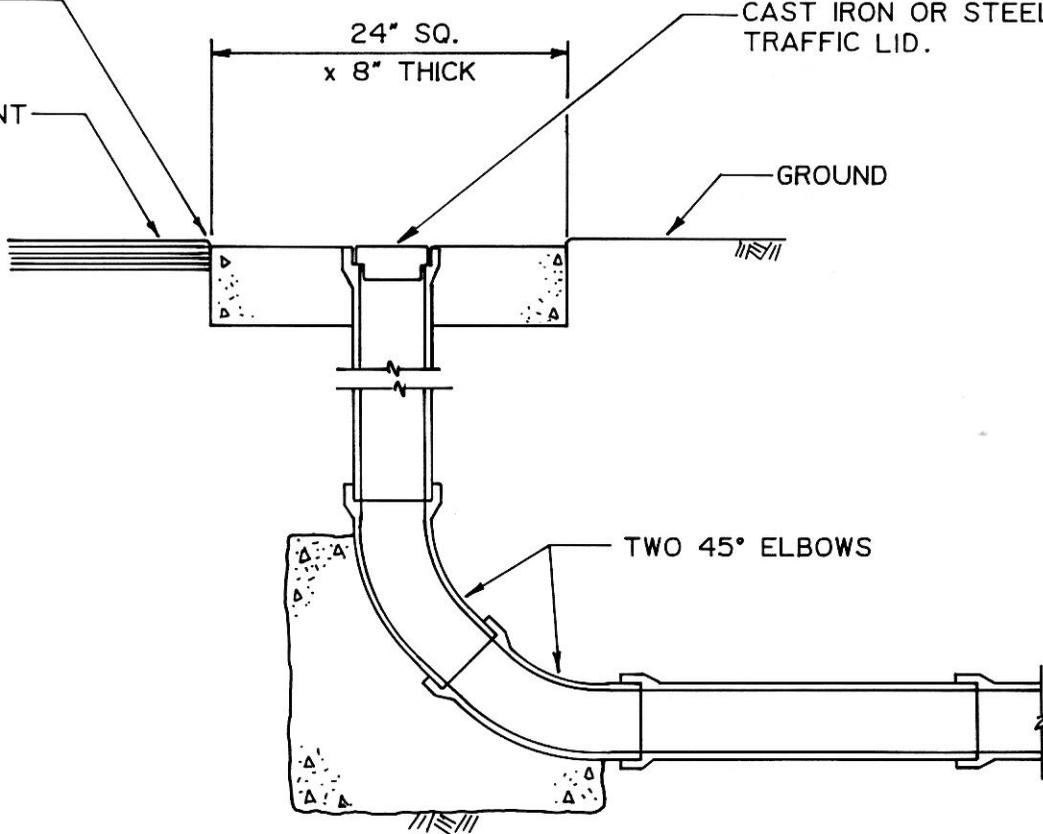
SAWCUT AC PAVEMENT
AND RECESS 1/4"

AC PAVEMENT

24" SQ.
x 8" THICK

CAST IRON OR STEEL
TRAFFIC LID.

