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Town of Yountville

GENERAL INFORMATION AND PROCEDURES

REFERENCE DOCUMENTS AND STANDARD DRAWINGS

All work shall comply with the Codes and Ordinances of the Town of Yountville and these specifications are to be used in conjunction with the Town Standard drawings.

WORK WITHIN TOWN RIGHT-OF-WAY

Issuance of an Encroachment Permit and associated insurance requirements and surety (i.e. bonding) is required prior to any work within Town right-of-way. The Contractor is responsible for providing all traffic control. Contractor shall obtain an encroachment permit from the Town of Yountville, 6550 Yount Street, Yountville, CA 94599 before start of work. Contractor shall comply with all requirements of the permit.

PERMITS AND NOTIFICATION

An Encroachment Permit shall be obtained prior to any work within the Town right-of-way.

Contractor shall obtain all agencies required permits and pay all fees prior to commencement of any work.

Contractor shall give the Town of Yountville Public Works Department 48 hours notice before starting work. Call (707) 944-8851 or contact at 6550 Yount Street, Yountville, CA. 94599 for Inspection Services.

Work hours are limited to Monday through Friday from 7:30 A.M. to 5:00 P.M.; however, no work shall be permitted on Town holidays. Inspection will be available Monday through Friday from 8:00 A.M. to 4:00P.M.

All underground improvements shall be installed and approved prior to paving.

No building sewer, lateral sewer or water service shall be installed, altered or repaired nor any connection made thereto, until a permit for the work has been obtained from the Town and the necessary fees paid.

Building sewers cannot be constructed or inspected until all main line constructions is completed, tested and approved by the inspector and accepted by the Town.

DEFINITIONS

In these standards the following names shall have the following definitions:

APPROVED - means accepted or acceptable under an applicable specification or standard stated or cited in these standards or accepted as suitable for the proposed use under procedures and authority of the Town Manager.

BUILDING DRAIN - that part of the lowest piping of a drainage system which receives the discharge from soil, waste and other drainage pipes inside the walls of the building and conveys it to the building sewer beginning at a point two (2) feet outside the building wall, as measured along the pipe line.

BUILDING (STRUCTURE) - is a structure built, erected and framed of component structural parts designed for the housing, shelter, enclosure, or support of persons, animals or property of any kind.

CONTRACTOR - any contractor licensed by the State of California to enter into contracts for and to perform the work of installing or constructing improvements under Town jurisdiction, or the owner of private property doing his own work on private property he owns.

FIRE DEPARTMENT - shall mean the fire suppression agency with jurisdiction which is currently the California Department of Forestry (CDF). Fire chief shall mean the agencies designated representative.

GRADE - the slope or fall of a line of pipe in reference to a horizontal plane. In drainage it is usually expressed as the fall in a fraction of an inch per foot or percentage slope per foot length of pipe.

OTHER SPECIFICATIONS - wherever in these standards other specifications are mentioned, it shall be understood that the materials or methods mentioned therewith shall conform to all requirements of the latest revision of the specifications so mentioned.

PLUMBING SYSTEM - all plumbing fixtures and traps, or soils, waste, special waste and vent pipes within a building and to a point two (2) feet outside the building foundation thereof.

SEWERS –

Building Sewer - that portion of the service sewer between the lateral sewer and the point of connection to the building drain of the structure.

Lateral Sewer - that portion of the service sewer (4" diameter minimum) within a public road right of way or easement. (That portion between the main sewer and the property line, or the edge of the easement) and terminating in the building sewer.

Main Sewer - (Public Sewer) a public sewer which has been or is being constructed to accommodate one (1) or more service sewers.

Service Sewer - the privately owned and maintained (4" diameter minimum) sewer line which links the sanitary or waste plumbing (building drain) of a house or other building with the main sewer. The service sewer begins at its point of connection with main sewer and terminates at its point of connection to the building drain and includes the lateral sewer and the building sewer. The point of connection to the building drain shall be two (2) feet or less form the point where the plumbing First extends outside the foundation.

Trunk Sewer - a public sewer which has been or is being constructed to accommodate more than one (1) main sewer and is not used for building sewer connections.

SIDEWALK - shall mean a Portland Cement Concrete (PCC) or asphalt concrete (AC) surfaced area for pedestrian usage located within the street right of way or easement dedicated for such use and included as a standard element of a street section.

STATE STANDARDS – shall mean current issue (May 2006 at time of writing) of State Standards – Caltrans Standard Plans and Specification.

STREET - shall include roads, avenues, lanes, alleys, crossings or intersections and courts which have been dedicated and accepted according to the law or which have been in common and undisputed use by the public or which have been dedicated to a semi-public use.

STREET RIGHT-OF-WAY - width shall mean the shortest distance between the lines delineating the right of way of a street.

STREET WIDTH - means the distance between the curb faces of a street or edge of pavement where a curb face is omitted.

TOWN - The Town of Yountville, a municipal corporation in the County of Napa, State of California.

TOWN MANAGER - The Chief Administrative person for the Town appointed by the Town Council or his/her authorized agent acting on behalf of the Town.

TOWN ENGINEER - The Town Engineer or his authorized agent acting within the scope of his authority, as the Town representative.

TRAFFIC LANE - That portion of a traveled way for the movement of a single line of vehicles.

TRAVELED WAY - That portion of the street for the movement of vehicles, exclusive of shoulders and parking lanes or bays.

DESIGN STANDARDS

AND SPECIFICATIONS

I. WATER SYSTEM DESIGN STANDARDS

PURPOSE:

To provide guidelines for the design of water utilities projects and thereby reduce the time required for processing the plans. These guidelines do not include, but may reference, additional conditions which may be promulgated by all other pertinent ordinances, codes, and official policy set forth by the Town of Yountville. These guidelines are intended to impose minimum acceptable design criteria. More stringent requirements may be imposed at the discretion of the Town Manager based on specific project conditions.

It is the responsibility of the design engineer to initiate written requests for approval of any design concepts contrary to these criteria, to verify additional requirements imposed, perform any necessary calculations or studies, and resolve specific design problems with the appropriate agency.

WATER SYSTEM:

1. Materials

A. Service laterals shall be constructed per applicable Town standards.

B. Asbestos cement pipe shall not be allowed under any circumstances.

C. Ductile iron pipe must be polyethylene encased and have approved cathodic protection, (see Section 12A)

2. Alignment

A. Typical alignment shall be within the street traveled way and STD. DWG. WA-9.

B. Public water mains outside the public street are not allowed without special permission from the Town Manager.

C. Minimum allowable radius for 8" diameter water mains is 250 feet and for 12" diameter water mains is 350 feet.

D. New mains must match the grade and centerline offset of existing water mains where possible.

E. Maintain a constant distance from centerline wherever possible.

F. Conform to the State of California Department of Health Services "Criteria for the separation of water main and sanitary sewer" and Town STD DWG WA-10.

