



***Edgemont***

Community Services District

# **DESIGN AND CONSTRUCTION STANDARDS MANUAL**

For

**SEWERAGE FACILITIES**

**NOVEMBER, 2022**

A L B E R T   A .  
**WEBB**  
A S S O C I A T E S

SECTION V

# **BASIC SPECIFICATIONS**

SECTION V

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BASIC SPECIFICATIONS  
SECTION A

**GENERAL SPECIFICATIONS**

**A. REFERENCE SPECIFICATIONS**

The following published reference specification shall hereby become part of these specifications.

1. State of California, Department of Transportation, "Standard Specifications", (Latest Edition).
2. The Greenbook "Standard Specifications for Public Works Construction", Latest Edition, published by Building News, Inc., 990 Park Center Drive, Suite E, Vista CA 92081. Part I of the "Standard Specifications for Public Works Construction" shall apply to work accomplished under the contract except as herein modified.

**B CONTRACTOR'S SCHEDULE OF WORK**

Within seven (7) days from the time the Contract is executed by all parties and at such other times as may be requested by the District, the Contractor shall submit to the District a detailed construction schedule which shall show the order in which the Contractor proposes to carry on the work, the dates at which the Contractor will start the several parts of the work, and the estimated dates of completion of the several parts. The District reserves the right to approve or alter the Schedule proposed by the Contractor, prior to the start of work.

The District may establish priorities for completion of certain parts of the work which may be necessary to provide certain services or which he may deem advisable in the interest of public safety and convenience.

The construction schedule and supplementary construction schedules submitted shall be consistent in all respects with the time requirements of the contract.

The receipt or written approval of any schedules by the Owner's Representative or the District shall not in any way relieve the Contractor of its obligations under the Contract Documents. The Contractor is fully responsible to determine and provide for any and all staffing and resources at levels which allow for good quality and timely completion of the Work. Contractor's failure to incorporate all elements of Work required for the performance of the Contract or any inaccuracy in the schedule shall not excuse the Contractor from performing all Work required for a completed Work within the specified Contract time period. If the required schedule is not received by the time the first payment under the Contract is due, Contractor shall not be paid until the schedule is received, reviewed and accepted by the Owner's Representative.

1. Schedule Contents. The schedule shall allow enough time for inclement weather. The schedule shall indicate the beginning and completion dates

of all phases of construction; critical path for all critical, sequential time related activities; and "float time" for all "slack" or "gaps" in the non-critical activities. The schedule shall clearly identify all staffing and other resources which in the Contractor's judgment are needed to complete the Work within the time specified for completion. Schedule duration shall match the Contract time. Schedules indicating early completion will be rejected.

2. Schedule Updates. Contractor shall continuously update its construction schedule. Contractor shall submit an updated and accurate construction schedule to the Owner's Representative whenever requested to do so by Owner's Representative and with each progress payment request. The Owner's Representative may withhold progress payments or other amounts due under the Contract Documents if Contractor fails to submit an updated and accurate construction schedule.

### **C. INSPECTION**

All work and materials furnished under these specifications shall be subject to rigid District inspection and acceptance.

The Contractor shall notify the District at least two working days in advance of any work to be done, in order that inspection, including that of on-site materials, may be provided with a minimum of inconvenience to the District or delay to the Contractor. The Contractor shall perform construction only in the presence of an inspector unless written permission to work during the absence of an inspector has been granted by the District or inspector. Any work done in the absence of an inspector without permission shall be subject to rejection.

The District shall at all times have access to the work during its construction and shall be furnished with every reasonable facility for ascertaining that materials and workmanship are in accordance with the requirements of these Specifications.

When required, the Contractor shall notify the District a sufficient time in advance of manufacture or production of materials to be supplied, in order that the District may arrange for shop or plant inspection and testing. The District shall have access to all parts of the shop or plant where material subject to inspection is being manufactured.

All materials shipped prior to having satisfactorily passed such testing and inspection by the District shall not be used unless approved by the District.

The Contractor shall also furnish the District duplicate, certified copies of all factory and mill test reports when required by the District.

Work or materials failing to conform to these Specifications may be rejected at any time.

The District has made the necessary arrangements for inspection (general, geotechnical and specialties) of Contractor's work during the District's field services' regular (i.e. 7:00 a.m. to 3:30 p.m., Monday through Friday) 40 hour work week. If the Contractor works more than an 8 hour day, a 40 hour week, and/or District observed holidays, the financial



responsibility for ALL added inspection shall be the responsibility of the Contractor. The prevailing hourly rates for inspection are on file with the District. Such prevailing rates will be applied at 1-1/2 times the regular rates for periods over 8 hours a day and/or 40 hours per week and/or District observed holidays and 2 times the regular rates for periods over 12 hours in one (1) day.

#### **D. DEFECTIVE WORKMANSHIP AND MATERIAL**

The Contractor shall promptly remove from the premises all work and materials condemned by the District as failing to conform to the contract, whether incorporated or not, and the Contractor shall promptly replace and re-execute his own work in accordance with the contract and without expense to the District and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement and pay for reinspection costs.

If the Contractor does not remove such condemned work or materials within a reasonable time after notice, the District may remove them and store the materials at the expense of the Contractor. If the Contractor does not pay the expenses of such removal within 10 days' time after such removal, the District may, upon thirty days' written notice, sell such materials at auction or at private sale and shall account for the net proceeds thereof after deducting all the costs and expenses that should have been borne by the Contractor.

#### **E. SANITATION**

All parts of the work shall be maintained in a neat, clean, sanitary condition. Fixed and portable toilets, which are made inaccessible to flies, shall be provided wherever needed for use of employees, and their use shall be strictly enforced. Toilets shall be kept supplied with toilet paper, sanitary hand cleanser, and shall have workable door fasteners. Toilets shall be serviced no less than once weekly and shall be present in a quantity of not less than 1 per 20 workers as required by CAL-OSHA regulation. The toilets shall be maintained in a sanitary condition at all times. Use of toilet facilities in the Work under construction shall not be permitted. Any other sanitary facilities required by CAL-OSHA shall be the responsibility of the Contractor. All waste and refuse from sanitary facilities provided by the Contractor or from any source related to Contractor's operations shall be taken care of in a sanitary manner, satisfactory to the District, and in accordance with the laws and regulations pertaining thereto. Contractor shall rigorously prohibit and prevent committing of nuisance within the work site area or upon the District's right-of-way or adjacent to private property. Contractor shall furnish all facilities and means for proper sanitation of the work, and shall protect and save harmless the District, its officers and employees from any liability resulting from improper or insufficient sanitation.

#### **F. FIRST AID AND PROTECTIVE FACILITIES**

First aid facilities and supplies shall be kept on the jobsite. Instructions in first aid shall be given, and Contractor shall provide emergency first aid treatment and supplies for his employees sufficient to comply with all legal requirements.

## **G. CONTRACTOR TO PROVIDE FACILITIES FOR EMPLOYEES**

Contractor shall, at his own expense, provide all labor, materials, equipment, and facilities which may be required to carry out effectively the provisions of these specifications. Contractor shall receive no additional payment therefore, and all compensation to be received for such work shall be included in the prices bid on the Bidding Sheet.

## **H. POWER**

The Contractor shall provide, at his own expense, all necessary power required for his operations under the contract. The Contractor shall provide and maintain in good order such modern power equipment and installation as shall be adequate, in the opinion of the District, to perform in a safe and satisfactory manner the work required by the Contract.

## **I. CLEANUP**

THROUGHOUT ALL PHASES OF CONSTRUCTION, INCLUDING SUSPENSION OF WORK, AND UNTIL FINAL ACCEPTANCE OF THE PROJECT, the Contractor shall keep the premises occupied by him and the project site in a neat and clean condition, and free from unsightly accumulation of rubbish, excess construction materials, and excess excavated materials. The Contractor shall also abate dust nuisance by cleaning, sweeping, and sprinkling with water, or other means as necessary. The use of water resulting in mud on public streets will not be permitted as a substitute for sweeping or other cleaning methods.

Materials and equipment shall be removed from the site as soon as they are no longer necessary.

Care shall be taken to prevent spillage on haul routes. Any such spillage shall be removed immediately and the area cleaned.

Excess excavated material from the pipe trench shall be removed from the site immediately. Sufficient material may remain for use as backfill. Forms and form lumber shall be removed from the site as soon as practicable after stripping.

FAILURE OF THE CONTRACTOR TO COMPLY WITH THE DISTRICT'S CLEANUP ORDERS MAY RESULT IN AN ORDER TO SUSPEND WORK UNTIL THE CONDITION IS CORRECTED. No additional compensation or extension of time will be allowed as a result of such suspension.

The Contractor shall not discharge smoke, dust, or any other air contaminants into the atmosphere in such quantity as will violate the regulations of any legally constituted authority.

Upon completion of work and before the final estimate is submitted, the Contractor shall, at his own expense and cost, satisfactorily dispose of or remove from the vicinity of the work all plants, buildings, rubbish, unused materials, concrete forms, and other equipment and materials belonging to him or used under his direction during the

construction, and in the event of his failure to do so, the same may be removed and disposed of by the District at the Contractor's expense.

**J. UTILITIES AND EASEMENTS**

The plan portion of each sheet indicates the general location of underground utilities as shown on available records. No attempt has been made to show service connections other than those services improved as part of the contract work. The plans also indicate the location of public right-of-way lines and easements that will be acquired by the District. Easements for private development projects shall be acquired by the private developer. It shall be the Contractor's responsibility to conduct all his operations within the rights-of-way and easements as shown on these plans.

**K. RELATIONSHIP WITH OTHER GOVERNMENTAL AGENCIES**

Where the pipeline and structures are constructed within the rights of way under the jurisdiction of other governmental agencies, Contractor shall comply with all requirements of said agencies. Where the same subject matter is covered by the specifications of two or more agencies, the specifications more restrictive on the Contractor shall govern in all cases.

**L. EXPOSURE OF UTILITIES IN ADVANCE OF WORK**

It shall be the Contractor's responsibility to determine the exact location and depth of all utilities and service connections. He shall also determine the type, material, and condition of any utility which may be affected by or affect the work. The Contractor shall have all utility companies field locate all underground lines before start of construction.

In order to provide sufficient lead time to resolve unforeseen conflicts, order materials and take other appropriate measures to ensure that there is no delay in work, the CONTRACTOR SHALL POTHOLE ALL UTILITY MAINS THAT MUST BE CROSSED OR CLOSELY PARALLELED PRIOR TO ANY CONSTRUCTION. CONTRACTOR SHALL THEN IMMEDIATELY PROVIDE THE LOCATION AND DEPTH OF THE "POTHOLED" UTILITIES TO THE ENGINEER. The Contractor shall expose all service connections before excavation in the area. All cost incurred in exposing utilities shall be borne by the Contractor.

THE DISTRICT RESERVES THE RIGHT TO MAKE MINOR ADJUSTMENTS IN PIPELINE ALIGNMENT AND GRADE, ALL AT NO ADDITIONAL COST TO THE DISTRICT.

Failure of the Contractor to comply with these provisions will result in an order to suspend work until these provisions are complied with, and no additional compensation or extension of time will be allowed as a result of such suspension. Payment per bid item or spread.

**M. ADVANCE NOTIFICATION OF AGENCIES**

It shall be the Contractor's responsibility to determine and notify those agencies requiring advance notification for inspection or other purposes before beginning construction in

any area of concern to said Agency. A minimum of two working days advance notice shall be given to the various agencies before beginning construction in the area unless specific advance times and requirements are stated in these detailed specifications or required by the Agency.

## **N. CROSSING, PROTECTION AND/OR RELOCATION OF UTILITIES**

### 1. General

Utilities for the purpose of these specifications shall be considered as including, but not limited to, and irrespective of ownership; Pipelines (including irrigation mains), conduits, transmission lines, and appurtenances of "Public Utilities" (as defined in the Public Utilities Act of the State of California) and those of private industry, business, or individuals solely for their own use or for use of their tenants; and storm drains, sanitary sewer, street lighting, traffic signal systems, duct banks, telephone cable, transmission cables, and completely buried structures.

The District has made an earnest effort to locate and indicate on the drawings all utilities which exist within the limits of the work. However, the accuracy and completeness of the utilities indicated on the drawings are not guaranteed. If utilities are shown in profile, the depth indicated is based on general practice and is not guaranteed at any specific location. No attempt has been made to show service connections on the plans. It shall be the responsibility of the Contractor to determine the exact location of all utilities and their service connections. The Contractor shall have the utility companies field locate their utilities before excavation. The Contractor shall verify with each utility company the extent to which they will field locate their utilities. Where required, field location by Contractor forces shall be included in the contract price for which such work is appurtenant thereto and no additional allowance will be made therefore. The Contractor shall make his own investigation as to the location and type of existing utilities and their appurtenances and service connections which may be affected by the contract work, and shall notify the District as to any utility located by him which has been incorrectly shown or omitted from the drawings.

### 2. Utilities Shown on Plans

Where utilities cross or parallel the pipeline trench but do not conflict with the permanent work to be constructed, the Contractor shall protect the utility in place unless otherwise indicated on the plans. The Contractor shall notify the utility owner at least two working days in advance of the crossing or parallel construction and will coordinate the construction schedule with the utility service requirements.

Unless otherwise provided in the specifications, full compensation for crossing or paralleling of utilities shown on the plans shall be included in the contract unit price for which such work is appurtenant thereto and no

additional allowance will be made therefore. Said various contract prices shall include all labor, materials, tools and equipment necessary or incidental to the work.