GROUND



TWO 45° ELBOWS

SECTION



Approved By
City Administrator
R. Ricci
Date
5-3-91

Approved By
City Engineer
A. Boyd
Date
5/2/91

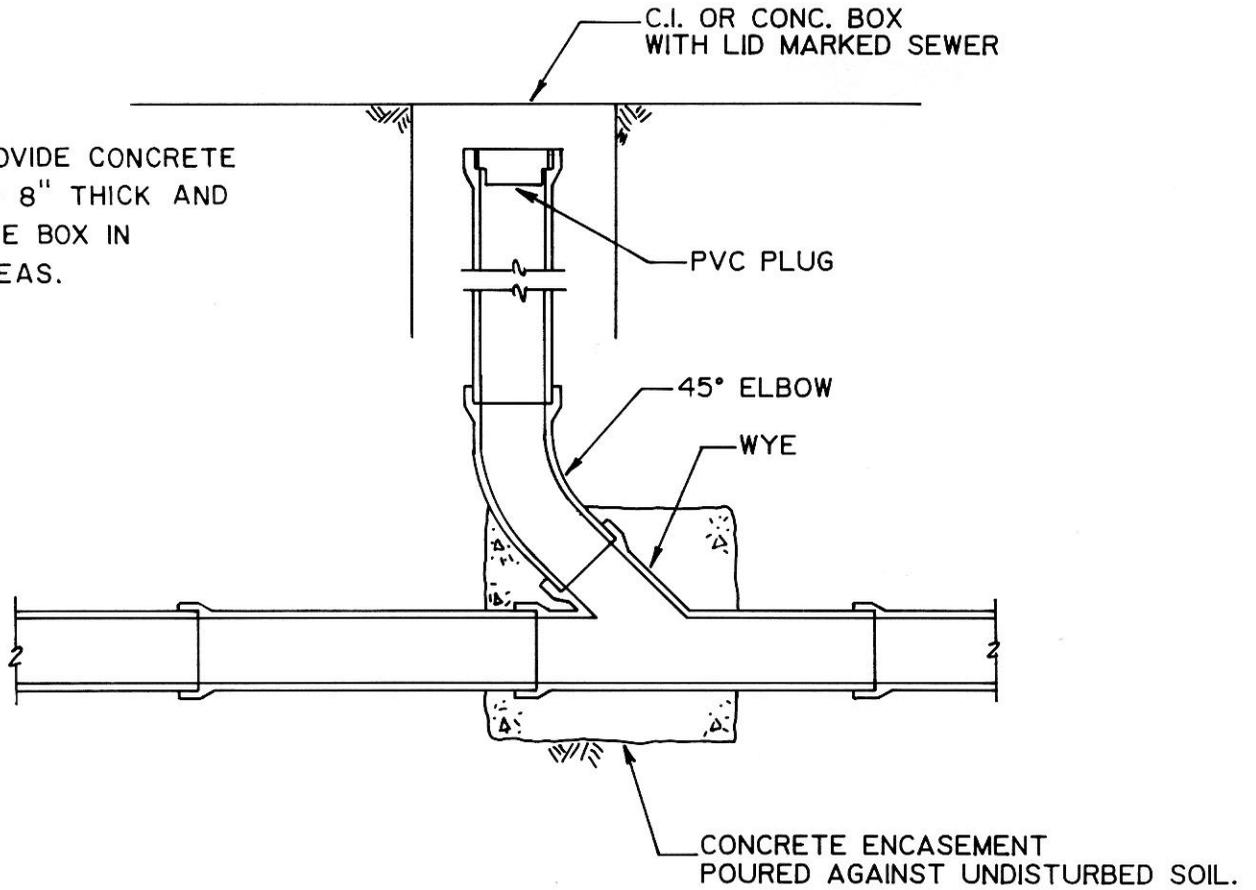
END OF LINE CLEANOUT

No.	Date	App.	Revision

Standard Detail No.

S-4

NOTE: PROVIDE CONCRETE SURROUND 8" THICK AND 8" OUTSIDE BOX IN PAVED AREAS.



SECTION



Approved By
City Administrator
R. Pucci
5-3-91
Date

Approved By
City Engineer
A. Boyd
5/2/91
Date

INLINE CLEANOUT

No.	Date	App.	Revision

Standard Detail No.

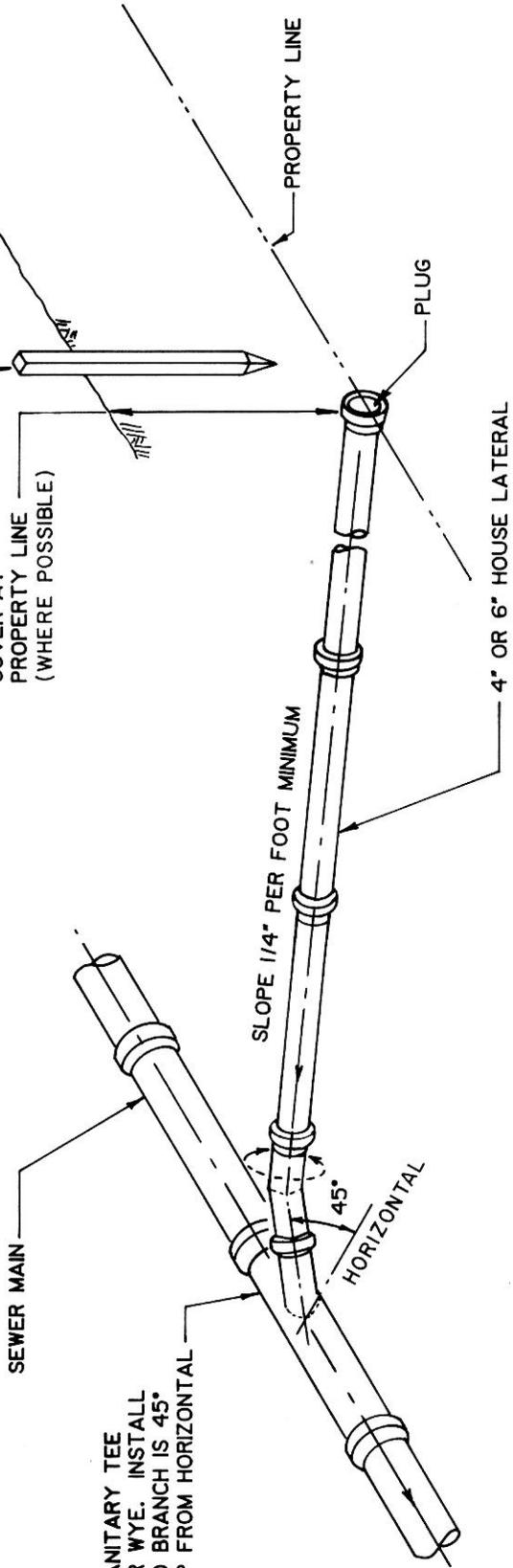
S-5

NOTE:

