STANDARD SPECIFICATIONS
FOR CONSTRUCTION

NEWHALL COUNTY WATER DISTRICT

MAY 2010

NCWD

NEWHALL COUNTY WATER DISTRICT

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PREFACE

The Specifications and Standard Drawings contained herein set minimum standards for working relationships, workmanship and quality. These documents are provided as construction standards for proposed improvements or additions to the Newhall County Water District water system.

Use of these documents should not be construed as a substitute for engineering each separate project. Each project will have calculations, specifications and drawings prepared by an appropriately State of California licensed engineer.

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL BE APPROVED BY THE DISTRICT AND BE IN ACCORDANCE WITH THE MOST CURRENT STANDARD SPECIFICTION FOR PUBLIC WORKS CONSTRUCTION, SSPWC (GREENBOOK), LATEST EDITION, NCWD STANDARD SPECIFICATION, STANDARD DRAWINGS, WATER ORDINANCES, RULES AND REGULATIONS. THE CONTRACTOR SHALL HAVE A SET OF NCWD STANDARD SPECIFICATIONS ON THE SITE AT ALL TIMES.

2. ALL EASEMENTS REQUIRED BY THE DISTRICT FOR INGRESS, EGRESS AND EXCAVATION PURPOSES SHOULD BE PROVIDED PRIOR TO COMMENCEMENT OF WORK.

3. IT IS THE OWNER'S AND/OR DEVELOPER'S RESPONSIBILITY TO DETERMINE THAT THE REQUIRED FIRE FLOW IS AVAILABLE. ALL IMPROVEMENTS ARE AT THE EXPENSE OF OTHERS AND SUBJECT TO DISTRICT'S APPROVAL.

4. PRIOR TO COMMENCING ANY WORK, THE CONTRACTOR SHALL CALL UNDERGROUND SERVICE ALERT 811 TO LOCATE EXISTING UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR POTHOLING AND SURVEYING ALL CONNECTION POINTS AND CROSSINGS PRIOR TO SHOP DRAWING SUBMITTAL AND THE START OF CONSTRUCTION AT NO ADDITIONAL COST TO THE DISTRICT. REFER TO SPECIFICATION SECTION 1.21 FOR ADDITIONAL REQUIREMENTS.

5. THE CONTRACTOR SHALL APPLY FOR INSPECTION FROM THE DISTRICT (661) 259-3610 AT LEAST 48 HOURS BEFORE STARTING WORK ON A PROJECT. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR INSPECTION EACH DAY AT LEAST 24 HOURS IN ADVANCE.

6. DEVELOPERS/CONTRACTORS SHALL COMPLY WITH ALL RULES AND REGULATIONS OF APPLICABLE AGENCIES.

7. THE DEVELOPERS/CONTRACTORS SHALL APPLY FOR THE INSTALLATION OF A TEMPORARY CONSTRUCTION WATER METER AND SHALL COMPLY WITH THE DISTRICT'S SPECIFICATIONS REGARDING CONSTRUCTION OF TEMPORARY WATER SERVICE.

8. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES ON THE DRAWINGS ARE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. NO CERTIFICATION IS MADE AS TO THE ACCURACY OR THOROUGHNESS OF THIS PLAN BY THE DISTRICT. APPROVALS OF THE DRAWINGS BY THE DISTRICT DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OF LOCATION OR THE EXISTENCE OR NONEXISTENCE OF ANY UNDERGROUND UTILITY, PIPE OR STRUCTURE. THE CONTRACTOR SHALL TAKE ALL DUE PRECAUTIONARY MEANS TO PROTECT ALL LINES AND STRUCTURES REGARDLESS IF SHOWN OR NOT ON THE DRAWINGS.

9. FIRE HYDRANTS WITH STANDARD 6"X 4" X 2 ½" HEADS CONFORMING TO DISTRICT'S STANDARD SPECIFICATIONS SHALL BE INSTALLED AT EACH OF THE LOCATIONS ON APPROVED DRAWINGS.

10. WHERE FIRE HYDRANTS ARE INSTALLED OR UPGRADED, THE CONTACTOR SHALL INSTALL REFLECTORIZED, RAISED PAVEMENT MARKERS (STIMSONITE HYDRANT SPOTTER), ALSO CALLED "BLUE DOTS." A TWO-PART EPOXY ADHESIVE SHALL BE USED TO INSTALL THE MARKERS. ONE MARKER SHALL BE INSTALLED OPPOSITE EACH FIRE HYDRANT; APPROXIMATELY 6 INCHES OFFSET FROM STREET CENTERLINE ON THE HYDRANT SIDE OF THE STREET.

11. WATER METER LINES SHALL BE INSTALLED PERPENDICULAR TO WATER MAINS ON PROPERTY LINES. NOT TO BE LOCATED IN DRIVEWAYS AND OR CUSTOMER'S WALKWAYS OR HARDSCAPE.

12. DEVELOPER/OWNER SHALL BE RESPONSIBLE TO PROVIDE SURVEY STAKES TO CORRECTLY LOCATE THE WATER FACILITIES. SURVEY STAKES SHALL PROVIDE GRADE AND ALIGNMENT FOR USE BY THE CONTACTOR TO CONSTRUCT THE FACILITIES.

13. DISINFECTION: CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO ASSURE SANITARY INSTALLATION OF ALL FACILITIES. THEY SHALL ENDEAVOR TO KEEP ALL DIRT, RODENTS, INSECTS, ETC. AWAY FROM SURFACES TO BE EXPOSED TO DOMESTIC WATER. TEST PLATES SHALL BE INSTALLED BEFORE PRESSURE TESTING AND DISINFECTION. DISTRICT'S INSPECTOR SHALL DESIGNATE TEST PLATE LOCATIONS. ISOLATION VALVES SHALL BE KEPT OPENED AT ALL TIMES UNTIL SATISFACTORY COMPLETION OF PRESSURE TEST, DISINFECTION, FLUSHING AND BACTERIOLOGICAL TEST. CONTRACTOR SHALL NOTIFY THE DISTRICT 24 HOURS IN ADVANCE OF ANY DESIRED OPERATION OF ISOLATION VALVES. VALVES SHALL BE OPERATED ONLY BY NCWD PERSONNEL. THE DISTRICT WILL ARRANGE FOR BACTERIOLOGICAL TEST SAMPLING OF NEW WATER MAINS UPON NOTIFICATION BY CONTRACTOR. DEVELOPER/CONTRACTOR SHALL COMPLY WITH STANDARD SPECIFICATIONS SECTION 3.14 FOR DISINFECTION.

14. FITTINGS SUBJECT TO THRUST SHALL BE INSTALLED WITH CONCRETE THRUST BLOCK RESTRAINTS POURED AGAINST UNDISTURBED SOIL OF TRENCH WALL. SIZES OF THRUST BLOCKS SHALL BE PER DISTRICT'S STD. DRAWING NO. 101. UPON APPROVAL OF THE DISTRICT.

15. PRIOR TO COMMENCEMENT OF CONSTRUCTION, IT IS THE OWNER/DEVELOPER/ENGINEER'S RESPONSIBILITY TO DETERMINE THAT THE REQUIRED FIRE FLOW IS AVAILABLE, AND IF NOT, WHAT FACILITIES ARE REQUIRED TO SATISFY THE APPLICABLE REGULATORY AGENCY. ALL IMPROVEMENTS ARE AT THE EXPENSE OF OTHERS AND SUBJECT TO THE DISTRICT'S APPROVAL.

16. THE CONTRACTOR SHALL PROTECT IN PLACE ALL EXISTING SEWER, STORM DRAIN, GAS AND ELECTRICAL SUBSTRUCTURES INCLUDING LATERAL CONNECTIONS. ALL DAMAGES SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.

17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CERTIFIED COMPACTION TEST RESULTS AT A MINIMUM OF 300 L.F. INTERVALS FOR THE TRENCH BACKFILL. TEST SHALL BE CONDUCTED FOR SUBBASE AND AT GRADE IN ACCORDANCE WITH DISTRICT'S STANDARD SPECIFICATIONS SECTION 3.4 AND SECTION 211 OF THE SSPWC. THE DISTRICT RESERVES THE RIGHT TO REQUIRE ADDITIONAL TEST AS DETERMINED BY THE PROJECT ENGINEER OR INSPECTOR.

18. ALL WATER LINE STATIONS SHOWN ON THESE PLANS ARE BASED ON CENTER LINE OF STREET STATIONS.

19. BARRICADES, IN ACCORDANCE WITH STANDARD DRAWING 124, SHALL BE INSTALLED AT FIRE HYDRANTS AND OTHER FACILITIES NOT LOCATED BEHIND STANDARD CURB FACE, OR AS REQUIRED BY THE DISTRICT.

20. PAINT FIRE HYDRANTS WITH VISTA PAINT 9900 PROTEC GLOSS YELLOW PER STANDARD DRAWING 120.

21. SHUT-OFF VALVE FOR THE FIRE HYDRANT SHALL NORMALLY BE 10' TO 25' FROM THE FIRE HYDRANT.

22. ALL MATERIAL USED AND ALL WORK TO BE PERFORMED SHALL BE IN ACCORDANCE WITH THE AWWA STANDARDS.

23. MINIMUM REQUIRED COVER IS 36" FOR ALL WATER MAINS AND SERVICES UNLESS OTHERWISE DIRECTED BY THE DISTRICT. REFER TO STANDARD DRAWING 100.

24. MAXIMUM DEPTH IS 60" UNLESS OTHERWISE DIRECTED BY THE DISTRICT.

25. ERODED SEDIMENTS AND OTHER POLLUTANTS MAY NOT BE TRANSPORTED FROM THE SITE VIA SHEET FLOW, SWALES, AREA DRAINS, NATURAL DRAINAGE COURSES OR WIND.

26. STOCKPILES OR EARTH AND OTHER CONSTRUCTION RELATED MATERIAL MUST BE PROTECTED FROM BEING TRANSPORTED FROM THE SITE BY THE FORCES OF WIND OR WATER.

27. FUELS, OILS, SOLVENTS, AND OTHER TOXIC MATERIAL MUST BE STORED IN ACCORDANCE WITH THEIR LISTING AND ARE NOT TO CONTAMINATE THE SOIL AND SURFACE WATERS.

28. EXCESS OR WASTE CONCRETE MAY NOT BE WASHED INTO THE PUBLIC WAY OR ANY OTHER DRAINAGE SYSTEM. PROVISIONS SHALL BE MADE TO RETAIN CONCRETE WASTES ON-SITE UNTIL THEY CAN BE DISPOSED OF AS SOLID WASTE.

29. SEDIMENTS AND OTHER MATERIALS MAY NOT BE TRACKED FROM THE SITE BY VEHICLE TRAFFIC. THE CONSTRUCTION ENTRANCE ROADWAYS MUST BE STABILIZED SO AS TO INHIBIT SEDIMENTS FROM BEING DEPOSITED INTO THE PUBLIC WAY. ACCIDENTAL DEPOSITIONS MUST BE SWEPT UP IMMEDIATELY AND MAY NOT BE WASHED DOWN BY RAIN OR OTHER MEANS.

30. ANY SLOPES WITH DISTURBED SOILS OR DENUDED OF VEGETATION MUST BE STABILIZED SO AS TO INHIBIT EROSION BY WIND AND WATER.

31. ALL FITTINGS MUST HAVE MECHANICAL JOINTS. FOR AT LEAST 2 PIPE JOINTS ON EITHER SIDE.

32. ALL WATER SERVICES WILL BE LOCATED AT LEAST 10 FEET FROM SEWER LATERALS UNLESS APPROVED BY THE DISTRICT.

33. WATER METERS WILL BE LOCATED PER DISTRICT'S REQUIREMENTS AND NOT WITHIN 5 FEET OF DRIVEWAYS. ANY RELOCATION SHALL BE APPROVED BY THE DISTRICT. A "W" SHALL BE IMPRINTED ON CURB FACE AT EACH SERVICE LATERAL (METER) LOCATION. WATER MAIN VALES SHALL NOT BE PLACED IN CURB OR GUTTER.

34. STATION NO. OF WATER SERVICE CONNECTIONS TO BE MARKED BY THE CONTRACTOR ON THE AS-BUILT DRAWINGS.

35. ALL FIRE HYDRANT RUNS AND SERVICES MUST BE STRAIGHT FROM VALVE TO HYDRANT; BURY WITH FULLY RESTRAINED MECHANICAL JOINTS.

36. CONTRACTOR SHALL PROVIDE TRENCH PROTECTION AND CONDUCT ALL CONSTRUCTION IN ACCORDANCE WITH CAL-OSHA REQUIREMENTS.

37. CONTRACTOR SHALL WARRANTY ALL WORK FOR 12 MONTHS AFTER DATE OF DISTRICT'S BOARD APPROVAL.

38. THE DEVELOPER SHALL PROVIDE PRINTS AND DIGITAL FORMAT OF ALL "AS-BUILT" CONDITIONS INCLUDING THE STATIONING OF SERVICE LATERAL CONNECTIONS AND PAD ELEVATION AS A CONDITION OF FINAL APPROVAL.