3. Special Water/Sewer Crossings

At the locations shown on the plans or if the vertical separation between the outside of the sewer pipe and the outside of existing water pipes at crossings is less than one (1) foot, and when directed by the District, the Contractor shall provide the construction required per the detail shown on the plans and per the California Department of Public Health Water/Sewer Special Construction Requirements. The special construction will be deleted at locations shown if the vertical separation of the waterline above the sewerline is 1 foot or greater.

The District hereby reserves the right to increase or decrease this item from the quantity shown on the Proposal forms without altering the unit price bid per each. Payment will be made in accordance with the unit bid price provided on the Bidding Sheet; in the event no item for said special construction work is designated on the Bidding Sheet, Contractor shall be paid under the "Extra Work" provisions of the General Conditions.

4. Relocation of Utilities by the Contractor for His Own Convenience

The temporary relocation or the alteration of any utility desired by the Contractor solely for his own convenience in the performance of the contract work, to a position or condition other than that provided for in the specifications or shown on the drawings, shall be the Contractor's own responsibility, and he shall make all arrangements with the property owners regarding such work. Any costs of such work for the Contractor's own convenience shall be absorbed in the unit prices or included in the lump sum amounts bid for the various contract items.

5. Service Connections

Compensation for service connection crossings (not shown on the Plans) shall be included in the contract price for which such work is appurtenant thereto and no additional allowance will be made therefore.

6. Utility Conflicts with Proposed Improvements

If a utility, whether shown on the plans or not, should intersect the proposed improvement at grade anywhere along the line of the improvement, the Contractor shall immediately notify the District. The Contractor may be advised to continue with the construction, leaving sufficient "gap" in his construction as determined by the District as may be necessary to accommodate resolution of the conflict, to be completed after the conflict has been resolved. In addition, the Contractor shall notify the District in writing, stating the nature of the conflict, location by schedule, sheet number, name of the street or location of easement and

the station at which the conflict occurred. The District shall, within a reasonable time, make the necessary arrangements to resolve the conflict. Completion of the gap after the resolution of conflict shall not be just cause for additional compensation. Such completion of the "gap" shall be started within three working days after the Contractor has been notified of resolution of the conflict and completed in a workmanlike manner within reasonable time thereafter. When directed or approved by the District, changes in line or grade of any structure being built may be made in order to avoid utilities. Any additional costs because of such changes will be paid for as "Extra Work".

When a utility shown on the plans conflicts with the proposed improvements, the District will arrange for the relocation or alteration of said utility or require the Contractor to do same as "Extra Work". Work required in connection with unknown utilities will be performed and paid for as specified in the following paragraphs.

7. Unknown Utilities Disclosed During Contract Work

(Not including service connection)

In the event that a utility is disclosed or installed subsequent to the award of contract, such utility not being indicated on the drawings, the alteration, relocation or proper support and protection shall be done and paid for as follows:

- (a) When said utility is found to occupy the space required to be occupied by a part of the permanent works to be constructed under the Contract, the District will arrange for the relocation or alteration of said utility, or require the Contractor to do same as "Extra Work".
- (b) When the said utility is found to lie parallel to the permanent work and within the trench prism defined by the minimum allowable trench excavation consistent with safety and the rules, orders and regulations of local, State and Federal agencies having jurisdiction; the District will arrange for the relocation, protection or alteration of said utility, or require the Contractor to do same as "Extra Work".
- (c) When said utility is more or less parallel with, and any portion of it does not lie within the trench prism specified hereinabove, the Contractor shall advise the District thereof, and in cooperation with the District of the utility, provide and place the necessary support, if any, for proper protection to ensure continuous and safe operation of the utility. All costs of such work shall be borne by the Contractor.

- (d) Utilities found to cross the excavation but not intercepting the permanent works to be constructed, then the Contractor will be required to protect the existing facility in place and construct the proposed facility under the unknown utility.

Compensation for such crossings will be at a unit price per each in accordance with the proposal therefore. The number of such crossings is estimated and the District hereby expressly reserves the right to add to the number shown or decrease from the number shown or to totally delete the item for unknown utility crossings at no change in the unit price per each. The time extension for such crossings shall be determined by the District and shall be added to the total time for completion allowed and for which no liquidated damages will be assessed.

- (e) Upon disclosing a utility in the course of excavation that was not indicated on the drawings or marked in the field, the Contractor shall protect it in place. However, he shall immediately investigate if it is abandoned. The Contractor will be compensated at the bid unit price for unknown utility crossings only for the initial crossing of abandoned lines; and only if he did protect the abandoned utility in place.

8. Responsibility of the Contractor

The Contractor shall be held responsible for all costs for the repair of any and all damage to the contract work or to any utility (whether previously known or disclosed during the work), as may be caused by his operations. Utilities not shown on the drawings to be relocated or altered by others, shall be maintained in place by the Contractor.

At the completion of the contract work, the Contractor will leave all utilities and appurtenances in a condition satisfactory to the utility owners and the District.

**O. PROTECTION OF FACILITIES OTHER THAN UTILITIES**

It shall be the Contractor's responsibility to protect in place or remove and replace to original condition all existing facilities. The existing natural and man-made features and elevations on the plans are shown by topography. The topography shown is not guaranteed complete. It shall be the Contractor's responsibility to familiarize himself with the conditions of proposed work and to identify by field investigation those features, whether or not shown on the plans, which require removal and replacement or protection in place. These features include, but are not limited to, fences, cross gutters, roads, sidewalks, driveways, curbs and gutters, power poles, signs, drainage structures, trees, landscaping, etc.

The Contractor shall repair all existing structures which may be damaged as a result of the work under the contract. Reconstruction shall be of the same type and material as the existing facility and shall be of equal quality or better than the original work.

Full compensation for complying with these requirements shall be considered as included in the price bid for the various items of work, and no additional compensation shall be made therefore.

**P. GROUND WATER**

Contractor shall investigate the possibility of ground water prior to submitting bid and shall assume all cost and liabilities incurred, should a ground water problem arise.

**Q. CONSTRUCTION WATER**

The Contractor shall make all arrangements to furnish all construction water, all at no cost to the District.

**R. WATER SUPPLY FOR COMPACTION AND DUST CONTROL**

Contractor shall furnish and apply all water necessary for compaction and dust abatement purposes.

He shall apply water to construction areas where dust conditions so warrant, as directed by the District.

The water supply and payment of fees shall be the responsibility of the Contractor.

Full compensation for complying with these requirements shall be considered as included in the price bid for the various items of work, and no additional compensation shall be made therefore.

**S. TRAFFIC CONTROL**

It shall be the Contractor's responsibility to maintain traffic warning signs, barricades, flagmen, and other traffic control devices as required to maintain two-way traffic, and as required by agencies having jurisdiction over the roadways in the work area. It shall be the responsibility of the Contractor to investigate with various agencies having jurisdiction over the right-of-way in work area to determine the extent of traffic control that may be required by each agency.

Also, it shall be the Contractor's responsibility to provide all traffic control devices to ensure a safe working environment for any associated project work such as survey, geotechnical and materials testing, etc., that is required.

Full compensation for compliance with those provisions shall be considered as included in the bid unit price for various items, and no other compensation shall be made therefore.

**T. ACCESS TO ADJACENT PROPERTIES**

Contractor shall at all times provide access to the properties in the area of work, unless otherwise approved by District. The Contractor shall be responsible for providing adequate advance notice to properties that will not have access. It shall be the



responsibility of the Contractor to provide such temporary structures in the area of work to provide reasonable access to the properties. At least one (1) lane on cross streets shall be available at all times for use of vehicles and emergency equipment.

Full compensation for compliance with these provisions shall be considered as included in the bid unit price for various items, and no other compensation shall be made therefore.

#### **U. STAKING OF LINE AND GRADE**

The District will provide offset line and grade stakes at ground level and will furnish cut sheets therefore, unless otherwise indicated in the specifications. The Contractor shall be responsible for transfer of such offset line and grade into the trench for construction of the work and for the accuracy of such transfer. Cost of such transfer will be included in the unit prices bid for the work and no extra compensation will be made to the Contractor.

The Contractor shall inform the District a reasonable time in advance (at least three working days) as to his need for additional grades and lines, in order that the same may be furnished and all necessary measurements made for record and payment with the minimum of inconvenience to the District or of delay to the Contractor.

The Contractor shall examine carefully all construction stakes and by visual inspection of stakes, string lines and headers set therefrom, interpret and confirm that the line and grade information is in accordance with the Plans. If there is an apparent error or lack of understanding as to what is meant by the staking, the Contractor shall request an interpretation of staking before proceeding with any work.

The Contractor shall preserve bench marks, survey stakes, and points set for lines, grades, or measurement of the work in their proper places until authorized by the District to remove them. In case of their destruction or removal by him or his employees or agents, they shall be replaced at the Contractor's expense.

#### **V. PROTECTION OF SURVEY MONUMENTS**

It shall be the Contractor's responsibility to protect all of the existing survey monuments. Removal of such monuments or displacement thereof shall require their resetting per the existing type of monument. The cost of resetting such monuments shall be the financial responsibility of the Contractor. Contractor is advised that resetting of monuments must be done by a registered civil engineer or licensed land surveyor. Should the Contractor anticipate removal of any survey monuments, he shall include the cost of resetting of the same in the various items of work.

#### **W. RECORD DRAWINGS**

The Contractor SHALL PROVIDE, and keep up-to-date, a complete "as-built" record set of blue-line prints, which shall be corrected daily and show every change from the original Drawings and Specifications and the exact "as-built" locations, measurements, sizes, and kinds of equipment. Prints for this purpose shall be obtained from the Engineer at cost. This set of Drawings shall be kept on the work site and shall be used only as a

record set. The Engineer shall require that these drawings be presented monthly for review prior to any progress payment being made. At the completion of construction, the Contractor shall deliver said record set of prints to the District and will be required to certify the accuracy of the Record Drawings.

#### **X. RESEEDING**

Where cultivated and maintained ground covers in lawns, parkways or easements have been removed for installation of pipelines, the Contractor shall restore or replace such ground cover in kind by reseeding or resodding, after the backfill in the trench or excavation has been consolidated and the construction area graded and cleared of rocks and other objectionable material as required by these specifications. After reseeding or resodding the areas shall be covered with a suitable mulch.

Where natural vegetation has been removed for installation of pipelines, after the installation, compaction, grading and clearing has been completed, the Contractor shall reseed such areas in accordance with the Basic Specifications, Section A, Paragraph Y entitled "Erosion Control". All costs to the Contractor for restoration, replacement, reseeding or resodding shall be absorbed in his bid for the applicable unit prices per linear foot of pipe and no other compensation will be made therefore.

#### **Y. EROSION CONTROL**

##### **1. General**

The Contractor shall provide erosion control measures as defined herewith on all areas where the natural vegetation has been disturbed by the construction of the facilities. If a ground cover other than natural vegetation has been disturbed, this section does not apply and the Contractor shall replace said ground cover in kind.

##### **2. Preparation**

After the backfill has been compacted and the pipe line tested, the Contractor shall remove and dispose of rocks and debris from the area to be reseeded. No seeding shall be performed during windy weather or when the ground is too wet or in an untillable condition. The fertilizer and seed shall be spread before the straw cover material is applied. Commercial fertilizer shall not be applied until after the seed has been sown.

##### **3. Material**

Materials shall consist of the following: Seed - The seed shall consist of the following mixture: Crested wheatgrass, 47 percent; Intermediate Wheatgrass, 27 percent; Wimmera Ryegrass, 13 percent; Blando Ryegrass, 13 percent. The seed shall be spread at the rate of 100 pounds per acre and shall be applied by the use of a "Cyclone Seed Sower" or equal. Fertilizer - The fertilizer shall be Ammonium Phosphate (16-20-0) spread at the rate of 300 pounds per acre and shall be applied

by the use of a "Cyclone Seed Sower" or equal. Mulch - After the application of the seed and fertilizer, new straw (stable bedding straw shall not be used) shall be uniformly spread at the approximate rate of four tons per acre. The straw shall then be "Mulched" into the ground by use of a "wire" roller or other approved equipment.

4. Protection for Steep Slopes

In cases where the grade over the pipe line exceeds 25 percent slope the Contractor shall provide additional erosion control measures to stabilize the backfill material. The Contractor shall submit to the Engineer for his approval, special engineering details of the method to be used.

Full compensation for complying with the requirements of this section shall be included in the unit price per linear foot of pipe installed and no other compensation shall be made therefore. Bidder's attention is specifically called to the fact that the responsibility of determining the amount and the type of erosion protection shall rest with the prospective bidder.

**Z. CONTRACTOR'S SUBMITTALS**

Contractor shall check and verify all field measurements and shall submit with such promptness as to provide adequate time for review and cause no delay in his own Work or in that of any other contractor, subcontractor, or worker on the Work, three (3) hard copies together with one (1) electronic (pdf) copy of all shop or setting drawings, calculations, schedules, and materials list, and all other provisions required by the Contract.

Contractor shall make any corrections required by the District's Representative, and email to the District's Representative corrected copies in pdf format and furnish such other copies as may be needed for completion of the Work.

Whenever called for in these Specifications or on the Drawings, or where required by the District, the Contractor shall furnish to the Construction Manager, and District's Representative, for review an electronic submittal of good quality, color, in pdf format. The maximum total attachment file size can be no larger than 10 megabytes. If files are larger, submittals may be sent on a CD Rom to the Construction Manager and District's Representative via overnight mail or hand delivery. In the case where a good quality pdf is not available the Contractor will submit three (3) hard copies to the Construction Manager and one (1) hard copy to the District's Representative, (four copies total). Copies of all shop drawings shall be submitted, accompanied by a letter of transmittal, and shall be addressed to the District.