FOR EXISTING SEWERS, CONNECTION MAY BE MADE WITH SADDLE SUBJECT TO APPROVAL BY CITY

LOCATE SEWER WITH A 1 1/2" HIGH S CHISEL ON TOP OF CURB WHERE LATERAL CROSSES UNDER CURB. WHERE NO CURB EXISTS, OR WHERE LATERAL ENDS 8' OR MORE BACK OF CURB, SET A 4" x 4" x 3' - 0" REDWOOD STAKE EXTENDING 2" ABOVE FINISHED GRADE

4' - 0" MINIMUM COVER AT PROPERTY LINE (WHERE POSSIBLE)



(FOR TYPICAL HOUSE CONNECTION SEE SHEET S-7)

ISOMETRIC



Approved By
City Administrator
R. Lucci
5-3-91
Date

Approved By
City Engineer
A. Boyd
5/2/91
Date

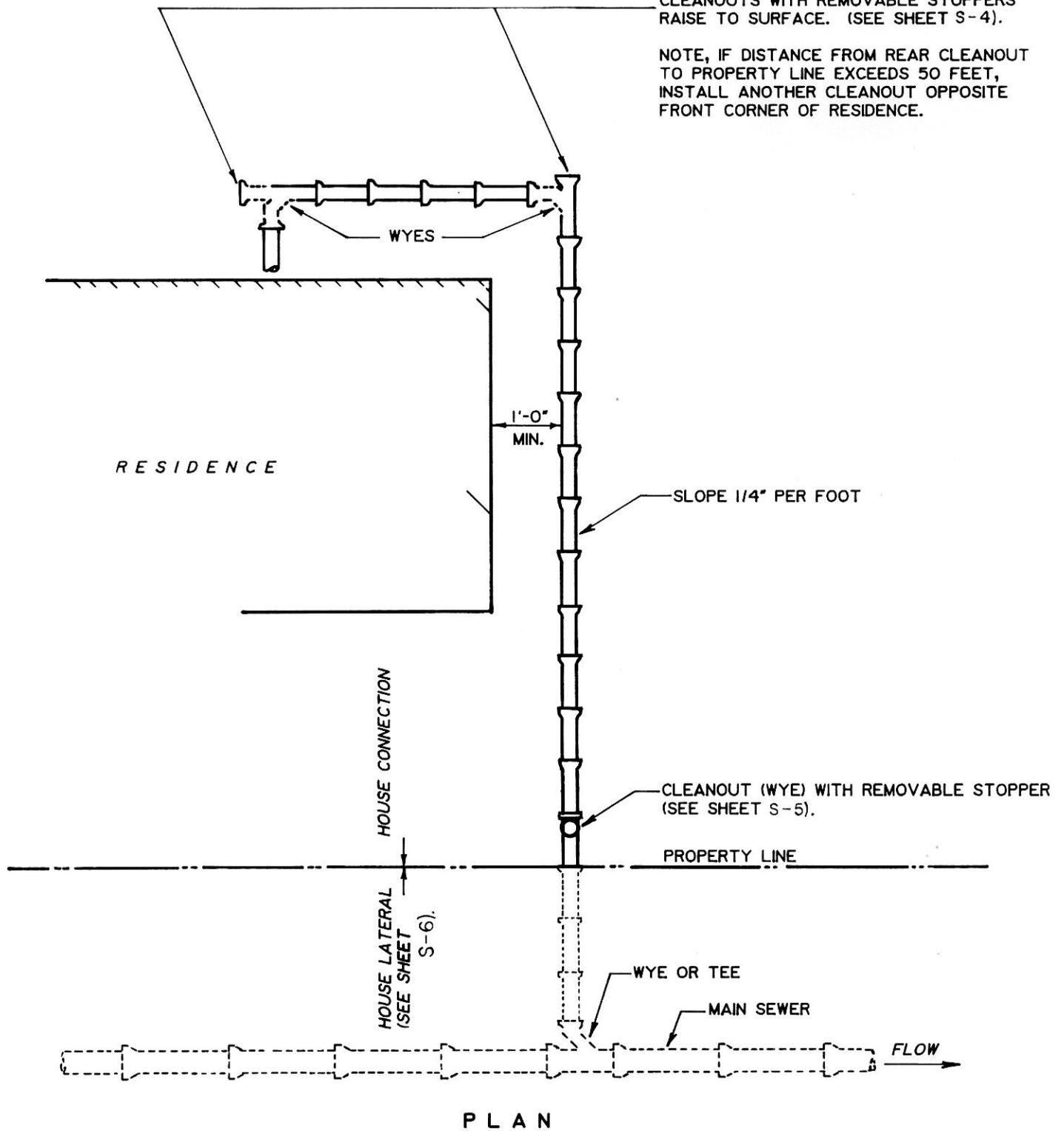
TYPICAL HOUSE LATERAL

No.	Date	App.	Revision

Standard Detail No.
S-6

CLEANOUTS WITH REMOVABLE STOPPERS RAISE TO SURFACE. (SEE SHEET S-4).