G. Install felt expansion material between pipes with 1" or less vertical clearance.

H. Minimum horizontal separation from existing gas, electrical, and telephone lines shall be 3 feet between pipes.

I. Minimum clear horizontal separation from a metallic pipeline with an induced current shall be 5 feet.

J. Minimum clear horizontal separation from a storm drain shall be 5 feet.

3. Size

A. Water mains must be sized to meet minimum Fire Code requirements, (see Section 8)

B. For residential/commercial installations, public and private mains shall be 6".

C. Dead end mains shall be a minimum of 8" diameter pipe.

D. The Town Manager may require increased pipe size for overall system benefit.

4. Covers

A. Definition: Cover is the distance from the top of the pipe to finished grade.

B. Standard installation shall be in accordance with the General Construction Notes.

C. The minimum cover for all water main construction, under any circumstances, is 30".

D. Where cover exceeds 8', special permission from the Town Manager is required.

E. Service laterals must have minimum cover in accordance with the approved standards.

5. Connection to an Existing Main

A. In most major streets, or in new streets, the new water main must be bored and jacked into place. Conditions should be verified with the Town Engineer.

B. For connecting 2" diameter pipes and smaller, use a hot tap.

C. Cut-in tee must be used if additional valves are required on the existing main. If the new lateral is larger than existing main, the tee shall be the size of the new lateral and reduced to the size of the existing main.

D. Size-on-size taps are only allowed in accordance with the approved standards.

E. A mechanical joint tapping sleeve must be used in accordance with approved Town standards.

6. Valving

A. Valving at intersections shall be in accordance with the provisions of STD DWG WA-9.

B. Main line valves within 250' of an intersection may be considered as part of the intersection.

C. All hydrant runs must be valved.

7. Service Laterals and Water Meters

A. Size of water meter shall be determined by the Town Manager using the current AWWA guidelines.

B. 1. Maintain a minimum 5' separation from the sewer lateral.
2. Meter boxes shall not be placed in driveways except where there is no practical alternative. Boxes in driveways or parking areas must have traffic covers and be encased in concrete (4" each side).

C. Residential (single unit)

1. One meter per lot.
2. Individual 1" services, where practical, for 5/8" meter.
3. Where Residential Fire Sprinklers are required, install individual 1" service
for 1" meter. Backflow devices shall be required to separate the systems on the site.
4. Dual services are not permitted.

D. Apartments

1. Each building/complex will be master metered.
2. Separate irrigation meters for common areas are required.

E. Condominiums

1. Each unit must be individually metered.
2. Individual meters must be clustered.
3. Separate irrigation meters for common areas are required.

F. Mobile Home Parks

1. In parks where spaces are individually owned, separate metered services are required for each mobile home.
2. In parks where spaces are rented or leased master meters will be required.
3. Separate irrigation meters for common areas are required.

G. Commercial

1. Size of the meter and service are based on calculations by the Town in accordance with AWWA standards.
2. A separate meter is required for irrigation.
3. A minimum 1" service shall be required.
4. A minimum 2" service lateral is required for a shell building or light industrial building.
5. A minimum 8" Fire Protection service is required for industrial lots and shopping centers except as approved by the Town Manager.
6. Commercial installations will require backflow prevention. (See Section 9).

H. Irrigation

1. Separate irrigation meters must be provided for all commercial users, condominiums, apartment complexes and mobile home parks.
2. All irrigation services must have reduced pressure backflow devices.
3. Irrigation meter size shall be determined by the maximum flow required at any one control valve.
4. Sizing of irrigation meters shall be coordinated with the Town Administrator.
5. Backflow devices specified on the irrigation plan must conform to Yountville Town STD. DWG. WA-13 and must be on the current USC Approved List of Devices.

8. Fire Hydrants

A. Before combustible materials may be stored or constructed on site, the Fire Department must approve fire flow and access. Before a fire hydrant may be placed in service, a high velocity flush of the fire hydrant shall be witnessed and approved by the Town.

B. Location of fire hydrants must be approved by the Fire Department.

C. Each hydrant must be on a separate valved main line section.

D. Whenever possible, locate hydrants at street intersections.

E. If it's not possible to locate at an intersection, locate the hydrant near a property line or where it will minimize interference with property use.

F. Locate hydrants a minimum of 10' from driveways.

G. Residential areas -

1. Space fire hydrants every 500', or as approved by the Fire Dept.
2. Evenly distribute hydrants throughout the project.
3. No building may be more than 250' from the nearest hydrant or as approved by the Fire Dept.
4. Approximately one fire hydrant is needed for every two acres in a residential development.

H. Commercial Areas -

1. General hydrant spacing shall be every 300' or as approved by the Fire Dept.
2. Evenly distribute hydrants throughout the project.
3. No building may be more than 150' from the nearest hydrant.

I. Minimum fire flow required at all fire hydrants -

1. Residential and commercial areas - 1,500 gallons per minute with a 20 psi residual.
2. Or as required by Appendix III-A of the Uniform Fire Code, whichever is greater.

9. Backflow Devices

A. Backflow devices are required to be installed by State of California Administrative Code, Title 17.

B. All backflow devices that are installed must be on the approved USC list.

C. Backflow assemblies must be installed as near as possible to the water meter as shown on STD DWG WA-13 and STD DWG WA-14.

D. Where residential fire sprinklers are installed, double check valve backflow preventers are required where the fire service connects to the domestic service. The backflow preventer must be accessible for testing and maintenance.

E. Properties with private sewer lift stations must have reduced pressure backflow assemblies on their water systems.

F. All irrigation services require reduced pressure backflow assemblies.

G. Parcels with a private well must have double check valves installed on each service.

10. Pressure

A. Maximum allowable main line pressure is 100 psi measured at a fire hydrant.

B. Maximum allowable service pressure measured at a faucet is 85 psi.

C. Minimum service pressure measured at a faucet is 35 psi, unless otherwise approved by the Town Manager.

D. If the service pressure exceeds the maximum of 85 psi, an individual pressure regulator will be required on the service line.

11. Specialty Items

A. Air relief valves.

1. Air relief valves are required at locations in the system that are one pipe diameter or more higher than the remainder of the system, such as over a hilltop.
2. Air relief valves are not required in residential areas if services are installed at or near the crown within one pipe diameter vertically of the high point.

B. Pressure reducing valves are installed to maintain overall system balance.

C. Surge or pressure relief valves are installed where pressure could potentially reach above the maximum allowable.

D. Manual blow offs are required at the end of every main where Fire Hydrants are not provided.

12. Special Conditions

A. The need for cathodic protection will be determined by the Town Manager for each project. This may require soils reports or other additional information.

B. Abandon water mains and services.

1. For lines 1" or smaller, expose lateral at the main, close the corporation stop, disconnect the lateral and plug or cap the corporation stop.
2. For lines 1/2" or larger, remove the valve and plug the main.
3. Valve boxes for abandoned valves must be removed.
4. Abandoned mains, valves and risers located within the street structural section must be removed.

C. Private water mains vs. Public water mains

1. Public water mains may not be constructed outside the street right-of-way without specific approval of the Town Manager.
2. Fire hydrants required on site to serve one lot will be private systems.
3. Fire hydrants required on site to serve two or more lots, or properties, will be public systems.
4. Normally where the water mains are publicly maintained, the sewer mains should also be publicly maintained.

D. Water mains installed outside of the paved roadway shall have suitable access.

II. WATER SYSTEM CONSTRUCTION STANDARD SPECIFICATIONS

WATER MAIN CONSTRUCTION

1. Description

All water mains and related appurtenances shall be constructed in accordance with the Yountville Water System Design Standards.