The letter of transmittal, shall give a list of the numbers of the drawings submitted. All drawings must be marked with the name of the project and the name of the Contractor and be numbered consecutively. All drawings must be complete in every respect.

Responses and comments to the submittals will be e-mailed in PDF format. No hard copies will be sent. The Construction Manager will respond directly to the Contractor and will copy the District's Representative.

Revisions indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Drawings and Specifications and shall not be taken as the basis of claims for extra work. Submittals that are not approved will be returned to the Contractor for corrections and re-submittal. Incomplete submittals will not be accepted.

It is considered reasonable that the Contractor shall make a complete and acceptable submittal to the District by the second submission of a submittal item. The District reserves the right to withhold monies due the Contractor to cover additional costs of review beyond the second submission.

Approval of shop drawings will be general and shall not relieve the Contractor from the responsibility for proper fitting and construction of the work, nor from furnishing the material and work required which may not be indicated in the shop drawings when approved; neither does it relieve him from responsibility for errors in shop drawings.

Example submittals include, but are not limited to the following:

1. All materials provided by the Contractor
2. All appurtenances provided by the Contractor
3. Miscellaneous
  - (a) Pothole information for utilities
  - (b) Copies of permits required to be obtained by the Contractor
  - (c) SWPPP
  - (d) Pre-Construction Video
  - (e) Schedule of construction (with key milestones provided)
  - (f) Sewer bypass plan
  - (g) Safety program

#### **AA. RESPONSIBILITY FOR MATERIAL FURNISHED BY THE DISTRICT**

The Contractor's responsibility for material furnished by the District shall begin upon the Contractor's acceptance at the point of delivery to him. All material shall be examined by the Contractor and District. The Contractor shall immediately (upon delivery) notify the District of any material the Contractor perceives to be defective in manufacture or otherwise damaged. Should the District concur that the material should not be utilized the material will be replaced by the District. Material furnished by the District in good condition and accepted by the Contractor which is later discovered to have been damaged, shall be replaced by the Contractor at his expense. The Contractor shall be responsible for the safe storage of all materials until they have been incorporated in the completed project.

#### **BB. ERRORS OR DISCREPANCIES NOTED BY CONTRACTOR**

If the Contractor, either before commencing work or in the course of the work, finds any discrepancy between these Specifications and Drawings, or between either of them and

the physical conditions at the site of the work, or finds any error or omission in any of the Drawings or in any survey, he shall promptly notify the Engineer in writing of such discrepancy, error or omission.

#### **CC. HANDLING AND STORAGE OF MATERIALS**

All materials shall be handled in such a manner as to prevent damage and, in the case of water system work, maintain sanitary conditions. All materials for use in the work shall be stored by the Contractor in such a manner as to prevent damage from exposure to the elements, admixture of foreign materials or from any other cause. The Contractor shall be entirely responsible for damage or loss by weather or other causes as to work under the Contract

#### **DD. GEOTECHNICAL SERVICES**

All construction operations should be observed by a representative of the geotechnical engineer. The presence of the geotechnical engineer's field representative will be for the purpose of providing observation and field testing and will not include any supervising or directing of the actual work of the Contractor, his employees, or agents. Neither the presence of the geotechnical engineer's field representative nor the observations and testing by the geotechnical engineer shall excuse the contractor in any way for defects discovered in his work. It is understood that the geotechnical engineer will not be responsible for job or site safety on this project, which will be the sole responsibility of the contractor. CONTRACTOR TO PROVIDE SAFE ACCESS FOR GEOTECHNICAL IN CONFORMANCE WITH OSHA STANDARDS AT NO ADDITIONAL COST TO THE DISTRICT.

Dependent upon the circumstances of each particular project, as determined by the District, geotechnical services may include full time monitoring and testing or part time, periodic monitoring and testing.

#### **EE. EARTHWORK**

##### 1, General

Earthwork shall conform to the requirements of the agency having jurisdiction, but shall not be less than herein specified. Earthwork shall be performed in accordance with the requirements of Section 19 of the Specifications entitled: "State of California, Department of Transportation, Standard Specifications", Latest Edition, insofar as the same may apply and except as herein modified.

All excavations and embankments required to complete the work as specified herein shall be unclassified and made to the lines and grades shown upon the plans, or as staked in the field. (ALL EXCAVATION SHALL BE UNCLASSIFIED AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY PRIOR TO SUBMITTING HIS PROPOSAL TO FAMILIARIZE HIMSELF WITH THE CONDITIONS THAT HE MAY ENCOUNTER DURING CONSTRUCTION.) Excavated materials not

required for fill, embankments or backfills shall become the property of the Contractor, and shall be disposed of at his own expense.

All excavations shall be protected and supported as required for safety and in the manner set forth in the rules, orders and regulations prescribed by the Division of Industrial Safety of the State of California.

All trenches and excavations shall be backfilled overnight and on weekends and holidays. Barriers shall be placed at each end of all excavations, and at such places as may be necessary along excavations from sunset each day to sunrise of the next day until such excavation is entirely refilled. (UNLESS OTHERWISE SPECIFIED, BACKFILL SHALL BE COMPLETE AND STREETS OPEN TO TRAFFIC BY 5:00 P.M. UNLESS OTHERWISE APPROVED BY THE DISTRICT.)

No excavated material shall be deposited on private property unless written permission of the Property Owner thereof is secured by the Contractor, or specifically provided for on these plans and in these specifications. Copies of said written permission, duly signed by the Property Owners of the private property involved, shall be furnished to the District by the Contractor before any excavated material is placed outside the limits of the established right-of-way. Free access must be provided to all driveways, watergates, hydrants, etc.

Any water which may be encountered or may accumulate in the excavation shall be pumped out or otherwise removed as necessary to keep the bottom of the excavation free and clear of water during the progress of the work.

2. Clearing and Grubbing

Areas where construction is to be performed shall be cleared of all rubbish and other objectionable material of any kind, which, if left in place, would interfere with the proper performance or completion of the contemplated work, would impair its subsequent use or form obstructions therein. Trees and other landscaping, unless otherwise specifically identified on the plans for removal, shall not be destroyed, and such measures as are necessary shall be taken by the Contractor for the protection thereof. Organic material from clearing and grubbing operations will not be incorporated in excavation backfill.

It shall be the Contractor's responsibility to remove and dispose of all excess material resulting from clearing and grubbing operations at his own expense. The Contractor shall make his own arrangements for disposal sites at his own expense, at which said material may be wasted. Full compensation for clearing and grubbing shall be included in the contract unit price for which such work is appurtenant thereto, and no additional allowance will be made therefore.

3. Grading Along Pipeline

The Contractor shall perform all grading to provide a working pad along the pipeline. The pad grade shall follow the existing ground grade as nearly as possible. If unnecessary excessive overcutting occurs during this operation, the Contractor may be required to replace all such overcut material and recompact to 90%, or to do other remedial work as directed by the District, all at no cost to the District.

4. Trench Excavation

(a) General

Excavation for sewer pipe, fittings, and appurtenances shall be in open trench to the depth and in the direction necessary for the proper installation of the same as shown upon the plans or as otherwise directed by the District. Trench banks shall be kept as near vertical as is safe, and where necessary shall be properly braced and sheeted, in accordance with the provisions of the Basic Specifications, Section A, Paragraph EE.5 entitled "Trench and Excavation Shoring". The trench bottom shall be graded to provide a smooth, firm and stable foundation at every point throughout the length of the pipe. For sewer pipe, at each joint the bottom of the trench shall be recessed in such a manner as to relieve the bell or coupling of all load.

Where the excavation has been made deeper than necessary, the Contractor shall furnish crushed rock, sand, or other material approved by the District for bedding to provide uniform support under the lower third of the depth of the pipe barrel. The cost of the material and labor to place and compact to achieve a firm and stable foundation herein specified shall be included in the unit price bid for the size of pipe laid thereon.

(b) Limit of Excavation

Except with specific approval of the District's Engineer, no more than 500 feet of open trench shall be excavated in advance of laying of pipe.

(c) Tunneling

Tunneling will be permitted only where native earth is of such firmness that it will remain in its original position, without sloughing off, throughout the work of excavation and backfilling; if sloughing occurs, the roof of the tunnel shall be broken down and the trench excavated as an open trench as herein specified.

(d) Trench Widths for Sewer

The maximum allowable trench width, at the top of the pipe, is the outside diameter of the barrel plus ten (10) inches on either side of the exterior of the pipe barrel. Where the trench width at the top of the pipe is wider than ten (10) inches on either side of the exterior of the pipe barrel, the pipe shall be backfilled from the bottom of the trench to a level one-fourth (1/4) of the diameter above the center of the pipe with 3/4-inch crushed rock or as directed by the District. The cost of the labor and material to provide crushed rock encasement, if required, shall be the responsibility of the Contractor, and no additional compensation will be made therefore.

(e) Blasting

Use of explosives on the work shall be subject to approval of the District. All operations involving handling, storage and use of explosives shall be conducted with every precaution prescribed by Construction Safety Orders of Division of Industrial Safety, State of California, and by local laws and regulations. Only competent, reliable persons working under experienced supervision shall be permitted to use explosives. Contractor will be held responsible for and shall make good any damage caused by blasting or otherwise resulting from disposition or use of explosives on the work. Contractor shall obtain, at no additional cost to the District, blasting permit(s) that may be required.

5. Trench and Excavation Shoring

Pursuant to Section 6705 of the Labor Code of the State of California, in advance of any excavation pursuant to this contract, Contractor shall submit to the District for his acceptance a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such plan varies from the shoring system standards, the plan shall be prepared by a registered civil or structural engineer. Nothing in this provision shall be deemed to allow the use of a shoring, sloping, or protective system less effective than that required by the "Construction Safety Orders". Reference shall also be made to the rules, orders, and regulations of the Division of Industrial Safety of the State of California, latest edition, and the U.S. Department of Labor, Safety and Health Standards for Construction, latest edition.

FULL COMPENSATION FOR COMPLYING WITH THESE REQUIREMENTS SHALL BE CONSIDERED TO BE INCLUDED WITHIN THE CONTRACT UNIT OR LUMP SUM BID PRICES PAID FOR THE



VARIOUS ITEMS ON THE BIDDING SCHEDULE, AND NO ADDITIONAL ALLOWANCE WILL BE MADE THEREFORE.

6. Pipe Bedding for Sewer

(a) General

All pipe bedding shall be of the type indicated on the plans and shall be in accordance with the pipe bedding Standard Drawings included in these Specifications.

Bedding shall be crushed rock bedding per Basic Specifications, Section A, Paragraph EE.7 entitled "Crushed Rock Bedding". (COMPENSATION FOR BEDDING MATERIAL AS INDICATED ON THE PLANS SHALL BE INCLUDED IN THE CONTRACTOR'S BID FOR THE APPLICABLE UNIT PRICES PER LINEAR FOOT OF PIPE AND NO ADDITIONAL COMPENSATION WILL BE MADE THEREFORE.) Minimum compaction for all pipe bedding shall be 90% relative compaction.

(b) Unstable Material

Where material at the bottom of the trench is found to be unstable, soft, or spongy, such material shall be removed to a depth as determined by a Geotechnical Engineer retained by the District Engineer and replaced with Special Crushed Rock Bedding as specified in the Basic Specifications, Section A, Paragraph EE.7 entitled "Crushed Rock Bedding".

(c) Rock

Where rock is encountered, it shall be removed below grade, and the trench backfilled with suitable material to provide a compacted earth cushion with a thickness under the pipe of not less than 1/2-inch per inch of nominal diameter of the pipe to be installed, with a minimum allowable thickness of 6-inches. Where a special bedding class is indicated on the plans, the depth indicated on the Standard Drawing shall be increased to that stated herein, all at no additional cost to the Owner.

CONTRACTOR SHALL RECEIVE NO ADDITIONAL COMPENSATION FOR ABOVE MENTIONED WORK.

7. Crushed Rock Bedding

When specified on the plans or when groundwater is encountered in the excavation, or when soft, spongy and unstable material is encountered in the bottom of the trench, and when approved by the District, the material in the bottom of the trench shall be removed to a depth directed by the District and replaced with well graded 3/4-inch maximum crushed rock bedding as specified below. The crushed rock bedding shall be installed

and compacted as shown on the Standard Drawing attached to these Specifications, or with no standard drawing place crushed rock bedding 8" min. thickness (90% min. compaction) under bottom of pipe. The 3/4-inch maximum crushed rock material shall be approved by the District before use.

Crushed rock shall be the product of crushing rock or gravel. Fifty percent of the particles retained on a 3/8-inch sieve shall have their entire surface area composed of faces resulting from fracture due to mechanical crushing. Not over 5% shall be particles that show no faces resulting from crushing. Less than 10% of the particles that pass the 3/8-inch sieve and are retained on the No. 4 sieve shall be waterworn particles. Gravel shall not be added to crushed rock. Crushed rock shall have the following gradation:

Sieve Sizes	3/4-inch Max Crushed Rock % Passing
1"	100
3/4"	90-100
1/2"	30-60
3/8"	0-20
No. 4	0-5
No. 8	--

Crushed Rock Bedding, where ordered by the District, shall be paid for at the unit price per ton complete in place, if Bidding Sheet so indicates, otherwise total cost of crushed rock bedding shall be borne by the Contractor.