NOTE, IF DISTANCE FROM REAR CLEANOUT TO PROPERTY LINE EXCEEDS 50 FEET, INSTALL ANOTHER CLEANOUT OPPOSITE FRONT CORNER OF RESIDENCE.



PLAN



Approved By
City Administrator
R. Pucci
Date
5-3-91

Approved By
City Engineer
A. Boyd
Date
5/2/91

TYPICAL HOUSE CONNECTION

No.	Date	App.	Revision

Standard Detail No.

S-7

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Contract No. _____

DOMESTIC WATER AND SANITARY SEWER SYSTEM IMPROVEMENTS

The contract, dated _____, _____, is made by and between the City of Bishop, hereinafter called "City", and _____, hereinafter called "Developer". This contract contains all the terms of the agreement between the City and the Developer concerning domestic water and sanitary sewer system improvements to be constructed and paid for by the Developer and dedicated to and accepted by the City for inclusion into the City's domestic water and sanitary sewer system.

ARTICLE I. DOMESTIC WATER AND SANITARY SEWER SYSTEM IMPROVEMENTS TO BE CONSTRUCTED

Any improvements to be constructed as part of the domestic water and sanitary sewer system may include water main, services, fire hydrants, valves, fittings, blowoffs, sewer pipelines, manholes, cleanouts, service laterals, lift stations, and force mains, and related improvements.

Domestic water and sanitary sewer system improvements to be constructed under terms of this contract shall serve the subdivision or parcel of land described below:

(Description)

ARTICLE II. DEVELOPER'S ENGINEER

Developer hereby names as his engineer to prepare the Plans and Specifications for the proposed improvements:

Firm's Name

Mailing Address

City, State and Zip Code

Phone No.

Engineer to Contact

Registration No. & Expiration date

ARTICLE III. CITY SPECIFICATIONS

The City’s “Specifications for Domestic Water and Sanitary Sewer Systems” hereinafter called City’s Specifications, is hereby made a part of this Contract by reference as though set forth in full in this Contract.

ARTICLE IV. FEES

1. DEVELOPMENT FEE

Pursuant to the City’s Ordinance and Resolutions, a Water Development Fee in the amount of \$_____, and a Sewer Development Fee in the amount of \$_____, are to be paid to the City by the Developer prior to final acceptance of the work for the improvements described in Article I.

2. PLAN CHECK FEE

The Developer shall deposit with the City the sum of \$_____ to be used toward payment of Plan Checking costs for the improvements described in Article I. Said deposit shall be submitted with the Plans that are to be checked.

3. INSPECTION FEE

The Developer shall deposit with the City the sum of \$_____ to be used toward payment of construction inspection costs of the improvements described in Article I. Said deposit shall be made prior to issuance of the Permit by the City.

4. FINAL COST ACCOUNTING

After satisfactory completion of construction, as determined by the City, of the improvements described in Article I, the City will prepare a statement summarizing the Plan Check and Inspection costs and the total of the two deposits, made by the Developer to the City, described in Articles IV-2 and IV-3. Said statement will be prepared within 30 days after the City acknowledges satisfactory completion of construction (not acceptance as described in Article VI-5) and a copy provided to the Developer.

If the total of the two deposits exceeds the total of the Plan Check and Inspection costs, the excess will be returned to the Developer with the written acceptance of the improvements. If the total of the two deposits is less than the total of the Plan Check and Inspection costs, payment of the deficit shall be delivered to the City prior to acceptance of the improvements by the City.

5. BASIS FOR DETERMINING PLAN CHECK AND INSPECTION FEES

The fees for plan checking and inspection will be computed as follows: The cost to the City for services by other than City employees will be charged to the Developer at actual cost plus ten percent (10%). The cost to the Developer for City employees will be calculated using the actual hourly wage rate, not including fringe benefits or payroll taxes, multiplied by a factor of 2.2 to cover overhead costs. The hourly wage rate of salaried employees will be determined by dividing the employees annual salary by 2080. Costs for materials and equipment, if any, will be charged to the Developer at their actual cost.

ARTICLE V. INSURANCE REQUIREMENTS

As required by Section 8 of the General Provisions of the City Specifications, the Developer shall provide to the City proof of his Contractor’s Worker’s Compensation Insurance and Liability Insurance on the forms provided by the City. No alteration or substitution of said forms will be allowed.

The Liability Insurance shall provide bodily injury coverage of not less than \$_____ for one person and for not less than \$_____ for one occurrence.

Property damage coverage shall be for not less than \$_____.

No work shall be permitted until the required insurance forms have been filed with and accepted by the City.

ARTICLE VI. BOND REQUIREMENTS

As required by Section 9 of the General Provisions of the City Specifications, the Developer shall provide to the City Performance and Payment Bonds or, at the sole discretion of the City, a Guarantee Bond in lieu of the Performance and Payment Bonds.