2. Pipe

The pipe, except where otherwise specified on the plans, shall be Ductile Cast Iron, all in accordance with the following:

A. Ductile Iron Pipe shall be cement lined, new pipe conforming to ANSI A 21.51 1976 or most recent issue, if any, as sponsored by the American Water Works Association for thickness Class 50 Ductile Iron Pipe. The pipe must be polyethylene encased; all joints, connections and fittings wrapped or coated and have approved cathodic protection. The pipe shall be furnished with either Bell and spigot end, "Tyton Joints" or Mechanical Joints except where otherwise specified on the plans.

3. Copper Service Tubing

All water service tubing 2" and smaller shall be copper service tubing and shall be in conformance with the latest AWWA Standards as described in ANSI/AWWA Standard C800 of the latest revision, and with ASTM B88, and shall be Type "K" soft temper for 1-inch tubing and Type "K" hard temper for 2-inch tubing.

4. Fittings

All fittings shall be new gray iron or ductile iron fittings conforming to ANSI/AWWA C110/C153 or latest revision and shall have the proper type of ends to match the type of pipe used. Gray iron fittings shall be coated inside and outside with a petroleum asphaltic coating conforming to AWWA C110 and shall meet or exceed the pressure rating of the pipe to be installed.

Ductile iron fittings shall be cement mortar lined in accordance with AWWA C104 or latest revision and shall have a petroleum asphaltic coating conforming to AWWA C110. Ductile iron fittings shall have a minimum pressure rating of 250 p.s.i. and shall otherwise meet or exceed the pressure rating of the pipe to be installed and shall have a minimum Class 53 thickness rating.

5. Gate Valves

Gate valves shall conform to AWWA Standard C509 or latest revision and shall be the resilient seat type with non-rising stem, opening counter-clockwise with O-ring stem seal and suitable ends for connections to type of pipe or fitting used. The working pressure rating of gate valves shall meet or exceed the pressure rating of the pipe specified on the plans. External bolts and nuts shall be 304 stainless or poly wrapped per STD DWG WA-4.

6. Butterfly Valves

Butterfly valves shall conform to AWWA Standard C504 or latest revision and shall be of the rubber seat type. Valve discs shall rotate 90 degrees for the full open position to the tight shut position. The valve seat shall provide a tight shutoff at a pressure differential of 150 p.s.i. upstream and 0 p.s.i. downstream in either direction. The valve operator shall be the traveling nut type. Valve shall open with a counter-clockwise rotation of the operating nut.

7. Valve Boxes

Each gate valve shall be covered by a precast 8" valve box set flush with street surface with cast iron ring and cover marked "WATER." The valve boxes are to be Christy G5 or approved equal.

8. Fire Hydrant and Lateral Assembly

At the location(s) shown on the plans, the Contractor shall provide and install a fire hydrant and lateral assembly per STD DWG WA-3.

No bends will be allowed in fire hydrant laterals without approval of the Town Engineer.

Residential fire hydrants will have one 2 1/2 inch outlet and one 4 1/2 inch outlet.

Commercial fire hydrants will have two 2 1/2 inch outlets and one 4 1/2 inch outlet.

All hydrants shall be painted in accordance with the specifications shown on STD DWG WA-3.

A blue reflective pavement marker shall be placed at the street centerline to indicate the hydrant

location.

All hydrants shall be installed plumb.

Before a fire hydrant may be placed in service, a high velocity flushing of the hydrant lateral shall be witnessed and approved by department personnel per Section V. General Construction Notes.

9. Asbestos Cement Pipe

The installation of asbestos cement pipe is prohibited. All cutting, handling and disposal of asbestos cement pipe shall be done in compliance with the Contractor's State Licensing Law and all applicable laws and regulations.

10. Excavation and Backfill

Excavation and backfill of the pipeline shall be as shown on STD DWG WW-9.

Excess Material from excavation shall become the property of the Contractor and shall be disposed of to the satisfaction of the Town Engineer.

Prior to disposal of any materials or operation of any equipment on sites provided by the Contractor for disposal of excess trench excavation owned by him, the Contractor shall submit to the Town Engineer written authorization for such disposal of materials and entry permission signed by the owners of the disposal site and the required permits.

11. Laying and Handling Pipe Materials

Proper implements, tools and facilities satisfactory to the Town Engineer shall be provided and used by the Contractor for safe, convenient and workmanlike prosecution of the work. All pipe fittings and valves shall be carefully lowered into the trench in such a manner as to prevent damage to pipe coatings. Under no circumstances shall pipe or accessories be dropped or dumped into the trench. Before lowering and while suspended, the pipe shall be inspected for defects and the cast iron pipe rung with a light hammer to detect cracks. Any defective, damaged or unsound pipe shall be rejected and sound material furnished. Cutting of pipe for inserting valves, fittings or closure pieces shall be done in a neat and workmanlike manner without damage to pipe. All pipe stockpiled on the job shall be stored with the ends covered to prevent the entrance of foreign matter.

Whenever it is necessary, either in the vertical or horizontal plane, to avoid obstructions, or when long radius curves are permitted, the amount of deflection shall not exceed the maximum recommended by the pipe manufacturer or that required for satisfactory jointing.

Each length of pipe shall be free of any visible evidence of contamination, dirt and foreign material before it is lowered into its position in the trench, and it shall be kept clean by approved means during and after laying. At times when pipe laying is not in progress, the open ends of any pipe which have been laid shall be closed by approved means to prevent the entrance of small animals or foreign material. Trench water shall not be permitted to enter the pipe.

12. Laying of Ductile Iron Pipe (DIP)

The flame cutting of pipe by means of oxyacetylene torch shall not be allowed.

Ductile iron pipe shall be as specified in and installed per AWWA C600 or latest revision and in accordance with the manufacturer's recommendations.

13. Thrust Blocking

All tees, bends and plugs shall be provided with thrust blocking and/or harness as shown on the plans or in accordance with STD DWG WA-6 and WA-7.

14. Hydrostatic Test

All testing shall be done in the presence of Town personnel. The test shall be performed after the line has been laid and all backfill placed and compacted as specified elsewhere in these specifications. The Contractor, at his option, may test the line at any time during construction. However, the final test for acceptance shall be made only after all backfill is in place. Each valved section of pipe, or combined sections, as approved by the Town Engineer, shall be subjected to a hydrostatic pressure of not less than 200 p.s.i. for 15 minutes, then 150 p.s.i for 30 minutes for a total duration of 45 minutes. Valves on existing mains in services required to be operated in connection with this job shall be operated only by personnel of the Town. Each section of pipe shall be slowly filled with water and the specified test pressure shall be applied by means of a pump connected to the pipe in a satisfactory manner. The pump, pipe connection, all necessary apparatus, gauges and measuring devices shall be furnished by the Contractor. The Contractor shall make the taps into the pipe and shall furnish all necessary assistance for conducting the tests. Before applying the test pressure, all air shall be expelled from the pipe. To accomplish this, taps shall be made, if necessary, at the points of the highest elevation, and afterward tightly plugged.

Suitable means shall be provided by the Contractor so that Town can determine the quantity of water leakage under the test pressure. No pipe installation will be accepted until all leakage is stopped. The Contractor shall, at his own expense, locate the cause and repair any leakage,

15. Chlorination of Pipeline

Chlorine may be applied by any of the standard methods indicated in AWWA C651, subject to the approval of the Town. The point of application of the chlorination agent shall be at the beginning of the pipe extension, or any valved section of it, and through a corporation stop inserted in the newly laid pipe.