Payment for trench width for Crushed Rock Bedding shall be limited to a maximum width of three (3) outside pipe diameters or the actual width, whichever is less. Any trench excavation beyond the maximum width limit shall be filled and compacted with crushed rock per the Standard Drawing, and the COST OF THE ADDITIONAL BEDDING SHALL BE BORNE BY THE CONTRACTOR.

THE DISTRICT RESERVES THE RIGHT TO INCREASE OR DECREASE THIS ITEM WITHOUT CHANGE IN UNIT PRICE OF THIS ITEM OR ANY OTHER ITEM.

8. Trench Backfill and Compaction Requirements for Sewer

(a) Pipe Zone

After the sewer pipe has been laid and inspected as herein specified, the trench shall be backfilled from the level of the bedding shown on the Standard Drawings, to a height of one (1) foot above the top of the pipe with specially selected and carefully compacted material which shall be clean, crushed rock material

(Basic Specifications, Section A, Paragraph EE.7 entitled “Crushed Rock Bedding”), free from large stones or lumps. Backfilling shall be carried on simultaneously on each side of the pipe to assure proper protection of the pipe. Minimum compaction for all pipe zone material shall be 90% relative compaction.

(b) Procedure Above Pipe Zone

For sewer mains in public right of way, backfill above the pipe zone shall be per the City or Agency having jurisdiction. The following summarized trench backfill requirements and their corresponding City or Agency:

City of Moreno Valley: Standard Plan MVSI-132 Series

City of Riverside: Standard Drawing No. 452

For all other locations not in public right of way, from the top of the pipe zone backfill to ground surface, the material for backfill shall be crushed miscellaneous base pursuant to the City of Moreno Standard Plan MVSI-132 Series.

For laterals, the entire trench above the pipe zone shall be backfilled with slurry backfill.

(c) Compaction Above Pipe Zone

Relative compaction in all streets and easements, public and private, from the pipe zone to the bottom of base material shall be 90% (95% to within 12 inches of the bottom of the base material). The base material shall be the thickness required and compacted to 95% relative compaction.

(d) Compaction Tests

The compaction test, as required by the District, that meets the required compaction, shall be paid for directly to the testing laboratory by the District. The minimum District requirements are as follows: Compaction tests shall be made at intervals not greater than 150' and one (1) test every 1' maximum vertical increment of trench backfill. Additionally at least 50% of all service laterals shall be tested. The tests shall be made in accordance with a combination of the Sand Cone Method (ASTM D1556) and nuclear gauge testing methodology at rates (i.e. 1 sand cone method to “10” nuclear gauge tests) specified by the District and at varying depths.

It should be noted that dependent upon the circumstance of each project (e.g., quantity of earthwork involved), full time compaction testing could be required by the District.

It shall be the Contractor's responsibility to pay for all compaction tests that indicate insufficient compaction in the area where the Contractor has previously indicated that compaction was completed.

The Contractor shall provide, at his own expense, all labor and equipment necessary for all compaction test holes. Choice of location of all tests will be made by the District. The aforementioned labor and equipment shall be readily available to perform the necessary work when required. Should the Contractor not be ready to perform such work in support conducting the compaction test, and standby charges are incurred by the District for such a delay, the Contractor shall be responsible for payment of said standby charges.

It shall be the Contractor's responsibility to advise the District two working days prior to requiring compaction tests.

(e) Compaction Requirements under Agency Permit

Where the permit of a governing agency sets forth requirements for compaction more stringent than those stated herein, the Contractor shall adhere to the Agency requirements.

(f) Excess Excavated Material

The Contractor shall make the necessary arrangements for and shall remove and dispose of all excess or unsuitable material. All costs for the disposal of excess or waste material shall be borne by the Contractor.

It is the intent of these specifications that all surplus material of any kind shall be disposed of by the Contractor outside the limits of the public rights-of-way.

Excavated material shall not be deposited on private property unless written permission from the Property Owner thereof is secured by the Contractor. Copies of said written permission, duly signed by the Property Owner of the private property, shall be furnished to the District by the Contractor before such material is placed on private property.

(g) Imported Backfill Material

For work performed within the City of Moreno Valley right-of-way, ECSD's easements and other areas within the City of Moreno Valley, all trench backfill and pipe bedding material shall be imported. For all other areas (City of Riverside), all pipe bedding material shall be imported. For City of Riverside, trench backfill above the pipe zone may be native pursuant to the City of

Riverside Standard Drawing No. 452. However, whenever the excavated material is, in the opinion of the Geotechnical Engineer retained by the District Engineer, unsuitable for backfill, the Contractor shall arrange and furnish imported backfill material. Such backfill material shall comply with the requirements of pipe bedding in the Basic Specifications, Section A, Paragraph EE.6 entitled "Pipe Bedding for Sewer" herein.

Full compensation for disposing of unsuitable material, as well as for providing suitable material as herein specified, shall be paid for at unit price per ton of such material delivered and placed in accordance with backfill requirements, if Bidding Sheet so indicates, otherwise total cost of Imported Backfill Material shall be borne by the Contractor.

Contractor is hereby notified that the actual quantity of imported backfill material specified herein cannot be determined at this time. The District is anticipating a condition that may not exist; therefore, the quantities are fictitious for the purpose of comparing bids and the District reserves the right to reduce, to totally delete, or increase, the quantity of imported backfill material required without any consideration for adjustment in unit price of this item or any other item if the material is not needed or the final quantities are substantially different from those shown on the bidding schedule.

9. Structure Excavation and Backfill

Structure excavation shall include the removal of all material of whatever nature necessary for the construction of foundations and other structures in accordance with the plans.

In operating compacting equipment near structures, care shall be used to prevent the displacement of, or injury to, the structure. Backfill shall be carried up evenly on all sides in accordance with the soils engineer's recommendations.

No backfilling shall be done until concrete is thoroughly set and is safe to withstand the load.

All excavation shall be unclassified and it shall be the Contractor's responsibility prior to submitting his proposal to familiarize himself with the conditions that he may encounter during construction.

Full compensation for complying with the above requirements for structure excavation and backfill shall be considered as included in the lump sum bid for a structure, and no other compensation shall be made therefore.

10. Control of Water

The Contractor shall provide and maintain at all times during construction, ample means and devices with which to promptly remove and dispose of all water entering the excavations or other parts of the work. 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. Ground water shall not be allowed to rise around pipe installations until jointing compound in the joints has set.

The Contractor shall dispose of the water from the work 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.

Dewatering for structures and pipelines shall commence when ground water is first encountered, and shall be continuous until such times as water may be allowed to rise in accordance with the provisions of this Section.

11. Payment

Payment for earthwork and for conforming to all of the provisions of these specifications, unless otherwise specified herein and itemized in the bid schedule, shall be considered to be included in the contract unit or lump sum prices paid for the various items of work wherein earthwork is required, and no additional allowance will be made therefore.

**FF. SUBSTITUTIONS**

1. Pursuant to Public Contract Code Section 3400(b) the District may make a finding that is described in the invitation for bids that designates certain products, things, or services by specific brand or trade name.
2. Unless specifically designated in the Contract Documents, whenever any material, process, or article is indicated or specified by grade, patent, or proprietary name or by name of manufacturer, such Specifications shall be deemed to be used for the purpose of facilitating the description of the material, process or article desired and shall be deemed to be followed by the words "or equal." Contractor may, unless otherwise stated, offer for substitution any material, process or article which shall be substantially equal or better in every respect to that so indicated or specified in the Contract Documents. However, the District may have adopted certain uniform standards for certain materials, processes and articles.
3. Contractor shall submit requests, together with substantiating data, for substitution of any "or equal" material, process or article no later than thirty-five (35) days after award of the Contract. To facilitate the construction schedule and sequencing, some requests may need to be

submitted before thirty-five (35) days after award of Contract. Provisions regarding submission of “or equal” requests shall not in any way authorize an extension of time for performance of this Contract. If a proposed “or equal” substitution request is rejected, Contractor shall be responsible for providing the specified material, process or article. The burden of proof as to the equality of any material, process or article shall rest with the Contractor. The District has the complete and sole discretion to determine if a material, process or article is an “or equal” material, process or article that may be substituted.

4. Data required to substantiate requests for substitutions of an “or equal” material, process or article data shall include a signed affidavit from the Contractor stating that, and describing how, the substituted “or equal” material, process or article is equivalent to that specified in every way except as listed on the affidavit. Substantiating data shall include any and all illustrations, specifications, and other relevant data including catalog information which describes the requested substituted “or equal” material, process or article, and substantiates that it is an “or equal” to the material, process or article. The substantiating data must also include information regarding the durability and lifecycle cost of the requested substituted “or equal” material, process or article. Failure to submit all the required substantiating data, including the signed affidavit, to the District in a timely fashion will result in the rejection of the proposed substitution.
5. The Contractor shall bear all of the District’s costs associated with the review of substitution requests.
6. The Contractor shall be responsible for all costs related to a substituted “or equal” material, process or article.
7. Contractor is directed to the Special Conditions (if any) to review any findings made pursuant to Public Contract Code section 3400.

**GG. WORKERS**

1. Contractor shall at all times enforce strict discipline and good order among its employees. Contractor shall not employ on the Work any unfit person or any one not skilled in the Work assigned to him or her.
2. Any person in the employ of the Contractor whom the District may deem incompetent or unfit shall be dismissed from the Work and shall not be employed on this Work except with the written approval of the District.

**HH. REMOVAL OF HAZARDOUS WASTE**

Should Contractor encounter material reasonably believed to be polychlorinated biphenyl (PCB) or other toxic wastes and hazardous materials which have not been rendered harmless at the Work site, the Contractor shall immediately stop work at the

affected Work site and shall report the condition to the District in writing. The District shall contract for any services required to directly remove and/or abate PCBs and other toxic wastes and hazardous materials, if required by the Work site(s), and shall not require the Contractor to subcontract for such services. The Work in the affected area shall not thereafter be resumed except by written agreement of the District and Contractor.

## **II. AIR POLLUTION CONTROL**

Contractor shall comply with all air pollution control rules, regulations, ordinances and statutes. All containers of paint, thinner, curing compound, solvent or liquid asphalt shall be labeled to indicate that the contents fully comply with the applicable material requirements.

Without limiting the foregoing, Contractor must fully comply with all applicable laws, rules and regulations in furnishing or using equipment and/or providing services, including, but not limited to, emissions limits and permitting requirements imposed by the South Coast Air Quality Management District (SCAQMD) and/or California Air Resources Board (CARB). Although the SCAQMD and CARB limits and requirements are more broad, Contractor shall specifically be aware of their application to "portable equipment", which definition is considered by SCAQMD and CARB to include any item of equipment with a fuel-powered engine. Contractor shall indemnify District against any fines or penalties imposed by SCAQMD, CARB, or any other governmental or regulatory agency for violations of applicable laws, rules and/or regulations by Contractor, its subcontractors, or others for whom Contractor is responsible under its indemnity obligations provided for in the Conditions of the Contract.

## **JJ. COMPLIANCE WITH STATE STORM WATER PERMIT**

1. Contractor shall be required to comply with all conditions of the State Water Resources Control Board ("State Water Board") National Pollutant Discharge Elimination System General Permit for Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity ("Permit") for all construction activity which results in the disturbance of in excess of one acre of total land area or which is part of a larger common area of development or sale. Contractor shall be responsible for filing the Notice of Intent and for obtaining the Permit. Contractor shall be solely responsible for preparing and implementing a Storm Water Pollution Prevention Plan ("SWPPP") prior to initiating Work. In bidding on this Contract, it shall be Contractor's responsibility to evaluate the cost of procuring the Permit and preparing the SWPPP as well as complying with the SWPPP and any necessary revision to the SWPPP. Contractor shall comply with all requirements of the State Water Resources Control Board. Contractor shall include all costs of compliance with specified requirements in the Contract amount.
2. Contractor shall be responsible for procuring, implementing and complying with the provisions of the Permit and the SWPPP, including the



standard provisions, monitoring and reporting requirements as required by the Permit. Contractor shall provide copies of all reports and monitoring information to the Owner's Representative.

3. Contractor shall comply with the lawful requirements of any applicable municipality, the District, drainage district, and other local agencies regarding discharges of storm water to separate storm drain system or other watercourses under their jurisdiction, including applicable requirements in municipal storm water management programs.
4. Storm, surface, nuisance, or other waters may be encountered at various times during construction of the Work. Therefore, the Contractor, by submitting a Bid, hereby acknowledges that it has investigated the risk arising from such waters, has prepared its Bid accordingly, and assumes any and all risks and liabilities arising therefrom.
5. Failure to comply with the Permit is in violation of federal and state law. Contractor hereby agrees to indemnify and hold harmless District, its officials, officers, agents, employees and authorized volunteers from and against any and all claims, demands, losses or liabilities of any kind or nature which District, its officials, officers, agents, employees and authorized volunteers may sustain or incur for noncompliance with the Permit arising out of or in connection with the Work, except for liability resulting from the sole established negligence, willful misconduct or active negligence of the District, its officials, officers, agents, employees or authorized volunteers. District may seek damages from Contractor for delay in completing the Contract in accordance with the Contract Documents, caused by Contractor's failure to comply with the Permit.

