



**CUPERTINO SANITARY DISTRICT
SANTA CLARA COUNTY
CALIFORNIA**

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These specifications approved and adopted by the Sanitary Board of the Cupertino Sanitary District, Santa Clara County, California

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Note: Above sections noted with * does not apply to work performed by developer/owner or Contractor doing the work for others.

SECTION I

WORK CONTRACTED BY DISTRICT

GENERAL CONDITIONS

1.01 Work and Plans. - All work to be performed within the Service Area of the Cupertino Sanitary District shall conform to State of California Department of Transportation Standard Specifications, District Standard Details and Specifications, and Project Plans and Project Specifications. In case of conflict among these documents, District Standard Specifications shall take precedence unless otherwise directed by the District Engineer. The intent of these documents is to prescribe the details for the construction and completion of the work which the Contractor undertakes to perform in accordance with the terms of the Contract. The Contractor shall furnish all labor, materials, tools, equipment, and incidentals, and do all the work involved in executing the Contract to complete the construction of said improvements. The work shall be completed to the satisfaction of the District Engineer of Cupertino Sanitary District.

1.02 Definition of Terms. - Whenever any work or expression defined below, or pronoun use in its stead, occurs in these Specifications, it shall have and it is mutually understood to have the meaning given:

“Abbreviations”

ASTM – American Society for Testing and Materials

AWWA – American Water Works Association

CALTRANS – California Department of Transportation

MUTCD - Manual on Uniform Traffic Control Devices (Both FHWA and Caltrans)

“Contractor” shall mean the party entering into contract for the performance of the work covered by these specifications and Contractor’s authorized agents or legal representatives.

“District” shall mean the Cupertino Sanitary District, Santa Clara County, California.

“District Engineer” shall mean the District Engineer of the Cupertino Sanitary District acting personally or through assistants acting within the scope of the particular duties entrusted to them.

“Engineer of Record” shall mean Engineer responsible for the design of the sewers and appurtenances to be constructed.

1.03 Examination of Plans, Specifications, and Site of Work. - The Contractor shall become informed through personal examination of the site of the proposed work, by due consideration of the Plans and Specifications, and by such other means as Contractor may prefer as to the actual conditions and requirements of the work

and to any unusual difficulties that may be encountered in the execution of the work and as to all circumstances and conditions affecting the work.

1.04 Inspection and Observation. - The Contractor is solely responsible for all inspection. The District Engineer shall have access to the work at all times for observation during its construction, and shall be furnished with every reasonable facility for ascertaining that the materials and the workmanship are in accordance with the requirements and intentions of the Contract. All work done and all materials furnished shall be subject to observation.

The observation of the work or materials by the District Engineer shall not relieve the Contractor of any of Contractor's obligations to fulfill Contractor's contract as prescribed. Work and materials not meeting District requirements shall be made good and unsuitable work or materials may be rejected, notwithstanding that such work or materials have been previously observed by the District Engineer or that payment therefore has been included in a progress estimate.

The Contractor shall give the District Engineer two (2) working days' notice prior to commencement of any portion of the work so that proper observation may be provided. Any work done in the absence of the District Engineer shall be subject to rejection.

No labor, except for the protection of the public or the work, shall be performed between 5p.m. and 7a.m., nor on Saturdays, Sundays, or legal holidays, except with the express consent of the District Engineer.

Any work performed by the Contractor outside the normal District working hours will require observation. The Contractor shall pay all extra costs incurred by the District for this purpose, unless written authorization to waive such charges is granted by the District Engineer.

1.05 Construction Stakes. - Construction stakes shall be set by the Engineer of Record and checked by the District Engineer. Unless authorized by the District Engineer, cuts are not to be marked on the cut stakes by the Engineer of Record. Two (2) copies of the cut sheets shall be supplied to the District Engineer two (2) working days before Contractor desires to start work. Stationing of the construction stakes is to be along the centerline of the sewer. Grade stakes to be marked up station, up grade. Maximum distance between stakes to be fifty (50) feet on tangents and twenty-five (25) feet on horizontal and vertical curves.

1.06 Material and Samples. - All materials shall be of specified quality and fully equal to samples, whenever samples are required.

The Contractor shall furnish to the District Engineer for test, whenever requested, and free of charge, samples of all materials proposed to be used in the work; also samples of finished concrete work or pavement. The Contractor shall furnish competent labor, free of charges, to screen material samples as directed by the District Engineer. Rejected material must be immediately removed from the work by Contractor at Contractor's expense, and shall not again be brought upon the work.

1.07 Character of the Workers. - The Contractor shall employ only competent workers. Any person employed on the work by the Contractor who is intemperate, incompetent, or who fails or refuses to perform the work in the manner specified herein, shall be discharged immediately from the project and that person shall not again be employed on the project.

1.08 Superintendence. - In the absence of the Contractor from the work, whether permanent or temporary, Contractor must provide and leave a competent and reliable agent or foreman in charge who shall receive instructions from the District Engineer. This agent or foreman shall have full authority from the Contractor to execute orders without delay, and to supply materials, equipment, labor and tools. All notices, communications, orders or instructions given or sent to, or served upon such agent or foreman shall be taken as served upon the Contractor. If, at any time, any such known and authorized personnel are not present on the project site to receive instructions from the District Engineer, the District Engineer shall have authority to stop the work.

1.09 Preservation of Monuments. - The Contractor shall not disturb any monuments or stakes found on the line of improvements without permission from the District Engineer, and shall bear the expense of resetting any monument or stakes, which may be disturbed without such permission. The Contractor shall reset all street names, signs, monument boxes, etc., disturbed by Contractor during the progress of the work.

1.10 Preservation of Trees, Underground Utilities, Bench Marks, Fences, Walls, Etc. - The Contractor shall anticipate all underground obstructions. Underground obstructions include, but are not limited to water lines, gas lines, sewer lines, utility lines, rock, concrete and debris. No extra payment will be allowed for the removal, replacement, repair, or possible increased cost caused by underground obstructions. Any such lines or obstructions indicated on the map show only the approximate location and must be verified in the field by the Contractor. The District Engineer will endeavor to familiarize the Contractor with all known underground utilities and obstructions, but this will not relieve the Contractor from full responsibility in anticipating all underground obstructions.

The Contractor's attention is particularly called to the necessity of preserving those trees, shrubs, plants, grass, etc., which are to remain and to the underground utilities, conduits, drains, fences, walls, landscape features, etc., which, if removed, taken down or disturbed during construction, are to be rebuilt to the satisfaction of the property owner and the District Engineer without incurring any claim for extra compensation on the part of the Contractor. No trees or tree roots of three (3) inches diameter or larger shall be cut or severed without prior written approval of owner and/or other jurisdictional authority.

1.11 Removing Obstructions. - On County roads or on easements, no obstructions shall be removed without specific permission from the County Engineer and the District Engineer.

On State highways, no obstructions shall be removed without specific permission from the California Department of Transportation Engineer.

On City streets, no obstructions shall be removed without specific permission from the City Engineer of that city and the District Engineer.

1.12 Observing Ordinances and Codes. - The Contractor shall observe all applicable ordinances, rules, regulations and codes of the District, City, County, State, and Federal in the performance of the work, including but not limited to water pollution control, best management practices, disposal of waste material, traffic control, obstruction of streets, keeping open passageways, and protecting the same where they are exposed or dangerous to travel.

1.13 Safety Provisions. - The Contractor shall comply with all federal, state and local agencies' regulations, codes and construction safety requirements.

1.14 Closing Streets and Traffic Handling. - No lane or road shall be closed without the written permission of the City, County or State authority having jurisdiction over said road or street. Whenever a road is closed, the Contractor shall provide detour routing and traffic handling plan for road closure and notify the appropriate authority including County Communications, the fire district, schools, trash handlers and postal service in advance of the closing and immediately upon reopening. Whenever a lane is closed, Contractor shall provide lane closure and traffic handling plan and also shall obtain an approved traffic handling plan from the jurisdictional authority. The traffic handling plan shall conform to current MUTCD Standards.

1.15 Barriers, Lights, Etc. - The Contractor shall be solely responsible for taking all necessary measures to protect the work and prevent accidents during construction. Contractor shall provide and maintain all necessary barriers, guards, temporary bridges, watchmen, flags, and lights, in accordance with applicable ordinances or codes necessary to provide for a safe work zone.

1.16 Public Utilities. - Where it shall be necessary to remove the facilities of any owner of a public utility or franchise, the Contractor shall make such arrangements as are required to have such property removed. The Contractor shall arrange their work such that the moving of the facility or utilities shall not interfere with the Contractor's other operations.

It shall be the responsibility of the Contractor to negotiate and enter into any contract, pay any costs or expenses required and comply with any standard regulations of any owner of a public utility or franchise for the removal or relocation of their facilities or for the right to work within any property or right-of-way owned by the public utility or franchise.

The right is reserved to the District for owners of public utilities and franchises to enter upon the road or street for the purpose of making necessary repairs, or for making changes in their facilities made necessary by the work.

1.17 Sub-Surface Soil Data. - If the sub-surface soil investigations were made at the site, the logs of these test holes and soils reports are available for inspection at the District Engineer's office. No responsibility is assumed by the District for the subsoil

quality or conditions other than at the locations and at the time the exploration was made. No claim for extra compensation or for extension of time will be allowed on account of sub-surface conditions inconsistent with the data shown unless otherwise provided elsewhere herein. The Contractor is solely responsible for obtaining sub-surface soil data for the work.