39. NO – OX- 1D PROTECTIVE COATINGS SHALL BE APPLIED TO ALL FITTINGS, FASTNERS, NUTS AND BOLTS.

40. WHEN GRADE IS 10% OR GREATER ALL PIPE SHALL BE RESTRAINED.

41. LOCATING WIRE ON ALL PIPING. COPPER TRACER WIRE SHALL BE PLACED CONTINUOUSLY CENTERED JUST ABOVE THE TOP CENTER OF THE PIPE FOR THE PURPOSE OF PROVIDING A CONTINUOUS SIGNAL PATH FOR ELECTRONIC PIPE LOCATIONS USED TO DETERMINE THE PIPE ALIGNMENT AFTER INSTALLATION. THE WIRE SHALL BE ELECTRICALLY CONTINUOUS THOUGHOUT THE ENTIRE PIPE SYSTEM INCLUDING ADJACENT SERVICE LINE ASSEMBLIES. THE COPPER WIRE SHALL BE NO. 12 GUAGE WITH HMWPE INSULATION. THE WIRE SHALL BE BROUGHT TO THE SURFACE AT VALVE LOCATIONS AND SHALL BE ACCESSIBLE BY REMOVING THE VALVE CAN COVER. THE WIRE SHALL BE BROUGHT TO THE SURFACE PER THE DISTRICT'S STANDARD DRAWINGS. THE WIRE SHALL ALSO BE TAPPED IN PLACE BY MEANS OF A PLASTIC ADHESIVE TAPE, PLACED AT 10-FOOT INTERVALS. ALL SPLICED CONNECTION SHALL BE MADE USING 3M DIRECT BURY SPLICE KIT OR APPROVED EQUAL, AND WRAPPED WITH PVC TAPE. SPLICED CONNECTIONS SHALL ALSO BE IN A LOOPED CONFIGURATION. THE CONTRACTOR SHALL PERFORM ELECTRICAL CONTINUITY TEST AND PROVIDE THE DISTRICT WITH THE RESULTS THEREOF.

42. FITTINGS MORE THAN 60" DEEP MUST BE C-110 DUCTILE.

43. PIPE AND FITTINGS MUST BE DOMESTIC – IMPORTS MUST BE APPROVED BY DISTRICT.

44. PIPE CONNECTIONS MADE BETWEEN DISSIMILAR METALS NEED INSULATOR GASKETS AND BOLT KITS.

1.0 GENERAL PROVISIONS

1.1 GENERAL

These specifications are to be used to establish standards of work, materials, and construction procedures for improvements to the water system of the Newhall County Water District (District). These specifications are intended to establish general requirements and technical standards for all pipeline work within the District. The District reserves the right to make changes to these specifications at any time.

1.2 SUPPLEMENTARY SPECIFICATIONS

Wherever reference is made within these documents to certain standard specifications, the reference shall be construed to mean the standards, with all subsequent amendments, changes, or additions as thereafter adopted and published that are in effect at the date of approval of the plans and specifications. Standard specifications and documents referenced herein and their abbreviations include, without limitation, the following:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AI	The Asphalt Institute
AISC	American Institute of Steel Construction, Inc.
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute (formerly USASI, USAS, ASA)
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
CDHS	California Department of Health Services
EPDM	Ethylene Propylene Dienemonomer Rubber
HMWPE	High Molecular Weight Polyethylene
MIL	Military Specification (leading symbol)
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration, U.S. Dept. of Labor
SSPC	Steel Structures Painting Council State
SSPWC	Standard Specification for Public Works Construction
Spec.	California Standard Specifications, Department of Transportation, Division of Highways
UL	Underwriters' Laboratories, Inc.

1.3 DEFINITION OF TERMS

Whenever in these specifications or other documents where these specifications govern and the following terms are used, they shall be defined as follows:

- Acceptance
  Shall mean that the water system has been installed to District specifications and the Board of Directors has accepted the facilities, starting the one (1) year guarantee period.

- Agreement
  The written Agreement between the District and the Applicant providing for the construction of the improvement by the Applicant or his Contractor.

- Applicant
  Shall mean any property owner, firm, or corporation who makes application for District service or enters into an Agreement with the District.

- Board
  The Board of Directors of the Newhall County Water District.

- Contract
  A written Agreement executed by and between the Applicant and the Contractor covering the performance of the work.

- Contractor
  The individual, partnership, association, corporation, entity (public or private), or combination thereof, who has entered into a Contract with the Applicant or into a Public Contract with the District for performance of the work pursuant to these specifications. Except as to Public Contracts, wherever reference is made to Contractor in the Specifications, such reference shall include the Contractor in his own capacity and in his capacity as authorized agent and representative of the Applicant. Accordingly, where the Specifications require the Contractor to perform certain acts, or hold the Contractor responsible for certain costs, expenses or liabilities, or the like, such requirements and responsibilities shall be equally applicable to and binding upon the Applicant.

- District
  The Newhall County Water District

- Engineer
  A registered civil engineer appointed by the District acting either directly or through his properly authorized agent, engineers, assistants, inspectors, and superintendents, unless otherwise qualified.

- Final Completion
  Shall mean the water system is complete and active, street improvements are complete and required title insurance policies for easements, if any, are provided. The Developer shall contact the District's inspector and request a punch list.

- Fire System Activation Letter
  The letter informing Los Angeles County Fire Department that the water system and fire hydrants are available for protection. As-built drawings must be submitted, easement and/or deed documents must be recorded, and title insurance policies to said easements and/or deeds provided prior to issuance of letter. Also, pipe identification wires and compound meters shall be tested if included in the project.

- Inspector – Owner's Representative
  The personal representative of the District.

- Plans
  The official scale and full size approved detail drawings, or exact reproductions thereof, which show location, character, dimensions, elevations, and details of the work.

- Specifications
  The STANDARD SPECIFICATIONS FOR CONSTRUCTION published by Newhall County Water District. Should other specifications used for public contracts conflict with said Standard Specifications, the job-specific specifications will govern.

- Standard Drawings
  The Standard Drawings, a part of the STANDARD SPECIFICATIONS FOR CONSTRUCTION published by Newhall County Water District, unless otherwise qualified.

- Work
  All labor, materials, equipment, transportation, supervision, or other facilities necessary to complete the improvement provided for in the Agreement.

- Private Contract Work
  Work done pursuant to a Contract between the Contractor and the Applicant.

- Public Contract Work
  Work done pursuant to a Contract between the Contractor and the District.

- Private Engineer
  A registered civil engineer employed by the Applicant.

- Approved, Directed, Satisfactory, Proper, Acceptable, Required, Necessary and or Equal
  Shall be defined as considered approved, directed, satisfactory, proper, acceptable, required, necessary, or equal in the opinion of the District.

1.4 ABBREVIATIONS

The abbreviations used in the plans and specifications are abbreviations the meanings of which are established by general usage through the industry.

1.5 PLANS SUBMITTED BY PRIVATE ENGINEERS

First submittal of water improvement plans shall include a letter for District file and record purposes that transmits the following described documents, drawings, and material:

- A Conceptual Plan showing how the project will be served
- Two (2) prints of an approved tentative map
- One (1) copy of the conditions of approval of said tentative tract map
- Full name, address and telephone number of the developer
- The name of the project engineer representing the firm on the subject project
- Two (2) prints of the tentative map on which the approved, preliminary water system, including required connections to sources of supply, are legibly shown
- One time plan check deposit of five-hundred dollars ($500.00 minimum), but up to one hundred and fifty dollars ($150.00) per sheet, application fee $1000, if required SB610 fee $1,500, and SB221 fee $1,500
- Copies of any other maps, plans, surveys, fire department requirements, improvements, and etc. that will help expedite the preliminary plan check and that will be required by Newhall County Water District prior to approving plans
- After final plan check is completed, submit two (2) sets of Mylars and an 11 X 17 copy in digital format. (See Section No. 1.5.2)

1.5.1 A complete set of plans shall include the following:

A cover sheet containing the following:

- Benchmark
- General Notes
- Typical street cross section
- One (1) inch equals three-hundred (300) feet map showing lot lines, existing and proposed water mains, water main sizes, valves, fire hydrant locations, sheet numbers and easements
- Vicinity map
- Full list of materials (size and length of pipe)
- Name, address and telephone number of Engineer and Developer
- Approval and revision blocks
- Fire department approval stamped
- Profile side view
- Number of services and size

1.5.2 Plan and profile sheets containing, but not limited to, the following:

- Horizontal scale of one (1) inch equal, forty (40) feet
- Vertical scale of one (1) inch equal four (4) feet
- Keep all existing and proposed utilities
- Existing and future surface profiles
- Approval and revision blocks

- North arrow
- Curb, gutter and sidewalk
- Property lines, lot lines and tract boundaries
- Complete dimensioning for entire right-of-way of subject street and adjoining streets
- Waterline stationing of all fittings, appurtenances, curves and intersections
- All proposed service lines and fire hydrants
- Side profile view showing all sewer and utility crossings, the proposed water main, minimum cover, waterline stationing, and fittings for transitions and invert elevations of conflicting utilities
- Pipe curve data
- Detail views as necessary for transitions, etc.
- Label and dimensioning for proposed water main
- Show all easement and deeds to be dedicated to the District
- Curbs, existing and/or proposed curbs shall be identified with dimensions from the street centerline shown
- Existing and proposed improvements shall be shown including but not limited to, curb and gutter, edge or pavement, power poles, driveways, sidewalks and fences
- All submitted plans shall be civil engineering drawings not an architectural or landscape drawing

1.5.3 Plans and profile sheets in digital format

- Be in NAD 1983 state plan zone 5 coordinates
- Be to actual scale
- In decimal degrees – not architectural units
- The main should not be broken for aesthetic purposes (i.e., gaps at valves, gaps for text) the main should be continuous and broken only at intersections
- Facility points (valves, fire hydrants, blow offs, etc.) should be snapped to the line or the end point of the main line
- The acceptable format for digital submissions shall be AutoCAD's (DWG) file type

1.5.4 District design criteria for new water system improvements include the following:

- Water mains shall be five (5) feet from face of curb, five (5) feet horizontal, and one (1) foot vertical separation from other utilities. For sewer, see Standard Drawing No. 189.
- Project shall have two (2) points of connection/sources of supply.
- All water mains must loop (no dead ends).
- Valves shall be located at right-of-way and property line prolongations.
- High points shall have air/vacuum release valves.
- Low points blow offs or inverts.
- All fittings shall have restrained joints; extend restrained joints for at least 2 pipe joints on both sides of the fitting.
- Fire hydrants to be located on the same side of the street as the main wherever possible. Blue dots to be placed six (6) inches from centerline toward fire hydrant.

- Hydrant runs will be fully restrained from valve to bury.

A plan layout shall also be provided in 300 scale per Section 1.5.1 showing all property lines and approved water line locations.

Plans for private contract work shall be checked by the District and shall be approved by the District prior to starting work.

The plan-checking fee of five hundred dollars ($500.00 minimum), or up to one hundred and fifty dollars ($150.00) per sheet, must be paid to the District prior to the first plan check. The remaining plan checking fee must be paid prior to further plan checking. Plan checking costs in excess of the deposit must be paid prior to picking up the approved plans.

Plans submitted to the District for approval shall have thereon the name, phone and registration number of the private engineer who prepared the plans and the name and phone number of the engineering firm and the name, phone and registration number of the private engineer under whose direction the plans were prepared and the name and phone number of the developer. Such plans shall be free of advertising, insignia, labels, emblems, seals, or other markings not relevant to the work. Plans are to be presented in a neat, concise, and professional condition.

Upon the approval of the plans, the original tracings and a predetermined number of sets of the plans must be returned to the District. Approval of plans by the District will not relieve the Applicant or private engineer of any responsibility because of errors in the plans either by commission or omission. Such errors, when brought to the attention of the private engineer by the District, shall be promptly remedied as herein provided.

After plans have been approved and filed, changes may be made in the plans only upon approval of the District. In order to obtain such approval, the private engineer shall first submit two sets of prints showing the proposed changes. After approval of changes, two sets of Mylar and a digital copy of the approved revised plans shall be submitted to the District.

If construction operations are not started within twelve (12) months of the date of approval, the plans must be re-submitted for plan check prior to construction. The re-submitted plans will be checked for conformance with the criteria current at the time of re-submittal. The cost of rechecking plans will be paid by the developer as determined in section 1.5.

The private engineer shall prepare "RECORD DRAWINGS" on prints of the latest revised plans showing clearly all changes in location and elevation of constructed improvement prior to the project being considered complete. These drawings shall show the configuration, manufacturer, and date of manufacture of all valves.

The private engineer shall submit the "RECORD DRAWINGS" to the District Manager for final inspection and approval. Upon receipt of such approval, the private engineer shall correct and deliver the "as-built" Mylars and digital plans to the District Manager not later than thirty (30) days after receipt of such approval. If there are multiple pages to the As-Builts, there should be one over all drawing with water facilities.

1.6 EASEMENT DOCUMENTS REQUIREMENTS

All easement documents are to be prepared and submitted on the District's approved format and provided along with plans submitted for plan check review per Appendix B and C.

Prior to the approval of water system plans, the easement documents must be approved as to form by the District.

Grant deeds for easements are required to be executed by the grantor, resubmitted to the District, and have the Affidavit of Acceptance by the District attached to same prior to the tie-in of the water system.

All required easements will be recorded and a Title Insurance Policy for same in the minimum amount of $25,000.00 provided to the District.

1.7 COMPLIANCE WITH LAWS AND REGULATIONS

The Contractor shall keep himself informed of all laws, ordinances, and regulations in any manner affecting those employed on the work, or the materials used in the work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. The Contractor shall at all times and at no expense to the District observe and comply with, and shall require all his agents, employees, contractors, and subcontractors to observe and comply with all such applicable laws, ordinances, regulations, orders, and decrees in effect or which may become effective before completion of the work.

Unless otherwise explicitly provided in these specifications, all permits and licenses required by other agencies necessary to the prosecution of the work shall be secured by the District.