Water from the existing distribution system shall be controlled to flow very slowly in the newly laid pipe during the application of chlorine. Valves on existing mains in service shall be operated only by personnel of the Town. The rate of chlorine feed shall be in such proportion to the rate of water entering the pipe that the chlorine dose applied to the water entering the newly laid pipe shall be at least 100 p.p.m. Precautions shall be taken to prevent back pressure causing a reversal of flow into pipe treated.

Treated water shall be retained in the pipe for a period of twenty-four hours. After the chlorine treated water has been retained for the required time, the chlorine residual at the pipe extremities and at representative points shall be at least five (5) parts per million. In the process of chlorinating, all valves and other appurtenances on the newly laid main shall be operated.

Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe line. The water throughout its length shall, upon test, both chemically and bacteriologically be proved equal to the water quality served the public from the existing water supply system.

Should the initial treatment, in the opinion of the Town prove ineffective, the analysis shall be made by a State certified analytical laboratory.

Care shall be taken, and if necessary provisions shall be made by the Contractor to insure no highly chlorinated water from treated pipelines enters any natural surface waters either directly or by way of any storm drainage systems.

Chlorination procedure shall be repeated until confirmed tests show that the water sampled from the newly laid pipe conforms to the above requirements.

There shall be a 24-hour waiting period after blowing off the main prior to taking bacteria samples. The initial bacteria test shall be of the 28-hour duration type, in accordance with the *State Department of Health Services* requirements. If the initial bacteria test fails, two consecutive passing bacteria tests must be obtained prior to making the tie-in. The first of these two subsequent tests shall be of the 24-hour duration type, and the second shall be of the 72-hour duration type. Bacteria tests are valid for only 30 days. If there is more than a 30-day lapse between a passing bacteria test and the applicable tie in, the bacteria test must be repeated prior to water main tie-in. Sampling and testing is the responsibility of the Contractor.

16. Water Main Tie Ins

Water main tie-ins are not permitted on Fridays or days preceding a holiday except as authorized by the Town Engineer.

The Contractor shall notify the Town 24 hours prior to individual mainline shutdowns required to facilitate his tie-in operations. The contractor shall schedule tie-in work with the Town at (707) 944-8851. Tie-ins will not be scheduled until a written passing bacteria test has been received by the Town. All shutdowns and valve turning operations shall be performed by Town

personnel only. A Town inspector must be present during all tie-in operations. No tie-ins shall be performed without prior authorization of the Town.

Pipe and fittings furnished for tie-ins shall be no smaller than the existing water main to which each tie-in is made.

Contractors or parties who fail to keep field appointments may be billed for scheduled Town personnel waiting or standby time which was used and the contractor shall bear the costs incurred by the Town for renotification of its customer.

Interruption of service to commercial customers shall, as much as practical, be coordinated with the customer's needs. The Contractor will contact the customer, consider the customer's interests and inform the Town accordingly.

After hours work or weekend work is to be avoided whenever possible and any overtime costs shall be borne by the contractor requesting such after hours work. Normal working hours are: 8:00 a.m. to 4:00 p.m. Monday through Friday.

Contractors or parties requiring work of any kind by the Town shall request such services a minimum of 24 hours in advance of the time such services are desired. Work requests, which will involve Town personnel for more than 8 hours and/or extensive number of Town supplied parts, shall be requested a minimum of 7 calendar days in advance.

If it is necessary to terminate service to any customer, the contractor shall make the request for such work an additional 72 hours (three additional working days for a total of five working days in advance notice) in advance of the time such services are desired, to allow the customers affected to have a minimum of 72 hours notice.

During the work, the Contractor shall exercise all necessary precautions to prevent the entrance of trench water or any other foreign material into the water main and shall conduct all operations in accordance with the most stringent sanitation practices. The interior of all appurtenances being installed shall be thoroughly swabbed with a strong HTH solution prior to installation.

17. Water System Component Reporting

The Contractor shall submit the material type, manufacturer and model number of all water system components to the Town prior to final testing.

18. Construction Water

General construction water shall be reclaimed water obtained from the Town wastewater treatment plant on Solano Ave.

Construction water shall be obtained from the Town only at the point(s) designated by the Town.

Hydrant meters shall only be connected to hydrants which have been accepted by the Town.

A refundable deposit for each meter may be required.

Contractors are prohibited from operating gate valves or fire hydrants on the Town system except as approved by Town staff.

Acquisition of water through appropriation at unmetered fire hydrants or other facilities is a violation of Town Ordinance. Use of construction water from sources other than the Town Water System must be approved by the Town.

III. SEWER SYSTEM DESIGN STANDARDS

PURPOSE

To provide guidelines for design of projects for the sewer utility projects and thereby reduce the time required for plan processing. These guidelines do not include but may reference those additional conditions which may be promulgated by all other pertinent ordinances, codes and official policies set forth by the Town, or other government agencies. These guidelines are intended to impose minimum acceptable design criteria. More stringent requirements may be imposed by the Town Manager based on specific project conditions.

It is the responsibility of the design engineer to initiate written requests for approval of any design concepts that differ with these criteria, to verify additional requirements imposed, to perform any necessary calculations or studies and to resolve specific problems with the appropriate agency, and/or Town.

1. Connection to an existing public sewer

A. Unaccepted connections of new mains to existing mains should be isolated from the collection system by a positive sealing plug. This plug is to be installed in the outlet of the closest manhole on the new main to the existing main. All labor and expense for this shall be borne by the contractor. Failure to comply can result in civil penalties.

B. A proposed sewer design must show a point of connection to an existing public sewer main. It is common for a project on one property to require the construction of sewer on an adjacent property before it can connect to the public sewer. Sewer system designs shall incorporate the design of any off-site sewer that is required for the connection to the public main. Appropriate portions of Town approved plans shall be referenced in the plans unless the mains have been accepted.

2. Materials

A. Gravity sewer mains shall be Polyvinyl Chloride (PVC) SDR 26; or Ductile Iron Pipe.

B. If a gravity sewer main is installed outside of a paved roadway with less than 3 feet of cover, ductile iron pipe is required.

C. All ductile iron pipe shall be polyethylene encased.

D. Use of Asbestos Cement Pipe or Acrylonitrile-Butadiene-Styrene (ABS) is **NOT** allowed under any circumstances.

E. Sewer force mains shall conform with the materials requirements for watermains or may be PVC C-900. Non-metallic pipes require tracer wire (Section V. General Construction. Notes 4)

3. Alignment

A. Follow the State of California, Department of Health Services, "Criteria for the Separation of Water and Sanitary Sewer Main."

B. Public sewer mains outside the public street shall be kept to a minimum.

C. Horizontal separation from storm drains shall be minimum five feet clear.

D. Horizontal separation from utilities, such as storm drains, gas, underground electric, underground television cable, etc., shall be a minimum of four feet clearance between the outsides of pipes.

E. Horizontal and vertical curves in gravity sewer mains will not be allowed unless specifically authorized by the Town Manager.