**KK. EXCESSIVE NOISE**

1. The Contractor shall use only such equipment on the Work and in such state of repair so that the emission of sound therefrom is within the noise tolerance level of that equipment as established by CAL-OSHA.
2. The Contractor shall comply with the most restrictive of the following: (1) local sound control and noise level rules, regulations and ordinances and (2) the requirements contained in these Contract Documents, including hours of operation requirements. No internal combustion engine shall be operated on the Work without a muffler of the type recommended by the manufacturer. Should any muffler or other control device sustain damage or be determined to be ineffective or defective, the Contractor shall promptly remove the equipment and shall not return said equipment to the job until the device is repaired or replaced. Said noise and vibration level requirements shall apply to all equipment on the job or related to the job, including but not limited to, trucks, transit mixers or transit equipment that may or may not be owned by the Contractor.

**LL. DOCUMENT RETENTION AND EXAMINATION**

1. In accordance with Government Code Section 8546.7, records of both the District and the Contractor shall be subject to examination and audit by the State Auditor General for a period of three (3) years after final payment.
2. Contractor shall make available to the District any of the Contractor's other documents related to the Work immediately upon request of the District.
3. In addition to the State Auditor rights above, the District shall have the right to examine and audit all books, estimates, records, contracts, documents, bid documents, subcontracts, and other data of the Contractor (including computations and projections) related to negotiating, pricing, or performing the modification in order to evaluate the accuracy and completeness of the cost or pricing data at no additional cost to the District, for a period of four (4) years after final payment.

**MM. SOILS INVESTIGATION**

When a soils investigation report for the Work site is available, such report shall not be a part of the Contract Documents. Any information obtained from such report as to subsurface soil condition, or to elevations of existing grades or elevations of underlying rock, is approximate only and is not guaranteed. Contractor acknowledges that any soils investigation report (including any borings) was prepared for purposes of design only and Contractor is required to examine the site before submitting its bid and must make whatever tests it deems appropriate to determine the underground condition of the soil.

**NN. STATE LICENSE BOARD NOTICE**

Contractors are required by law to be licensed and regulated by the Contractors' State License Board which has jurisdiction to investigate complaints against contractors if a complaint regarding a patent act or omission is filed within four (4) years of the date of the alleged violation. A complaint regarding a latent act or omission pertaining to structural defects must be filed within ten (10) years of the date of the alleged violation. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, P.O. Box 26000, Sacramento, California 95826.

**OO. CHANGE IN NAME AND NATURE OF CONTRACTOR'S LEGAL ENTITY**

Should a change be contemplated in the name or nature of the Contractor's legal entity, the Contractor shall first notify the District in order that proper steps may be taken to have the change reflected on the Contract.

**PP. PROHIBITED INTERESTS**

No District official or representative who is authorized in such capacity and on behalf of the District to negotiate, supervise, make, accept, or approve, or to take part in

negotiating, supervising, making, accepting or approving any engineering, inspection, construction or material supply contract or any subcontract in connection with construction of the project, shall be or become directly or indirectly interested financially in the Contract.

**QQ. PATENT FEES AND ROYALTIES**

The Contractor shall include in its bid amount the patent fees or royalties on any patented article or process furnished or used in the Work. Contractor shall assume all liability and responsibility arising from the use of any patented, or allegedly patented, materials, equipment, devices or processes used in or incorporated with the Work, and shall defend, indemnify and hold harmless the District, its officials, officers, agents, employees and representatives from and against any and all liabilities, demands, claims, damages, losses, costs and expenses, of whatsoever kind or nature, arising from such use.

**RR. OWNERSHIP OF DRAWING**

All Contract Documents furnished by the District are District property. They are not to be used by Contractor or any subcontractor on other work nor shall Contractor claim any right to such documents. With exception of one complete set of Contract Documents, all documents shall be returned to the District on request at completion of the Work.

**SS. NOTICE OF TAXABLE POSSESSORY INTEREST**

In accordance with Revenue and Taxation Code Section 107.6, the Contract Documents may create a possessory interest subject to personal property taxation for which Contractor will be responsible.

**TT. SUBMITTALS OF ALL SAMPLES, MATERIAL LISTS AND CERTIFICATIONS**

1. Contractor shall furnish to the District's Representative for approval, prior to purchasing or commencing any Work, a log of all samples, material lists and certifications, mix designs, schedules, and other submittals, as required in the specifications. The log shall indicate whether samples will be provided in accordance with other provisions of this Contract.
2. Contractor will provide samples and submittals, together with catalogs and supporting data required by the District's Representative, to the District's Representative within a reasonable time period to provide for adequate review and avoid delays in the Work.
3. These requirements shall not authorize any extension of time for performance of this Contract. District's Representative will check and approve such samples, but only for conformance with design concept of work and for compliance with information given in the Contract Documents. Work shall be in accordance with approved samples and submittals.

**BASIC SPECIFICATIONS**  
**SECTION B**

**SEWER PIPELINE MATERIALS**  
**SPECIFICATIONS**

BASIC SPECIFICATIONS  
SECTION B-SEWER PIPELINE MATERIALS SPECIFICATIONS

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## BASIC SPECIFICATIONS

### SECTION B

#### SEWER PIPELINE MATERIALS SPECIFICATIONS

##### **A. GENERAL**

Where alternate pipeline materials are allowed by the District, the Contractor shall select such materials and construction methods as will result in a satisfactory completed project. All pipe materials shall be new and unused unless otherwise specified. Materials and strength of pipe shall be as shown on the plans or as specified herein.

##### **B. GRAVITY MAINS**

###### 1. Vitrified Clay Pipe (VCP)

###### (a) General

Vitrified clay pipe and fittings shall be extra strength and shall conform in every respect with the requirements of the specifications and standards of the National Clay Pipe Institute and Sections 207-8 of the "Standard Specifications for Public Works Construction", Latest Edition, for the size of pipe indicated upon the plans. Vitrified clay pipe shall be of the best quality, vitrified, homogeneous in structure, thoroughly burned throughout the entire thickness, free from cracks or other imperfections and must give a clear metallic ring when struck with a hammer.

###### (b) Joints

Joints in vitrified clay pipe shall be made using a factory-made mechanical compression joint, consisting of a plastic material (Polyurethane), and shall be produced by Gladding McBean, Mission Clay Products or approved equal and shall conform with the requirements of Section 208-2.3 Type "G" Joints of the "Standard Specifications for Public Works Construction", Latest Edition. Note the requirements in the General Design Requirements, Paragraph E entitled "Sewer Notes", Note No.2.

###### 2. Ductile Iron Pipe (DIP)

Ductile iron pipe shall comply with the provisions of Section 207-9 of the "Standard Specifications for Public Works Construction", Latest Edition. All pipe/fittings shall be coated inside and outside per ANSI Standard A21.6 - (latest edition) unless otherwise noted. Ductile iron pipe shall be

compression (slip) joint, conforming with ANSI A21.11 and A21.51, latest, and have a standard thickness class (minimum CL 50) based on internal pressures and external loadings as supported by engineering calculations signed by a professional engineer registered in the State of California. All ductile iron pipe shall be provided with double polyethylene encasement for the entire length of the pipeline, per AWWA Standard C105. The minimum bedding class shall be Class "C" per the Owners specifications and standards.

Where restrained joints are required, ductile iron pipe/fittings shall be U.S. Pipe TR flex restrained joint or equal, conforming with ANSI A21.11 and A21.51, latest.

Unless otherwise specified, all ductile iron pipe shall be interior lined with 3M Scotchkote 134, fusion-bonded epoxy, 2 coats at 8 mils each for a total of 16 mils and then sealed with a bituminous coating in accordance with ANSI A21.6 or ANSI A21.51.

The weight, class or nominal thickness, and casting period shall be shown on each pipe/fitting. The manufacturer's mark, the year in which the pipe/fitting was produced and the letters "DI" or "DUCTILE" shall be cast or stamped on the pipe.

3. Polyvinyl Chloride (PVC) Plastic Pipe (4" to 12" Dia.)

PVC solid wall pipe shall meet the requirements of ASTM Designation D-3034, SDR 26 or 35. Whenever portions of the proposed sewer construction are to be installed on the radius of a curve, the minimum radius and installation of the pipe shall be in accordance with the manufacturer's recommendations.

4. Warning Tape

Warning tape shall be installed over all pipes (VCP, PVC, DIP) sewer mains placed on 3-ft below the ground along the pipeline alignment. Tape shall be green colored and a minimum of 8 mils thick and 6 inches wide. Tape shall bear a continuous, printed message every 16 to 36 inches warning of "CAUTION BURIED SEWER PIPE BELOW." Tape shall be Northtown Company, Terra Tape, or equal.

**BASIC SPECIFICATIONS**  
**SECTION C**

**SEWER PIPELINE CONSTRUCTION**  
**SPECIFICATIONS**



BASIC SPECIFICATIONS  
SECTION C - SEWER PIPELINE CONSTRUCTION SPECIFICATIONS

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BASIC SPECIFICATIONS  
SECTION C

**SEWER PIPELINE CONSTRUCTION SPECIFICATIONS**

**A. SEWER PIPE INSTALLATION**

1. General

The Contractor shall furnish and install all sewer pipeline material required for the construction of the sewer and appurtenances as herein specified and shown on the Drawings. All pipeline material shall be installed per manufacturer's published recommendations and per the applicable published standards for the particular material being installed unless otherwise modified herein. In case of any conflict, the most stringent and highest requirement shall govern, and the Contractor shall adhere to said requirement, all at no additional cost to the District.

2. Installation of Pipelines

Pipe laying shall proceed up-grade with the spigot ends of bell-and-spigot pipe pointing in the direction of the flow. Each pipe shall be laid true to line and grade and in such manner as to form a close concentric joint with the adjoining pipe, following manufacturer's instructions for the specific jointing method being used. Any pipe which exceeds 1/2-inch from true alignment, settlement, or joint offset after laying shall be taken up and relaid at the Contractor's expense. The SAG measuring device shall be approved by the District. The SAG measuring device shall have a scale to measure the depth of flow to the invert of the pipe and shall be placed in front of the camera. The Contractor shall clean the pipe by balling.

Notwithstanding prior factory or yard inspection, the District shall have the right to reject any damaged or defective pipe found on the job which in his opinion will affect the durability of the installation, and the District may order its removal from the work.

3. Sewer Constructed on Radius

Proposed sewer construction to be installed on the radius of a curve shall be constructed in accordance with Section IV, Paragraph B.1.b.

#### 4. Plastic Sewer System

##### (1) General

These provisions establish the requirements for the use of PVC plastic sewer pipe for house lateral and main line sewer construction. Use is limited to those projects which are approved in writing by the District.

Plastic pipe may only be used where indicated on plans approved by the District. Where plastic pipe is used, one type shall be used between consecutive manholes and shall include the house laterals in that system. When pipe and fittings are fabricated by the same manufacturer, Contractor will not be allowed to use fittings from other manufacturers.

Plastic pipe shall not be used for sewers serving industrial areas, or areas that, in the opinion of the District, are likely to be rezoned to industrial zones.

##### (2) Care & Handling

Pipe shall be stored at the jobsite in unit packages provided by the manufacturer. Caution shall be exercised to avoid compression, damage or deformation to bell ends of the pipe. If pipe is anticipated to be exposed to direct sunlight for more than 14 days, pipe must be covered with an opaque material while permitting adequate air circulation above and around the pipe to prevent excessive heat accumulation.

If pipe is strung along trench prior to installation, string only pipe to be used within a 24-hour period; all pipe is to be laid on a flat surface. The interior as well as all sealing surfaces of pipe, fittings, and other accessories shall be kept free from dirt and foreign matter. Gaskets shall be protected from excessive exposure to heat, direct sunlight, ozone, oil and grease. Solvent cement when used shall be stored in tightly sealed containers away from excessive heat.

##### (3) Mandrel Test of PVC Pipe

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, approved by the Engineer, with a circular cross section having a diameter of at least 95% of the specified average inside diameter, shall be pulled through the pipe by hand.

Ninety-five (95%) of the specified average inside diameter for flexible plastic pipe taken from the appropriate ASTM requirements are as follows:

Pipe Size Nominal Dia.	PVC Solid Wall (ASTM D-3034)	
	SDR 35	SDR 26
4"	3.975"	3.891"
6"	5.915"	5.793"
8"	7.920"	7.754"
10"	9.900"	9.692"
12"	11.78"	11.538"

5. Cleaning

Before final acceptance of sewer facilities or prior to putting any sewer into service, all sewer facilities shall be visually checked and all foreign objects, materials or obstructions removed from the facilities. The District shall require that the facilities be cleaned by flushing, balling, rodding or other means so that the materials may be removed from the system.

6. Measurement and Payment

Unless specifically otherwise provided for in these Specifications, full compensation for the work required for a complete installation of sewer pipeline shall be considered included in the bid unit price per linear foot of pipe, and no other compensation shall be made therefore.

Measurement for payment of pipe shall be on the basis of the horizontal linear footage constructed by the Contractor, complete in place. Measurement will exclude the space occupied by structures constructed by the Contractor. Pipe stubs of one pipe length or less installed in manholes shall be included in the price for manholes and will not be included in the measurement for pipe.

Where excavation depth breakdowns are indicated on the Bidding Sheet, the depths (sewer invert to ground surface) shall be determined by the cut sheets prepared by the survey crew.

Where the offset stake elevation varies more than 0.5 feet from the pipe centerline elevation (at the ground surface), the survey crew will take elevation shots to determine the actual cut from ground surface to invert of pipe. Using this procedure, the payment depth will be based upon average depth between 25 foot interval stations.