1.8 PROTECTION OF PERSONS AND PROPERTY

The Contractor shall provide for the protection of all persons and property as herein specified. Attention is called to "General Industry Safety Orders" and "Construction Safety Orders" of the California State Department of Industrial Relations, Division of Industrial Safety, to which the Contractor is required by law to conform. The Contractor shall provide himself with copies of these rules and orders. To the extent applicable, the Contractor shall also comply with the provisions of the Safety and Health Regulations for construction promulgated by the Secretary of Labor under Section 107 of the Contract Work Hours and Safety Standards Act, as set forth in Title 29 C.F.R.

The Contractor shall take all necessary measures to protect the work and prevent accidents during the construction. The contractor shall provide and maintain sufficient night lights, barricades, guards, temporary sidewalks, temporary bridges, danger signals, watchmen, and necessary appliances and safeguards to properly safeguard life and property. The contractor shall also protect all excavations, equipment, and materials with barricades and danger signals so that the public will not be endangered.

The Contractor shall so conduct his operations as to offer the least possible obstruction and inconvenience to traffic, and shall have under construction no greater amount of work then can be handled properly with due regard for the rights of the public. All traffic shall be

permitted to pass through the work with as little delay and inconvenience as possible unless otherwise authorized by the County of Los Angeles or the City of Santa Clarita.

Convenience of abutting property owners shall be provided for as far as practicable. Convenient access to mailboxes, driveways, houses, and buildings adjoining the work, as well as fire hydrants, shall be maintained and temporary approaches to intersections shall be provided and kept in good condition. When a section of surfacing, pavement or a structure has been completed, it shall be opened for use by traffic at the request of the District. In order that unnecessary delay to the traveling public may be avoided, the Contractor, when so ordered, shall provide competent flagmen whose sole duty shall consist of directing traffic either through or around the work.

Care should be taken to preserve and protect all public and private property and facilities in and around the work site. The Contractor shall be liable for the complete cost of repairing or replacing all such property and facilities damaged or destroyed during the progress of the work.

No valve or other control on the existing system shall be operated for any purpose by the Contractor unless said operation is under the direct supervision of District personnel. Any operation of District facilities without direct supervision of District personnel will be cause for the District to stop work on the project and will result in the issuance of an unauthorized use of water fine to the Contractor or Developer responsible. Any damage resulting from said operation will be repaired at the Contractor's expense. Otherwise, the District will operate all valves, hydrants, blow-offs, and curb-stops on the existing system. The District Inspector shall be notified 48 hours prior to the construction of tie-ins to existing lines.

1.9 PUBLIC NOTICE

- Notice of Starting Work:
  The Contractor shall provide and distribute to all occupants along the streets of the proposed work, printed notices 8-1/2 inches x 11 inches in size, with wording similar to that showing on the following page.

- Notice of Temporary Shutdown:
  Notice shall be given for temporary interruption of service to existing customers no later than forty-eight (48) hours prior to said interruption. Said note to be printed on 8-1/2 inches x 11 inches paper in format to be approved by the District prior to distribution.

(Example)

NOTICE

WITHIN THE NEXT FEW DAYS, WORK WILL BE STARTED ON THE INSTALLATION OF A WATER SYSTEM IN YOUR STREET.

The work may cause some inconvenience but will be of permanent benefit.

We shall appreciate your cooperation in the following matters:

1) Please be alert when driving or walking in the construction area.

2) Tools, materials, and equipment are attractive to children. For the safety of children, please keep them away.

3) Please report all inconvenience to the Foreman on the job, or call the office at the number given below.

The work is being performed by:
(Insert firm name, superintendent's name, address, and telephone number in this space.)

We will endeavor to complete this work as rapidly as possible and with a minimum of inconvenience to you.

_____
(Signed) Name of Firm

1.10 MATERIALS AND WORKMANSHIP

Unless otherwise specified, all materials incorporated in the work shall be new. Materials not otherwise designated by detailed specifications shall be of the best commercial quality, suitable for the purpose intended and approved by the District.

All workmanship shall be in conformance with the best trade practices. Particular attention shall be given to the appearance of exposed work. Any work or workmanship not conforming to the best practices shall be subject to rejection.

The District practices zero tolerance for graffiti, and it is the Contractor's responsibility to protect and ensure facilities are graffiti-free until acceptance.

1.11 PROJECT CLEAN-UP

An orderly job shall be maintained at all times. Tools, rubbish, and materials shall be picked up and stored in a workmanlike manner at all times. All material, etc., used during construction shall be removed from the vicinity of the completed work. Surfaces shall be returned to a condition acceptable to the District. All excess material shall be disposed of as directed by the District or removed from the work site.

1.12 GUARANTEE

All parts of the work shall be guaranteed against defective materials or workmanship and against settlement of backfill and any resulting damage to resurfacing for a period of one (1) year from the date of acceptance by the Board of Directors.

The expiration of the one (1) year guarantee period does not limit the developer's liability for work, which is done contrary to the plans and specifications.

When such defect or settlement is discovered requiring repairs to be made under this guarantee, all such repair work shall be done at no expense to the District within ten (10) days after written notice has been given by the District. Should the Contractor or Applicant fail to repair the work as directed within ten (10) days thereafter, the District may make the necessary repairs and charge the Developer or Applicant with the actual cost of all labor and materials required.

In the event such defect or settlement is discovered requiring immediate corrective action to be taken in the opinion of the District General Manager, the District shall have the right to repair or replace same and to take whatever other action the District deems appropriate to correct same and to charge the Developer with the actual cost incurred by the District.

1.13 FINAL COMPLETION

As a necessary condition to, and prior to District recognition of final completion of the work, the Applicant shall submit in duplicate to the District:

- An itemized cost breakdown of the work including cost per foot, and total footage installed, for each size and type of pipe installed; cost per each and total number of fire hydrants installed; and cost per each and total number installed for each size of service lateral and meter installed
- A bill of sale conveying, at no cost, to the District all facilities installed
- All easement documents recorded and title insurance policies issued
- A letter requesting a final walk-through or punch list and the completion of all items on said punch list

1.14 EQUAL OPPORTUNITY

During the performance of the public contract, the Contractor agrees as follows:

The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, gender, ancestry, national origin, actual or perceived sexual orientation, marital status, age or disability. The Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, gender, ancestry, national origin, actual or perceived sexual orientation, marital status, age or disability. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of any or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in a conspicuous place available to employees and applicants for employment, notices setting forth the provisions of this Equal Opportunity clause.

The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor; state that all qualified applicants will receive consideration for employment without regard to race, color, religion, gender, ancestry, national origin, actual or perceived sexual orientation, marital status, age or disability.

The Contractor shall send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding a notice advising the said labor union or worker's representative of the Contractor's commitments under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

When applicable to the project, the Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965 and of the rules, regulations, and relevant orders of the Secretary of Labor.

- The Contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965 and by the rules regulations, and orders of the Secretary of Labor or pursuant thereto and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

- In the event of the Contractor’s noncompliance with the Equal Opportunity clause of this Section or with any of the said rules, regulations, or orders, the Contract may be declared ineligible for further Government federally assisted construction contracts in accordance with procedure authorized in Executive Order No. 11246 of September 24, 1965 or by rule, regulations, or order of the Secretary of Labor, or as provided by law.

- The Contractor will include this Equal Opportunity clause in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965 so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such

action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions including sanctions for noncompliance; provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

The Equal Opportunity requirements of Executive Order No. 11246 are not applicable to federally assisted contracts:

- Which do not exceed ten-thousand dollars ($10,000)
- Where work is to be performed entirely outside the United States and no recruitment of workers within the United States is involved; or
- Which are specifically exempt by the Secretary of Labor.

1.15 TRENCH SHORING AND SHEETING

In the event the work will entail construction of any trench or trenches or excavation or excavations that will be five (5) feet or deeper and into which a person will be required to descend, prior to commencing such construction, the Contractor shall obtain a permit from the California Division of Industrial Safety pursuant to Section 6501 of the California Labor Code. Said permit shall be posted at the job site prior to opening of the excavation. A copy of said permit shall be provided to the District prior to the start of construction or excavation requiring same.

In addition, and with respect to Public Contract work involving a Public contract price in excess of twenty-five thousand dollars ($25,000.00), if any such trenches or excavations will be entailed in the work, prior to commencing such construction, the Contractor shall also submit to the District for District approval a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such plan varies from the shoring system standards established in Title 8, Article 6, California Division of Industrial Safety Orders, the plan shall be prepared at Contractor's expense by a registered civil or structural engineer.

1.16 PRESERVATION OF MONUMENTS

All historical monuments, bench marks, survey marks, and stakes shall be preserved. If such monuments are damaged or destroyed during construction, they shall be repaired or replaced at no expense to the District.

1.17 DUST CONTROL

The Contractor shall perform dust control operations, in an approved manner, whenever necessary including weekends and holidays or when directed by the Owner’s representative, even though other work on the project may be suspended. Dust control shall be generally accomplished by the use of water; however, the use of approved means may be used when necessary to keep dust in the air to a minimum.

The Contractor shall submit dust control plans/procedures for managing/reducing dust and PM10 emissions in accordance with these specifications

The Contractor's methods of controlling dust shall meet all air pollutant standards as set forth by Federal and State regulatory agencies and be in compliance with the South Coast Air Quality Management District Rule 403 – Fugitive Dust, including Best Available Control Measures for High Wind Conditions as contained in Rule 403. Water shall also be sufficient to prevent dust in amounts damaging to property, cultivated vegetables, domestic animals, or as to cause a nuisance to persons living in or occupying buildings in the vicinity.

Dust nuisance during construction shall be abated by cleaning and sweeping paved areas and repeated wetting of exposed soils. During periods of high winds (25 mph or higher) earthmoving types of tasks shall be terminated.

Dirt hauled offsite in trucks shall be watered and covered to reduce construction related dust. All haul trucks shall take measures to prevent haul materials from spilling onto public streets as outlined in State Vehicle Code 23114.

The work shall be conducted to provide control as follows:

- No fuel shall be used nor shall any work be conducted which shall emit into the atmosphere any smoke, which is defined as equal to Ringelmann No. 2, or darker.

- No work shall be conducted which will emit into the atmosphere any flying dust or dirt which is hazardous to humans or which might constitute a nuisance. Any dirt, dust, or mud that accumulates on streets is to be removed by the end of each work day.

1.18 SANITATION

Temporary chemical toilet facilities shall be provided for the use of all workmen. Each toilet building shall be maintained in a sanitary condition at all times, and at the completion of the construction, shall be removed from the site.

Pure, cool drinking water with individual drinking cups or a sanitary bubbler fountain shall be available at all times.

1.19 SHOP DRAWINGS

The Contractor shall submit to the District four (4) copies of any shop and erection drawings required by the plans or specifications. The District will, within 2-4 weeks, return two copies to the Contractor marked "Disapproved", "Approved", or "Approved as Revised". In the last case, all revisions will be clearly shown on the returned copy, which shall be considered as an approved drawing, and only drawings or prints, which are approved, shall be used for manufacture.

Revisions shown on the shop drawings shall be considered as changes necessary to meet the requirements of the plans and specifications and shall not be taken as the basis of claims for extra charges. When delay is caused by the re-submission of shop drawings, Contractor shall not be entitled to any damages or extension of time on account of such delay. The corrections on prints marked "Approved as Revised" shall be made on the originals as soon

as practicable and new prints submitted. District's approval shall be considered as applying only to the general arrangement, and such approval of the criticism of detail shall not relieve the Contractor from entire responsibility for correctness of details and dimensions. Contractor shall correct any misfits due to any errors in the drawings. Any fabrication or other work performed in advance of the receipt of approved shop drawings shall be done entirely at the Contractor's expense.

1.20 CONTRACT BONDS

- Public Contracts
  Simultaneously with the execution of the Agreement, the Applicant shall furnish to the District bonds, in a form acceptable to the District, insuring performance of and full payment for the work to be performed pursuant to the Agreement, Contract, and Specifications, in an amount equal to one hundred percent (100%) of the contract price. The bonds, commonly referred to as Performance and Payment Bonds, respectively, shall be issued by a surety or sureties acceptable of the work by the District and the presentation of satisfactory evidence that all workers and subcontractors on the work have been paid. The Performance Bond shall be released upon expiration of the guarantee period, one (1) year after the District's acceptance of the work.

- Other Contracts
  The Contractor shall furnish to the County of Los Angeles any bonds specified in the approval document for the improvements issued by the applicable jurisdiction. The District shall notify the appropriate agency upon final completion of the work to allow the agency to release construction bonds held to the extent the agency's policy dictates

1.21 POTHOLING

The Contractor shall pothole utility crossings and expose all joining points to the existing systems for verification of horizontal and vertical locations prior to submitting any shop drawings. The Engineer will notify the Contractor how to modify the design, if necessary, in order to properly join up with the existing facilities.

The Contractor shall collect and provide to the Engineer for review the top of pipe elevation, the bottom of pipe elevation, the coordinates (northing and eastings), the outside diameter of pipe, the pipe material, and the condition of pipe.

2.0 PIPELINE MATERIALS

2.1 GENERAL

The work of this section shall include furnishing and installing all pipe, fittings, joints, together with all material, equipment, labor, transportation, supervision, and other items of expense necessary for or incidental to the installation of pressure water mains and appurtenances in accordance with the plans and specifications.

All materials shall be carefully examined at the job site by the Contractor and Inspector. The pipe and appurtenances shall be new.