1.18 Protection of the Work and Cleaning up. - The Contractor shall care for all work until final completion and acceptance. All damage done to existing improvements by the Contractor shall be repaired by Contractor to as or better condition. Contractor shall remove all spoil material and rubbish from the work after Contractor's completion, and before Contractor makes application for acceptance of the work.

If the Contractor fails to comply with any requirements of this section, the District, at its option, may do the repair at the Contractor's expense, and deduct the cost from any amounts due to the Contractor and the surety on the Contractor's performance bond shall be liable therefore.

1.19 Defective Work or Materials. - The Contractor shall promptly correct or remove from the premises all work and materials deemed by the District Engineer to be in non-compliance and non-conforming to the Contract Plans and these specifications. The Contractor shall promptly replace unacceptable work in accordance with the Contract at no expense to the District. All improvements destroyed or damaged by such removal and replacement shall also be repaired by the Contractor to as good or better condition.

If the Contractor does not remove such unacceptable 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 expense of such removal within ten (10) days' time after such removal, the District may dispose of such materials in any manner the District deems appropriate. The Contractor shall be responsible for payment of all removal and disposal costs incurred by the District and the District shall be entitled to assert a claim against the Contractor's bond or other security for recovery of such costs and any other costs, expenses or damages incurred by the District as a result of such defective work or materials.

No work or materials which are defective in its construction or in any of the requirements of these specifications will be considered as accepted in consequence of the failure of the District Engineer to point out such defects or deficiency during construction. The Contractor shall correct any unacceptable work discovered at any time prior to one (1) year after filing Notice of Completion by the District for work contracted by the District or acceptance by the Sanitary Board for work contracted by others.

Neither the final certificate of completion, acceptance by the Sanitary Board, final payment, or any provision in the Contract shall relieve the Contractor of responsibility for faulty materials or workmanship, and Contractor shall remedy any defects due thereto and pay for any damage to other work resulting therefrom, which may appear or be discovered up to one (1) year after filing of said Notice of Completion or said acceptance by the Sanitary Board. The District Engineer shall give notice of observed defects with reasonable promptness, and the Contractor shall proceed to remedy such defects immediately upon receiving such notifications.

1.20 Loss and Damage. - All loss or damage arising from any unforeseen obstruction or difficulties, either natural or artificial, which may be encountered in the prosecution of the work, or from any action of the elements prior to the final acceptance of the work, or from any act or omission not authorized by these Specifications, on the part of the Contractor or any agent or person employed by the Contractor, shall be borne by the Contractor at his expense.

1.21 Final Observation. - The Contractor shall notify the District Engineer when Contractor desires a final inspection of the work. The District Engineer will, as soon thereafter as possible, make the necessary examination. If the work is found in compliance with these Specifications, the District Engineer will furnish the Contractor with an approval to that effect.

1.22 Legal Relations and Responsibility to the Public. - The Contractor shall keep fully informed of all State and Federal Laws, local, municipal and County ordinances, regulations, orders and decrees, which in any manner affect those engaged or employed on the work, or the materials or appliance used in or on the work, or which in any way affect the conduct of the work, and off all orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. The Contractor shall, at all times, observe and comply with all such existing and future laws, ordinances, regulations, orders and decrees, and shall protect and indemnify the owner and owner's representatives, the District, the City or County in which work is performed, and in all of their officers and employees against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by Contractor or Contractor's employees and representatives insofar as they relate to the work.

1.23 Patents. - The Contractor shall assume all responsibilities and pay all royalties arising from the use of patented materials, equipment, devices, or processes used on or incorporated in the work.

1.24 Responsibility for Damage. - The District, the Sanitary Board, the District Engineer, any city having jurisdiction, and the County of Santa Clara (including the officers and employees of the forenamed), shall not, in any manner, be answerable or accountable for any loss or damage that shall or may happen to the work or any part thereof, respectively, or for any of the materials or other things used or employed in finishing or completing the work; or for injury to any person or persons, either workers or the public; or for damage to adjoining property from any cause that might have been prevented by the Contractor, or Contractor's workers, or by anyone employed by Contractor, against all of which injuries or damages to persons and property the Contractor having control over such work shall properly guard against and shall make good all damages from whatever cause, being strictly responsible for the same. The Contractor shall be responsible for any damage to any person or property resulting from defects or obstructions from any cause whatsoever during the progress of the work, or at any time before its completion and final acceptance.

1.25 Contractor Not an Agent of the District. - The Contractor is not an agent of the District or of the District Engineer. The Contractor is employed herein by the District as an independent contractor to provide the materials and to do the work according to the terms and conditions herein contained and referred to for the prices set forth in the Contract, and all persons employed by the Contractor in connection with this Contract shall be employees of the Contractor, and not employees of the District or the District Engineer in any respect. The liability of the Contractor for all damages to persons or to public property, arising from the Contractor's execution of the work, shall be Contractor's sole responsibility.

1.26 Plans and Specifications Mutually Explanatory. - The plans and specifications are intended to be explanatory of each other. Any work indicated in the plans and not in the specifications, or vice-versa, is to be executed as if indicated in both. Should any such discrepancy appear, the interpretation of the District Engineer shall be final and conclusive.

1.27 Datum. - The datum, to which all elevations mentioned herein or shown on the plans are referred, is the official datum of the U.S.G.S. (United States Geological Survey)

1.28 Authority of the District Engineer. - All work shall be performed in a workmanlike manner under the observation and to the satisfaction of the District Engineer. To prevent disputes and litigation, the District Engineer shall in all cases, determine the quality, acceptability, and fitness of the work and materials; shall decide all questions relative to the true construction, meaning and intent of the plans and specifications; shall have the power to reject or condemn all work or material which does not conform to the plans and specifications; and shall have the power to stop observation and acceptance of the work until fulfillment of all plans and specification requirements is assured. All work performed by the Contractor without observation may be rejected.

1.29 Changes in Alignment. - The District reserves the right to make changes in alignment of the sewer line, or the introduction of curves in the sewer line or changes in location of manholes, from the alignment and location shown on the plans, so long as the average depth of cut is not increased. These changes shall be made without incurring any claim for extra compensation.

1.30 Quality Testing of Materials and Workmanship. - The Contractor is solely responsible for all testing and inspection of the work unless otherwise specified. All workmanship and materials shall meet the minimum requirements of as specified herein and in accordance with Standard Specifications of State of California (Caltrans). If the Plans and Specifications provides that the Contractor shall furnish materials or manufactured articles or shall do work for which no detailed specifications/information are set forth, the materials or manufactured articles shall be of the best grade and quality and workmanship obtainable in the market or from firms of established, good reputation, or if not ordinarily carried in stock, shall conform to the usual standard for first-class materials or articles of the kind required, with due consideration of the use to which they

are to be put. In general, the work to be performed shall be in full conformity and harmony with the intent to secure the best industry standard of construction and equipment for the project as a whole or in part. If the District Engineer orders additional testing and work is found to be unsatisfactory, the cost of the additional testing shall be paid for by the Contractor.

1.31 Pursuance of Work Under Unfavorable Weather and Other Conditions. - During unfavorable weather and other conditions, the Contractor shall pursue only such portions of the work as shall not be damaged thereby. No portions of the work, the satisfactorily quality or efficiency of which will be affected by any unfavorable conditions, shall be constructed while those conditions remain, unless special means or precautions approved by the District Engineer shall be able to overcome them.

1.32 Approval of Contractor's Plans No Release of Liability. - Acceptance by the District Engineer of any plans or any method of work proposed by the Contractor shall not relieve the Contractor of any of Contractor's responsibilities for any error therein, and shall not be regarded as any assumption of risk or liability by the District Engineer, or the District, or officers, or representatives, or employees thereof, and the Contractor shall have no claim against the District on account of the failure or partial failure or deficiency of any plan or method so accepted. Such acceptance shall be considered to mean purely that there is no objection to the Contractor's using, upon Contractor's own full responsibility, the plan or method the Contractor proposes.

1.33 Permits and Fees. - The Contractor shall, at Contractor's own expense, unless the plans and specifications state otherwise, obtain all necessary permits and licenses for the construction of the project, give all necessary notices, pay all fees, and comply with all laws, ordinance rules, and regulations relating to the work and to the preservation of public health and safety.

1.34 Storm Water Pollution Prevention Plan (SWPPP). - The SWPPP shall conform to the requirements in the local jurisdiction guidelines and to Caltrans Preparation Manual, the National Pollutant Discharge Elimination System (NPDES) permit, Plans, Caltrans Specifications, and in accordance with these specifications.

The SWPPP shall include best water pollution control and management practices.

The SWPPP shall also include the best temporary water pollution control and management practices, such as temporary cover, street sweeping, drainage inlet protection, fiber rolls, silt fences, and construction site management.

The construction of sewer improvement project has the potential to discharge non-visible pollutants in storm water from the construction site. At the direction of the Engineer, the Contractor shall include in the sampling and analysis plan (SAP) a description of the sampling and analysis strategy to be implemented on the project for monitoring non-visible pollutants.