The District reserves the right to revise pipeline grades, and the Contractor shall trench and lay accordingly. Payment for said grade revisions shall be based upon the unit bid price for the appropriate size and depth category, and no additional compensation shall be made therefore.

7. Payments to Contractor for Completed Work

NO PARTIAL PAYMENT SHALL BE GIVEN TO THE CONTRACTOR FOR CONSTRUCTION OF THE SYSTEM UNTIL THE PORTION OF THE SYSTEM FOR WHICH THE PAYMENT IS TO BE MADE HAS BEEN TESTED AND THE ENGINEER HAS CERTIFIED THAT THE SYSTEM IS SUBSTANTIALLY COMPLETED AND READY FOR USE.

Consideration for partial payment may be given prior to the Contractor completing the permanent pavement (excluding AC Cap), provided the delay of placing the permanent paving was, in the opinion of the Engineer, due to causes beyond the control of the Contractor.

The Engineer may establish priorities for completion of certain parts of the work which may be necessary to provide certain services or which he may deem advisable in the interests of public safety and convenience.

**B. MANHOLES**

1. General

The manholes shall be constructed in accordance with the Standard Drawing, and at the locations shown on the plans. All concrete used in the manholes shall be Class "A" Concrete per the Basic Specifications, Section C, Paragraph E.2 entitled "Portland Cement Concrete Classification", unless otherwise indicated herein.

2. Precast Concrete Sections

Precast manhole sections shall conform to the size, shape, form and details shown on the Standard Drawing. The precast cylinder units and precast eccentric top sections shall meet the strength requirements for "Precast Reinforced Concrete Manhole Risers and Tops", ASTM C478. The Contractor shall submit shop drawings of the precast manhole Contractor proposes to use. Each manhole section shall be sealed with an approved preformed, permanently flexible gasket to form a watertight joint. Sealed joints shall conform to ASTM C-990; and shall not shrink, harden or oxidize upon aging. Precast concrete rings are to be joined and sealed with CS-102B butyl/bitumen blended sealant as manufactured

by ConSeal of New Carlisle, Ohio. Manhole sections shall be set perfectly plumb. Sections of various heights shall be used in order to bring the top of the manhole ring and cover to the elevation shown on the plans.

### 3. Manhole Bases

Manhole bases shall be constructed of Class "A" concrete (Basic Specifications, Section C, Paragraph E.2 entitled "Portland Cement Concrete Classification") poured against native undisturbed material and to the form and dimensions shown on the Standard Drawing. If the Contractor over-excavates beyond the vertical dimensions shown on the Standard Drawing, the depth of concrete below the invert of the pipe shall be increased to greater than the 9" minimum as required to meet undisturbed material; all at no additional cost to the District.

Concrete shall be poured to a level ring-section seating surface, with the base centered over the sewer intersection unless otherwise specified. A metal forming ring shall be used to form a level joint groove in the manhole base. The groove will receive the first precast section to form a watertight joint.

Concrete shall be allowed to reach sufficient compressive strength prior to the installation of the precast manhole sections.

Connections of plastic sewer pipe to a manhole shall be watertight. All PVC or other flexible pipes entering or leaving concrete structures, including manholes, shall have a rubber sealing gasket, as supplied by the pipe manufacturer, firmly seated perpendicular to the pipe axis, around the pipe exterior and cast into the structure as a water stop. Additional requirements may be imposed by the District for manhole connections in projects constructed in areas of high or potentially high groundwater.

Precast manhole bases WILL NOT be allowed.

### 4. Manhole Frames and Covers

Manhole frames and covers shall be in accordance with the Standard Drawing. All frames and covers shall be traffic strength and shall be monogrammed according to the Standard Drawings.

The elevations at which manhole frames and covers are to be set shall conform to the requirements set forth on the plans, but in all cases shall be governed by the District in the field. Manholes shall not be constructed to final grade until final paving has been completed. Where

the cover is in existing pavement or in the traveled way of the existing road shoulder, it is to be placed flush with the existing surface. Where the cover is in unpaved areas, it shall be set per the Standard Drawing.

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 filled as shown on the Standard Drawing. 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 fine satisfactory fit. All costs of setting and securing manhole frame and cover sets in place as herein provided, including all necessary concrete work, shall be considered as included in applicable contract unit prices and no additional allowance will be made therefore.

5. Standard Manholes

Standard manholes shall be constructed in accordance with the Standard Drawing and at the locations shown on the plans. Materials and construction of standard manholes shall conform in all respects to the applicable provisions of these specifications.

Standard manholes shall be either four-(4)-foot, five-(5)-foot, or six-(6)-foot diameter as shown on the plans. Full compensation for a complete installation of standard manholes shall be paid for at bid unit price per each and no other compensation will be made therefore.

6. Joint Wrap in Groundwater Conditions

In conditions where groundwater exists (or where the soils report indicates it could potentially exist) external wrap all joints with an approved joint wrap impermeable to the groundwater. Joint wrap shall be a minimum of 65 mils thickness with width at least four (4) inches either side of concrete section joint. Product shall be ConWrap as manufactured by ConSeal of New Carlisle, Ohio. The external wrap shall be installed in addition to the required joint sealant per the Basic Specifications, Section C, Paragraph B.2 entitled "Precast Concrete Sections".

7. Testing of Manholes

(A) Ground Water Conditions - Infiltration Test

All manholes in areas where ground water exists over the top of the pipe shall be water tested. All pumping of ground water shall

be discontinued for at least three (3) days, after which the manhole shall be tested for infiltration. The inlet(s) and outlet of each manhole shall be plugged. Test for a minimum of thirty (30) minutes. No visible leakage shall be allowed.

(B) Vacuum Testing

All manholes shall be vacuum tested. Refer to Basic Specifications, Section C, Paragraph N entitled "Vacuum Testing of Manholes" for specific requirements.

**C. SEWER LATERALS**

1. General

The sewer laterals shall be constructed as shown on the Standard Drawing. Sewer laterals of the size called for on the plans shall be installed at approximately the locations shown on the plans. The exact location will be determined in the field by the District or private developer. The Contractor shall field reference each lateral connection with a surface marker. The marker shall be as specified on the Standard Drawing.

2. Materials

Sewer laterals shall be constructed of PVC or VCP material and shall meet the requirements of the Basic Specifications, Section B entitled "Basic Sewer Pipeline Materials Specifications."

3. Tees and Wyes

Tees and wyes shall be of the same material as the sewer main and the longitudinal barrel of the tee or wye shall be of the same size as the sewer main. If the lateral pipe is PVC and is to be connected to VCP tees or wyes, provide proper transition adapter and band seal couplings with stainless steel band and straps. Tees or wyes of the size called for on the plans shall be installed at approximately the locations shown on the plans. The exact location will be determined in the field by the District or private developer. A suitable plug shall be provided and installed prior to backfilling operations to ensure a watertight joint.

4. Construction

All sewer laterals shall be installed per the Standard Drawing. In no case shall any lateral be constructed at less than two percent (2%) slope unless shown on plans. The sewer lateral shall be constructed a minimum distance of five (5) feet horizontally from existing water services.



Unless otherwise approved by the District, any required saddle connections to existing mains shall be made with an approved sewer tapping machine. The Contractor shall submit to the District his proposed method for tapping, including manufacturer's tapping equipment descriptions, etc.

5. Payment

Unless otherwise specified, sewer laterals shall be paid for at the unit price per foot bid, measured in a horizontal plane along the centerline of the sewer lateral from the centerline of the main sewer to the property line. Said prices per linear foot shall be considered full compensation for furnishing all pipe and fittings, other materials, equipment and labor necessary to install the pipe; including clearing and grubbing, pavement removal and replacement, placement of bedding in the locations shown on the plans in accordance with the Standard Drawings and specifications, removal and/or replacement of existing interfering improvements; and all other work pertinent to installing the sewer lateral complete in place and for which no additional compensation shall be made therefore.

In payment for tees and wyes, compensation shall be made for each tee and wye installed at the unit price bid, excepting for tees and wyes installed for cleanouts, compensation for which shall be included in the price per cleanout. The portion of the tee or wye covered by such compensation shall be considered to be the branch portion.

**D. TESTS FOR LEAKAGE IN SEWER**

1. General

All the tests for exfiltration from, and infiltration into the system shall be in accordance with Section 306-1.4 of the "Standard Specifications for Public Works Construction", Latest Edition, except as modified herein. The method of testing and testing equipment shall be approved by the District.

The Contractor shall, at his own expense, furnish all materials for making the tests required under the direction of the District.

If the leakage or infiltration, as shown by the tests, exceeds the standard set forth in said section, Contractor shall, at no additional cost to the District, make the necessary repairs by methods approved by the Engineer to correct the deficiencies. All tests must be completed before the street or trench is resurfaced with permanent pavement replacement,

but after complete installation and trench compaction of all facilities within a particular section between manholes.

Full compensation for testing shall be included in the bid price of various items of work, and no other compensation shall be made therefore.

## 2. Air Testing

The Contractor shall test all sewers by means of the air test specified herein, unless otherwise directed by the District. The air test shall be in accordance with Section 306-1.4.4 of the Standard Specifications for Public Works Construction, Latest Edition, except as herein modified.

Air shall be introduced into the pipeline until 3-1/2 psi gauge pressure has been reached, at which time the flow of air to the pipe shall be shut off. After the temperature has stabilized the air pressure shall be permitted to drop and, when the internal pressure has reached 3.0 psi gauge, the time lapse required for the air pressure to drop to 2.0 psi gauge shall be measured. The time lapse (in seconds) required for the air pressure to decrease from 3.0 to 2.0 psi (gauge) shall not be less than that given in the following table:

<b>Sewer Pipe Dia.</b>	<b>Minimum Time Lapse (Seconds)</b>
8"	140
10"	170
12"	200
15"	260
18"	310
21"	360
24"	410
27"	460
30"	510
33"	560
36"	610

If the time lapse exceeds that shown in the table, the pipe shall be presumed to be within acceptable limits; if the time lapse is less, the Contractor shall make the necessary corrections to reduce the leakage to acceptable limits by repair methods approved by the District.

## 3. Water Infiltration Test

Where ground water conditions are encountered and the water level prior to any pumping or dewatering operations is above the top of the proposed

sewer pipe, then the Water Infiltration Test shall be used in lieu of the air test (Basic Specifications, Section C, Paragraph 2 entitled "Air Test"). The Water Infiltration Test shall be in accordance with Section 306-1.4.3 of the Standard Specifications for Public Works Construction, Latest Edition, except as herein modified.

The infiltration shall not exceed 0.0016 gallons per hour per foot of sewer, per inch of pipe diameter. The test shall be run for a minimum period of two (2) hours. The Contractor shall furnish all labor, materials, equipment required for the infiltration test, at no additional cost to the District.

If ground water conditions are such that the ground water level is between the flow line of the proposed sewer pipe and the top of the pipe, both the air test and the water infiltration test shall be conducted at no additional cost to the District. In such a case, the section of pipe being tested shall be deemed acceptable only if it passes both the air test and the water infiltration test.

## **E. CONCRETE WORK**

### **1. General**

Concrete shall be composed of portland cement, natural aggregates, and water proportioned to produce required strength and well mixed into required consistency, Type II-V for all concrete in contact with wastewater.

Portland cement concrete for manhole bases, cradles, encasements, thrust blocks and structures shall be composed of portland cement, fine aggregate, coarse aggregate and water proportioned and mixed in accordance with the requirements of Section 90 of the State of California Department of Transportation Standard Specifications, except as may be herein modified.

Concrete for manhole bases, cradles and encasements, and all other concrete structures, shall be constructed to the lines and grades and in accordance with the design shown in the details on the plans.

Prior to placing any concrete, the Contractor shall submit to the District the design mix proposed to be used. Said mix shall set forth the weights of cement, sand, coarse aggregate and the amount of water to be used. (Source of supply shall also be furnished to the District.) The proposed mix shall be approved by the District prior to placing any concrete.

2. Portland Cement Concrete Classification

<b>Concrete Class</b>	<b>Compressive Strength @ 28 days (psi)</b>	<b>Sack of Cement/CY</b>
"A"	3,500	6
"B"	2,500	5
"C"	2,000	4
"D"	4,000	7

The amount of free water used in concrete shall not exceed 312 pounds per cubic yard, plus 20 pounds for each required 100 pounds of cement in excess of 564 per cubic yard.

Additional cement and a modified concrete mix, as approved by Engineer, will be required for situations requiring pumping of concrete.

3. Class "B" Concrete Encasement

Class "B" concrete shall be used for unreinforced concrete encasements that may be required by unforeseen field conditions. The quantity shown on the proposal is an estimate. The District hereby reserves the right to reduce this item to a small percentage of that shown on the proposal forms, delete it or increase it, without altering the unit price bid for cubic yard of concrete.

The unit price bid for cubic yard of concrete shall include furnishing all materials, labor, and equipment to properly place the concrete as may be required, and no other compensation shall be made therefore.

4. Reinforced Concrete Encasement

At the locations shown on the plans, and in accordance with the detail shown on the plans and/or Standard Drawing, and these Basic Specifications, the Contractor shall construct reinforced concrete encasement around the sewer carrier pipe. Concrete for reinforced concrete encasement shall be Class "A". Reinforcing steel (unless otherwise indicated) shall be No. 4 bar, billet steel having minimum yield point of 60,000 psi, formed and spaced as shown on the plans or the Standard Drawing.

Payment for reinforced concrete encasement shall be at the unit price per cubic yard of concrete for the section as shown on the plans or Standard Drawing, and no other compensation will be made therefore.