All pipe, fittings, joints, valves and appurtenances shall be designed to handle the expected internal pressure and external load requirements for the specific job constraints and application including provision for testing and long service life. Unless otherwise approved by the District all new main constructions shall be as follow, in accordance with these specifications:

a. Below ground mains up to 30 inches in nominal internal diameter shall be constructed using ductile iron.

b. For below ground mains over 30 inches in nominal internal diameter the pipeline shall be constructed using cement mortar lined and coated welded steel pipe.

c. All above grade piping shall be cement mortar lined and epoxy coated welded steel pipe shop coated in accordance with painting section (3.9).

d. PVC pipe shall not be used unless approved by the District.

e. Thickness of fittings shall be equal to or greater than that of adjacent piping.

f. All drain lines 2" and smaller are to be sch 80 p.v.c. bigger than 2" is to be c-900 or SDR 35.

2.2 SCOPE

This section defines the materials to be used for pipelines, fittings, joints, and appurtenances.

2.3 CEMENT MORTAR LINED AND COATED STEEL PIPE

Cement mortar lined and coated steel pipe (CMLC Pipe) and fittings shall be furnished and installed in accordance with the plans. Pipe, including special fittings and joints, shall be manufactured in accordance with AWWA C200, C205, C206. and Fed. Spec. SS-P-385 except as further specified in these specifications.

The pipe shall consist of the following component parts: a welded sheet steel or plate steel cylinder with joints formed integrally with the steel cylinder or with the steel joint rings welded to the ends; a self-centering bell and spigot joint with a circular pre-formed rubber gasket so designed that the joint will be watertight under all conditions of service.

Steel for cylinders shall be hot-rolled low carbon steel sheets conforming to ASTM A-570 Gr 33 or 36. The minimum acceptable yield strength of the steel shall be 33,000 psi and the minimum wall thickness of any size pipe shall be 10 gauge. Above grade pipe or pipe in vaults shall be minimum standard weight thickness. Diameter indicated or specified shall be net inside diameter plus or minus one-quarter (1/4) inch after cement mortar-lining. Type II cement shall be used for all mortar-linings and coating.

For the following nominal inside diameters, the lining thickness and minimum cement-mortar coating thickness shall be as follows:

	LINING		COATING	
Nominal Pipe Size (inches)	Thickness (inches)	Tolerance (inches)	Thickness (inches)	Tolerance (inches)
4 – 10	¼	-1/32+1/32	1/2	+1/8

12 – 18	3/8	-1/16+1/8	5/8	+1/8
20 – 44	½	-1/16+1/8	3/4	+1/8
45 – 58	¾	-1/16+1/8	1	+1/8
60 and over	¾	-1/16+1/8	1 1/4	+1/8

Cathodic protection for CMLC Pipe is required as specified.

2.3.1 Joints

- Rubber gasket joints shall conform to Fed. Spec. SS-P-385 and made in accordance with Standard Drawing No. 115 for plain end pipe.
- Lap Welded Field Joints. Where indicated on the drawings, lap joints shall comply with AWWA C206 and as shown on Standard Drawing 190
- Flanged Ends. Pipe section ends required to be fitted with flanges for special fittings and connections, as shown on the drawings, shall utilize flanges, which comply with the requirements of AWWA C207 Class "D" for steel hub flanges. No plate flanges shall be used. All flanged spools shall be positioned and tack-welded in place prior to completing the weld. Flange bolts installed underground shall be either galvanized or cadmium plated and coated in accordance with AWWA C203. Gaskets for flanged joints shall be one sixteenth (1/16) inch thick for up to twenty (20) inch pipe, one eighth (1/8) inch thick for pipe larger than twenty (20) inches. Rubber gaskets shall not be used for flanged connections. Nuts and bolts shall have hex heads.

2.3.2 Fittings for steel pipe

All bends, elbows, tees, crosses, reducers, and other fittings for mains twelve (12) inches and smaller shall be either Class 150 or Class 250 Cast Iron Flanged Fittings and shall conform to AWWA Standard C110 and shall be cement mortar lined per AWWA Standard C104; or epoxy lined as approved by the District. Fittings for mains larger than twelve (12) inches may be fabricated in accordance to AWWA Standard C208. Alternate fittings and adapters may be used where conditions restrict or make impractical the use of cast iron fittings or adapters. The use of any alternative will require the prior approval of the District.

2.4 DUCTILE IRON PIPE

Ductile iron pipe shall be designed in accordance with the latest revision of ANSI/AWWA C150/A21.50 for a minimum Class 53 DIP or class 350 (or project requirements, whichever is greater) rated working pressure plus a 100 psi minimum surge allowance; a 2 to 1 factor of safety.

Ductile iron pipe shall be manufactured in accordance with the latest revision of ANSI/AWWA C151/A21.51. Each pipe shall be subjected to a hydrostatic pressure test of at least 500 psi at the point of manufacture.

Pipe shall have standard asphaltic pipe coating on the exterior and a double thickness cement mortar lining on the interior in accordance with ANSI/AWWA C104/A21.4, of latest revision. Manufacturers' certificates indicating that pipe has been double lined must be submitted with each pipe delivery.

The class or nominal thickness, net weight without lining, and name of manufacturer shall be clearly marked on each length of pipe. Additionally, the letters "DI" or "Ductile" and the country where cast shall be cast or stamped on the pipe.

2.4.1 Joints

All pipe shall be furnished with either Push-On Type Joints, such as "Tyton" or Mechanical Joints. Joints shall be in accordance with ANSI/AWWA C111/A21.11, of latest revision, and be furnished complete with all necessary accessories. All rubber gaskets shall be EPDM.

2.4.2 Mechanically restrained joints

Restrained joints shall be provided at all fittings: tees, crosses, reducers, bends, caps, plugs, and valves such that the pipe is fully restrained for a minimum of two full pipe lengths in all directions unless otherwise indicated on the plans.

2.4.3 Fittings for ductile iron pipe – domestic and/or District standards

Fittings shall be ductile iron. Ductile iron fittings shall conform to the latest revisions of either ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53. Fittings shall have a standard asphaltic coating on the exterior and a double thickness cement mortar lining on the interior in accordance with ANSI/AWWA C104/A21.4, of latest revision.

All fittings and accessories shall be furnished with Mechanical Joints in accordance with ANSI/AWWA C111/A21.11, of latest revision. Restraining glands will be required on all M.J. fittings per section 2.4.2. The design of all connections between ductile iron pipe and other types of pipe shall be submitted to the District for approval prior to ordering the connection materials.

Twist-off nuts, sized the same as the tee-head bolts, shall be used to ensure proper activating of restraining devices. The gland shall be manufactured of ductile iron conforming to ASTM A536-80. The retainer-gland shall have a pressure rating equal to that of the pipe on which it is used through 14” with a minimum safety factor of 2:1. Gland shall be Megalug by EBBA Iron, Inc. or Ford not Ford “I” (Import), Ford Domestic is ok, or approved equal.

2.5 CATHODIC PROTECTION

The developer’s engineer shall design a cathodic protection system in accordance with the recommendations put forth in the project geotechnical investigations and these Standards and Drawings.

3.0 PIPELINE INSTALLATION

3.1 SCOPE

This section covers the installation of pipelines and appurtenances, including trenching, laying, backfill, compaction, restoring street surfaces, and clean-up.

3.2 SHOP DRAWINGS

Proposals for alternate methods or materials, special conditions, or the like, require approval of the District; detailed shop, fabrication, or erection drawings shall be provided by the Contractor. These drawings shall be submitted to the District for approval to accommodate the rate of construction in accordance with Section 1.19. For steel pipe and fittings the contractor shall submit material lists containing layout schedules, fabrication details, dimensions, and protective coatings to be used prior to pipe fabrication for the Districts approval. The contractor is responsible for field verifying dimensions and providing all make up pipe required to complete the work at no additional cost to the District.

3.3 CONTROL OF WATER

The Contractor shall furnish, install, and operate all necessary machinery, appliances, and equipment to keep excavation sufficiently free from water during construction of the work to permit proper laying and jointing and shall dispose of water so as not to cause injury to public or private property or to cause a nuisance or a menace to the public. All water shall be discharged in accordance with Regional Water Quality Control Board requirements.

3.4 GENERAL

Excavated material suitable for backfilling shall be piled in an orderly manner a minimum of two (2) feet from the excavated banks to avoid overloading and to prevent slides or cave-ins. Such grading shall be done as may be necessary to prevent surface water from flowing into trenches. Any water accumulating therein shall be removed by pumping or other approved means. Such sheeting and shoring shall be installed as may be necessary for protection of the work and safety of personnel in accordance with OSHA requirements. Sheeting and shoring shall be in accordance with Section 1.15. Excavations in earth and in rock shall be carried to six (6) inches below bottom of pipe. Bell holes and depressions for couplings, valves, and the like shall be excavated the same distances below these installations. The materials excavated shall be used in the backfill or removed and disposed of by Contractor as required by Engineer and as specified at no additional cost to the District.

The overnight use of trench plates will be allowed only upon written request by Contractor or Developer subject to approval by the District. Trench plates shall be nonskid, a minimum of one-inch thick, and rated for H.D.-20 loading or greater. The excavation beneath the plate shall be shored, and the plates must be either pinned to the existing surface and ramped with temporary asphalt or counter-sunk flush to the surface. If two or more adjoining plates are to be used, they shall be tack-welded together. In the event that pending inclement weather or other conditions as determined by the District may adversely affect the use of plates, said plates shall be removed, and the excavation shall be backfilled, and the surface secured with temporary asphalt. The placement of trench plates shall be in accordance with the requirements of and meet the approval of the governmental agencies having jurisdiction.

Unless otherwise approved by the District prior to the beginning of construction, the length of open trench shall not exceed 500 feet including excavation, pipeline installing, and backfill in any one location. Minimum trench width shall be as required for proper assembly and joint inspection, but in no case less than twelve (12) inches greater than nominal pipe diameter. Maximum allowable width of trench for all pipelines measured at the top of the

pipe shall be the outside diameter of the pipe (exclusive of all bells or collars) plus sixteen (16) inches, and such maximum shall be inclusive of all timbers. All open trenches will be backfilled to the satisfaction of the District Inspector by the end of each workday. (See Standard Drawing No. 100 for detail)

3.4.1 Trench excavation shall be per Standard Drawing No. 100

3.4.2 Placing of pipe zone bedding and backfill material

All pipe zone backfill from a depth of six (6) inches below the bottom of the pipe to twelve (12) inches above the top of the pipe shall be imported fill sand having a minimum sand equivalency of SAE30. The six (6) inch bedding layer shall be placed and compacted to a minimum of 90% of the maximum density of the material at optimum moisture content. The pipe shall then be installed after which the remaining imported pipe zone material up to twelve (12) inches above the top of the pipe shall be placed and compacted in lifts, if necessary, to said relative compaction of 90%.

3.4.3 Backfilling pipe trenches above the pipe zone

Backfill in pipe trenches above the pipe zone shall be a structural fill accomplished by filling and compacting the trench in lifts of depths that will permit obtaining a minimum compaction of 90% of the maximum density of the material at optimum moisture content.

All backfill materials shall be placed in such a manner as to not disturb the pipe or damage its coating. Impact, free fall, hydro hammer, or similar compaction equipment shall not be used for compaction in water system trenches. Slurry or cement-treated backfill material will not be allowed in trench with the exception of cross gutters, etc. as determined by the District Inspector or by written permission of the District.

3.4.4 Trench backfill compaction tests

The Developer will retain the services of an independent soils firm having a State of California licensed laboratory to make soils compaction tests at any point or points or depths as the District sees fit after the trench is backfilled. The minimum number of tests shall be shown on the plans. In the event any of said tests indicate that the trench compaction is less than the compaction above described, the Contractor will be required, at his own expense, to remove placed trench material in the zone or zones directed by the District and to then replace and compact said trench material to meet the requirements of this specification. Retesting at the Contractor's expense will be required on all recompacted material. Unless otherwise noted, refer to NCWD General Note 17 for testing intervals.

- Trench Width
  See Standard Drawing No. 100

- Depth of Pipe
  See Standard Drawing No. 100

- Location of Existing Facilities
  Contractor shall excavate and locate existing utilities and culverts prior to excavation. All pavements shall be cut or sawed a minimum of eight (8) inches wider than the trench prior to trenching.

3.5 CHANGES IN LINE AND GRADE

The alignment of the pipeline is shown on the plans.

In the event obstructions not shown on the plans are encountered during the progress of the work, which will require alterations to the plans, the Developer's Engineer shall submit proposed changes to the District for approval. The Contractor shall not make any deviation from the specified line or grade without prior approval by the District.

The Contractor is responsible for verifying points of connection and joins for all items in this contract before starting any construction. All facilities must properly join and connect to improvements that exist at the time the point of connection is constructed. The Contractor shall notify the District's construction manager of any discrepancy between plans, specifications, surveys and the site conditions prior to start of work and shall obtain a clearance from the construction manager regarding resolution of the discrepancies prior to commencement of any work. It is the Contractor's responsibility to coordinate its work with the concurrent work on the site, accommodate other contractors, and complete facility connections in conformance with all governing agency regulations and the directions of the District.

3.6 HANDLING AND STORING MATERIALS

During storage, handling, and transporting, every precaution shall be taken to prevent injury to pipe. Pipe shall be handled only by means of fabric slings or other approved methods for the pipe used.

Valves, fittings, hydrants, and other accessories shall be loaded and unloaded by lifting with hoist or skidding, so as to avoid shock or damage. Under no circumstances shall such materials be dropped. Any disapproved materials shall be removed from the job site immediately. In distributing the material at the site of work, each piece shall be unloaded opposite the place where it is to be laid in the trench. Steel and ductile iron pipe shall be so handled that the lining and coating will not be damaged. If, however, any part of the coating is damaged, repair shall be made by the Contractor at his expense to the manufacturer's specifications.