F. In general, public sewer mains run parallel to street centerlines.

4. Manholes and Cleanouts

A. A manhole is required at every horizontal or vertical change in alignment.

B. Maximum distance between manholes is 300 feet.

C. A manhole is required at the end of every main, except as otherwise specific in "D" below.

D. Cleanouts may be installed in lieu of manholes at the end of a sewer main where the distance is less than 300 feet to the nearest manhole.

E. Minimize the number of manholes.

F. 60" diameter manholes are required for mains deeper than 8'.

G. Private sewer mains must connect to the public main at a manhole.

H. Provide sufficient drop through the manhole to compensate for energy loss caused by change of alignment. A minimum drop of 0.10 foot is required for deflection angles greater than 30 degrees.

I. When pipe size increases, set inlet crown at least as high as the outlet crown.

5. Drop Manholes

A. Minimize the number of drop manholes.

B. Standard drop manhole installations are required when the drop in the manhole is greater than 2 feet.

6. Accessibility

A. Manholes should be located in paved roadways wherever feasible.

B. All-weather vehicle access is required to every manhole.

C. Sewer easements are to be a minimum of 12' in width.

D. All access roads must be a minimum 10' in width.

E. Acceptable types of access roads are:

1. 6" of blue shale for slopes up to 10%.
2. 2" of AC on 6" of aggregate base for slopes in excess of 10%.

F. All access roads longer than 100' must have an approved turn-a-round.

7. Size

A. Mains shall be sized to provide adequate capacity and a minimum 2 feet per second
velocity.

B. The standard diameter for public mains is 8", the minimum public main is 6" in where there are less than 6" connections planned.

C. The minimum private main is 6" in diameter.

8. Cover

A. Minimum cover for all gravity sewers is 24".

B. Where cover is less than 36" ductile iron pipe must be used.

C. Definition of cover: distance from the top of the pipe to finished grade.

9. Slope

Design all gravity sewers to achieve a minimum velocity of 2' per second when flowing full. Use n = 0.011 for new pipe, n = 0.015 for the existing system or manufacturer's recommendation, whichever is higher.

10. Sewer Laterals - Building Connections

A. Each lot should be served by one lateral.

B. Each building shall have an independent connection to a main sewer except that where the Town Engineer determines that it will not be detrimental to the interest of the applicant or the Town. Multiple structures may be connected to the same building sewer when located on the same parcel. When more than one residential or commercial lot is served by a single lateral the lateral must meet the private main standards.

The applicant for multiple connections to the same building sewer shall provide a plan to scale (preparation by Civil Engineer is recommended but not required) showing:

a. The location of all physical features such as buildings, trees, creeks, paved areas, building drain outlets, etc.

b. Existing and proposed sewers, including size, alignment, lengths, grades, elevations, cleanouts, etc.

c. Ground elevations at critical points sufficient to determine that the system is workable and will serve all buildings, using adequate grade and cover. All elevations shall be on National Geodetic Vertical Datum (NGVD).

d. Calculations verifying adequacy of piping size for proposed fixture unit loading. See Uniform Plumbing Code for criteria.

C. All laterals must connect to the main with a wye connection. Connection to existing sewer mains deeper than 6 ft. may be done with watertight sewer saddle connection. All bends, where permitted shall be made with long radius fittings.

D. Minimum slope of sewer laterals is 2% or 1/4" per foot, unless otherwise approved by the Town Engineer.

E. Service sewers shall be sized in accordance with the latest edition of the Uniform Plumbing Code, but in no case smaller than four (4) inches.

F. A backwater check valve shall be installed in the building sewer line at a location approved by the Town Manager, whenever the building has a finished floor elevation twelve (12) inches or less above the top elevation of the nearest upstream manhole or cleanout. Backwater check valves shall be approved by Town Manager prior to installation.

G. Cleanouts of the same size as the line they are intended to serve shall be provided as follows:

a. At the point of connection to the building drain.

b. At any single turn greater than forty-five (45) degrees.

c. At intervals along the building sewer when the cumulative total of deflections from the point of connection to the main or from another cleanout exceeds forty-five (45) degrees.

d. At property line or where lateral enters the Town right-of-way.

Cleanouts shall be extended to grade and protected by "Christy" F-8 curb valve boxes, or equal, except that in areas subjected to traffic or where located in traffic areas or sidewalks, "Christy" G-5 traffic valve boxes, or equal, with cast iron lids shall be used. These cleanouts located in traffic areas shall have a 12 inch deep concrete collar poured around the valve box with a minimum outside diameter of at least 20 inches greater than the OD of the top of the box.

H. Lateral sewer piping and construction shall conform to Town STD DWG WWl and the requirements contained herein.

Building sewer piping shall be a minimum of 4-inch diameter and shall be one of the following:

Ductile Iron Pipe, ANSI A21.51 Acrylonitrile-
Butadiene-Styrene (ABS Pipe SDR 26)
Polyvinyl-Chloride (PVC Pipe SDR 26)

The pipe manufacturer's written instructions shall be closely followed in all piping installations.

Any gas, water or electric services or other pipes paralleling a sewer pipe shall be separated from said sewer pipe by a minimum horizontal clear distance of twelve (12) inches. Such pipes placed in the same trench as a sewer pipe, if above the elevation of said sewer pipe, shall be placed on a solid shelf excavated

at one side of the common trench. The bottom of any water service pipe placed in the same trench as a sewer pipe shall be at least twelve (12) inches above the top of said pipe.

I. Where an existing building is disconnected from a septic tank and reconnected to a new service sewer, the connection to the new sewer shall be made at the end of the building drain. No portion of the existing piping from the building drain to the septic tank shall be utilized for connecting to the new service sewer unless said piping is exposed and tested to permit the Town to determine that it meets all of the Town's requirements for new construction.

J. When an application is made to connect to an existing building sewer, constructed prior to 1970, or if the Town has reason to believe that the sewer is deficient in any respect, the Town Manager may require the contractor to excavate and/or test the sewer and to repair or replace it if necessary to make sure that it complies with these sewer standards.

11. Proximity to Wells

Building sewers shall not be located closer than 50 feet from an individual domestic well. However, said clearance can be reduced to 25 feet if the building sewer is constructed of cast iron. Where special hazards are involved, the distance required shall be increased, as may be directed by the Napa County Health Officer. Also, see Bulletin # 74 "Water Well Standards", State of California, the Resource Agency Division of Water Resources for additional requirements.

IV. SEWER SYSTEM CONSTRUCTION STANDARD SPECIFICATIONS

1. Materials

Sewer pipe shall be ductile iron pipe (D.I.) or polyvinyl chloride pipe (PVC).

2. Polyvinyl Chloride (PVC) Pipe

PVC solid wall sewer pipe and fittings for gravity sewers shall be made for all new, rigid, unplasticized polyvinyl chloride in accordance with ASTM Standard Specifications D3034 and F-679 and shall have a wall thickness of at least SDR 26. Joints shall consist of an integral thickened bell-and-rubber ring and shall conform to ASTM D3212. Gaskets shall conform to ASTM E477. Joints shall be assembled using only manufacturers recommended lubricant.

All pipe shall have a home mark to indicate full penetration of the spigot when the joint is made.

All PVC pipe entering or leaving a concrete structure shall have a standard manhole gasket, as supplied by the pipe manufacturer, firmly clamped around the pipe exterior and cast into the structure base or near the structure wall center as a water stop.