## **F. PAVEMENT REMOVAL AND REPLACEMENT**

### **1. General**

Pavement removal and replacement for all public roads, including aggregate base and temporary paving where required, shall comply with all the requirements of the agency issuing the Encroachment Permit. In roads established under formation of a special road district, the specifications of the Encroachment Permit shall apply. Any private roads and streets, including driveways in which the surface is removed or damaged, shall be restored to the original grade and crown by the Contractor. Removed or damaged sections shall be restored with the type of improvements (or better) conforming to that which existed at the time the Contractor entered upon the work.

It shall be the responsibility of the bidder to satisfy himself as to the existing pavement sections prior to submitting his bid.

Full compensation for temporary and permanent resurfacing, including the replacement of base material as required, shall be included in the unit bid price for pavement removal and replacement per linear foot of mainline trench. Any required pavement removal and replacement for manholes, house connection laterals, or other appurtenances shall be considered included in the bid price for the various items, and no additional compensation shall be made therefore.

### **2. Pavement Cutting**

Pavement shall be cut to a straight edge parallel to the pipe alignment prior to excavation. Method of pavement cutting shall be saw cut or as specified by the Agency having jurisdiction. Under no circumstances shall excavation be started prior to scoring of pavement. If the adjacent pavement is disturbed during the Contractor's operation, the pavement shall be recut on a straight line to remove the damaged pavement before resurfacing. Portland cement concrete pavement and sidewalk shall be saw cut. Pavement cutting shall be considered included in the bid price for pavement removal, disposal and replacement, and no additional compensation shall be made therefore.

### **3. Permanent Trench Pavement**

The permanent trench pavement shall be in accordance with the Agency having jurisdiction. If not specifically addressed by the road agency's permit, the existing pavement shall be saw cut and the permanent trench base paving shall be constructed to be flush with existing so that the

asphalt concrete is smooth, true to grade and cross section thus providing an even driving surface without undulations. The completed base paving surface shall be provided as described herein whether an asphalt concrete cap is specified or not specified. Should an asphalt concrete cap be required, Contractor shall grind down the base paving prior to placement of A.C. cap.

#### 4. Asphalt Concrete Cap

Where required by the agency issuing the Encroachment Permit or other agency having jurisdiction, an asphalt concrete cap shall be placed along the length of the trench. The installation of the asphalt concrete cap shall be in accordance with the specifications and policies of the agency having jurisdiction. Where the asphalt concrete cap is not specifically stated in the applicable permit or on the drawings, and when directed by the District, the minimum cap shall be a grinded 0.10-foot thick, 12-foot wide section centered over the center of the trench or the traveled way, and pulled with a "Barber Greene" or equivalent.

Full compensation for placement of asphalt concrete cap, where required, shall be included in the unit bid price per linear foot of mainline trench. Any required asphalt concrete cap for house connection laterals or other appurtenances shall be considered included in the bid price for the various items, and no additional compensation shall be made therefore.

### **G. CONNECTIONS TO EXISTING MANHOLES**

The Contractor shall make connections to existing manholes at the location and elevation shown on the plans and as verified in the field by the Contractor. Where new flow-through channels have to be cut in the existing manhole base, 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 1/4 inch. The channel surface shall be smoothed with epoxy mortar. The new VCP or PVC sewer pipe shall be firmly embedded in epoxy grout where it joins the existing manhole.

Payment for connections to existing manholes shall be included in the contract price paid for the various items of work wherein connections to existing manholes are required, and no additional allowance will be made therefore.

### **H. TEMPORARY HANDLING OF SEWAGE**

Certain work in connection with tying into existing sewers and manholes, may require the temporary handling of sewage either by temporary bypass lines, pumping, bulkheading at low flows, or other means, to be approved by the District. Sewage so diverted shall be handled in a manner such that all sewage shall be contained and

properly disposed of so as not to create a public nuisance or health hazard. No extra compensation will be allowed in connection with the temporary diversion of sewage, and all such costs shall be included in the various contract unit prices.

Should the Contractor's operation result in fine(s) from other agency jurisdictions or result in the District's need for cleanup assistance, the payment of such fines and District assistance shall be the responsibility of the Contractor.

## **I. STEEL CASING**

Steel casing shall be butt welded of sheets conforming to ASTM Specification A283/A283M and shall be constructed at the location shown on the plans or as directed by the District. Construction may be by open trench. If the Contractor elects to install the casing pipe by jacking, the provisions of these specifications for jacked steel casing pipe shall apply. However, payment shall be at the bid unit price for steel casing.

The casing pipe shall have a steel thickness not less than 1/4 inches. It shall be the Contractor's responsibility for selecting a size of casing, at or above the minimum specified, in order that the installation may be done with a sufficient degree of accuracy. Any and all increased costs resulting from the Contractor's use of steel casing pipe with greater diameter or thickness than the minimum specified, shall be borne by the Contractor.

Carrier pipe conforming to these specifications for the designated pipe shall be installed within the casing pipe to the lines and grades shown on the plans. The carrier pipe shall be supported on either Advanced Products & Systems Casing Spacers and Insulators, PSI Pipeline Seal and Insulator Inc., Cascade Waterworks Manufacturing Co., or equal. The ends of the steel casing shall be sealed with synthetic rubber end seals with stainless steel band straps with a weep hole installed at the lower end for drainage. The annular space between the steel casings and carrier pipe shall be left empty unless grouting is specified by the Engineer or on the plans.

Measurement for payment for casing pipe, excluding carrier pipe within said casing, shall be made along the centerline of the casing pipe between the limits shown on the plans and/or staked in the field.

Payment for steel casing pipe will be at the contract unit price per linear foot for steel casing pipe placed in accordance with these plans and specifications. Payment shall be full compensation for furnishing all labor, excavation, backfill, steel casing pipe, shoring, equipment, services, transportation, sand cement, concrete, all grouting operations described herein, and other appurtenant items of labor and material required to complete the work. The carrier pipe will be paid for under the bid item for pipe.

## **J. JACKED STEEL CASING**

The Work of this section includes furnishing and installing jacked steel casing under roadways, railroads, storm drain facilities and other major pipelines, facilities or structures; including all labor, excavation, backfill, boring, jacking, steel casing pipe, shoring, equipment, services, transportation, sand cement, concrete, grouting, and other appurtenant items of labor and materials required to complete the work. Jacked steel casings and bore installations shall be installed only by a qualified company regularly engaged in this specialty work.

Jacked steel casing shall be butt welded of sheets conforming to ASTM Specification A283/A283M and shall be constructed in accordance with the provisions of Section 306-2 of the "Standard Specifications for Public Works Construction", Latest Edition, except as herein specified or Northwest Pipe Co. Perma Lok steel casing conforming to ASTM A 36, ASTM A 515, grade 60 or ASTM A 572, grade 42.

The casing pipe shall have a steel thickness not less than 3/8 inch. The casing pipe shall be a minimum of 20 feet in length to a maximum of 40 feet in length. Any and all increased costs resulting from the Contractor's use of steel casing pipe with greater diameter or thickness than the minimum specified shall be borne solely by the Contractor.

Steel casing pipe of the minimum size and thickness specified shall be installed in place by jacking and boring methods without the use of water or air at the locations shown on the plans, and to grades required to install carrier pipe. If the bore casing is equal to or exceeds 18-inches in diameter and the length of the bore exceeds 80-feet in length, the Contractor shall bore using a track machine, unless otherwise directed by the Authority.

Voids, if developed outside the casing and within limits for boring or jacking, from any cause such as removal of rocks encountered in boring, shall be filled with lean grout forced in under pressure by insertion of a grout pipe outside of the casing. The lean grout shall consist of one part of portland cement to not more than four parts of sand by volume, placed at low pressure. Grout pressure is to be controlled so as to avoid deformation of the casing and installed product pipeline. Sand for grout to be placed outside the casing shall be of such fineness that 100% will pass a No. 8 sieve and no less than 35% will pass a No. 50 sieve.

If the Contractor is not ready to place the pipe in the casing at the time of completion of boring and jacking operations, the ends shall be bulk headed, and the approach trenches in public streets shall be backfilled, temporary surfacing placed thereon, and the affected portion of the street reopened to traffic. For short (overnight) duration, the trenches may be securely covered with armored plates to allow for uninterrupted traffic.

The Contractor shall be responsible for maintaining the specified line and grade, and preventing settlement of overlying structures, or other damage due to the boring and



jacking operations. Except as otherwise indicated in this Section of the Specifications, the Contractor shall comply with the applicable provisions of latest adopted edition of the Standard Specifications for Public Works Construction (SSPWC) together with any latest Supplement Amendment. Additionally, jacked steel casing shall be in accordance with applicable ASTM Standards.

#### SUBMITTALS

1. The following shall be submitted:
  - (a) Submittals for jacking or boring operation shall be in accordance with SSPWC Section 306-2.1 unless indicated otherwise.
  - (b) The Contractor's attention is directed to the provisions for "Shoring and Bracing Drawings" in Section 6705 of the California Labor Code. If such plan varies from the shoring system standards established in the Construction Safety Orders of the State of California, such alternative systems plans shall be prepared by a civil or structural engineer licensed in the State of California.
  - (c) Casing installation schedules which include schedules of excavation, pipeline installation, and backfill operations.
  - (d) Material list including diameter, thickness, and class of steel casing.
  - (e) Detailed locations and sizes of all boring or jacking and receiving pits.
  - (f) Shop drawings of casing insulators (spacers) and end seals including manufactures' catalog information.
  - (g) Permits associated with the boring or jacking operations.
  - (h) Pressure concrete mix design and bracing plans to prevent the carrier pipe from shifting or floating in accordance with SSPWC Section 306-2.3.
  - (i) Submittal approval of boring operation plan shall occur prior to excavation of boring operation.

#### POTHOLING OF EXISTING UTILITIES

Contractor shall be required to pothole any existing underground utilities crossing the proposed jacked steel casing installation that may potentially interfere with the installation. Refer to Special Conditions.

## PERMIT PROVISIONS AND REQUIREMENTS

1. Contractor shall be responsible for obtaining any required permits other than those indicated in the Special Conditions to be obtained by the Authority. Contractor shall comply and adhere to all permit requirements at no additional cost to the Owner.
2. Where Agency permit provisions differ from the specification requirements stated herein, the highest and most stringent standard or requirement shall govern; and Contractor shall construct the installation to said higher standard at no additional cost to the Authority.

## CASING SPACERS

Casing isolators/spacers shall have a minimum 14 gauge steel band and where required, 10 gauge risers. The band, risers and connecting studs shall be welded and cleaned at the factory before the application of a fluidized bed fusion bonded PVC coating of between 10-16 mils thickness. The PVC coating shall provide good resistance to acids and alkalis and excellent resistance under ASTM B117 salt spray tests. The isolators/spacers shall have a flexible PVC inner liner of 0.09 inch thickness with a durometer "A" 85-90 hardness and a minimum 58,000 volt dielectric strength. The runners shall be high pressure molded glass reinforced polymer with a minimum compressive strength of 18,000 psi per ASTM D638. The runners shall be 2.0 inch in width and a minimum of 7.0 inches long for C8G-2 models and 11" for C12G-2 models (polyethylene runners are not an acceptable alternative). The runners shall be attached to the band or riser by 3/8" welded steel studs and lock nuts which shall be recessed far below the wearing surface on the runner. The recess shall be filled with a corrosion inhibiting filler. The band section shall be bolted together with cadmium plated studs, nuts and washers. End seals shall be made of synthetic rubber. Banding straps shall be made of stainless steel.

Products of the type indicated shall be made by one of the following:

1. Casing Spacers – Pipeline Seal and Insulator Inc. Model C12G-2, Advance Products & Systems Inc. Model S/12, or approved equal.
2. End Seals – Pipeline Seal and Insulator Inc. Model S, C or W, Advance Products & Systems Inc. Model AC or AW, or approved equal.

The Contractor shall give the District a minimum of three (3) days advance notice of the start of an excavation or boring operation. All work shall be performed in the presence of the District unless the District has granted prior approval to perform such work in its absence. All welding procedures used to fabricate steel casings shall be pre-qualified under the provisions of ANSI/AWS D1.1. Welding procedures shall be required for, but not necessarily limited to, longitudinal and

girth or special welds for pipe cylinders, casing joint welds, reinforcing plates and grout coupling connections. No exterior of interior joints of the carrier pipe shall have mortar grout applied over a seam until the seam has cooled. Exterior and interior joints of the carrier pipe shall be mortar coated and lined in the field.

#### INSTALLATION OF STEEL CASING

**JACKING HEAD:** A steel jacking head shall be fitted to the lead section of the casing in such a manner that it extends around the entire outer surface of the steel casing and projects at least 18 inches beyond the driving end of the casing. The jacking head shall not protrude more than 1/2 -inch outside of the outer casing surface. The head shall be securely anchored to prevent any wobble or alignment variation during the boring or jacking operations. To minimize voids outside the casing, excavation shall be carried out entirely within the jacking head and not in advance of the head. Excavated materials shall be removed from the casing as the boring or jacking operation progresses and no accumulation of excavated materials within the casing shall be permitted.