The City has determined that bonding requirements for the proposed sewer improvements described in Article I shall be as follows:

Performance Bond;	required	_____
	not required	_____
Payment Bond;	required	_____
	not required	_____
Guarantee Bond;	required	_____
	not required	_____

No work shall be permitted until the bond form(s) have been filed with and accepted by the City.

ARTICLE VII. PROCEDURE

1. PRELIMINARY PLANS AND PLAN CHECK FEE DEPOSIT

The Developer shall provide to the City three copies of the proposed Plans and Specifications for the improvements described in Article I along with the Plan Check Fee Deposit described in Article IV-2.

The City will return one set of the proposed Plans and Specifications to the Developer with any comments or corrections noted on the documents within approximately 20 working days after the date of receipt of the Plans and Specifications by the City.

2. FINAL PLANS AND SPECIFICATIONS AND INSPECTION FEE DEPOSIT

After making the changes and corrections noted on the preliminary Plans and Specifications, the Developer will deliver three copies of the proposed final Plans and Specifications to the City for review.

When the proposed final Plans and Specifications are delivered to the City for review, any Grants of Easements that may be required for the construction and maintenance of the proposed improvements will be delivered to the City also.

3. FINAL REVIEW AND APPROVAL OF PLANS AND SPECIFICATIONS

Within approximately 20 working days after the date of delivery of the proposed final Plans and Specifications and Grants of Easements, if any, the City will review the documents and notify the Developer of any additional changes or corrections that may be needed. If no further changes or corrections are needed, the Plans and Specifications and Grants of Easements will be presented to the City Council at their next regularly scheduled City Council meeting for their approval and acceptance.

4. ISSUANCE OF PERMIT BY CITY TO CONSTRUCT THE IMPROVEMENTS

Within 10 working days after receipt from the Developer by the City of four sets of the required Performance and Payment Bonds, or Guarantee Bond if the Performance and Payment Bonds have been waived by the City, described in Section 9 of the General Provisions of the City Specifications, and four sets

of the executed Workmen's Compensation Insurance and Liability Insurance forms, described in Section 8 of the General Provisions of the City specifications, provided the City has previously approved the Plans and Specifications, the City will review the documents and notify the Developer of any corrections or changes required. If no corrections or changes are needed, the documents will be presented to the City Council at their next regularly scheduled City Council meeting for their approval. Provided all fees, including the Domestic Water and Sanitary Sewer System Improvements Connection Charge, if any, and the Inspection Fee Deposit, have been paid and the bond and insurance forms are satisfactory to the City, the Permit to construct the domestic water and sanitary sewer system improvements will be issued within five working days after authorization to do so by the City Council.

5. **FINAL ACCEPTANCE OF THE WORK BY THE CITY**

After construction of the improvements described in Article I has been completed to the satisfaction of the City, the final cost accounting described in Article IV-4 has been completed and any sums due have been paid by the Developer to the City, and the "Record Drawings" described in Section 3-5 of the General Provisions of the City Specifications have been filed with the City, the City Council will issue a Notice of Final Acceptance of the improvements.

ARTICLE VIII. TERMINATION OF CONTRACT

Developer may terminate this agreement at any time prior to issuance of the Permit upon giving written notice to the City. In which event, the City will prepare a statement summarizing the costs to the City and deposits made by the Developer as described in Article IV-4. If cost(s) exceeds the deposit(s), Developer shall pay the sum due to the City within 30 calendar days. If deposit(s) exceeds the cost(s), City will reimburse the Developer the sum due Developer within 30 calendar days.

ARTICLE IX. GIVING NOTICE

Any notice to be given hereunder by either party to the other party shall be by personal delivery in writing or by registered or certified mail, postage prepaid, return receipt requested. Either party may change its address by written notice in accordance with this paragraph.

The addresses of the parties to this agreement as of the date of this agreement are:

CITY: City of Bishop
377 West Line Street
PO Box 1236
Bishop, CA 93515

DEVELOPER: _____

CITY

DEVELOPER

Mayor, City of Bishop

City Clerk

Recording Requested by
And for the Benefit of:
City of Bishop

When Recorded Mail To:

City of Bishop
Public Works
PO Box 1236
Bishop, CA 93515

GRANT OF EASEMENT

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged

Hereinafter called "GRANTOR" HEREBY GRANTS TO

CITY OF BISHOP

A political subdivision of the State of California hereinafter called 'GRANTEE',

An easement and right-of-way to lay, construct, reconstruct, maintain, operate, repair, renew, change the size of and remove domestic water and sanitary sewer pipelines with appurtenant fittings, structures and other equipment, with the right of ingress to and egress from the same, over, through, under, along and across those certain parcels of land situated in Section _____, Township _____, Range _____, M.D.B.&M., in the County of Inyo, State of California, and as shown on Exhibit "A" attached hereto and described by and Exhibit "B" attached hereto:

GRANTORS and its successors further grant to the GRANTEE the right to trim such trees and other foliage and to cut such roots on said property as may be necessary for the construction, protection, maintenance, operation, renewal and replacement of such pipe line or related structures over, under, across and through said lands, and the full exercise of the rights hereby granted, and covenants that no buildings or permanent improvements will be placed thereon.