After pipe installation and placement and compaction of backfill, but prior to placement of pavement, all pipe shall be cleaned and then mandrelled to measure for obstructions. Obstructions shall include, but not be limited to deflections, joint offsets and lateral pipe intrusions. A rigid mandrel, with an effective circular cross section having a diameter of at least 95% of the specified base inside diameter shall be pulled through the pipe by hand. The minimum length of the circular portion of the mandrel shall be equal to the nominal diameter of the pipe. All obstructions encountered by the mandrel shall be corrected by the Contractor. Obstructions due to deflection shall be corrected by replacement of the over-deflected pipe, not by re-rounding in place.

If a section of pipe fails to meet the mandrel test and is reinstalled and fails the second time, said section(s) of pipe shall be replaced with an approved rigid pipe material.

The manufacturer shall furnish to the Town a 5 % deflection mandrel and proving ring as shown on the Town Standards for the Town's retention and use.

The average inside diameter for PVC Solid Wall Sewer Pipe shall be the "Average Outside Diameter" (see ASTM D3034 and F679) minus 2.12 times the "Minimum Wall Thickness" (see ASTM D3034 and F619).

The Contractor shall retest the solid wall pipe using a mandrel with an effective circular cross section having a diameter of at least 95% of the specified average inside diameter eleven (11) months after recordation of Notice of Completion of a Town Sewer Contract or after the acceptance by the Town Council of subdivision improvements. Any pipe which fails to pass the

mandrel test shall be replaced at the expense of the Contractor. The Town reserves the right to determine the longitudinal limits of any pipe that is required to be replaced. Pipe replacement shall be guaranteed by the project maintenance bond.

3. Ductile Iron Pipe (DIP)

Ductile iron pipe shall be cement lined, new pipe conforming to ANSI. A 21.51-1976 or most recent issue, if any, as sponsored by the American Water Works Association for thickness class 50 Ductile Iron Pipe. The pipe shall be furnished with either "Tyton Joints", or mechanical joints except where specifically specified on the plans.

All ductile iron pipe buried underground shall be encased in polyethylene film in the tube form. Polyethylene material and installation procedure for the encasement shall conform to ANSI/AWWA C105/A21.5-82 or most recent issue, if any. Installation Method "A" as described in aforementioned specification shall apply.

The pipe must be polyethylene encased; all joints, connections and fittings wrapped or coated and have approved cathodic protection.

4. Fittings

Couplings for connection to the sewer main shall be of a type approved by the Town.

All mechanical fittings shall be coated inside and outside with a petroleum asphaltic coating subject to approval by the Town.

5. Excavation and Backfill

Excavation and backfill shall be as shown on STD. DWG. WW9, "Standard Trench Detail" of the Yountville Standard Drawings.

All stumps and large roots encountered during trenching operations shall be removed to the satisfaction of the Town. The trench shall be opened sufficiently ahead of the pipe laying operations to reveal obstructions. Trench crossings shall be provided as necessary to accommodate public travel and to provide convenient access to adjacent properties. Flow shall be maintained in any sanitary sewers, storm drains, water lines, or water courses encountered in trenching.

All cutting, handling and disposal of asbestos cement pipe shall be done in accordance with the Contractor's State Licensing Law and all applicable laws and regulations.

6. Existing Manholes

At locations where sewer is to be installed into or out of existing manholes, the manhole wall and base shall be chipped to accept the new size of pipe and to form a flow channel in the manhole base. The Contractor shall dry pack around the pipe between the pipe and the chipped out opening. The Contractor shall also backfill the area around the pipe with concrete to insure a watertight connection.

Existing manholes that are modified in the course of construction shall be epoxy coated in accordance with Section 9 of the Specifications.

Existing manholes and cleanouts located within the street right of way shall be adjusted to conform to finished pavement grades in accordance with the details shown on the plans.

Prior to the removal of an existing manhole frame, a platform shall be constructed in the manhole above the top of the sewer to prevent any dirt or debris from falling into the sewer. The platform shall remain in place until all work on the manhole has been completed and the asphalt concrete has been placed around the manhole. Prior to the removal of the platform from the manhole, all dirt and debris shall be removed.

Lowering of the manhole ring and cover shall be accomplished by the removal of existing concrete grade rings below the manhole ring or by removing the upper section of manhole barrel and substituting therefore a shorter section of barrel.

At the Contractor's option, in lieu of removing and replacing barrel sections as above provided, the top of the existing upper barrel section may be trimmed and the taper section replaced on such trimmed surface provided, however, that such trimming shall not crack or otherwise damage the remaining portion of barrel section.

In the event that the portion of barrel section to remain is cracked or damaged or otherwise made unsuitable for use by such trimming, the entire section shall be removed and replaced with a new section of barrel. Trimming of taper sections will not be permitted.

All sections of the manhole shall be set in cement mortar or in approved gasket material. Trim excess gasket material and plaster inside joints smoothly. Manhole sections set in cement mortar shall be smoothly plastered inside and out.

After placing the surface course of asphalt concrete, all manholes and cleanouts shall be located and marked with white paint before the close of that work day.

Within two working days of paving, all manholes and cleanouts shall be adjusted to grade and inspected.

7. Pipe Laying

Where ground water occurs, pumping shall continue until backfilling has progressed to a sufficient height to prevent flotation of the pipe. Water shall be disposed of in such a manner as to cause no property damage or not be a hazard to public health or the environment.

Where projects consist of construction or new mains or extensions of existing mains, contractors must make provisions to keep flow from entering the sewer collection system. This shall include the installation of a positive sealing plug on the outlet of the new mains closest manhole to the xisting main. Additionally, if any new laterals enter the new main between the existing main and the closest manhole on the new main, each lateral shall be individually plugged with a positive sealing plug. The Contractor shall be held responsible to periodically check that all plugs are holding tight. The Contractor shall ensure that the water contained in the new main is not contaminated with human or hazardous waste, prior to removal of any plugs. The Contractor shall make provisions to dewater the new mains without disposal into the sewer collection system and without cause of property damage or hazard to the public health or environment. Failure to comply may result in penalties.

Where construction consists of constructing a new main or extension of an existing main, the downstream end of the new main shall be securely closed with a tight fitting plug until the construction is accepted by the Town.

If the new sewer main is connecting to an existing main at a location other than an existing manhole, the Contractor shall pothole the existing sewer main to verify invert grades and locations.

Sewer pipe shall be installed on the alignment and grade as shown on the plans and in accordance with the Standard Specifications, or as directed by the Town. Existing sewer laterals shall be removed and replaced at the locations shown on the plans, or as directed by the Town.

Sewer pipe shall be laid in straight lines and on uniform rates of grade between points where changes in alignment or grade are shown on the plans. The interior of the pipe shall be free of foreign matter before lowering into the trench.

The pipe manufacturer's written instructions covering the installation of his pipe shall be closely followed unless otherwise directed by the Town or these Specifications. The trench shall not be backfilled until authorized by the Town. Pipe laying shall proceed upgrade with the spigots pointing in direction of flow.

Electro-optical grade setting devices must be used and shall be operated by a person proficient in its operation. Any section of pipe found to be defective or which has had grade or joints disturbed shall be re-laid by the Contractor at his expense.