In the SAP the Contractor shall identify potential non-visible pollutants that will be present on the construction site associated with the following:

- A. Construction materials and wastes;

- B. Existing contamination due to historical site usage; or
- C. Application of soil amendments, including soil stabilization products, with the potential to alter pH or contribute toxic pollutants to storm water.

If the Contractor or the Engineer identifies a deficiency in the implementation of the approved SWPPP, the deficiency shall be corrected immediately, unless an agreed date for correction is approved in writing by the Engineer. The deficiency shall be corrected before the onset of precipitation. If the Contractor fails to correct the deficiency by the agreed date or before the onset of precipitation, the Engineer may correct the deficiency and deduct the cost of correcting deficiencies from payments

This item of work is considered to be included in other contract bid items and no separate payment will be made therefor.

1.35 Contractor to Report Errors or Discrepancies. - If the Contractor, in the course of work, discovers any discrepancies between the plans and the conditions on the ground, or any errors or omissions in the plans or specifications, it shall be Contractor's duty to inform the District Engineer immediately in writing, and the District Engineer shall promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractor's risk and may not be accepted by the District Engineer.

1.36 Removal or Replacement of Work Done Without Lines, Grades, or Levels. – Any work done without lines, levels, or grades calculations being accepted by the District Engineer, or without the observation of the District Engineer, may be ordered removed and replaced at the Contractor's sole cost and expense, except when such work is authorized by the District Engineer in writing.

1.37 Right of Way Acquisition. – Right of ways or easements required for work to be performed are delineated on the Plans. The Contractor shall make arrangements and pay for all expenses for additional area required by Contractor outside the limits of said right of way or easements, unless otherwise specifically provided by the District Engineer in writing.

In the event of delay on the part of the District, its officers, agents, representatives or employees, in obtaining any such right of way or easements as shown on the Plans, the Contractor shall have additional time for completion of the Contract for the period, or periods of time embraced by such delay, but shall have no claim for damage against the District, its officers, its agents, representatives, or employees by reason of said delay or delays.

1.38 Work in Easement Area. - Where the work is to be constructed in easements which have been improved by the installation of fences, lawns, trees, shrubs, orchards, gardens, imported topsoil, etc., after the approval by the owner, the Contractor shall remove such improvements as may be necessary for the prosecution of the work and give them proper care and attention until the work has been satisfactorily backfilled and compacted, after which the Contractor shall replace them in as good or better than the

original condition and at their original location, said replacement to be done to the satisfaction of the District Engineer.

When the work is to be constructed in easements which include or are alongside existing improvements, the excavation shall be so braced and supported that the ground adjacent to the excavation will not slide or settle, and all existing improvements of any kind shall be fully protected from damage. If any damage does result to such improvement, the Contractor shall make the necessary repairs, or reconstruction at Contractor's own expense and as directed by the District Engineer.

The Contractor shall remove all trees specifically designated to be removed. Any trees not so designated for removal shall be considered "existing improvements" as provided for in the preceding paragraph.

Where sewers are to be constructed in easements through unimproved lands, no boulders or large rock shall be returned to the trench within two (2) feet of the ground surface, unless directed otherwise by the District Engineer. In any case, the ground surface over and adjacent to the trench shall be left free and clear of all boulders and large rock. All such unsuitable material shall be disposed of off-site at the Contractor's expense.

All manholes and flushing inlets situated within easements shall be marked with a single four-inch (4") steel post as shown on the District Standard Detail Sheets.

All work on easements is to be completed as soon as possible after the beginning of said work.

1.39 Registration. - Any Contractor performing work on public sewers under the jurisdiction of the Cupertino Sanitary District shall hold a proper State License to perform such work, register with the District, and provide insurance as provided herein.

1.40 Contractor's Insurance. –

(a) Insurance Specifications. The Contractor shall procure and maintain for the duration of the construction work and until the improvements are accepted by the District, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work by the Contractor, its agents, representatives, employees or subcontractors. Unless otherwise expressly approved in writing by the District Engineer, such insurance shall conform with the following specifications:

Minimum Scope of Insurance

Coverage shall be at least as broad as:

1. Insurance Services Office Commercial General Liability coverage (occurrence form CG 0001).
2. Insurance Services Office form number CA 0001 (E4 1/87) covering Automobile Liability, code 1 (any auto).
3. Workers' Compensation insurance as required by the State of California and Employer's Liability Insurance.

4. Course of Construction insurance providing coverage for "all risks" of loss.

Minimum Limits of Insurance

The Contractor shall maintain limits no less than:

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

Other Insurance Provisions

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

1. The District, the District Engineer, Mark Thomas & Co. Inc., the County of Santa Clara, and the city in which the project is located, and their respective officers, officials, employees and agents (the "Additional Insured Parties"), shall be named as additional insureds with respect to: liability arising out of activities performed by or on behalf of the Contractor; products and completed operations of the Contractor; premises owned, occupied or used by the Contractor; or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the Additional Insured Parties.
2. For any claims related to the project, the Contractor's insurance coverage shall be primary insurance with respect to each of the Additional Insured Parties. Any insurance or self-insurance maintained by any of the Additional Insured Parties shall be excess of the Contractor's insurance and shall not contribute with it.
3. Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the Additional Insured Parties.
4. The Contractor's insurance shall apply separately to each of the Additional Insured Parties against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
5. Each insurance policy shall be endorsed to state that coverage shall not be suspended, voided, cancelled, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to each of the Additional Insured Parties.

6. Course of construction insurance shall name the District as loss payee, as its interest may appear, and shall include a waiver of all rights of subrogation against the District.

(b) Acceptability of Insurers. Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII, unless otherwise acceptable to the District.

(c) Verification of Coverage. The Contractor shall furnish the District with original certificates of insurance or endorsements evidencing coverage required by these specifications. The certificates or endorsements are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates or endorsements are to be in form and substance satisfactory to the District and shall be received and approved by the District Engineer before work commences. At the request of the District, the Contractor shall provide complete, certified copies of all required insurance policies, including endorsements effecting the coverage required by these specifications.

(d) Subcontractors. The Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates or endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

1.41 Liquidated Damages. - Should the Contractor fail to complete the work, on any part thereof, in the time agreed upon in the Contract, or within such extra time as may have been allowed for delays by extensions granted as provided in the Contract, the Contractor shall reimburse the District for the additional expense and damage for every day that the Contract remains uncompleted after the date of completion given in the Contract. It is agreed that the amount of such additional expense and damage incurred by reason of failure to complete the work is the per diem rate stipulated in the Contract. The said amounts are hereby agreed upon as liquidated damages for the loss to the inspectors, and other employees, after expiration of the time for completion, and on account of the value of operation of the works dependent thereon. It is expressly understood and agreed that this amount is not to be considered in the nature of a penalty, but as liquidated damages which have accrued against the Contractor, and the District is authorized to deduct the amount of such damages from any moneys due the Contractor for work performed or material furnished under this Contract, and the Contractor and Contractor's sureties shall be liable for any excess.

1.42 Trade Names. - Trade names, which may be specified in this Contract, are for the purpose of establishing quality and performance. The Contractor shall have thirty-five (35) days to submit information to the District Engineer supporting Contractor's request to substitute for "original" materials in accordance with the current Government Code. The District Engineer shall be responsible for determining if the proposed substitute is equal in quality and performance.

1.43 Measurement of Quantities. -

A. **Sewer Pipe** - In the final determination of the quantities of sewer pipe constructed, main sewers shall be measured horizontally along

the centerline of the sewer from center of manhole to center of manhole or flushing inlet, without deduction for wye branches, manholes, or flushing inlets. Lateral sewers shall be measured horizontally from the centerline of main sewer to end of lateral at property line or easement line.

The unit bid price paid per linear foot of pipe of whatever kind or class and for the various sizes thereof for any and all sewer lines constructed under the project shall include full compensation for furnishing all materials, equipment, labor and all incidental work for the installation of the sewer pipes, including but not limited to shoring, pavement removal/restoration, replacement of existing improvements in kind or better, complete in place as directed by the Engineer and in accordance with Plans and Specifications.

B. Wye Branches or Saddles. - The cost of wye branches or saddles and one-eighth bends shall be considered as included in the unit price bid for lateral sewer pipe and no additional compensation will be made therefore.

C. Manholes and Flushing Inlets to be Constructed. - The unit bid price paid for manholes or flushing inlets shall include full compensation for furnishing all materials for, and doing all work necessary or incidental to the complete construction of all manholes or flushing inlets, complete to the heights shown on the plane, and in accordance with the Plans and Specifications.

D. Metal Pipe Casing. - The unit bid price paid per lineal foot of metal pipe casing shall include full compensation for furnishing all materials and all work necessary for the installation of the metal pipe casing including the slurry when required and concrete bulkheads at each end of the casing. The length of the pipe inside of the casing shall be included in the unit bid price paid for the casing and no additional compensation shall be allowed therefore.

E. Bedding Material, Class 2 Aggregate Base (Trench Backfill), Imported Clean Rock or Gravel Fill. - Pay item for this item of work will be measured by cubic yards. The unit bid price paid per cubic yards of materials specified in the Plans and Specifications shall include full compensation for furnishing all materials, equipment and doing all work necessary for the installation of the materials including, but not limited to removal and disposal of existing material, complete in place as directed by the Engineer.