3.7 INSTALLING PIPE

The Contractor is required to coordinate all installation of the various utilities so that the storm drain and sewer are constructed prior to the water main installation. The Contractor shall, after excavating the trench and preparing the proper bedding for the pipe, furnish all necessary facilities for properly lowering and placing sections of the pipe in the trench without damage and shall properly install the pipe. The sections of pipe shall be fitted together correctly and shall be laid true to line and grade in accordance with elevations established by the Engineer. In the absence of curb and gutter, construction stakes shall be set by a registered civil engineer or licensed land surveyor indicating line and grade and location of all valves and appurtenances. The maximum stake interval shall be fifty (50) feet. The full length of the barrel of the pipe shall have a uniform bearing upon six (6) inches of bedding material, but if the pipe has a projecting bell, suitable excavation shall be made to receive the bell, which shall not bear on the subgrade. The requirement for closely fitting

the bottom of the pipe to the bedding material for the width shown on the drawings will be strictly enforced.

Restrained joints are required for pipes laid on slopes 10% or greater. Pipe installed on slopes greater than 33% shall have slope anchors in accordance with Standard Drawing 102.

Pipe shall be laid uphill. Pipe shall be true in alignment, both vertical and horizontal, and shall not show any undue settlement after laying. No pipe shall be laid which is damaged, cracked, checked, or spalled, or has any other defect deemed by the District to make it unacceptable. All such sections shall be permanently removed from the work.

At all times when the work of installing pipe is not in progress, all openings into the ends of the installed pipelines shall be kept tightly closed with suitable bulkheads to prevent the entrance of animals, foreign materials, and water.

The pipe trench shall be kept free from water at all times, and the Contractor shall take all necessary precautions to prevent the pipe from floating due to water entering the trench from any source, shall assume full responsibility for any damage due to this cause, and shall, at his expense, restore and replace the pipe to its specified condition and grade if it is displaced due to floating or due to any other reason.

All pipelines adjoining concrete structures shall have a flexible joint at eighteen (18) inches from the face of such concrete structures.

Before lowering and while suspended or standing vertically at trench side, the pipe shall be inspected for defects. Any defective, damaged, or unsound material shall be rejected.

3.7.1 Ductile iron

Pipe shall be laid true to line and grade. Pipe shall be installed in accordance with AWWA C603. All pipe on curves shall be assembled straight and laid over. The maximum joint deflection shall be herein before specified. The rubber rings shall be checked after installation with a gauge supplied by the manufacturer to ensure that the ring is properly seated. If, for any reason, the ring is not properly seated, the joint shall be pulled apart and satisfactorily remade.

Encase all ductile iron pipe with polyethylene encasement. At all locations where pipe is to be encased or cradled in concrete, the pipe shall be wrapped with a minimum of two (2) layers of 8-mil polyethylene in such a manner that the concrete does not form a bond with the pipe. Polyethylene film shall be manufactured of virgin polyethylene material conforming to the material requirements of the latest revision of ANSI/AWWA C105/A21.5 and the following requirements of the latest revision of ASTM Standard Specification O-2148, Polyethylene Plastics, Molding and Extrusion Materials:

Class:	A (Natural/Clear Color)
	C (Black)

Polyethylene film shall have a nominal thickness of 0.008 in. (8 mils) or 0.010 in. (10 mils) if specified. The minimum tolerance thickness shall not exceed 10% of the normal thickness.

Locating wire shall be installed with all pipe. The wire shall be insulated, 12-gauge copper, with HMWPE insulation and shall be installed as detailed on Standard Drawing No. 100. The wire shall be placed on the top of the pipe and the centerline of the pipe. The wire shall be fastened securely at each joint or fitting with an eight (8) inch length of two (2) inch wide duct tape or other approved method. Locating wire shall be located on the outside of the poly wrap.

Soil Testing and Evaluation: Representative soil testing shall be conducted for evaluating potential soil corrosivity for ductile iron pipe. Soil corrosivity testing shall be done in conformance with the Soil Evaluation System described in Appendix A of the latest revision of the ANSI/AWWA C105/A21.5 standard. Soil resistivity testing shall be done in conformance with ASTM G187, latest revision. Corrosion control methods shall be consistent with those found in ANSI/AWWA C105/A21.5, latest revision or the Design Decision Model, both of which are specific to ductile iron pipe.

3.7.2 Steel pipe

Jointing sections of welded steel pipe with rubber gasket joints shall be accomplished by placing the rubber gasket in the spigot groove before the section is lowered into the trench and lubricating the bell end of the last section laid with an approved lubricant to reduce the friction of the entering gasket. The spigot end shall then be inserted in the bell end of the pipe in place and forced into position without injury to the pipe or gasket. Care shall be taken to ensure that the spigot is fully entered into the bell and a "feeler" gauge used to check the position of the rubber gasket. Just prior to joining the two ends together, each end of pipe shall be "buttered" with cement mortar in such a manner and in sufficient quantity to completely fill the space between the respective mortar linings. The mortar shall be composed of one (1) part of portland cement of the same type used in the lining and coating, two (2) parts of sand by volume, and one-eighth (1/8) part fire clay with sufficient water added to give the mixture a stiff consistency. The mixture shall not be held over one (1) hour, then shall be discarded and no re-tempering by addition of water shall be allowed. Epoxy concrete adhesive shall be applied to the metal prior to coating of field fabrications or minor repairs on both coating and lining that the District may allow. After the jointing is completed, the pipe interior shall be swabbed to remove all excess mortar by drawing an approved type swab or squeegee through the pipe. After the field joints have been completed and inspected, the joint exterior shall be thoroughly cleaned.

Pipe bonding devices to provide electrical continuity shall be provided in accordance with the approved plans and pipe manufacturer’s recommendations.

The outside joint recess shall be grouted with cement mortar after a fabric diaper has first been placed around the joint and tightened securely to prevent leakage while the mortar is being poured. The diaper shall be made of heavy-duty polyethylene fabric or other approved material of sufficiently close weave to prevent cement loss from the mortar. The fabric shall be hemmed on each edge and shall contain a metal strap within each hem sufficiently longer than the circumference of the pipe to allow a secure attachment of the diaper to the pipe. The diaper shall be centered on the joint and positioned to provide a mortar coating of the pipe ends equal in thickness to the mortar coating on the pipe. The mortar shall be the same as for the interior joints except that it shall contain sufficient water to produce a creamy consistency. Prior to placing the mortar, the joint and diaper shall be moistened with water. The joints shall be poured and rodded or manipulated by hand to remove air bubbles from one side only until the mortar comes up to the top of the diaper on

the opposite side. The mortar shall completely fill the outside annular space between the ends of the pipes around the entire circumference of the joint. If required by the District, the diaper shall be removed and the grouted joint inspected after the adjacent pipe sections have been sufficiently covered with backfill material to bring the pipe to a normal in-place temperature. The joint shall be repaired, if necessary, and given a heavy coating of Hunt, or equal, curing compound at the earliest practicable time after the mortar has hardened sufficiently.

Field welded joints shall be in conformance with AWWA C206, ANSI B31.3 and Standard Drawing 190.

Butt-strap closure joints, in accordance with Standard Drawing 191, shall be completed in the trench after the pipe has been laid to the alignment and grade shown on the Drawings. They shall be field welded by full-circumferential fillet welds or one of the edges may be shop welded and the other field welded. Welding shall be done in the same manner as specified for welded joints.

3.8 FOUNDATION ROCK

Where ground water is encountered or the native material does not afford a solid foundation for pipe subgrade as specified herein, the Contractor shall excavate to such depths below the subgrade as the District decides is necessary and shall construct a stable base by placing foundation rock upon which pipe bedding can be prepared. Foundation rock shall be three-quarter (3/4) inch aggregate base material or crushed rock in accordance with SSPWC Section 200-1.2.

3.9 PROTECTIVE COATINGS

All otherwise uncoated buried steel surfaces, including nuts and bolts, shall receive two (2) coats of NO-OX-1D Protective Coatings, or approved equal, for a minimum dry film thickness of 30 mils and then be wrapped with 8 mil polyethylene sheet per AWWA C-105.

3.9.1 Surface preparation

Prepare all surfaces to be painted in accordance with the manufacturers recommendations. All rust, loose scale, sharp edges and foreign matter shall be removed from surfaces to be coated by wire brushing (SSPC-2), using power tools (SSPC-3) or sandblasting (SSPC-10). Oil and grease shall be removed with cleaning solvent (SSPC-1), and surfaces shall be dry.

3.10 SHOP PAINTING

All buried and above ground exposed piping shall be coated by the manufacture or have shop or field coating applied in accordance with these Specifications. Products are those manufactured by Tnemec Company or Devoe or approved equal and are specified as the standard of quality. Fusion Bonded Epoxy shall be Skotchote 134 by 3M or approved equal.

Materials shall comply with all current federal, state, and local environmental laws and regulations, including, but not limited to the laws and regulations of the NSF International in accordance with ANSI/NSF. Std. 61, U.S. Environmental Protection Agency (USEPA), South Coast Air Quality Management District (AQMD) and the California Air Resources Board (CARB).

Unless noted otherwise, colors for finish coats shall be as indicated on the Project Drawings, NCWD Standard Drawings and as approved by the District.

Prepare all surfaces and apply all coatings in accordance with the Manufactures published recommendations.

3.10.1 System No. C-1--Exposed Metal, Corrosive Environment

Type: Aromatic Urethane zinc rich, high build epoxy, water borne urethane.

Service Conditions: Use on metal structures, piping, valves, fittings, and appurtenances subjected to continuous water condensation (such as in vaults or trenches or above ground), or occasional immersion or splashing.

Surface Preparation: SSPC SP-10.

Shop Prime Coat: Aromatic urethane zinc rich primer. Apply to a dry-film thickness of 3 mils Tnemec 90-97, or approved equal.

Intermediate Coat: Apply to a dry-film thickness of 4-6 mils:

Coating shall be Tnemec L69, or approved equal.

Finish Coat: 2-3 mil dry-film thickness:

Coating shall be Tnemec 1081, or approved equal.

3.10.2 System No. D-1 -- Buried Metal

Type: epoxy having a minimum volume solids of 65%

Service Conditions: Use to coat buried metal (flanges, bolts and nuts, fittings, flexible pipe couplings, structural steel etc.).

Surface Preparation: SSPC SP-10.

Prime Coat: Apply to a dry-film thickness of 5-7 mils:

Finish Coats: Two coats of 5-7 mils dry-film thickness for each coat.

Coating shall be Tnemec L69, or approved equal.

3.10.3 System No. G-1--Interior Surface of Ferrous-Metal Valves

Type: Fusion Bonded epoxy coating.

Service Conditions: Use to coat interior surfaces of ferrous metal valves, excluding seating areas and bronze and stainless steel pieces.

Surface Preparation: Minimum SSPC SP-5. Remove protuberances which may produce pinholes in the coating. Round sharp edges. Remove surface contaminants, which may prevent bonding of the coating, shall be removed.

Coating: Within 10 hours of cleaning apply coating to a dry-film thickness of 12 mils in accordance with manufacturer's recommendation:

Coating shall be Skotchkote 134 by 3M, or approved equal.

3.10.4 Coating System for Steel surfaces (Not Including Reservoirs)

System No. I-3—Interior and/or Exterior Surface of Steel Pipe

Type: Fusion Bonded epoxy coating.

Service Conditions: Use to coat surfaces of specified steel pipe.

Surface Preparation: Minimum SSPC SP-10. Remove protuberances, which may produce pinholes in the coating. Round sharp edges. Remove surface contaminants, which may prevent bonding of the coating, shall be removed.

Coating: Apply to a minimum dry-film thickness of 15 mils in accordance with manufacturer's recommendation:

Coating shall be Skotchkote 134 by 3M, or approved equal.

3.11 ANCHOR AND THRUST BLOCKS

Anchor and thrust blocks shall be installed at fittings and valves and, where directed by the District, in accordance with details shown on Standard Drawing No. 101. Excavations and forms for thrust and anchor blocks shall be examined by the District's authorized representative prior to placement of concrete. Thrust blocks shall be constructed of five-sack concrete and shall bear against undisturbed soil and shall be allowed to cure for at least forty-eight (48) hours prior to pressurizing the pipe. No quick setting additives shall be used. Any flanged fittings coming in contact with concrete shall have the bolts and nuts covered with a layer of 8 mil polyethylene film. Formwork shall be constructed wherever necessary to confine the concrete to the prescribed dimensions for the block. All form lumber shall be removed prior to testing. All concrete anchor block shall be allowed to cure until an adequate strength has been obtained prior to pipeline pressure tests. Provide temporary thrust restraint as required to prevent pipe movement during pressure testing (See Standard Drawing 107.)

3.12 HYDROSTATIC TEST

After the pipe backfill has been completed and accepted, the pipe shall be subjected to a hydrostatic pressure test as hereinafter specified. Contractor shall flush all pipelines and appurtenances proceeding from higher ground elevations to lower ground elevations and/or in the manner and with the procedure prescribed by District. Flushing shall continue until all chlorine, debris and foreign materials have been removed from pipelines and appurtenances. If so directed by District, Contractor shall remove portions of certain appurtenances, such as air valve installations, blow-off installations, and service installations, in order to accomplish complete flushing. Appurtenances so removed shall be replaced. The District shall be notified twenty-four (24) hours prior to testing. An Inspector shall be present.

A certified backflow device approved by the District shall be used when filling, flushing and chlorinating.