Proper implements, tools and facilities satisfactory to the Town shall be provided and used by the Contractor for the safe and efficient execution of the work. All pipe, fittings and accessories shall be carefully lowered into the trench by means of derrick, ropes, or other suitable equipment in such a manner as to prevent damage to pipe and fittings. Under no circumstances shall pipe or accessories be dropped or dumped into the trench. The pipe and accessories shall be inspected for visible defects prior to lowering into trench. Any visibly defective or unsound pipe shall be replaced.

The line and grade of existing utilities shall not be altered. Any leakage caused in existing utilities by reason of the Contractor's operations shall be immediately repaired at the Contractor's expense.

Existing storm drains shall be supported or removed and replaced at the Contractor's option. In any case, the Contractor shall be responsible for maintaining the existing line and grade of the storm drains.

Existing water lines shall be supported in place with service maintained during construction. The Contractor shall be responsible for any damage resulting from improper backfilling.

Existing Sewer lines shall be supported in place with service maintained during construction. The Contractor may, at his option, remove and replace any sewer laterals which are not in use during construction. The Contractor shall be responsible for damage to sewer lines during construction and any damage resulting from improper backfilling.

8. Sewer Laterals and Services

Sewer lateral inverts shall be set above the mid point of the sewer main unless no other option is available.

Grades and Alignment

Service sewers shall be run in practical alignment at a uniform slope of not less than 1/4 inch per foot toward the main sewer; provided that where it is impractical due to the depth of the main sewer or to the structural features or the arrangement of any building or structure, to obtain a slope of 1/4 inch per foot, any such piping may have a slope of not less than 1/8 inch per foot when approved by an Administrator.

Pipe Cover and Clearance

Lateral sewers - shall be installed at sufficient depth to serve the parcel involved, but in no case less than three (3) feet clear cover at the property line.

Building sewers - shall have a clear cover of eighteen (18) inches minimum from finished grade. Where clear cover is less than eighteen (18) inches, cast iron pipe shall be used. Where building sewers are located or cross driveways of the property, ductile iron pipe shall be used.

9. Sewer Structures

Manholes: Manholes shall be standard precast concrete manholes as detailed on STD DWG WW6 and STD DWG WW7. Mains deeper than eight feet require 60" diameter manholes. Precast concrete manhole bases must be from the list approved by the Town.

Manhole bases may be poured-in-place concrete on undisturbed earth. The bases shall be poured full thickness against the side of the manhole excavation or to dimensions shown on the plans. The manhole excavation site shall be dewatered before pouring.

Pre-cast manhole bases, conforming to Town Standard WW6 and WW7 in dimensions and the requirements outlined below for materials may be used. Such pre-cast bases shall be placed on a minimum 12-inch thick cushion of drain rock, as specified in STD DWG WW6 and STD DWG WW7. The drain rock shall extend a minimum of 6 inches beyond the outside edges of the base.

Concrete for manhole bases shall be Class A portland cement concrete conforming to the applicable requirements. The portland cement shall be Type V conforming to ASTM Designation: C 150 or low-alkali-Type II cement meeting the requirements for Type V cement.

Where steel reinforcement is required in manhole base construction, such reinforcement shall be furnished and placed as shown on the plans and in accordance with the applicable provisions.

The base slab and initial riser section shall be connected with integrally poured concrete to create a watertight joint. Flow channels shall be constructed as shown on the plans. Changes in size or grade shall be made gradually and changes in direction by smooth curves. All finished surfaces shall be smoothly troweled with a steel trowel. All manhole barrels and taper section shall be precast concrete sections using Type V portland cement complying with ASTM Designation : C 150 or low-alkali Type II cement meeting the requirements for Type V cement.

The 48-inch and 60-inch diameter barrels and taper sections shall be constructed in accordance with the applicable provisions of ASTM Designation: C 478 and shall be inspected by the Town to determine that the interior surfaces are smooth and free of pockets or depressions. The inside face of all barrels, tapers and rings shall be aligned with and flush to adjacent sections.

Manhole frames and covers shall be in accordance with the Town STD DWG WW8.

Epoxy Coat Existing Sewer Manhole: After construction or modifications to a manhole are complete, all interior manhole surfaces except pipe inverts shall be coated with a Super High Viscosity Modified Structural Epoxy. If interior of manhole is already coated, then those areas that have been disturbed and/or damaged shall be coated.

Epoxy shall be Neopoxy NPR-5305, or substitute as approved by the engineer. Minimum finished coating thickness shall be 0.20 inches and shall be applied by spraying.

The epoxy shall be a rapid curing, high strength, high corrosion resistant modified epoxy resin designed for spray application or, when needed fro small repairs, hand application. Resistance to sulfuric acid, hydrogen sulfide, nitric acid, sodium hydroxide, and gasoline and other chemicals demonstrated by independent third party testing and extensive field experience.

This material shall meet the following requirements:

Minimum Thickness	200 mils
Flexural Modulus (ASTM D-790)	500,000 psi

Flexural Strength (ASTM D-790)	11,000 psi
Tensile Elongation	5%
Tensile Strength (ASTM D-638)	7,000 psi
Compressive Strength (ASTM C-579)	14,000 psi
Coefficient of Linear Thermal Expansion	3.7×10^{-6} cm/cm/^{0}C
Service Temp.	0°F - 150°F
Shore D Harness (ASTM D-4541-95el)	>80
Shrinkage	<0.5%
Adhesion: Concrete (ATM D-4541-95el)	Concrete Fails
Adhesion: Steel (ASTM D-4541-95el)	2000 psi
Abrasion Resistance (D4060-95, CS17)	50mg/1000@1000 gram load

All joints in manholes shall be sealed by means of a preformed, self-bonding, self-sealing plastic gasket, such as "Ram-Nek", manufactured by the K.T. Snyder Company, Houston, Texas, or approved equal. Joint seals shall be installed in full compliance with the manufacturer's current recommendations. All manholes shall be water tight prior to grouting.

Manhole frames and covers shall be in accordance with the Town STD DWG WW8.

At locations where sewer is to be installed into or out of existing manholes, the manhole wall and base shall be chipped to accept the new size of pipe and to form a flow channel in the manhole base. The Contractor shall dry pack around the pipe between the pipe and the chipped out opening. The Contractor shall also backfill the area around the pipe with concrete to insure a watertight connection.

Cleanouts: Mainline cleanouts shall be installed per STD DWG WW10 at the locations shown on the Plans.

After placing the surface course of asphalt concrete, all manholes and cleanouts shall be located and marked with white paint before the close of that work day.

Within five working days of paving, all manholes and cleanouts shall be adjusted to grade and inspected.

10. Testing of Sewers

Testing of all portions of the sewer including manholes will be required.

For either exfiltration or infiltration test, the maximum leakage shall not exceed 250 gallons per inch of pipe diameter per mile per 24 hours as measured over a period of 30 minutes minimum. Should the leakage exceed the maximum allowable rate, the Contractor shall repair, overhaul, or rebuild the defective portion of the sewer line to the satisfaction of the Town at no additional cost to the Town. After repairs have been completed by the Contractor, the line shall be retested as specified above, all at no cost to the Town.

The test shall be performed after the line has been laid and all backfill placed and compacted as specified elsewhere in these specifications. The Contractor, at his option, may test the line at any time during construction. However, the final test for acceptance shall be made only after all backfill is in place and compacted.