F. Asphalt Concrete and Screen (Trench Width). - The bid price per lineal foot shall be for the full width pavement opening over the trench and shall include cost of doing such work and furnishing labor, equipment and materials therefore.

G. Asphalt Concrete Surfacing Over Trenches. - The bid price per lineal foot shall be for the full width opening of the trench and consisting of four inches (4")* of asphalt concrete surfacing and required

tack coat shall include cost of doing such work and furnishing labor, equipment and materials therefore, all as herein specified.

*These thicknesses of material shall apply unless otherwise noted in plans or bid item.

H. Class 2 Aggregate Base Over Trenches. - The bid price per lineal foot shall be for the full width opening the trench, and consisting of twelve inches (12")* of compacted, imported, Class 2 aggregate base in place, including temporary paving where required.

The unit price per lineal feet for aggregate base material shall include full compensation for furnishing and placing all material and the removal of unsuitable excavated material from the job site.

*These thicknesses of material shall apply unless otherwise noted in plans or bid item.

I. Asphalt Emulsion and Screenings (Full Street Width). - The bid price per square foot shall include all labor, equipment, and materials for the application of asphaltic oil and crushed granite screenings.

When specified, all streets where any trenching is done shall receive asphalt emulsion and screenings for the full width of the streets (from lip of gutter to lip of gutter).

All traffic handling, sweeping and cleanup shall be included with no extra compensation on the part of the Contractor.

1.44 Payment. - Payment shall be made to the Contractor for work performed under this Contract for the quantities of work as determined in accordance with Sections 1.43, 1.46 and 1.47 of these Specifications. Payment for extra work will be made in accordance with Sections 1.45, 1.46, and 1.47 of these Specifications. Traffic Handling and trench safety items will not be paid for separately, but will be considered incidental to the related items of work. All permit costs and costs associated with regulatory and resource agency requirements will not be paid for separately, but will be considered incidental to the related items of work.

1.45 Extra Work and Changes. - Extra work means work which was not included in the Plans or Specifications or in any bid schedule. Extra work does not include any items for which a unit price was stated in the bid even if the estimated quantity differs from the actual quantity. The District, without invalidating the Contract, may order additional work or make changes in or deletions from the work and increase or decrease the Contract price accordingly. All such work shall be executed under the original Contract except that any claim for extension of time caused thereby shall be adjusted at the time of ordering such extra work or change. In giving instructions, the District Engineer shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purpose of the work, but otherwise, except in the case of emergency endangering life or property, no extra work or change shall be made unless agreed to and recorded on a "Contract Change Order" and no claim for an addition to the Contract price shall be valid unless so agreed to and recorded. Before becoming effective, all Change Orders must be signed by the District Engineer.

The value of such extra work or change shall be determined in one or both of the following ways:

- (1) By estimate and acceptance in a lump sum.
- (2) By any unit prices named in the Contract or subsequently agreed upon.

The Contract price shall be adjusted by considering separately any work added and any work deleted. The Contractor agrees that Contractor shall not be entitled to claim damages for anticipated profits on any portion of the work that may be deleted. The amount of any adjustment for work deleted shall be estimated at the time deletion of work is ordered and the estimated adjustment will be deducted from the subsequent monthly pay estimates.

The District reserves the right to contract with any person or firm other than the Contractor for any or all extra work.

1.46 Claims for Extra Work. - If the Contractor claims that any changes in the work or any instructions by means of Plans or otherwise involve extra cost, Contractor shall give the District Engineer written notice thereof within a reasonable time after receipt of such instructions or notice of such changes, and, in any event, before proceeding to carry out such instructions or to put such changes into effect, except in special cases involving an emergency endangering life or property. In all such special cases, the Contractor shall keep an accurate account of the extra costs in a form as the District Engineer may direct and shall present such account supported by receipts to the District Engineer. The District shall be entitled to reject any claim for extra cost if the foregoing procedure is not followed.

1.47 Payments for Work Completed. - Partial payments will be made on or before the 24th of each month, as the work progresses, on estimates filed by the Contractor on or before the 10th of the month and as approved by the District Engineer, provided that the Contractor is performing the overall job in a diligent manner. In making partial payment, there shall be retained ten percent (10%) of the amount of each estimate until final completion and acceptance of all the work. Upon completion and acceptance of the work, and upon receipt of all lien releases, the District Engineer shall issue a certificate that the work has been completed and accepted under conditions of this Contract, and shall make and approve the final estimate of work. A Notice of Completion shall then be filed, in full compliance with the applicable statutory requirements. Thirty-five (35) days after filing or recording the Notice of Completion, the entire balance found to be due the Contractor, including the retained percentages, with exception to such sums that may be lawfully retained by the District, shall then be paid to the Contractor. Such payment shall be conditioned; however, upon the submission by the Contractor of evidence satisfactory to the District that all claims for labor, materials, and any other outstanding indebtedness in connection with the Contract have been paid.

If after the work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor, and the District Engineer so certifies, the District shall upon the certification of the District Engineer and, without terminating the Contract, make payment for the balance due for that portion of the work

fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claim.

1.48 Substitution of Securities for Withheld Amounts. - Pursuant to Laws of the State of California, securities may be substituted for any moneys withheld by a public agency to ensure performance under a contract. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the public agency, or with a state or federally chartered bank as the escrow agent, who shall pay such moneys to the Contractor upon satisfactory completion of the Contract.

Securities eligible for substitution under this section shall include those listed in the Government Code of the State of California or bank or savings and loan certificate of deposit.

The Contractor shall be the beneficial owner of any securities substituted for moneys withheld and shall receive any interest thereon.

Any escrow agreement entered into pursuant to this section shall contain as a minimum, the following provisions:

- (1) The amount of securities to be deposited;
- (2) The terms and conditions of conversion to cash in case of the default of the Contractor; and
- (3) The termination of the escrow upon completion of the Contract.

1.49 Payments Withheld. - The District Engineer may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any estimate to such extent as may be necessary to protect the District from loss on account of:

- (1) Defective work not remedied.
- (2) Claims Filed or reasonable evidence indicating probable filing of claims.
- (3) Failure of the Contractor to make payments properly to Subcontractors for material or labor.
- (4) A reasonable doubt that the Contract can be completed for the balance then unpaid.
- (5) Damage to or interference with another Contractor.
- (6) Failure of the Contractor to keep Contractor's work's progressing in accordance with Contractor's time schedule.
- (7) Where work on the unit price items are substantially complete but lack cleanup and/or corrections ordered by the District Engineer, amounts shall be deducted from unit prices in partial payment estimates to amply cover such cleanup and corrections.

When the above conditions are removed, payment shall be made for amounts withheld because of them.

1.50 Assignments and Transfer of the Contract. - The Contractor shall not assign or transfer this Contract or any part thereof or any interest therein without consent

in writing of the District, and the Contractors surety, and any such assignment or transfer without such written consent shall be null and void.

1.51 Indemnity. - The Contractor shall indemnify and save harmless and defend the District and Mark Thomas & Co. Inc. and their respective officials, officers, agents and employees, from and against all losses and claims, demands, payments, suits, actions, recoveries and judgments of every nature and description brought or recovered against them by reason of any act or omission of the said Contractor, Contractor's agents, or employees, in the execution of the work or in making or failing to make payments therefore, or in guarding the same.

1.52 Subcontracts. –

- (1) The Contractor may, to the extent permitted by law, without additional expense to the District, utilize the services of Subcontractors on those parts of the work which are specified to be performed by Subcontractors.
- (2) Nothing contained in the Specifications or Plans shall be construed as creating any contractual relationship between any Subcontractor and the District. The divisions or sections of the Specifications are not intended to control the Contractor in dividing the work among Subcontractors or to limit the work performed by any trade.
- (3) The Contractor shall be as fully responsible to the District for the acts and omissions of Subcontractors and of persons employed by Subcontractors as Contractor is for acts and omissions of persons directly employed by Contractor.
- (4) The Contractor shall be responsible for the coordination of the trades, Subcontractors, and material suppliers engaged upon Contractor's work. Neither the District nor the District Engineer will undertake to settle any difference between the Contractor and Subcontractors or between Subcontractors. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind Subcontractors to the Contractor by the terms of this Contract insofar as applicable to the work of Subcontractors.
- (5) The District and the District Engineer reserve the right to approve all Subcontractors. Such approval shall be a consideration to the awarding of the Contract and unless notification to the contrary is given to the Contractor prior to the signing of the Contract, the list of Subcontractors, which is submitted with Contractor's proposal, will be deemed to be acceptable.

1.53 Other Contracts. - The District may award other contracts. The Contractor shall fully cooperate with such other contractors and carefully fit said Contractor's own work to that provided under other contracts, as may be directed by the District Engineer. The Contractor shall be liable for any act which will damage or interfere with the performance of work by any other Contractor.

1.54 District's Right to Take Over the Work. - If the Contractor should be adjudged bankrupt, or if Contractor should make a general assignment for the benefit of Contractor's creditors, or if a receiver should be appointed to take over Contractor's affairs, or if Contractor would fail to prosecute the work with due diligence and carry the work forth in accordance with Contractor's work schedule and the time limit set forth in the Contract Documents, or if Contractor should fail to substantially perform one or more of the provisions of the Contract, the District may serve written notice on the Contractor and on the surety on Contractor's performance bond, stating its intention to exercise one of the remedies hereinafter set forth and the grounds upon which the District bases its right to exercise such remedy.