Each water main shall be filled with potable water and shall be tested in sections of convenient lengths as determined by the range of elevations within the test section, which shall result in test pressure within the limits hereinafter specified. Testing against valves will not be permitted. Test plates will be used in this case.

The test pump gauge and gpm meter shall be connected to the water main at a location other than the highest point in the line in order to facilitate release of air from the high point. The gauge shall be approved by the District.

The test pressure at the location of the testing equipment shall be 150% of system pressure and be tested for a minimum of 4 hours. The test pressure at the highest point in the pipe test section shall not be less than 110 percent of pressure classification.

No leakage is allowed for steel pipe with fully welded joints. Welded joints shall be tested by

PIPE MATERIAL ALLOWABLE LEAKAGE (PER MILE, PER HOUR)

$$L = \frac{SxDx\sqrt{P}}{133,200}$$

in which:
L = Allowable leakage in gallons/hour;
S = Length of pipeline tested or 1000 feet whichever is less
D = Nominal diameter of pipeline tested, in inches
P = Test pressure for leakage test, in psi gauge

Contractor shall furnish and install, at his own expense, all corporation stops, test plates, temporary pipe, fittings, connections, equipment, bulkheads, RPBDs, and bracing required for the tests and shall be responsible for any and all damage resulting from failure under test of material furnished and installed by Contractor, or from faulty workmanship, negligence, or improper test methods.

If pipeline fails hydrostatic testing, Contractor shall make corrections and retest as required at no additional expense to the District.

All defective joints, cracked, or defective pipe, fittings, valves, hydrants, or service connections shall be removed and replaced by Contractor with sound material. Tests shall be rejected until satisfactory results are obtained as determined by the inspector.

Before applying the specified test pressure, care shall be taken to ensure the expulsion, through hydrants, air release valves, services, or by other suitable means, of all air within the pipe and appurtenances to be tested.

3.13 DISINFECTION OF WATER MAINS AND SERVICES

All water mains, water services, attached appurtenances, and temporary connections, if any, shall be disinfected in accordance with AWWA C651-99 and the following requirements:

Chlorine shall be applied to the water in sufficient quantity to produce a dosage of not less than 50 ppm in all sections of the line, services, and appurtenances. Treated water shall be retained in the system for a period of twenty-four (24) hours minimum and shall produce not less than half of ppm added in all sections being disinfected at the end of the twenty-four (24) hour period. Chlorine dosage is not-to-exceed one hundred (100) ppm under normal conditions.

After the required period of retention of the chlorine or hypochlorite solution, a District representative will test the water for residual chlorine and any further tests that may be required.

After chlorination, the water shall be dechlorinated and flushed from the line at its extreme ends until the replacement water is chemically and bacteriologically equal to the permanent

source of water supply. Two sets of samples for bacterial analysis will be taken 24 hours apart by the District and sent to the District's laboratory for analysis. The number of samples required will be as determined by the District, and the cost of processing will be borne by the Developer.

If the tests are not satisfactory, Developer shall provide additional disinfection as required at no extra cost to the District and new tests will be conducted.

Should the initial treatment fail to produce satisfactory disinfection of the pipeline, as evidenced by the chlorine residual, the chlorination procedure shall be repeated until acceptable results are obtained. Contractor shall discharge water at approved locations and manner in accordance with Regional Water Quality Control Board requirements.

3.14 WATER FOR CONSTRUCTION PURPOSES

District rules and regulations apply.

3.15 HOT TAPPING OF EXISTING WATER LINE

Pressure taps are allowed only as shown on approved plans.

All hot taps shall either be performed by the District or an experienced licensed contractor specializing in said work. Contractors must have a proven ability to perform hot taps, hold a current underground contractor's license, and carry sufficient insurance as determined by the District and be approved by the District prior to commencing said work.

Existing mains to be tapped must be cleaned. The area required to be cleaned shall be either the diameter of the hot tap plus seven (7) inches or the full diameter of the main to be tapped when full circle reinforcement is required. The following steps are then required prior to hot tapping:

3.15.1 Steel mains

The nozzle shall be welded to the main after cleaning. It shall then be blind flanged and air tested to 100 psi. The pressure must hold for a minimum of three minutes. The test must be done in the presence of a District Inspector.

After passing the air test, the reinforcement ring shall be placed and welded continuously on edges to the existing main and to the nozzle pipe.

3.15.2 Ductile iron

A mechanical stainless steel tapping tee with stainless steel flanges are required (Muller H304 tapping sleeve) or approved equal. After cleaning the main, the sleeve shall be bolted to the main and a blind flange placed on the nozzle. An air test shall then be performed as described above.

4.0 VALVES, FIRE HYDRANTS, AND APPURTENANCES

4.1 VALVES

All main line valves shall be located on the property line or utility easement prolongation in the street unless otherwise indicated by the District.

All valve box risers shall be of eight (8) inch Schedule 40 PVC pipe. The entire valve box assembly shall be per Standard Drawing No. 111. Valve lids shall be in accordance with Standard Drawing No. 111, stamped with NCWD logo and powder coated. All valve risers shall be adjusted so that the valve box will be flush with the finished street grade per Standard Drawing No. 111.

Valves shall be installed plumb and in alignment with the pipe. Each valve shall be operated prior to its installation to assure proper functioning.

Valves two and one-half (2 1/2) inches and smaller shall be brass or stainless steel ball valves.

Valves between 3 inches and 12 inches shall be gate valves above 12” shall be BFV with resilient seat valves per Section 4.2

Unless otherwise specified, all valves above twelve (12) inch shall be butterfly valves. Valves are not to be located in curb or gutter.

4.2 GATE VALVES

All gate valves must equal or exceed the requirements of the latest revision of AWWA C500 or AWWA C509, standards for gate valves and resilient-wedge gate valves. The body shall further be coated with 10 mil epoxy, the trim 316 stainless steel and all rubber be EPDM and shall be Mueller, Clow, Kennedy, or approved equal.

Valves supplied shall be resilient wedge, resilient wedge, with O-ring seals, non-rising stems, two (2) inch operation nut, opening left.

Valves specified "with hand wheels" shall be supplied with operating hand wheels instead of two (2) inch operating nut.

Valve ends shall conform to AWWA standard; flanged ends per AWWA C110 as required for steel pipe; or mechanical joints as required for ductile iron.

Valves shall be suitable for buried service and horizontal mounting. Valves shall be adequately anchored for thrust in accordance with the requirements of these specifications and as shown in Standard Drawing No. 111.

4.3 CONTROL AND CHECK VALVES

4.3.1 Standard Check

Standard check valves shall be slanting disc bottom buffer type valves to prevent slamming during instantaneous shutoff. The area through the valve shall equal that of the full area of the pipe. Use Val Matic Swing Flex or approved equal and be of EPDM rubber.

4.3.2 Automatic Control Type Valves

Automatic control valves shall be Cla-Val only and hydraulically operated, diaphragm-actuated, globe pattern valve. Valves shall contain a resilient, EPDM, having a rectangular cross-section, contained on three and one-half sided by a disc retainer and forming a tight seal against a single removable seat insert. The diaphragm assembly contacting a valve stem shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat, This diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separation operating pressure from line pressure. The diaphragm shall consist or nylon fabric bonded with synthetic rubber and shall not be used as a seating surface. Packing glands and/or stuffing boxes are not permitted and there shall not be pistons operating the valve.

Valve shall be of indicated size and shall be of manufacturer's standard cast iron or ductile iron with Type 303 stainless steel trim (seat, disc guide, cover bearing, stem nut and stem). Valve shall have a 200-psi pressure rating with 250 ductile iron flanges. Interior ferrous surfaces shall be factory lined with liquid epoxy per the painting section, also all exterior ferrous surfaces shall be coated per the painting section.

The design shall precluded cavitation erosion, fouling of working surfaces, and other effects adverse to reliability. Seats and other trim shall be secured by means precluding their loosening by hydraulically induced vibrations; and the fit of stems in guides and guide lengths shall preclude any binding, scraping, or deviation from true alignment affecting the free movement of working parts.

Diaphragm-actuated, hydraulically controlled valves shall have an unrestricted opening with an adjustable controlled closure rate so that valve slamming is reduced to an absolute minimum upon instantaneous shut-off. Valve shall be hydraulically operated and pilot controlled. Valves shall be CLA-VAL or approved equal If put into vaults, all pilot controls must be stainless steel.

4.4 PLUG VALVES

Plug valves shall be used only where specified.

Plug valves shall be lubricated, have a semi-steel body, and tapered plug with dry film coating on seating surface with adjustable 3-bolt gland assembly sealed by double O-rings. The plug shall be removable through the top of the valve. The valves shall be designed for the working pressures shown on the plans. Valves shall be Rockwell, Dezurick, or approved equal.

Unless approved otherwise, valves shall have flanged ends and shall be equipped for totally enclosed worm gear operating with a two (2) inch square operating nut where called for on plans. Other valves shall be lever operated. Valves shall be equipped with lubricator extensions as indicated on the plans.

4.5 BUTTERFLY VALVES

Butterfly valves shall meet the provisions of AWWA C504 for rubber seated, tight closing valves and must be EPDM rubber. Valves shall be flanged-pattern short body, and shall be cast iron, shaft or stainless steel 18-8 Type 304, disc of Ni-Resist Type 1. They shall be Class 150 unless noted on the plans. Valve operators shall be waterproof, suitable for buried service and equipped with a two (2) inch square operating nut. Where possible, operators shall be placed on the side of the pipeline nearest the curb, opposite centerline of street. Valves shall be adequately anchored for thrust in accordance with the requirements of these specifications and as shown in Standard Drawing No.110. Concrete pads shall be poured under butterfly valves adequately anchored for thrust.

All butterfly valves shall be field tested in the presence of the inspector prior to installation for compliance with Section 5 of AWWA C504. This includes performance, leak, and hydrostatic testing. Factory certification is not an acceptable substitute for the field testing. Any valves not tested will be rejected. Contractor shall coordinate with pipe manufacture to ensure free movement of valve disc within the pipe.

4.6 COMBINATION AIR/VACUUM RELEASE VALVE AND BLOW-OFF ASSEMBLIES

Combination air/vacuum release valve assemblies shall be installed at all highpoints along the pipeline and at locations shown on the plans. The tap for the air valves and/or blow-off valves shall be made in a level section of pipe, no closer than eighteen (18) inches from any machined section of pipe, rubber gasketed joint, or flanged joint. Where practical, connections to steel pipe for combination valve assemblies and/or blow-off assemblies shall be made with a coupling welded to the pipe in the shop at time of fabrication. Where it is necessary to make the connection in the field, additional care shall be exercised to minimize the damage to mortar-linings in accordance with the Standard Drawings. Wherever connections can be made dry, the coupling shall be welded to the pipe and the mortar lining repaired in accordance with Standard Drawing 195. The exterior cement mortar lining shall be repaired in accordance with the specifications and the Standard Drawings. Paint all (buried and above grade) exposed metal in conformance with the painting section of these specifications. Locate blow-off risers within street ROW where possible or behind curb in accordance with Standard Drawing 125 and as shown on the Plans. Locate air release valve covers in accordance with Standard Drawing 125 and as shown on the Plans.

4.6.1 Air and Vacuum Release Valve Assembly

The Contractor shall install a combination air and vacuum release valve assembly as shown on Standard Drawing No. 122A and 122B at locations detailed on the plans and the engineer preparing the plans shall design the size of the air release valve based on industry standards and in accordance with the manufacturer's recommendations. Generally, one (1) inch assemblies are used for eight (8) inch and smaller mains, two (2) inch assemblies for larger mains up to twelve (12) inch. The engineer designing the Plans shall also determine the proper spacing intervals, the placement of above grade assembly, and the size of the enclosure to fit all appurtenances necessary for maintenance of the assembly.

4.6.2 Blow-Off Valve Assembly

The Contractor shall install blow-off assemblies as detailed on the plans. Valves and fittings shall equal or exceed the pressure rating of the pipe to which they are attached. Materials and required fittings are shown on Standard Drawing No. 121A through D. The blow-off assembly shall be adequately sized for draining and flushing of water lines. All valve boxes and riser covers shall be placed in the street ROW and

designed for full AASHTO H-20 loading when in a trafficked way unless otherwise approved by the District.

4.7 FIRE HYDRANT ASSEMBLIES

Fire hydrant assemblies shall include the connection to the main and shall consist of fire hydrant and appurtenances in accordance with these specifications and as shown on the Standard Drawing No. 120.

4.7.1 Location

Hydrants shall be located as shown or as directed and in a manner to provide complete accessibility and in such a manner that the possibility of damage from vehicles or injury to pedestrians will be minimized. All fire hydrants must have 3 feet of clearance around them with no obstructions. (See Standard Drawing No. 125)

4.7.2 Position

All hydrants shall stand plumb and shall have their nozzles facing the curb or street at an angle of forty-five (45) degrees.

4.7.3 Fire Hydrant Barricades

When required, fire hydrant barricades shall not obstruct the outlets and shall be constructed per Standard Drawing No. 124.

4.7.4 Materials

Fire hydrants shall be six (6) inches by four (4) inches by two and one half (2-1/2) inches James Jones No. J-3700R (system pressure below 200 psi) and James Jones No. J-3711R (system pressure above 200 psi.). All valve operating stem ends shall be equipped with pentagonal dummy nuts the same size as the nozzle cap ends.

Fire hydrants shall be brass or bronze. All hydrants must conform to AWWA C503 and in all cases must be approved by the County of Los Angeles, Forester, and Fire Warden. Fire hydrant tops shall be tapped for two and one-half (2 1/2) inch I.P.T. Fire hydrant location and maximum spacing interval shall be in accordance with the governing agency and approved by the District.