PASSED, ADOPTED AND APPROVED this _____ day of _____, _____ at Inyo County, California.

Ayes: Absent:
Noes: Abstain:

I certify the foregoing statements to be a true and correct copy of action taken by the governing board of this agency.

_____ _____ _____
Authorized Agent Signature Title Date

ACCEPTANCE

This is to certify that the interest in real property conveyed by the within grant easement to the City of Bishop is hereby accepted by order of the City Council on _____, and Grantee consents to the recordation thereof by its duly authorized officer.

DATED: _____

City Clerk/City Administrator

PERFORMANCE BOND

We, _____, as Developer and _____, as Surety, jointly and severally, bind ourselves, our heirs, representatives, successors and assigns, as set forth herein, to the

CITY OF BISHOP

(herein called "City") for payment of the penal sum of _____ Dollars (\$ _____), lawful money of the United States. The Developer's contract is for the construction of

DOMESTIC WATER AND SANITARY SEWER SYSTEM IMPROVEMENTS

Described in Contract No. _____

Dated _____

BETWEEN THE DEVELOPER AND THE CITY

THE CONDITION OF THIS OBLIGATION IS SUCH that if the Developer shall in all things abide by and well and truly keep and perform the covenants, and agreements in the said contract, and any alteration thereof made as therein provided, on his part to be kept and performed at the time and in the manner therein specified, and shall indemnify and save harmless the City, the City's Engineer, and their consultants, and each of their directors, officers, employees and agents, as therein stipulated, this obligation shall become null and void, otherwise, it shall be and remain in full force and effect.

Surety agrees that no change, extension of time, alteration, or addition to the terms of the contract, or the work to be performed thereunder, or the plans and specifications shall in any way affect its obligation on this bond, and it does hereby waive notice thereof.

Furthermore, this obligation shall remain in full force and effect for a period of one year commencing on the date of Final Acceptance by the City of the improvements described in the Contract between the Developer and the City.

Developer and Surety agree that if the City is required to engage the services of an attorney in connection with the enforcement of this bond, each shall pay City's reasonable attorney's fees incurred, with or without suit, in addition to the above sum.

Executed in four original counterparts on _____, _____.

Developer

By _____

(Seal if Corporation)

Title _____

(Attached Acknowledgement of Authorized Representative of Developer)

Any claims under this bond may be addressed:

(name and address of Surety)

(name and address of Surety's agent
for service of process in California,
if different from above)

(telephone number of Surety's agent
in California)

Attach Acknowledgement

Surety

By _____

(Attorney in Fact)

NOTICE:

No substitution or revision to this bond form will be accepted. Sureties must be authorized to do business in and have an agent for service of process in California. Certified copy of Power of Attorney must be attached.

PAYMENT BOND

We, _____, as Developer,
and _____, as Surety, jointly
and severally, bind ourselves, our heirs, representatives, successors and assigns, as set
forth herein, to the

CITY OF BISHOP

(herein called "City") for payment of the penal sum of _____
_____ Dollars (\$ _____).
lawful money of the United States. The Owner's contract is for the construction of

DOMESTIC WATER AND SANITARY SEWER SYSTEM IMPROVEMENTS
Described in Contract No. _____
Dated _____
BETWEEN THE DEVELOPER AND THE CITY

The Developer or any of his Contractor subcontractors fail to pay any of the persons named in Section 3181 of the California Civil Code, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract, or for any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the contractor and his subcontractors pursuant to Section 18806 of the Revenue and Taxation Code, with respect to such work and labor, then Surety will pay the same in an amount not exceeding the sum specified above, and also will pay, in case suit is brought upon his bond, such reasonable attorney's fees as shall be fixed by the court.

This bond shall insure to the benefit of any of the persons named in Section 3181 of the California Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

Surety agrees that no change, extension of time, alteration, or addition to the terms of the contract, or the work to be performed thereunder, or the plans and specifications shall in any way affect its obligation on this bond, and it does hereby waive notice thereof.

Furthermore, this obligation shall remain in full force and effect for a period of one year commencing on the date of Final Acceptance of by the City of the improvements described in the Contract between the Developer and the City.

Developer and Surety agree that should City become a party of any action on this bond that each will also pay City's reasonable attorney's fees incurred therein in addition to the sum above set forth.

Executed in four original counterparts on _____, _____.

Developer

(Seal if Corporation)

By _____

Title _____

(Attach Acknowledgement of Authorized Representative of Developer)

Any claims under this bond may be addressed to:

_____ (name and address of Surety)

_____ (name and address of Surety's agent for services of process in California, if different from above)

_____ (telephone number of Surety's agent in California)

(Attach Acknowledgement)

Surety

By _____
(Attorney-in-Fact)

NOTICE:

No substitution or revision to this bond form will be accepted. Sureties must be authorized to do business in and have an agent for service of process in California. Certified copy of Power of Attorney must be attached.