In any event, unless the matter complained of is satisfactorily cleared within ten (10) days after service of such notice, the District may, without prejudice to any other right or remedy, exercise one of such remedies at once, having first obtained a certificate from the District Engineer that sufficient cause exists to justify such action.

A. Terminate. -

The District may terminate the service of the Contractor which termination shall take effect immediately upon service of notice thereof on the Contractor and Contractor's surety, whereupon the surety shall have the right to take over and perform the Contract. If the surety does not commence performance of the Contract within ten (10) days after service on surety of the notice of termination, the District may itself take over the work, take possession of and use all materials, tools, equipment, and appliances on the premises and prosecute the work to completion by such means as it shall deem best.

In the event of such termination of Contractor's service, the contractor shall not be entitled to any further payment under the Contract until the work is completed and accepted. If the District takes over the work and if the unpaid balance of the Contract price when the District takes over the work exceeds the cost of completing the work, including compensation for any damage or expenses incurred by the District through the Contractor, such excess shall be paid to the Contractor. In such event, if such cost, expenses and damages shall exceed such unpaid balance of the Contract price, the Contractor and Contractor's surety shall pay the difference to the District. Such cost, expenses and damages shall be certified by the District Engineer.

B. Take Control of Work. -

The District may take control of the work and either make good the deficiencies of the Contractor itself or direct the activities of the Contractor itself or direct the activities of the Contractor in doing so, employing such additional help as the District deems advisable. In such event, the District shall be entitled to collect from the Contractor and Contractor's surety, or to deduct from any payment then or thereafter due the Contractor, the costs incurred by it through the default of the Contractor, provided the District Engineer approves the amount thus charged to the Contractor.

C. Require Surety to Take Control. -

The District may require the surety on the Contractor's performance bond to take control of the work at once and see to it that all deficiencies of the Contractor are made good with due diligence. As between the District and the surety, the cost of making good such deficiencies shall all be borne by the surety. If the surety takes over the work, either upon termination of the services of the Contractor or upon instruction from the District to do so, the provisions of the surety being substituted for the Contractor as to such provisions, including provisions as to payment for the work itself or to take control of the work.

In the event of a National Emergency, the District and the Contractor may by written agreement terminate the Contract in accordance with California Law.

1.55 Contractor's Right to Stop Work or Terminate Contract. - If the work shall be stopped under an order of any court or other public authority for a period of three (3) months through no act or fault of the Contractor or of anyone employed by Contractor, then the Contractor may on seven (7) days written notice to the District and the District Engineer stop work or terminate this Contract and recover from the District payment for all work executed, losses sustained on any plant or materials and a reasonable profit. If the District Engineer shall fail to issue any certificate for payment within ten (10) days after it is due, or if the District shall fail to pay the Contractor within fifteen (15) days after its maturity and presentation any sum certified by the District Engineer, then the Contractor may on seven (7) days written notice to the District and the District Engineer stop work and give written notice of intention to terminate the Contract. If the District shall thereafter fail to pay the Contractor within seven (7) days after receipt of such notice, then the Contractor may terminate the Contract and recover from the District payment for all work executed, any losses sustained upon any plant or materials, and a reasonable profit.

1.56 Delays and Extension of Time. - If the Contractor is delayed at any time in the progress of the work by an act or neglect of the District or the District Engineer, or of any employee, or by any separate contractor employed by the District, or by changes ordered in the work, or by the strike, lockouts, fire, unusual delay in transportation, unavoidable casualties, or any causes beyond the Contractor's control, or by delay authorized by the District Engineer, or by any cause which the District Engineer shall decide to justify the delay, then the time of completion shall be extended for such reasonable time as the District Engineer may decide. No extension of time shall be valid unless recorded on a properly completed Contract Change Order Form.

No such extension shall be made for delay occurring more than seven (7) days before claim thereof is made in writing to the District Engineer. In the case of a continued cause of delay, only one claim is necessary. This section does not exclude the recovery of damages for delay by either party under other provisions of the Contract.

1.57 Right of Occupancy. - The District shall have the right, if necessary to take possession of and to use any completed or partially completed portions of the work, if such use be approved by the District Engineer even if the time for completing the entire

work or such portions of the work has not expired and even if the work has not been finally accepted. Such possession and use shall not constitute an acceptance of such portions of the work. The District shall not have the right of such possession and use if it materially interferes with the Contractor's operations. The District shall also have the right to enter the premises for the purpose of doing work not covered by the Contract.

1.58 Utilities. - The Contractor shall arrange for utility service as required for work under this Contract, and shall pay the cost of all utilities until the date of acceptance of the work by the District.

1.59 Air Pollution. - The Contractor shall comply with all applicable Air Pollution Control Rules and regulations.

1.60 Time of Completion. - The project shall be completed within the time limitation designated in the Contract.

The Sanitary Board shall have the authority to extend the time of the Contract upon the written request of the Contractor. The granting of any extension of time on account of delays shall in no way operate as a waiver on the part of the District of its rights under the Contract.

In the event an extension of time is granted, all costs deemed by the Sanitary Board as resulting from the time extension shall be paid to the District by the Contractor.

1.61 Good Faith. - All parties to this Contract and subject to the Plans and Specifications shall, bargain for consideration, execute, and enforce the Contract in a manner consistent with notions of good faith in a contract setting.

Good faith is to mean honesty in fact and dealing in a commercially reasonable manner consistent with all provisions of the Contract and the Plans and Specifications.

Good faith will be determined by an excluding formula whereby acts of bad faith are clearly distinguishable from those reasonably associated with the proper execution and enforcement of the Contract.

Acts or violations of said Contract and the Plans and Specifications shall be grounds for termination of Contract by the District.

The good faith standard is not exclusive to the period of execution of said Contract but is also incorporated in the negotiation and post contract periods in direct relation with the aforementioned Contract.

1.62 Terms of Agreement. - Contractor by accepting of this document assents that any subsequent form used by the Contractor cannot contradict these terms. Inconsistent terms in Contractors form shall be stricken and the Contract and these provisions shall be the sole terms to which the parties are bound.

1.63 Modification. - There shall be no modification of the terms of the Contract or these Plans and Specifications without a written notice of the requested modification and subsequently written approval of the requested modification by the District Engineer and any other statutorily required individual or body.

SECTION 2
WORK CONTRACTED BY OTHERS
GENERAL CONDITIONS

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SECTION 2

WORK CONTRACTED BY OTHERS

GENERAL CONDITIONS

2.01 Work and Specifications. -

All work to be performed in the service area of the Cupertino Sanitary District shall conform to these specifications except Sections 1.17, 1.19, 1.25, 1.37, 1.41, 1.43, 1.44, 1.45, 1.46, 1.47, 1.48, 1.49, 1.50, 1.52, 1.54, 1.55, 1.56, 1.58, and 1.60 do not apply. All work shall include the furnishing of all labor, materials, tools and equipment, methods and processes to construct sanitary sewers in accordance with approved plans and these specifications to the extent applicable. The work shall be done in a thorough workmanlike manner but under the general review and to the satisfaction of the District Engineer of the Cupertino Sanitary District and all materials used in the completion of the work shall conform to the requirements of these Specifications.

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MATERIALS

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SECTION III

MATERIALS

3.01 Portland Cement Concrete (PCC). - Portland Cement shall conform to the provisions in Section 90, "Portland Cement Concrete" of the State Standard Specifications, ASTM Designation: C150-46 and these specifications. Portland cement concrete shall be Type II Modified, Class 2 concrete containing 590 pounds of cementitious material per cubic yard. Concrete for structures shall be Class 1.

3.02 Vitrified Clay Pipe (VCP). - All vitrified clay sewer pipe shall conform to the ASTM Designation: C200-44 for extra strength clay pipe and these Specifications. Each length of pipe shall be hard burned and free from cracks, warps, and blisters. The pipe shall be smooth and the ends of each length shall be square with the longitude axis. Each length of pipe shall produce a clear metallic ring when placed on end and struck with a light hammer. The pipe shall not absorb moisture in excess of eight percent (8%) of its dry weight. All vitrified clay pipe shall conform to the standards of the Clay Pipe Institute with respect to dimensions.

When tested for crushing strength by the three-edge bearing test, the pipe shall withstand a pressure in pounds per linear foot of pipe equal to at least two thousand two hundred fifty (2,250) times the net inside diameter of the pipe expressed in feet. The thickness of pipe, as set forth in the ASTM Specifications hereinabove referred to, shall be increased where necessary to produce pipe of the physical strength herein stipulated in relation to pipe diameter.

The District Engineer reserves the right to test sections of pipe at the site of manufacture, and the supplier will furnish all materials and equipment necessary to conduct such tests.

3.03 Vitrified Clay Pipe Joints. - Joints for Bell and Spigot Vitrified Clay Pipe shall be preformed plastisol joints, as manufactured by International Pipe and Ceramics Corporation (Gladding, McBean Pipe Products) (speed-Sea;), or Pacific Clay Products (Wedge-Lock), or approved equal.

Joints for plain Vitrified Clay Pipe shall be rubber sleeved with stainless steel bands as manufactured by Mission Clay Products (Band-Seal) or approved equal.