Fire hydrant risers shall be provided with Class 150 cast iron flanges and shall be installed four (4) inches to six (6) inches above grade.

Fire hydrant risers and runners shall be a full six (6) inches inside diameter pipe. The run shall be ductile iron as described in Standard Drawing No. 120 for all other materials. The bury shall be cast iron with Jones J-3711R (8) hole above 200psi 3700R below 200psi with plastic cap patterned flange unless otherwise specified.

All required bolts, nuts, and gaskets shall be provided. Bolt (6) hole flange 3/4” diameter holes bolts 5/8” x 3” long, and (8) hole flange 7/8” diameter holes bolts 3/4” x 3” long. Bolts at hydrant flange shall be installed with nuts on bottom. Only hexagonal nuts and bolts will

be permitted. All bolts provided must be a minimum length of at least three threads past nut when tightened.

All hydrants shall be painted with one (1) coat of red primer and two (2) finish coats of Vista Paint 9900 Protec Gloss Yellow or approved equal. The Contractor shall apply an additional finish coat after installation.

4.8 LOCATION OF APPURTENANCES

The District reserves the right to direct the location of all valve marker posts, air release valve assemblies, and blow-off valve assemblies within the road right-of-way or easement to ensure proper drainage and to minimize interference with traffic.

4.9 FLEXIBLE COUPLINGS

Flexible couplings shall have all stainless steel nuts and bolts and be either stainless steel bodies or all epoxy lined and coated. They shall be Rockwell, Smith-Blair, Baker, Dayton, or approved equal. Flanged couplings adapters shall be Rockwell, Smith-Blair, Baker, Dayton, or approved equal. Clamp type mechanical couplings shall be as manufactured by the Victaulic Company of America, Gustin-Bacon, or equal and shall be for pipe with grooved ends for water service and able to withstand a pressure equal to the strength of the pipe to which they are attached. All flexible couplings shall be protected by coating in accordance with the painting section of these Specifications. Metal sleeve couplings shall be per Standard Drawing 115.

4.10 SENSUS COMPACT FIRELINE METERS WITH ECR C/F

All projects that are required to provide on-site fire protection will be required to install an ECR C/F that is sized appropriately to meet the projects on-site fire protection and domestic requirements. ECR C/F assemblies shall be completely contained in a vented vault and include sufficient valving and bypass capabilities to allow the meter to be serviced, removed, or tested without interrupting water service to the customer. Serial number of ECR C/F shall be stamped on body of meter. The compound meter and vault must be fully detailed on improvement plans. The vault shall be in accordance with Standard Drawing No. 150.

4.11 WATER METERS-SENSUS METER PMM ECR/WP CF

4.11.1 Water Meters-Sensus Meter PMM ECR/WP CF with MXU 520-R Dual

All new domestic, commercial, industrial and land development will be required to install sensus ppm ECR/wp CF meters with 520-R Dual MXUs.

Water Meters Sensus:

- ¾” meter pmm/ECR WP C/F
- 1” meter pmm/ECR WP C/F
- 1.5” meter pmm/ECR WP C/F
- 2” meter pmm/ECR WP C/F
- MXU 520-R dual port for above meters

4.12 DOMESTIC SENSUS SRH COMPOUND METERS WITH ECR/WP C/F

Projects that are not required to provide on-site fire protection will be required to install a domestic sensus SRH compound meter with ECR/WP that is sized appropriately to meet the projects on site domestic requirements. Domestic sensus SRH compound meters with ECR/WP shall be completely contained in a vented vault and include sufficient valves and bypass capabilities to allow the meter to be serviced, removed, or tested without interruptions of water service to the customer. Serial number of meter shall be stamped on body of meter. The meter and vault must be fully detailed on improvement plans.

5.0 SERVICE LINES

5.1 LOCATION OF SERVICE LINE

- The trench for the services shall have a minimum width of ten (10) inches and a depth of thirty (30) inches below the existing or finished grade throughout the length of service up to two (2) inch services. Services larger than two (2) inches shall be detailed in supplementary drawings, which will be furnished to the District if such larger size is specified. Services two (2) inches and larger shall have a USC certified backflow device installed maintained by owner/customer.

- Size of services shall be shown on the plans, as specified, or as determined by the District.

- In general, each service shall start at the new water main and shall extend to the meter location at an elevation determined by Standard Drawing No. 130A and the existing grade at the meter location. Each service shall be connected to the corporation stop at the main and an angle stop shall be installed at its end in the meter box location.

- The locations of the meter boxes shall be as indicated on the plans or as directed by the inspector. No meter box shall be installed closer than five (5) feet from the edge of a driveway apron. Services shall not be installed in driveways and/or customer's hardscape.

- Single service lines shall not be less than ten (10) horizontal feet from sewer laterals.

- In no case shall a service or other tap be made in a main closer than twenty-four (24) inches to a bell, coupling, joint, fitting, or another service tap.

- A single service line is required for each metered connection. However, two individual services may be installed in a single twenty-four (24) inch trench excavated approximately along the projection of a lot line common to any two (2) lots. In such cases, service taps on the main shall not be less than two (2) feet apart. Service lines shall not exceed twenty (20) feet unless otherwise specified by the District.

- The meter shall be purchased from and installed by the District. Water services shall be installed by Contractor only when indicated on the plans.

- Services shall be tested and disinfected in the same manner as specified elsewhere herein for water mains. These operations shall be performed concurrently with the testing and disinfecting of the water mains where practicable.

5.2 CORPORATION STOPS AND ANGLE STOPS

All corporation stops and angle stops shall be same size as the service size. Corporation stops shall be Mueller 300 ball type or equal have male iron pipe threads on the inlet and pack joint on outlet. All stops shall have a circular waterway of service line diameter. All nuts, washers, and contact surfaces shall be faced to a true fit. All tapers shall be carefully ground and show no leakage under hydrostatic test. All stops shall be finished in a neat and manner, and the thickness of metal shall be equal around the axis of the circular way. All burrs on the inside of stops shall be carefully removed leaving a clean, smooth waterway. All stops, including copper tubing connections, shall be field tested with the water main as noted above. Ball type corps shall only be Jones, Ford, Mueller or equal.

5.3 COPPER TUBING – 1" AND 2" SERVICES ONLY

Copper tubing shall be required for all services. It shall be seamless copper water tube, Type K, cold drawn, and annealed of the size shown on the plans. It shall be true, smooth, clean on both inside and outside, and free from any cracks, seams, or other defects. It shall be truly cylindrical, of the full specified outside and inside diameters and of uniform thickness of metal, and shall conform to ASTM B88. The tubing shall be continuous between the main line and the meter with no splices permitted. Any repairs made must be sweated or may have to be replaced entirely as specified by the inspector. No compression fittings are to be used on 2" copper. All sweat fittings.

5.4 CONNECTIONS TO ASBESTOS CEMENT MAINS

5.4.1 Health Hazard

The Contractor is warned that asbestos is a known human carcinogen when inhaled and poses serious health risks. Asbestos fibers are easily inhaled and can result in chronic respiratory illness, cancer and other severe adverse health effects.

5.4.2 General

Asbestos materials may be encountered in the Work. The Contractor shall account for removal of all existing asbestos cement pipe in the total bid price shown on the bid schedule. All removed asbestos pipe becomes property of the Contractor and must be double wrapped in polyethylene certified as meeting RQ (Asbestos), Class 9, NA 2212, III. Removal of existing pipe shall extend to the nearest joint to prevent cutting of the pipe. Cutting of asbestos cement pipe is prohibited unless approved in writing by the District. If materials containing asbestos other than ACP are encountered, a contractor registered by CAL/OSHA and certified by the State Contractors Licensing Board for asbestos removal shall perform removal of existing asbestos material. Copies of the certification shall be submitted to the Engineer prior to the commencement of any asbestos removal activities. The Contractor or subcontractor shall comply with all State and Federal laws regarding handling and removal of asbestos materials. The Contractor shall be responsible for the proper identification, removal and disposal of all asbestos materials.

5.4.3 Joining Existing Asbestos Cement Pipe

In the specific instance of making piping connections to existing asbestos cement pipe, the Contractor shall connect at the nearest joint. Cutting of asbestos cement pipe is prohibited unless otherwise approved in writing by the District.

5.4.4 Tapping Existing Asbestos Cement Pipe

If approved by the District, tapped connections for water services shall be made with a bronze double strap service clamp as shown on the Standard Drawings. All connections for water services shall be made with a bronze double strap service clamp as shown on the Standard Drawings.

5.4.5 Handling Asbestos Cement Pipe

The Contractor shall perform all handling of asbestos cement pipe in strict conformance with all applicable CAL/OSHA, CAL/EPA, US/EPA and other governing and environmental health and safety agency requirements.

5.5 CONNECTIONS TO CEMENT MORTAR LINED AND COATED MAINS

Where practical, connections for water services shall be made with high pressure coupling welded to the pipe in the shop at time of pipe fabrication. After coupling is welded to the pipe, it shall be covered by mortar coating so no bare metal is left exposed. Where it is necessary to make the connection in the field, additional care shall be exercised to minimize the damage to mortar linings. Refer to Standard Drawing 195.

5.6 CONNECTIONS TO DUCTILE IRON MAINS

All connections for water services shall be made with double strapped malleable iron service saddles positioned as shown in Standard Drawing No. 130A. Saddles shall have female iron pipe thread same standard size as service tubing size.

5.7 CROSS CONNECTION PROTECTION

See Exhibit A NCWD – Backflow and Cross Connection Control Plan Manual.

5.8 PRECAST CONCRETE VAULTS

Precast concrete vaults and covers shall be manufactured in a plant especially designed for that purpose and shall conform to the size, shape and dimensions indicated on the detailed plans.

Design loads shall be based on H-20 loading per The American Association of Safety Highway Traffics (AASHTO) standard specifications.

Unless noted otherwise, vault access hatches and frames shall be fabricated in accordance with the project drawings and as approved by the District.

The bottom of the structure shall be placed on compacted, crushed rock sub-base, graded level and to the proper elevation as shown in the Standard Drawings or on the plans.

Openings or “knockouts” in precast concrete vaults shall be located as shown on the drawings and shall be filled with concrete grout or mechanical seals such as link seals for pipes larger than 3-inches outside diameter. Provide sleeves and water stops.

All joints and wall penetrations between precase concrete vault sections shall be made watertight. The sealing compound shall be installed according to the manufacturer's recommendations to provide a watertight joint.

APPENDIX A

BACKFLOW AND CROSS-CONNECTION CONTROL PROGRAM

AUTHORITY

Public health protection from contamination from backflow and cross-connection is regulated by the California Code of Regulations Title 17, Division 1, Chapter 5, Subchapter 1, Group 4, Articles 1-2. Water purveyors must maintain an adequate backflow and cross-connection program or risk the revocation of certification to supply public potable water.

Newhall County Water District diligently operates a backflow and cross-connection program with a conscientious effort to protect and prevent the public water supply from contamination by backflow or cross-connection and to immediately rectify any deficiencies discovered in the system. Accordingly, the Board of Directors of Newhall County Water District mandated a cross-connection control program by the establishment of Ordinance No. 79 on November 21, 1978, which was revised ten years later on July 19, 1988 by Ordinance No. 97.

RESPONSIBILITIES

A. State of California Department of Health Services:

Department of Health Services' primary responsibility is ensuring that water system is free of actual or potential sanitary hazards, including unprotected backflow or cross-connections. The Department of Health Services (DHS) has the further responsibility of ensuring that water purveyors provide an approved water supply at the point of delivery to the consumer's water system. Furthermore, the DHS ensures that the water purveyors require that their consumers install, test and properly maintain an approved backflow prevention device at the service connection when required.

B. Newhall County Water District:

The District's primary responsibility is to prevent water from unapproved sources, or any other substance, from entering the public water supply system. The District is prohibited by State laws and regulations from installing and maintaining a water service connection to a consumer's water system within its service area where a health, system, plumbing, or pollutional hazard exists, or will probably exist, unless the public potable water supply is protected against backflow by an approved prevention device installed at the service connection.

C. Consumer:

The Consumer has the primary responsibility of preventing pollutants and contaminates from entering their potable water system(s) or the public potable water system. The Consumer's responsibility starts at the point of delivery from the public potable water system and includes all of his water system. The Consumer, at his own expense, shall install, operate, test and maintain approved backflow preventers as directed and approved by the District in accordance with CCR, Title 17. Such assemblies shall be installed in an accessible location and in a manner approved by the District. The Consumer shall maintain accurate records of tests and repairs made to backflow preventers and provide the District and the Department of Health Services with copies of such records. The records must be made on forms approved by the District and shall include the lists of materials or replacement parts used.

Following any repair, overhaul, re-piping or relocation of a backflow preventer, the Consumer shall have the backflow preventer tested to ensure that it is in good operating condition and will prevent backflow. Testing, maintenance and repairs of backflow prevention devices shall be made by a certified backflow prevention device tester. Refer to TABLE 4 for a list of approved certified backflow prevention device testers.

D. User Supervisor (Reference CCR, Title 17, §7586)

Newhall County Water District may, at their discretion, require an industrial water user to designate a user supervisor when the water user's premises has a multi-piping system that convey various types of fluids, some of which may be hazardous and where changes in the piping system are frequently made. The user supervisor is responsible for conformance with all applicable laws, rules and regulations pertaining to backflow and cross-connection control. The user supervisor shall be responsible for the avoidance of cross-connections during the installation, operation and maintenance of the water user's pipelines, backflow preventers and water using equipment on the premises.