GUARANTEE BOND

We, _____, as Developer and Surety, jointly and severally, bind ourselves, our heirs, representative, successors and assigns, as set forth herein, to

CITY OF BISHOP

(herein called "City") in the sum of _____ dollars (\$_____), lawful money of the United States. The Developer's contract is for the construction of

DOMESTIC WATER AND SANITARY SEWER SYSTEM IMPROVEMENTS

Described in Contract No. _____

Dated _____

BETWEEN THE DEVELOPER AND THE CITY

Pursuant to the Contract, Developer is required to provide a bond to City securing Developer's guarantee that it will not be necessary for City to make any repairs to Developer's work under said Contract which may be caused by defective workmanship or materials furnished by Developer for a period of one (1) year from the date of acceptance thereof by City;

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Developer, his or its heirs, executors, administrators, successors and assigns, shall faithfully fulfill the one-year guarantee of all materials and workmanship furnished by Developer as set forth in the Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect. In the event legal action is required to enforce the provisions of this bond, the prevailing party shall be entitled to recover reasonable attorney's fees in addition to court costs, necessary disbursements and damages.

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

The rate of premium on this bond is \$_____ per thousand. The total amount of premium charged is \$_____.

(The above must be filled in by the Surety.)

Executed in four original counterparts on _____, _____.

Developer

(Seal if Corporation)

By _____

Title _____

(Attached Acknowledgement of Authorized Representative to Developer)

Any Claims under this bond may be address to:

(name and address of Surety)

(name and address of Surety's agent for services of process in California, if different from above)

(telephone number of Surety's agent in California)

(Attach Acknowledgement)

Surety

By _____

(Attorney-in-Fact)

NOTICE:

No substitution or revision to this bond form will be accepted. Sureties must be authorized to do business in and have an agent for service of process in California. Certified copy of Power of Attorney must be attached.

**CONTRACTOR'S CERTIFICATE
REGARDING WORKER'S COMPENSATION**

Description of Contract:

DOMESTIC WATER AND SANITARY SEWER SYSTEM IMPROVEMENTS AS DESCRIBED IN CONTRACT NO. _____, DATED _____, _____, BETWEEN THE CITY OF BISHOP AND _____ AS DEVELOPER

Labor Code Section 3700:

“Every employer except the State and all political subdivisions or institutions thereof, shall secure the payment of compensation in one of more of the following ways:

- (a) By being insured against liability to pay compensation in one or more insurers duly authorized to write compensation insurance in this State.
- (b) By securing from the Director of Industrial Relations a certificate of consent to self-insure, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his employees.”

I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with 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 _____

(Official Title)

(SEAL)

Labor Code Section 1961 provides that the above certificates must be signed and filed by the Contractor with the City prior to performing any work under this contract.)

On this _____ day of _____, _____, before me personally came _____ to me known, who being duly sworn, did depose and say: that _____ is an authorized representative of the _____ and acknowledged to me that _____ executed the within instrument of behalf of said insurance company.

In witness whereof, I have signed and affixed my official seal on the date in this certificate first above written.

Notary Public

Insurance Company Agent of Service
of Process in California:

_____ Name	_____ Agency
_____ Street Number	_____ Street Number
_____ City and State	_____ City and State
_____ Telephone Number	_____ Telephone Number

This certificate or verification of insurance is not an insurance policy and does not amend, extend, or alter the coverage afforded by the policies listed herein. Notwithstanding any requirements, term, or condition of any contract or other document with respect to which this certificate or verification of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

NOTICE:

No substitution or revision to the above certificate form will be accepted. If the insurance called for is provided by more than one insurance company, a separate certificate in the exact above form shall be provided for each insurance company.

On this _____ day of _____, _____, before me personally came _____ to me known, who being duly representative of the _____ and acknowledged to me that _____ executed the within instrument on behalf of said insurance company.

In witness whereof, I have signed and affixed my official seal on the date in this certificate first above written.

Notary Public

NOTICE:

No substitution or revision to the above endorsement form will be accepted. If the insurance called for is provided by more than one policy, a separate endorsement in the exact above form shall be provided for each policy.

CERTIFICATE OF INSURANCE

Description of Contract:

DOMESTIC WATER AND SANITARY SEWER SYSTEM IMPROVEMENTS AS DESCRIBED IN CONTRACT NO. _____, DATED _____, _____, BETWEEN THE CITY OF BISHOP AND _____ AS DEVELOPER.

Type of Insurance: Liability Insurance

THIS IS TO CERTIFY that the following policies have been issued by and below-stated company in conformance with the requirements of Articles 8-1 and 8-3 of the General Provisions of the City of Bishop Standard Specifications for Domestic Water and Sanitary Sewer Systems are in force at this time.