3.04 High Density Polyethylene (HDPE) Solid Wall Pipe. - All High Density Polyethylene (HDPE) Solid Wall Pipe and liner shall conform to ASTM D3350 or ASTM F714; minimum thickness shall be 32.5, or as specified by the District Engineer.

3.05 High Density Polyethylene Pipe Joints (HDPE). - All High Density Polyethylene Pipe (HDPE) joints to be field welded to manufacturer's specifications. Fusion shall be performed by technicians certified by a manufacturer of pipe fusion equipment. The fused joint shall be watertight and shall have tensile strength equal to or greater than that of the pipe. Beads formed by fusion welding shall be removed, both inside and outside.

3.06 ABS Solid Wall Pipe. - ABS Solid Wall Pipe is an acceptable pipe for upper sewer lateral repairs only (private). SDR 23.5 joint solvent cement shall be an A.B.S. cement.

3.07 Polyvinyl Chloride Pipe (PVC). – All sewer pipes shall be PVC pipe in accordance with these Specifications, unless otherwise shown on the Plans or directed by the District Engineer. Polyvinyl Chloride Pipe (PVC) and fittings shall conform to ASTM Specifications D3034 - SDR26 and shall be of the Uni-Bell Type. Approved water stop methods shall be used where “PVC” enters the manhole base.

3.08 Pressure Class Pipe (AWWA C.900, C. 1 SIZE). - Pressure Class Pipe may be required when unusual track conditions exist in the field, trench, loading, etc. as determined by the District Engineer and approved by the District Engineer.

3.09 Polyvinyl Chloride Pipe (PVC) Joints. - All Polyvinyl Chloride Pipe (PVC) Joints shall be rubber gasket such as Ring-Tite, Fluid-Tite, etc.

3.10 Embedment Materials. - Pipe embedment shall be as defined by the Unified Soil Classification System (USCS) in ASTM D-2487, Standard Method for Classification of Soils for Engineering Purposes. Unless otherwise specified by the District Engineer, the material shall be Class I Modified Bedding Material.

3.11 Crushed Rock Bedding. - When water conditions are present in the trench excavation, three-quarter inch (3/4”) max crushed rock shall be used for soil stabilization below the Embedment Materials to the depth to be determined in the field by the District Engineer to a minimum depth of two feet.

3.12 Metal Pipe Casing. - Metal casing to be bored and jacked shall be smooth steel pipe or casing. Casing and wall thickness to be selected by the Contractor and approved by the District Engineer.

3.13 Castings. - All castings for manhole rings, covers, and other purposes shall conform accurately to the form and dimensions shown on the detailed drawings. They must be of workmanlike finish, free from blow and sand holes or defects of any kind, and shall be made from a superior quality of rough even-grained gray iron, and shall possess a tensile strength of not less than thirty thousand (30,000) pounds per square inch and shall conform to the requirements of ASTM A48, Class 30B. Before leaving the foundry, they shall be thoroughly cleaned and coated by dipping in asphalt applied at a temperature of three hundred (300) degrees Fahrenheit in such a manner as to provide a firm, durable, and tenacious coating.

3.14 Manholes. - Precast Portland Cement concrete manhole shall conform to Section 3.01, “Portland Cement Concrete” of these Specifications and in accordance with the District Standard Details.

3.15 Mortar and Plaster. - Mortar shall be composed of one (1) part cement and two (2) parts Structural Grade sand.

3.16 Slurry Mix Backfill. - When required or used as backfill material, the slurry cement backfill shall conform to the provisions in Section 19-3.062, “Slurry Cement Backfill” of the State Standard Specifications and the standard requirements of the governmental agency having jurisdiction over the street in which the slurry mix backfill is used. Slurry cement backfill shall contain 2 sacks of cement per cubic yard, unless otherwise directed by the District Engineer.

3.17 Bedding Material. – Bedding material shall consists of crushed gravel, crushed rock, natural sands or combination thereof consisting of hard durable particles or fragments of granular aggregate mixed or blended with fine sand, clay, stone dust, or other similar binding materials, produced from an approved source to provide a uniform mixture complying with the requirements of these specifications as to gradation, soil constants, and the capability of being compacted into a dense and stable sub-base. The material shall be free of vegetable matter, lumps, or excessive amounts of clay and other objectionable or foreign substances. Material shall conform to the following grading requirements and shall not contain any processed materials:

<u>Sieve Designation</u>	<u>Passing, Percent by Weight</u>
1”	100
3/4"	90 - 100
1/2"	40 - 60
3/8"	30 - 40
No. 4	2 - 10
No. 40	1 - 10
No. 100	1 - 10
No. 200	0 - 10

Liquid Limit - - - - - not more than 35

Plasticity Index - - - - not more than 6

District standard is to utilize above specification for bedding materials, except for when a quantity of bedding material to be utilized is less than 10 cubic yards, following material may be used:

Prior to installing the backfill material, mix 3 parts crushed rock per Section 3.11 of these specifications with 1 part sand until uniformity in the mixture material is achieved.

3.18 Trench Backfill and Base Material. – Base Materials shall be Class 2 Aggregate Base conforming to Section 26, “Aggregate Base” of the State Standard Specifications and these Specifications. Aggregate gradation shall be ¾” maximum and shall not contain any processed materials.

3.19 Plant-Mixed Surfacing. - Plant mixed surfacing shall conform to the provisions of Section 39, “Hot Mix Asphalt (HMA)” of the State Standard Specifications and these Specifications.

HMA shall be Type A and shall be ½ inch maximum, coarse gradation for aggregates.

3.20 Seal Coat (Oil and Screenings). – Seal coat shall conform to the provisions of Section 37-1, “Seal Coats” of the State Standard Specifications and these Specifications.

A single seal coat shall consist of one (1) application of bituminous binder and a cover of ¼” x No. 10 crushed granite screenings.

A double seal coat shall consist of two (2) complete applications of bituminous binder and a cover of ¼” x No. 10 crushed granite screenings.

3.21 Reinforcing Steel. - Reinforcing steel shall conform to the latest requirements of ASTM specifications for deformed bars. All bars shall be bent cold and fabrication shall be accurately done to the dimensions shown on the plans. At the time of concrete pouring, the bars shall be free from rust, scale, oil, paint or other coating which would reduce or destroy the bond between the steel and concrete.

SECTION 4

CONSTRUCTION PROCEDURE

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SECTION 4

CONSTRUCTION PROCEDURE

4.01 Excavation for Pipe Lines. - Trenches shall be excavated either by hand or by machine, beginning at the downstream and proceeding upgrade. All trenches shall be excavated vertically and shall be of open construction. Tunneling will not be permitted except where permission is given by the District Engineer and the dimensions and method of construction and backfilling have been approved by the District Engineer.

All trenches shall be of sufficient width to provide free working space on each side of the pipe and in no case shall such space be less than six inches (6") or greater than twelve (12") inches. Where bracing and shoring is necessary, an additional width, as directed by the District Engineer, will be allowed. In all cases, there shall be sufficient space between the pipe and the sides of the trench to thoroughly backfill and compact around the pipe.

In firm ground, the trench shall be cut no deeper than the thickness of the pipe below the flow line and to its true line and grade. The intent of the construction requirement is to insure a uniform and full bearing of the sewer pipe in solid ground. A bell hole shall be dug at the end of each pipe to accommodate the bell and facilitate the making of the joint.

If the trench should be cut deeper than necessary, it shall be brought up to grade with bedding material or with slurry mix as directed by the District Engineer.

When natural ground does not provide a firm support in the bottom of the trench, the Contractor shall provide a stable bed or foundation for the pipe by removing the soft material and replacing it by importing fill consisting of crushed rock. The District Engineer shall be the sole judge of the suitability of the bottom of the trench and as to the amount of crushed rock required. The Contractor shall remove any such soft material and replace it with crushed rock when ordered to do so by the District Engineer.

No pipe shall be laid until the District Engineer inspects and approves the condition of the bottom of the trench.

No more trench shall be opened than can be properly and completely backfilled in one (1) day.

One traffic lane each way shall be kept open in a safe condition at all times in accordance with the current MUTCD standards, unless otherwise provided in the approved plans. Whenever the Contractor's operations create conditions hazardous to traffic or to the public, the Contractor shall take the necessary precaution to provide adequate means to protect those who must pass over or through the work.

4.02 Trench Safety-Bracing Trenches. - All excavations shall be supported in the manner as set forth in the rules, orders and regulations of the Division of Industrial Safety of the State of California. Sheet piling and other timbers shall be placed in such a manner as to prevent caving of the walls of excavation. Also, all timbering and bracing shall be adequate to protect and prevent movement either horizontally or vertically of water lines, gas lines, telephone conduit and any and all other underground pipelines and other facilities adjacent to the trench or other excavation.

4.03 Trench Safety-Access To Trenches. - Safe and suitable ladders shall be provided for all excavations over five feet (5') in depth. The ladders shall project a minimum of two feet (2') above the top of the trench and a minimum of one (1) such ladder shall be provided for each fifty feet (50') of open trench, or fraction thereof, and be so located that workers in the trench need not move more than twenty-five feet (25') to a ladder.

4.04 Access to Mailboxes and Private Driveways. - No mailbox shall be inaccessible for the delivery of mail at any time during the progress of the work. The Contractor shall organize all operations such that all affected private driveways shall be accessible at all times, unless otherwise approved by the District Engineer.