SCOPE OF PROGRAM (Reference CCR, Title 17, § 7584)

For the purpose of satisfying the requirements of Title 17, the District operates the backflow and cross-connection program under the following guidelines:

A. The adoption of operating rules or ordinances to implement the cross-connection program (as stated in Authority, Paragraph 2 – Page 1);

B. The conducting of annual surveys to identify water user premises where cross-connections are likely to occur;

C. The provision of backflow protection by the water user at the user's connection or within the user's premises or both;

D. The provision of at least one person trained in cross-connection control to carry out the backflow and cross-connection program;

E. A procedure for testing backflow preventers (as stated in Testing and Maintenance of Backflow Preventers – Page 3); and

F. The maintenance of permanent records of locations, tests, and repairs of backflow preventers.

EVALUATION OF THE HAZARD (Reference CCR, Title 17, § 7585)

Newhall County Water District shall evaluate the degree of potential health hazard to the public water supply, which may be created as a result of conditions existing on a water user's premises. The District, however, shall not be responsible for abatement of cross-connections, which may exist within a user's premises. At a minimum, the evaluation should consider the existence of cross-connections, the nature of materials handled on the property, the probability of a backflow occurring, the degree of piping system complexity and the potential for piping system modification. Special consideration shall be given to the premises of the following types of water users:

A. Premises where substances harmful to health are handled under pressure in a manner that could permit their entry into the public water system. This includes chemical or

biological process waters and water from public water supplies that have deteriorated in sanitary quality.

B. Premises having an auxiliary water supply, unless the auxiliary supply is accepted as an additional source by the District and is approved by the Department of Health Services.

C. Premises that have internal cross-connections that are not abated to the satisfaction of the District or the Department of Health Services.

D. Premises where cross-connections are likely to occur and entry is restricted so that cross-connection inspections cannot be made with sufficient frequency or at sufficiently short notice to assure that cross-connections do not exist.

E. Premises having a repeated history of cross-connections being established or re-established.

TYPE OF PROTECTION REQUIRED (Reference CCR, Title 17, § 7604)

The type of protection that shall be provided to prevent backflow into the public water supply shall be commensurate with the degree of hazard that exists on the consumer's premises. The type of protective device that may be required (listed in an increasing level of protection) includes: Double Check Valve Assembly (DC), Reduced Pressure Principle Backflow Prevention Device (RP), or an Air-Gap Separation (AG). The water user may choose a higher level of protection than required by the District. The minimum types of backflow protection required to protect the public water supply, at the water user's connection to premises with various degrees of hazard are given in TABLE 1. Situations that are not covered in TABLE 1 shall be evaluated on a case-by-case basis and the appropriate backflow protection shall be determined by the District or Department of Health Services.

APPROVAL OF BACKFLOW PREVENTERS (Reference CCR, Title 17, § 7601)

Newhall County Water District requires that backflow preventers shall have passed laboratory and field evaluation tests performed by a recognized testing organization, which has demonstrated their competency to perform such tests to the District. Any backflow prevention device required herein shall be of a model approved by the District. The term approved backflow prevention device or assembly shall mean an assembly that has been manufactured in full compliance with standards established by State and County laws and regulations.

CONSTRUCTION OF BACKFLOW PREVENTERS (Reference CCR, Title 17, § 7602)

A. Air-Gap Separation. An air-gap separation (AG) shall be at least double the diameter of the supply pipe, measured vertically from the flood rim of the receiving vessel to the supply pipe; however, in no case shall this separation be less than one inch.

B. Double Check Valve Assembly. A required double check valve assembly (DC) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Double Check Valve Type Backflow Preventive Devices, which is herein incorporated by reference.

C. Reduced Pressure Principle Backflow Prevention Device. A required reduced pressure principle backflow prevention device (RP) shall, as a minimum, conform to the AWWA

Standard C506-78 (R83) adopted on January 28, 1978 for Reduced Pressure Principle Type Backflow Prevention Devices, which is herein incorporated by reference.

LOCATION OF BACKFLOW PREVENTERS (Reference CCR, Title 17, § 7603)

All backflow prevention devices shall be installed in an accessible location and in a manner approved by the District according to State laws and regulations, as follows:

A. Air-Gap Separation. An air-gap separation shall be located as close as practical to the user's connection and all piping between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by the District and the Department of Health Services.

B. Double Check Valve Assembly. A double check valve assembly shall be located as close as practical to the user's connection and shall be installed above grade, same as RP device, and in a manner where it is readily accessible for testing and maintenance.

C. Reduced Pressure Principle Backflow Prevention Device. A reduced pressure principle backflow prevention device shall be located as close as practical to the user's connection and shall be installed a minimum of twelve inches (12”) above grade and not more than thirty-six inches (36”) above grade measured from the bottom of the device and with a minimum of twelve inches (12”) side clearance.

TESTING AND MAINTENANCE OF BACKFLOW PREVENTERS (Reference CCR, Title 17, § 7605)

A. Newhall County Water District shall ensure that adequate maintenance and periodic testing are provided by the water user to ensure proper operation of the backflow preventer(s).

B. Backflow preventers shall be tested at least annually or more frequently if determined to be necessary by the Department of Health Services or the District. When devices are found to be defective, they shall be repaired or replaced in accordance with the provisions of this program.

C. The District shall notify in advance the water user when testing of backflow preventers is needed. The notice shall contain the date when the test must be completed.

D. The inspection and test of backflow preventers shall be at the water user’s expense.

E. Backflow preventers shall be tested by persons who have demonstrated their competency in testing of these devices to the District or Department of Health Services.

F. Backflow preventers shall be tested immediately after they are installed, relocated, or repaired and not placed in service unless they are functioning as required.

G. Reports of testing and maintenance shall be maintained by the District for a minimum of three years.

BACKFLOW OR CROSS-CONNECTION EVENT

In accordance with the Newhall County Water District Emergency Disinfection Plan, a cross-connection event or emergency will be approached in a manner similar to a bacterial contamination problem. The principal differences being that the source of contamination

can usually be identified as to approximate location and the flow pattern can be more precisely determined. In addition, a cross-connection may be bacterial or chemical. A chemical cross-connection problem does not necessarily require chlorine. It may require some other type of testing, and/or neutralizing. Castaic Lake Water Agency's laboratory has the facilities to test for chemical contamination problems.

In the event of accidental contamination by backflow or a cross-connection, the owner or user supervisor shall promptly take steps to confine further spread of the contamination within their system. The event or emergency will require immediate notification of Newhall County Water District, the Department of Health Services Division of Drinking Water and Environmental Monitoring – Field Operations Branch, and the Los Angeles Regional Water Quality Control Board. Refer to TABLE 2 for a listing of emergency telephone numbers.

Appropriate measures must be taken immediately to free the water system of contamination, flush out the contaminated water and, if necessary, notify affected consumers.

ENFORCEMENT

The consumer's water system shall be open for inspection at all reasonable times to authorized representatives of the District to determine whether cross-connections or other structural or sanitary hazards, including violations of these regulations, exist.

Service of water to any premise(s) found to be in violation of this backflow and cross-connection program shall be discontinued by Newhall County Water District after written notice of the violation to both the owner and consumer, if different; or, if necessary, discontinued immediately to protect the health and safety of the consumer where such a condition exists.

A violation exists if:

A. If a backflow prevention device required by this program is not installed, tested and maintained, as required herein.
B. If it is found that a backflow prevention device has been removed or bypassed.
C. If unprotected cross-connections exist on the premises.
D. If the periodic system inspection required herein has not been conducted.
E. If there is inadequate backflow protection at the service connection.
F. If a false report or false information is provided to the District by or on behalf of the owner or consumer, with regard to the backflow prevention device.

Water service will not be restored until such conditions or defects are corrected.

APPENDIX B

PROVIDING REQUIRED EASEMENTS

If an easement is required for construction and/or maintenance of water mains, the minimum width shall be 15 feet, unless otherwise determined by the District.

In areas where facilities are to be located in private streets, the minimum width of easements shall be 15 feet (20 feet if two pipelines are located in the street). In addition, 10-foot-wide easements shall be provided for all fire hydrants and meter services with easements extending a minimum of 3 feet beyond the hydrants or meters. Easements 15 feet wide are required for facilities that must pass through a residential lot. The easement shall be located on one lot and in no case will the District accept an easement split upon two lots. Buildings shall not be located within 5 feet of the District's easement. Trees and shrubbery shall not be located in District's easement.

The following is the suggested procedure, which should be followed when processing easements with the District:

1. Developer's Engineer shall submit three copies of the easement description and sketch to the District Engineer for review. If acceptable, two copies of the document will be submitted to the District for further processing. If not acceptable, the District Engineer will return the description and sketch with the required corrections noted thereon.

   All blanks in the documents, such as tract numbers, project identification, title report number, map and book numbers and pages, dates, etc., must be filled in as required by the District Engineer. If the tract map has not been recorded at the time of easement processing, the book and page number shall be left blank. The District will fill in the appropriate numbers following recording of the map and sketch shall be signed by licensed land surveyor or stamped by the Engineer who prepared the description. Sufficient space shall be provided of each page of the description and sketch for the District Engineer's easement review stamp (3"x 3" square). The easement sketch must contain a vicinity map showing the location of the easement in relation to major streets and highways, as well as the sketch depicting the easement boundaries with bearings, distances, points of beginning, north arrow, and any other information required by the District Engineer.

2. Once the District receives the acceptable easement documents from the District Engineer, the District, with the assistance of their attorney, will request the Developer to submit the following information:

   a. Grant of Easement on District form executed and notarized. Since the printed form is for a Corporate Grantor, a new jurat attachment must be used for individuals, partnerships, and joint ventures. Each notary jurat must correspond with the entity granting the easement.

   b. The easement description and sketch referred to in Item 1, which shall have on it the stamped approval of the District.

   c. Agreement subordinating the Grant of Easement to each encumbrance (Deed of Trust) upon the property.

d. A preliminary title report dated within 30 days of date of submission reflecting the current status of the subject property.

   NOTE: A preliminary subdivision report will not be accepted since it does not contain sufficient information.

All blanks in the documents, such as project identification, title report numbers, and pages, dates, etc., must be filled in if available. The Developer may request an appointment in order to have the package reviewed at the time of submittal by calling the office of the attorney for the District.

3. After approval by the attorney, the Grant of Easement will be initialed and returned to the District.

4. After the District has accepted the Grant of Easement and recorded same, the Developer shall be notified so that he may obtain an update of the preliminary title report showing the recordation of the Grant of Easement and verifying the fact that no new liens have been recorded on the property in the interim between the date of the previous title report and the date of recording of the easement.

5. Normally, the District will not record the Grant of Easement until after the tract has been recorded by the Developer. Consequently, the grantee named in the easement should be the entity who will hold title at the time the tract map is recorded.

   NOTE: APPROVAL BY THE DISTRICT WILL NOT BE GIVEN FOR THE WATER SYSTEMS UNTIL ALL EASEMENTS HAVE BEEN OBTAINED.

APPENDIX C

When recorded, return to:

Newhall County Water District
23780 North Pine Street
Santa Clarita, CA 91321-3109
Attn: General Manager

GRANT OF PERMANENT AND NON-EXCLUSIVE EASEMENT

For a valuable consideration, receipt and sufficiency of which are hereby acknowledged, _____ ("Grantor"), grants and conveys to NEWHALL COUNTY WATER DISTRICT, a public corporation, its successors and assigns ("Grantee"), a permanent easement and right of way, including the right to remove any improvements, trees, shrubs and any other growth thereon, unless herein otherwise provided, and at any time and from time to time to locate, construct, install, alter, inspect, remove, replace and maintain a line or lines of pipe of whatever nature, valves, and meter structures, service connections, services and/or connections, with all and every appendage, structure and equipment necessary or convenient to be installed or used by Grantee, or its successors, at any time or from time to time in connection with any of the aforementioned facilities for water transportation and for any and all other uses and purposes of the Grantee and its successors and assigns, in, under, upon, over, across and through those certain parcels of land situated in the County of Los Angeles, State of California, and more particularly described as follows:

The Grantor agrees for itself, its successors and assigns, not to erect, place or maintain, nor to permit the erection, placement or maintenance of any building, planter boxes, earth fill or other structures, except walls and fences, on the above-described real property. The Grantee and its contractors, agents and employees, shall have the right to trim or cut tree roots as may endanger or interfere with said systems and shall have free access to said systems and every part thereof, at all times, for the purpose of exercising the rights herein granted; provided, however, that in making any excavation on said property of the Grantor, the Grantee shall make the same in such a manner as will cause the least injury to the surface of the ground around such excavation, and shall replace the earth so removed by it and restore the surface of the ground to as near the same condition as it was prior to such excavation as it practicable.

This Grant of Easement shall bind and inure to the benefit of the respective heirs, personal representatives, successors, and assigns of the parties hereto.

Any subsequent removal, replacement or realignment of facilities located within the easement granted shall be accomplished at the expense of the person or entity requiring the same and at no expense to Grantee.

IN WITNESS WHEREOF, the Grantor has caused its name to be hereunto subscribed as of the _____day of _____, 2007.

_____

State of California)
) ss.
County of Los Angeles)

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

WITNESS my hand and official seal.

_____

CERTIFICATE OF ACCEPTANCE
OF GRANT OF EASEMENT

This is to certify that the undersigned Secretary of the Board of the Newhall County Water District has accepted on behalf of the said District the interest in real property conveyed by the within instrument and consents to the recordation of said instrument.

Dated: _____

_____
Secretary of the Board
Newhall County Water District