Policy Number	Expiration Date	Limits of Liability in Thousands (000)	
		Each Occurrence	Aggregate
A. GENERAL LIABILITY			
		Bodily Injury	\$ _____ \$ _____
		Property Damage	\$ _____ \$ _____
		Bodily Injury and Property Damage Combined	\$ _____ \$ _____
		Personal Injury	\$ _____ \$ _____
B. AUTOMOBILE INJURY			
		Bodily Injury (Each person)	\$ _____ \$ _____
		Bodily Injury (Each Occurrence)	\$ _____ \$ _____
		Bodily Injury and Property damage combined	\$ _____ \$ _____

C. EXCESS LIABILITY

Bodily Injury and
Property Damage combined
\$_____ \$_____

The following types of coverage are included in said policies (indicated by "X" in space):

A. GENERAL LIABILITY:

Comprehensive Form	Yes___	No___
Premises-Operations	Yes___	No___
Explosion and Collapse Hazard	Yes___	No___
Underground Hazard	Yes___	No___
Products/Completed Operations Hazard	Yes___	No___
Contractual Insurance	Yes___	No___
Board Form Property Damage Including Completed Operations	Yes___	No___
Independent Contractors	Yes___	No___
Personal Injury	Yes___	No___

B. AUTOMOBILE LIABILITY

Comprehensive Form Including Loading And Unloading	Yes___	No___
Owned	Yes___	No___
Hired	Yes___	No___
Non-Owned	Yes___	No___

C. EXCESS LIABILITY

Umbrella Form Yes___ No___

Other than Umbrella Form Yes___ No___

This certificate or verification of insurance is not an insurance policy and does not amend, extend, or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term, or condition of any contract or other document with respect to which this certificate or verification of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

The Company will give at least 30 days' written notice by certified mail to the City prior to any material change or cancellation of said policies.

Name Insured (Contractor)

Insurance Company

Street Number

Street Number

City and State

City and State

State of _____)
) ss,
County of _____)

By _____
Company Representative

(See Notice next page)

On this _____ day of _____, _____, before me personally came _____ to me know who being duly sworn, did depose and say: That _____ is an authorized representative of the _____ and acknowledged to me that _____ executed the within instrument on behalf of said insurance company.

In witness whereof, I have signed and affixed my official seal on the date in this certificate first above written.

Notary Public

Insurance Company Agent for Service of Process in California:

Name

Agency

Street Number

Street Number

City and State

City and State

Telephone Number

Telephone Number

NOTICE:

No substitution or revision to the above certificate form will be accepted. If the insurance called for is provided by more than one insurance company, a separate certificate in the exact above form shall be provided for each insurance company.

Insurers must be authorized to do business and have an agent for service or process in California and have an "A" policyholder's rating and a financial rating of at least Class XI in accordance with the most current Best's Rating.

INSURANCE ENDORSEMENT

Description of Contract:

DOMESTIC WATER AND SANITARY SEWER SYSTEM IMPROVEMENTS AS DESCRIBED IN CONTRACT NO. _____, DATED _____, _____, BETWEEN THE CITY OF BISHOP AND _____ AS DEVELOPER.

Type of Insurance: Liability Insurance

This endorsement forms a part of Policy No. _____.

ENDORSEMENT:

The City, the City’s Engineer, and their consultants, all other City consultants, and each of their directors, officers, agents and employees are included as additional insureds under said policies but only while acting in their capacity as such and only as respects operations of the named insured, his contractors, any subcontractor, any supplier, anyone directly or indirectly employed by any of the, or anyone for whose acts any of them may be liable in the performance of the above-referenced contract. This insurance shall not apply if the loss or damage is ultimately determined to be the result of the sole and exclusive negligence (including any connected with the preparation or approval of maps, drawings, opinions, reports, surveys, design, or specifications) of one or more of the aforesaid additional insureds. The insurance afforded to these additional insureds is primary insurance. If the additional insured have other insurance which might be applicable to any loss, the amount of this insurance shall not be reduced or prorated by the existence of such other insurance.

The Contractual Liability Insurance afforded is sufficiently broad to insure all of the matters set forth in the article entitled “Indemnity” in the General Provisions of the above-referenced contract except those matters set forth in the fourth paragraph thereof.

This endorsement does not increase the Company’s total limits of liability.

Named Insured (Contractor)

Insurance Company

Street Number

Street Number

City and State

City and State

Recording Requested by
and for the benefit of
City of Bishop

When Recorded, mail to:

City of Bishop
PO Box 1236
Bishop, Ca 93515

GRANT DEED AND DEDICATION

FOR VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,
_____,
Grantor hereby GRANTS to CITY OF BISHOP, A PUBLIC AGENCY, Grantee, the
_____systems facilities described
on Exhibit "A" attached hereto which are located within the County of Inyo, State of
California, and upon and within the parcel of real property described on Exhibit "B"
attached hereto, both of said exhibits being by reference herein made parts hereof.

GRANTOR does hereby also dedicate said facilities to the public use to be administered
and controlled by Grantee and its successors.

DATED: _____

(Attach appropriate notarial jurat)

ACCEPTANCE

This is to certify that the interest in real property conveyed by the within grant deed and
dedication to the City of Bishop is hereby accepted by order of the City Council on
_____, _____, and Grantee consents to the recordation thereof by its
duly authorized officer.

DATED: _____

City Clerk/City Administrator