4.05 Location of Existing Underground Utilities. - Prior to commencement of any grading or trenching operations, the Contractor shall, without fail, consult with all public utility companies affected. Such consultations shall include but not be limited to USA (Underground Service Alert), Water, Gas, Electric, Telephone and Cable TV Companies.

Contractor shall, as first order of work, perform potholing of existing utilities crossing the proposed work. If requested, walk the affected area accompanied by a representative of the public utility company.

The Contractor shall excavate around existing underground utilities at least seven hundred feet (700') ahead of Contractor's trenching to check for possible conflict of grade or alignment.

4.06 Closing and Removing Abandoned Conduits. - Whenever existing pipes or conduits are to be cut or abandoned, the open ends of such pipes or conduits shall be securely closed by a tight fitting plug, or by a wall of 4-sack concrete not less than six inches (6") thick, or by a tight brick wall eight inches (8") thick with cement mortar joints.

4.07 Removal of Water from the Trenches. - The Contractor shall at all times have at Contractor's job site sufficient pumping machinery ready for immediate use. The trenches and excavations shall be kept entirely free of water while concrete or mortar has set hard. Water shall be disposed of in such a manner as will not cause injury to public or private property, nor is a menace to public health.

4.08 Disposal of Materials. - All materials excavated in street and roadways or rights-of-way, not suitable or required for backfilling shall be immediately removed and disposed of by the Contractor as directed by the District Engineer.

4.09 Jacking/Micro-Tunneling (Horizontal Directional Drilling). - The method and equipment used in jacking or micro-tunneling (horizontal directional drilling) will be optional with the Contractor, but the Contractor shall submit to the District Engineer for approval a description of Contractor's proposed operations before proceeding with the work. Approval of the proposed method by the District Engineer will not relieve the Contractor of the responsibility for damages of any nature, which occur as a result of the method used.

The Contractor shall be responsible for any jacking or micro-tunneling the casing into place with sufficient accuracy to permit installation of the pipe within it to the grade shown on the plans.

After the pipe has been installed in the casing, the annular space between the pipe and the casing shall be filled with slurry mix or as directed by the District Engineer. Ends of casing shall be sealed with brick and cement grout. Should appreciable loss of ground occur outside the perimeter of the casing being jacked or micro-tunneled, the voids shall be backpacked promptly to the extent practical with soil cement. After jacking/micro-tunneling is completed, the Contractor shall drill holes in the casing at the locations of ground loss and force grout into such voids to refusal at pressures directed by the District Engineer, but not to exceed 50psi.

4.10 Pipe Bursting. - The method and equipment used in pipe bursting will be optional with the Contractor, but the Contractor must submit to the District Engineer for approval a description of Contractor's proposed operations before proceeding with the work. Approval of the proposed method by the District Engineer will not relieve the Contractor of the responsibility for damages of any nature, which occur as a result of the method used.

The Contractor shall be certified by the pipe busting system manufacturer as a fully trained user of the pipe bursting or similar trenchless pipe replacement system. The Contractor shall provide certificates of training for any employee directly involved in the supervision or operation of the pipe bursting system. The Contractor shall be responsible for repairing or replacing existing utilities, pavements, structures or other improvements damaged by the pipe bursting work. The Contractor is solely responsible for quality assurance during the length of the project and responsible for any costs associated with the corrective measures required to replace or repair items not meeting the quality standards specified by the District. Also the Contractor shall be responsible for continuity of sanitary sewer service to each facility connected to the section of sewer main during the execution of the work, and shall also bypass the main sewer flow around the pipe to be replaced, or into adjacent sanitary sewers, if available.

After pipe bursting is completed, the Contractor shall reconnect all service connections to the replacement pipe including those from unoccupied, abandoned, or vacant lots, unless directed otherwise by the Engineer. The Contractor shall be responsible for restoring/correcting, without any delay, all missed or faulty reconnections, as well as for any damage caused to property owners for not reconnecting the services soon enough or for not giving notice to the owners.

4.11 Laying of Sewer Pipe. - Following the digging of the trench, laser beam control survey equipment shall be used to establish pipe flow line. The bottom of the trench shall then be graded and the bottom of the trench shall be compacted to the satisfaction of the District Engineer.

All pipes shall be laid without break, upgrade from structure to structure, true to line and grade, with a uniform bearing under the full length of the barrel of the pipe, which shall not bear upon the sub grade. All adjustments to line and grade must be made by scraping away of earth or tampering under the body of the pipe and not by wedging or blocking.

At the close of each day's work, and at such other times when pipe is not being laid, the end of the pipe shall be protected with a close fitting stopper. Whenever the pipe is constructed with an end not joined to an existing pipe or structure, it shall be closed by a cap or plug that will provide a watertight seal. When connecting to an existing sewer line or structure, the pipe shall be sealed in a manner to prevent water and debris from entering the existing line until the new construction is completed to a point where water and debris will not enter the system.

4.12 Jointing Sections of Sewer Pipe. -

A. Vitrified Clay Pipe (VCP)

(1) Speed Seal – Wedgelock

Joints shall be thoroughly cleaned and lubricated with a soft vegetable soap compound or approved compound supplied by a manufacture, and pipe shall be joined by hand or barring method with a wood block across bell end of pipe. Pipe shall be shoved firmly home to indicator line, forming a watertight joint.

(2) Band Seal or Equal

Joints shall be thoroughly cleaned. Entering spigot end into rubber coupling pipe should be rotated for best alignment and stainless steel band tightened to sixty (60) pounds, forming a watertight joint.

B. Polyvinyl Chloride Pipe (PVC)

Bell shall be thoroughly cleaned, then rubber gasket placed in the bell end of the pipe and lubricated with a soft vegetable soap compound before entering the spigot end, which shall have also been wiped clean. Pipe shall be barred home or a jacking device used to form a watertight joint.

4.13 Jointing of Two Different Types of Pipe. - The jointing of two different types of pipe shall be made with Mission Banded Stainless Steel "Arc Shield", Fernco Stainless Steel "Shear Ring" or approved qual.

4.14 Locator for Curved Sewer - A continuous six (6) gauge copper wire or approved pipe locator material shall be placed in the trench on all curved sewer lines and shall terminate at the top of the manhole at each end of run.

4.15 Lateral Sewer and Connection to Main - The term "lateral sewer" as used in these Specifications, on the Plans, or on other drawings, is used to designate the portion of the side sewer laid from the main sewer to the property line.

Lateral sewers shall be laid either from the upper end of a wye branch or "Y" saddle connected to the main sewer to the property line and plugged into a watertight plug in accordance with District Standard Details.

4.16 Manholes – Manhole shall be constructed in accordance with the District Standard Details and these Specifications. Bases for manholes shall be poured against

undisturbed native material. Before concrete has set, a forming ring shall be placed on the top of the base, worked into concrete to form a matching joint for the precast manhole sections. Said ring shall be level. Channels shall be formed in the concrete and dressed up with grout. When Polyvinyl Chloride Pipe is used, an approved water stop shall be used where pipe enters the manhole base. All pipes entering the manhole will be required to have a coupling bank installed 12" from the manhole as shown on the Standard Details.

After the concrete base has set up, the rings shall be set. Base and rings shall be cleaned and washed with water at the joint before setting and high adhesion gasketing material (Ram-Nek or equal) shall be placed in the joint before setting to insure complete filling of the joint.

All manholes in street area shall be raised to final grade after final lift of pavement.

If mains or laterals are to be installed in existing precast section of manhole, one foot by one foot concrete collar with #4 loop is required.

4.17 Protection of Manholes

A. Plywood Covers:

As soon as the base has set up in new manholes, channels shall be protected by Plywood Covers. Covers shall remain in manholes until all work is completed and ready for acceptance.

When any construction is to be performed around existing manholes i.e., adjusting manhole casting to grade, street construction around manhole, connection to or modification of manhole, etc., the channels shall be protected by plywood covers, and shall remain in manholes until all work is complete and ready for acceptance.

Plywood covers shall not be less than ½" thick and cut to fit the inside of the manhole. Covers are to be in two pieces to permit installation or removal through a standard manhole casting.

B. Steel Covers:

At times when a manhole is not complete with a standard casting and cover, it shall be covered with a suitable steel plate over the top in addition to the plywood cover at the base.

4.18 Backfilling – Backfill shall conform to District Standard Details and these Specifications. After the pipe installation has been inspected and approved, the trench shall be filled immediately afterwards to a depth of at least six inches (6") above the pipe. During this process of backfilling, the specified embedment material shall be placed carefully around and under the pipe. The space forming this first backfill shall be free from rock or clods. Care should be taken to carry the backfill material up evenly on both sides of the pipe so as to keep an even pressure around the pipe. Asphalt concrete pavement, which has been previously cut, shall not be used as backfill.

Excavated material shall be allowed as a backfill material with the Engineer of Record's recommendation and as approved by the District Engineer for all paved areas. Excavated material composed of saturated clay, muck, or other material not suitable for backfill shall not be used in the backfill of the trench. Where such unsuitable material is

encountered, it shall be replaced with an approved import. Backfill shall be compacted in place as required below. The excavated material not suitable for backfill shall be removed from the job site at the Contractor's expense.