**JACKING PIT:** The excavations for the boring or jacking operations shall be adequately shored to safeguard existing substructures and surface improvements and to ensure against ground movement in the vicinity of the jack supports. Heavy guide timber, structural steel, or concrete cradles of sufficient length shall be provided to assure accurate control of boring or jacking alignment. The Contractor shall provide adequate space within the excavation to permit the insertion of the lengths of casing to be bored or jacked. Timbers and structural steel sections shall be anchored to ensure action of the jacks in line with the axis of the casing. A bearing block, consisting of a timber or structural steel framework, shall be constructed between the jacks and the end of the casing to provide uniform end bearing over the perimeter of the casing and distribute the jacking pressure evenly.

**CONTROL OF ALIGNMENT AND GRADE:** The Contractor shall control the application of the jacking pressure and excavation of materials ahead of the casing as it advances to prevent the casing from becoming earthbound or deviating from the required line and grade. The Contractor shall restrict the excavation of the materials to the least clearance necessary to prevent binding in order to avoid loss of ground and consequent settlement or possible damage to overlying structures.

**GROUTING:** Not used.

**INSTALLATION:** The installation of the casing shall be in accordance with the SSPWC Section 306-2.1 and subject to the approval of the agency having jurisdiction over the area containing the boring or jacking operations.

In the event that due to unforeseen field conditions and impediments that impedes on the Contractor's ability to proceed with the jacking and boring of the steel casing, the Contractor shall immediately alert the District and provide data and information to assist the District in their review. The Contractor shall also alert all agencies affected such as City, flood control districts, railroad, transportation districts, etc. Depending on the issues and length of time to resolve, Contractor shall secure the site, excavations pits and trenches, and maintain all traffic control and security to ensure safe passage of traffic, pedestrians, etc.

#### INSTALLATION OF CARRIER PIPE

**JOINTS:** All joints of the carrier pipe within the casing shall be in accordance with District Standards.

**INSTALLATION OF PIPE:** The end seals shall be pulled on (in case of pull on type of seals) and the casing spacers shall be installed over the carrier pipe at the proper location, in accordance with the casing spacers manufacturer's instructions. Care shall be taken not to damage the carrier pipe coating or the inner coating of casing pipe while installing the carrier pipe. The position of the runners in the carrier pipe and casing shall be as indicated and shall be uniform throughout the casing length. Line and grade of the carrier pipe shall be installed as specified on the plans and deviations shall not be permitted. Contractor shall be aware that during installation, rifling (rotating) of the carrier within the casing can occur and can be a cause of line and grade discrepancies. Take necessary measures to prevent rifling. Guides may be installed as necessary to prevent rifling (rotating) of the carrier pipe during installation.

**TESTING OF THE CARRIER PIPE:** Testing of the carrier pipe shall be completed prior to strapping the end seals.

**END SEALS:** After the carrier pipe has been tested, the end seals shall be strapped by stainless steel bands in accordance with the manufacturer's instructions.

**CLOSING OF PITS:** After equipment and excavated materials from the boring or jacking operations have been removed from the jacking pit, the Contractor shall prepare the bottom of the jacking pit as a pipe foundation. The Contractor shall remove all loose and disturbed materials below pipe grade to undisturbed earth and re-compact the material.

Measurement for payment for casing pipe excluding carrier pipe within said casing shall be made along the centerline of the casing pipe between the limits shown on the plans and/or staked in the field.

Payment for jacked steel casing pipe will be at the contract unit price per linear foot for jacked steel casing pipe placed in accordance with these plans and specifications. Payment shall be full compensation for furnishing all labor, excavation, backfill, boring, jacking, steel casing pipe, shoring\*, equipment, services, transportation, sand cement, concrete, all grouting operations described herein, and other appurtenant items of labor and material required to complete the work. The water carrier pipe will be paid for under the bid item for pipe. The ends of the casing pipe shall be closed using an end seal as manufactured by Advanced Products and Systems, Inc. or District approved equal. Brick and mortar is not acceptable.

#### **L. VIDEO INSPECTION**

Upon successful completion of the final leakage test for the sewer including manhole vacuum testing, and after base rock placement and compaction is complete, the contractor shall notify the District that the pipeline system is ready for video inspection. Said notification shall be made at least five working days in advance of the actual video inspection date. The video inspection will be made by a video inspection company approved by the District and hired by the Contractor. Video inspection shall be made in the presence of the District's Representative. Prior to the video inspection, the Contractor shall be responsible to provide the following items:

1. Clean sewer pipelines free of all dirt, rock, debris, etc.
2. Water source with an adequate amount water, pipe, hose, etc. to place enough water in the pipelines to evaluate pipeline alignment "SAGS".
3. Driveable truck access to each manhole within the system to be videoed.
4. Provide all traffic control methods required.
5. Acceptable depth gauge.

Should any of the aforementioned items not be in compliance by the time the video inspection is to occur, the Contractor shall be subject to compensating the District for all costs incurred.

Full compensation to the Contractor for complying with the above requirements shall be considered as included in the contract lump sum provided for such work and no additional allowance will be made therefore.

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\* Shoring shall be by steel shield from top of bore pit excavation to bottom, unless otherwise directed by Engineer.

Upon completion of the video for the subject sewerlines, the video inspection company will provide the District with the DVD (video file format to be viewable on a standard DVD player/computer and/or as approved by the District) and a written report detailing the condition of the interior of the mainline and joints. Subsequent to review of the DVD and report by the District, the District will notify the Contractor that he may then proceed with completion of the project; or the District will provide a list of corrective measures that must occur prior to acceptance.

Should remedial activities be necessary, the reconstruction methodology shall be approved by the District prior to commencement of the work. Upon completion of the remedial construction, the contractor shall once again notify the District that the sewerlines are ready for a video inspection. The District reserves the right to re-video any portions of the sewer system they determine may have been affected by the reconstruction work activities. Further, all related costs including but not limited to reconstruction materials, labor, equipment, video inspection, District and other agency inspection, and administrative costs shall be borne by the contractor.

#### **M. VIDEO INSPECTION COMPANY REQUIREMENTS**

The Sewer CCTV inspection work must be completed by a certified National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) operator(s) using established PACP coding and observations. Current certification shall be provided to the District a minimum of ten (10) days prior to the time work is performed.

CCTV inspection shall be performed by a certified NASSCO PACP certified operator; certification to be presented at the time work is performed and shall be submitted with the report.

(Closed Circuit Television Inspection - CCTV)

1. Rotating lens camera with articulating head.
2. Scanning capabilities of 360°.
3. Operative in 100% humidity conditions.
4. Lighting for the camera shall minimize reflective glare.
5. Lighting and camera quality shall be suitable to provide clear, in focus picture of the entire periphery of the pipe for all conditions.
6. Camera focal distance shall be adjustable through a range from 6" to infinity.

7. Remote reading distance (footage) counter shall be accurate to one percent (1%) over the length of the particular section being inspected. **Provide depth gauge for SAG measurement acceptable to District.**
8. The camera, television monitor, and other components of the color video system shall be capable of producing a minimum of 350 line resolution.
9. Documentation consisting of a DVD (video file format to be viewable on a standard DVD player/computer and/or as approved by the District) and a written report detailing the condition of the mainline and joints shall be submitted to the District inspector immediately following the video inspection. Each disc shall be labeled with the project or subdivision name, number and pipe run numbers it contains. Each disc shall be delivered in a plastic case.
10. All video equipment used for domestic sewer systems shall be certified for domestic sewerline inspection only.
11. The CCTV camera operator shall stop at each defect, pipe joint, and televise the entire joint with the pan and tilt feature on the head of the camera, initially, in a complete counterclockwise direction followed by a complete clockwise direction. If a defect is found, the CCTV operator will “home up” the camera prior to defining the defect and determining its size and location. The CCTV operator will also stop and record any questionable item such as a stain, crack, paint mark, shadow found or character change in a pipe being inspected. In other words, the CCTV operator must stop, record and note anything questionable no matter how minor. The Engineer, as defined by ECSD Standard Specifications, not the CCTV operator, will decide if a questionable items is a “problem event” when that Engineer reviews the video inspection.

## **N. VACUUM TESTING OF MANHOLES**

### **1. General**

All manholes shall be vacuum tested unless otherwise waived in writing by the District. Vacuum testing shall be performed either pre or post backfilling in accordance with the criteria stated herein. In all cases vacuum testing shall be performed prior to video inspection.

Contractor shall be solely responsible for safe access to the manholes and all necessary safety measures required for the vacuum testing.

## 2. Pre versus Post Backfilling Test Criteria

- (a) All manholes with depths from rim to pipe flowline less than or equal to twelve (12) feet shall be vacuum tested prior to backfilling.
- (b) All manholes with depths greater than twelve (12) feet from rim to pipe flowline shall be vacuum test post backfilling.

## 3. Reference Standard

Unless otherwise modified herein, vacuum testing shall be in accordance with ASTM C1244-11.

## 4. Manhole Preparation

- (a) Plug and seal all lift holes.
- (b) Care shall be taken to affect a seal between the vacuum base and the manhole rim. Pipe plugs shall be secured to prevent movement while the vacuum is drawn.
- (c) All pipe entering the manhole shall be temporarily plugged, taking care to securely brace the pipes and plugs to prevent them from being drawn into manhole.

## 5. Basic Field Testing Procedure

- (a) The test head gauge shall be placed at the top of the manhole in accordance with the manufacturer's recommendations.
- (b) A vacuum of 10 inches of mercury shall be drawn on the manhole, the valve on the vacuum line of the test head closed, and the vacuum pump shut off. The time shall be measured for the vacuum to drop to 9 inches of mercury.
- (c) The manhole shall pass if the time for the vacuum reading to drop from 10 inches of mercury to 9 inches of mercury meets or exceeds the values indicated in the table in Section C of the Basic Specifications Paragraph 6 entitled "Minimum Test Times – Standard Manholes" in Section C of the Basic Specifications.
- (d) If the manhole fails the initial test, necessary repairs shall be made in accordance with a submitted plan and method approved by the District. The manhole shall then be re-tested until a



satisfactory test is obtained. All repairs shall be the sole responsibility of the Contractor.

6. Minimum Test Times – Standard Manholes

(a). Testing Criteria

Depth of Manhole (feet)	Minimum Test Times (sec.) Based on Diameter of Manhole (feet)		
	4' dia.	5' dia.	6' dia.
Up to 8'	20 sec.	26 sec.	33 sec.
10'	25 sec.	33 sec.	41 sec.
12'	30 sec.	39 sec.	49 sec.
14'	35 sec.	46 sec.	57 sec.
16'	40 sec.	52 sec.	67 sec.
18'	45 sec.	59 sec.	73 sec.
20'	50 sec.	65 sec.	81 sec.
22'	55 sec.	72 sec.	89 sec.
24'	59 sec.	79 sec.	97 sec.
26'	64 sec.	85 sec.	105 sec.
28'	69 sec.	91 sec.	113 sec.
30'+	74 sec.	98 sec.	121 sec.

For manholes deeper than thirty (30) feet or larger than six (6) feet in diameter contact District for specific requirements.

(b) Testing Form and Certification

Submit testing form to District for approval. Include the following as a minimum:

- Date of Test
- Project Description
- General Contractor
- Agent/Company Performing Test
- Specific Location, Including Station and Manhole Number
- Detailed Test Results
- Certification Signed by Testing Company

7. Inspection and Re-Testing

The Inspector shall be notified when the testing will be performed and by whom. The inspector shall witness testing to verify procedures are being followed correctly, and must be given at least 48 hours notice.

Retesting manholes more than once may result in additional inspection fees chargeable to the Contractor.

8. Approved Vacuum Testing Companies

Vacuum testing shall be performed by Old Castle Precast of Riverside, California or other qualified testing organization approved by the District. Submit qualified testing company along with suitable documentation if alternate is proposed.

**O. SEWAGE SPILL CONTAINMENT PLAN AND SEWER BYPASS/PHASING PLAN**

1. General

The provisions stated herein shall apply whenever:

- (a) Existing residential/commercial sewer laterals are specified or indicated on the drawings to be disconnected from the existing sewer line and reconnected to the new line.
- (b) An existing sewer main is to be removed and replaced with a new sewer main at or near the same location.

Under either of the two cases, flows from the residential/commercial customers shall be contained and bypassed so that service is not interrupted.

2. Sewage Spill Containment Plan and Sewer Bypass Phasing Plan

The Contractor shall generate, and submit to the District at the Pre-Construction Meeting, a "Sewage Spill Containment Plan and Sewer Bypass Phasing Plan" that details the general order of construction, complete with details of where, when, and how the Contractor plans to bypass the existing sewer lateral and mainline flows. Proposed sewer bypass shall only be utilized during normal working hours, and the existing sewer shall be put back into service each day. The temporary bypass will be allowed to operate overnight only with specific written approval by the District. Requests for overnight bypass shall be detailed in the submitted plan. Unless otherwise approved by the District, residential customers may have their service interrupted for no more than 8 hours. Contractor shall provide sanitary sewer services, in accordance with the Basic Specification, Section A, Paragraph E entitled "Sanitation", to residential customers (services for each home) during construction if their service will be interrupted. Sewer service for commercial customers

along the proposed alignment shall not be interrupted by construction. Contractor shall identify all commercial customers in the plan.

3. Sewer Bypass

The Contractor shall arrange for, furnish, install and maintain all required bypass equipment, pumps, generators, piping, fittings, connections, etc. required to bypass the existing sewer flows during construction. All bypass equipment shall be installed and be made immediately operable to provide complete redundancy (primary and backup systems) to handle peak flow. Contractor shall provide for personnel to continuously monitor the bypass system.

4. Existing Sewer Flows

Refer to the Special Requirements section of the specifications for existing sewer flows. If information is not provided in Special Requirements, contact the District.