Compaction of backfill shall be made by mechanical means in eight-inch (8") lifts. Backfill shall be a minimum of two & one-half feet (2.5') above the top of the pipe before mechanical tamping is permitted. No jetting will be allowed. Other methods of mechanical compaction may be used subject to approval by the City or County Engineer and the District Engineer. Full relative compaction of backfill shall not be less than ninety-five percent (95%) in pavement area and 90% in native soil area.

4.19 Limitation of Leakage into Sewer Lines - In view of the fact that in the operation of the District's system or sewers and appurtenances, it will be necessary to treat the sewage, it is particularly important that all sewer lines constructed be substantially watertight.

The Contractor shall take note of this fact and shall exercise every precaution to secure water tightness throughout the component parts of the system, particularly as regarding the jointing of all pipe lengths. The Contractor shall follow the detailed Specifications and shall conform to the intent thereof to secure the highest quality of workmanship in the laying of all sewer lines under the Contract. All jointing of pipe shall be subject to rigorous inspection by the District Engineer.

4.20 Testing Requirements - After the sewer lines have been installed and after the trench has been backfilled and compacted and before paving, the lines shall be given the following tests:

A. Deflection Test:

Flexible pipe is required to show no more than 5 percent deflection. Test pipe no sooner than 30 days after backfilling of line segment but prior to final acceptance using standard mandrel to verify that installed pipe is within specified deflection tolerances.

Mandrel Sizing. Rigid mandrel shall have outside diameter (O.D.) equal to 95 percent of inside diameter (I.D.) of pipe. Inside diameter of pipe, for purpose of determining outside diameter of mandrel, shall be average outside diameter minus two minimum wall thicknesses for O.D. controlled pipe and average inside diameter for I.D. controlled pipe, dimensions shall be per appropriate standard. Statistical or other "tolerance packages" shall not be considered in mandrel sizing.

Mandrel Design. Rigid mandrel shall be constructed of metal or rigid plastic material that can withstand 200 psi without being deformed. Mandrel shall have nine or more "runners" or "legs" as long as total number of legs is odd number. Barrel section of mandrel shall have length of at least 75 percent of inside diameter of pipe. Rigid mandrel shall not have adjustable or collapsible legs which would allow reduction in mandrel diameter during testing. Provide and use proving ring for modifying each size mandrel.

Proving Ring. Furnish "proving ring" with each mandrel. Fabricate ring of 1/2-inch-thick, 3-inch-wide bar steel to diameter 0.02 inches larger than approved mandrel diameter.

Mandrel Dimensions (5 percent allowance). Average inside diameter and minimum mandrel diameter are specified in Table 15250-5, Pipe vs. Mandrel Diameter, at end of this Section.

B. Air Test:

The Contractor shall plug all side sewers. Contractor shall plug the ends of the main, and if buildings have been connected, the Contractor shall plug at the cleanout.

The Contractor shall supply the necessary metering equipment for the test. The Contractor shall supply hoses and a compressor or blower with adequate capacity to perform the test.

The line shall be supplied with air until approximately 4 psi has been reached, at which time the flow to the pipe shall be shut off. The District Engineer will then accurately determine the time of loss of 1 psi pressure in the range from 3.5 psi to 2.5 psi, or the amount of drop in pressure during allotted time for the test, if loss is less than one (1) pound.

Allowable rate for the loss of one (1) pound pressure (between 3.5 psi and 2.5 psi) per 100' of line is as follows:

4" – 11.6 seconds	12" – 104.4 seconds	18" – 235.0 seconds
6" – 26.1 seconds	14" – 145.5 seconds	21" – 320.0 seconds
8" – 46.4 seconds	15" – 163.2 seconds	24" – 418.0 seconds
10" – 72.5 seconds	16" – 185.7 seconds	27" – 529.0 seconds

If the time for one (1) pound drop is less than above, the Contractor shall make such repairs as are necessary to eliminate the excessive leakage. The test shall be repeated after the repairs are made. The line shall not be accepted until this test is passed.

NOTE: The District Engineer may, at his discretion, require a Hydrostatic Test of manholes in addition to Air Testing on sewer lines. Permission may be granted to conduct Hydrostatic Test of Manholes during flushing operation. When Hydrostatic Test of manholes is required, all sewer lines shall be plugged at manhole to be tested and manhole filled to at least four feet (4') above flow line. (Greater depths may be required in areas subject to a higher ground water level). Loss of water shall not exceed two (2) gallons per hour for any depth up to and including eight feet (8').

C. Hydrostatic Test: (Alternate to Air Test)

In the event a section of line will not pass the air test or the Contractor does not have the equipment for an air test, permission may be granted to test the line with water. The Contractor shall furnish the water and all equipment necessary to make the required tests.

The method of testing any section of the line shall be as follows:

The lower end of a section of line at the manhole shall be plugged watertight. Water shall be inserted in the line and the air in the line allowed to escape. A minimum of four feet (4') and a maximum of five feet (5') of head above the invert at the upper end of the line shall be used in conducting the test. If ground water is encountered, the head above the invert of the pipe shall be increased so that the net hydrostatic head shall be a minimum of four feet (4') and a maximum of five feet (5'). The water level at the upper manhole shall be marked and after two hours, the amount of water required to keep the line filled to the original water level shall be the measure of leakage in the line. This leakage shall be reduced to the equivalent leakage in gallons per square inch of pipe diameter per mile of pipe per twenty-four (24) hours. The maximum leakage allowed shall be two hundred (200) gallons per inch of diameter per mile of pipe per twenty-four (24) hours.

D. CCTV - All sewer mains and laterals shall be closed circuit televised as follows:

SEWER FLOW REQUIREMENTS

Do not exceed depth of flow shown in Table 1 for respective pipe sizes as measured in manhole when performing TV inspection. When depth of flow at upstream manhole of sewer line section being worked is above maximum allowable for TV inspection, reduce flow to level shown in Table 1, by plugging or blocking of flow, or by pumping and bypassing of flow as specified.

TABLE 1
Maximum Depth of Flow for TV Inspection

Nominal Pipe Diameter	Maximum Depth of Flow
6" - 10"	20 percent of pipe diameter
12" - 24"	25 percent of pipe diameter

SEQUENCE OF WORK

Perform Work in the following sequence:

1. Clean sewer lines and manholes in accordance with requirements of specifications.
2. Perform T V inspection to comply with requirements of this

specification.

CCTV INSPECTION REQUIREMENTS

DVD Commentary: Record the following information on audio track of DVD inspection tape: narrative of location, direction of view, manhole numbers, pipe diameter and material, date, time of inspection, and location of laterals and other key features

- a. DVD shall visually display this information at beginning and end of each manhole-to-manhole pipe segment.
- b. DVD between manholes shall visually display length in feet from starting point of given segment.

Sewer Identification: DVD and inspection documentation shall include sewer line and manhole identifiers shown on Drawings. After installation of liner, use upstream manhole as identifier in conjunction with distance meter.

Image Perspective: Camera image shall be down center axis of pipe when camera is in motion.

Provide 360-degree sweep of pipe interior at points of interest, to more fully document existing condition of sewer.

Points of interest may include, but are not limited to the following: defects, encrustations, mineral deposits, debris, sediment, and any location determined not to be clean or part of proper liner installation, and defects in liner that include, but are not limited to bumps, folds, tears, and dimples.

Sewer Reach Length: Physically measure and record length of each sewer reach from centerline of its terminal manholes.

Inspection Rate: Camera shall be pulled through sewer in either direction, but both inspections are to be in same direction. Maximum rate of travel shall be 30 feet per minute when recording.

4.21 Restoring pavement, Curbs, Gutter, Sidewalks, Etc. - Whenever such existing improvements as pavement, curbs, gutters, sidewalks, driveways, utilities, etc., have been cut or damaged in order to construct sewer pipe and appurtenances, the backfill shall be thoroughly compacted and all improvements restored to the condition in which they were before the excavation was made.

4.22 Restoration of Surface of Sewer Trenches in Existing Roadway - After the trenches have been backfilled and prepared as specified herein, the surface shall be finished by restoring to as nearly as possible its original condition, restoring the cushion or base or watering surface, or any combination of the above named in governing body having jurisdiction over the road in which work is being performed.

4.23 Flushing and Cleaning Sewer Lines - After all surface restoration operations and repairs have been completed; the Contractor shall flush and clean all sanitary sewer lines in the following manner:

A heavy rubber ball such as “MacWane Ball” manufactured by Sidu Company, Long Beach, California, or approved equal, inflated with air and having an outside diameter equal to the interior diameter of the pipe to be cleaned, shall be furnished by the Contractor. The ball shall be inflated so that it will fit snugly into the sewer line. The ball shall be placed in the last (upper) manhole on the line and water introduced into the manhole back of the ball. The ball shall pass through the pipe only by the pressure of the water behind it. A rope shall control the rate at which the ball is allowed to pass through the pipe at all times. A suitable sand trap shall be placed in the downstream side of the downstream manhole. Debris flushed out ahead of the ball shall be removed before balling the next section. The ball shall not be permitted to move through the pipe at too rapid a rate. In addition to balling and flushing new lines installed, the Contractor shall also ball and flush all existing lines to which taps are made for laterals and in the event the District Engineer feels that excessive amounts of debris have passed into the existing downstream line, the District Engineer may require one or more additional sections to be balled and flushed at the Contractor’s expense.

SECTION V

STANDARD CONSTRUCTION DETAILS

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