In the event that the exfiltration test prescribed above is impractical due to wet trench conditions, these portions of the sewer line where such conditions are encountered will be tested for infiltration. The Town shall determine whether the exfiltration or infiltration test will be used.

Even though the test for leakage is within the prescribed limits, the Contractor shall repair any obvious leaks.

Low pressure air testing may be used in lieu of water testing at the option of the Contractor. Water testing may be required by the Town, The following procedure shall be used for air testing.

1. Clean pipe to be tested by propelling a snug fitting inflated rubber ball through the pipe with water. Remove any debris.

2. Plug all pipe outlets with suitable test plugs. Brace each plug securely.

3. If the pipe to be tested is submerged in ground water, Inspector may require that gauge pressures be increased to compensate for groundwater hydrostatic pressure.

4. Add air slowly to the portion of the pipe installation under test until the internal pressure is raised to 4.0 p.s.i.g.

5. Check exposed pipe and plugs for abnormal leakage by coating with a soap solution. If any leakage is observed, bleed off air and make necessary repairs.

6. After an internal pressure of 4.0 p.s.i.g. is obtained, allow at least two minutes for air temperature to stabilize, adding only the amount of air required to maintain pressure.

7. After the two minute period, disconnect the air supply.

8. When pressure decreases to 3.5 p.s.i.g, start stop watch. Determine the time in seconds that is required for the internal air pressure to reach 2.5 p.s.i.g. The minimum allowable time in seconds shall be based on the diameters and lengths of pipe under test. The Contractor will be allowed to manually bleed air as required to drop the internal pressure to 3.5 p.s.i.g. to start test, of desired.

Air test data sheets and nomograph with directions for computing the specification time are available at the office of the Town.

The Contractor shall hire an independent television inspection service to perform a closed-circuit television inspection of all newly constructed sewers. The television inspection shall be produced and delivered to the Town in color DVD format, together with a typed log of their inspection.

The following conditions shall exist prior to the television inspection:

a. All sewer lines shall be in installed, backfilled and compacted;
b. All structures shall be in place, all channeling complete and all pipelines accessible from structures;
c. all other underground facilities, utility piping and conduit within two feet of the sewer main, shall be installed;
d. All compaction required shall be completed;
e. Pipelines to be inspected shall be balled, flushed and mandrel tested;
f. The final air or water test shall have been completed.
g. Immediately before the television inspection, run fresh water into the sewer until it passes through the downstream manhole.
h. No more than 1" deep water will be present at all times during video inspection.

When the above work has been completed, the Contractor shall notify the Town 48 hours in advance of the date for television inspection. During this inspection, the Contractor of his authorized representative shall be present to observe the video pictures as provided by the television camera. Cameras shall be pointed upstream and all video inspections shall run upstream.

The following video tape observations shall be considered defects in the construction of the sewer pipelines and will require corrections prior to acceptance:

a. Off grade - 0.08 foot, or over, deviation from grade
b. Joint separations - over 3/4";
c. Offset joints;
d. Chips in pipe ends - none more than 1/4" deep;
e. Cracked or damaged pipe or evidence of the presence of an external object bearing upon the pipe (rocks, root, etc.);
f. Infiltration;
f. Debris or other foreign objects;
h. Other obvious deficiencies when compared to Approved Plans and Specifications, these Standards and Standard Drawings.

The Contractor shall be notified in writing of any deficiencies revealed by the television inspection that will require repair, following which the Contractor shall excavate and make the necessary repairs and request a television reinspection. Television reinspection shall be at the Contractor's expense.

11. Trench Resurfacing

Trench resurfacing shall be as shown on STD DWG WW9, "Standard Trench Detail".

V. STREET STANDARDS

GENERAL

Street classifications and widths shall be those shown in the General Plan or as amended.

Street and right-of-way widths, curb return radii, curb, gutter, sidewalk and handicap ramp dimensions shall be as shown in the Town Standard Drawings.

Street design and construction shall conform to Caltrans Standards except as amended by these Town Standards.

DESIGN

1. Geometries

Minimum cross slope shall be 2%. Maximum cross slope shall be 4% except for traveled ways of major collectors and arterials which shall not exceed 3%.

Minimum street grade with concrete gutter shall be 0.005%.

Minimum street grade without gutter shall be 0.007%.

Vertical curves shall be used to connect grade profiles where the algebraic difference in grade rates exceeds one percent. The length of vertical curve required shall be determined by the sight distance requirements using Caltrans design practices.

Minimum centerline curve radius shall be 250 feet.

Miscellaneous

Where connecting to existing streets, sawcuts shall be a minimum of one foot (1 ft.) into the existing structural section asphalt.

Barricades shall be placed at the ends of stubbed streets.

Temporary asphalt conforms meeting handicap requirements must be placed at the ends of sidewalk except where right-of-way or unmitigatable physical obstruction exists. Wood barricades shall be placed in such cases.

2. Pavement Striping and Marking

Arterials and collector streets shall be striped, marked and signed in accordance with State Standards.

Pavement markings shall be painted.

Where local streets intersect collectors or arterials, the local streets shall have no less than 50 feet of centerline marking, Detail 23.

Centerlines of knuckles will be striped from 50 before the BCR to 50 feet past the ECR, Detail 23.

CONSTRUCTION

3. Asphalt Concrete

Asphaltic concrete surface course shall conform to Section 39 of the State Standard Specifications, meeting the Type "A" one-half inch (1/2") maximum, medium grading aggregate requirements. Aggregate shall be proportioned by weight and properly mixed according to the provisions of Section 39-3 State Standard Specifications and shall be placed at the locations and thickness shown on the plans. 3/4" maximum type B asphalt concrete may be used for asphalt base courses.

Asphalt binder shall be Performance Grade (PG), specifically PG 64-16 conforming to Section 92 of the State Standard Specifications.

Asphalt Emulsion

Asphalt emulsion for the application of the tack coat shall be applied with a distributor, which shall be kept on the job site during all phases of paving. Asphaltic emulsion shall be applied to all vertical surfaces of existing pavement, curbs, gutters, and construction joints in the surfacing against which additional material is to be placed, to a pavement to be surfaced and to other surfaces designated by the Engineer. A prime coat over Class II aggregate base is not required.

Spreading Equipment

Asphalt pavers shall be self-propelled mechanical spreading and finishing equipment, provided with a screed of strike-off assembly capable of distributing the material to not less than the full width of a traffic lane, screed action shall include any cutting, crowding or other practical action which is effective on the mixture without tearing, shoving or gouging, and which produced a surface texture of uniform appearance. The

screed shall be adjustable to the required section and thickness. The paver shall be provided with either a full width roller or tamper or other suitable compacting devices. Pavers that leave ridges, indentations, an uneven surface or other marks in the surface that cannot be eliminated by rolling or prevented by adjustment in operation shall not be used.

The asphalt paver shall operate independently of the vehicle being unloaded and shall be capable of propelling the vehicle being unloaded in a satisfactory manner and if necessary, the load of the haul vehicle shall be limited to that which will insure satisfactory spreading. While being unloaded, the haul vehicle shall be in contact with the machine at all times, and the brakes on the haul vehicle shall be in contact with the machine at all times, and the breaks on the haul vehicle shall not be depended upon to obtain contact between the vehicle and the machine.

Dumping of material in a windrow and then placing the material in the asphalt paver with loading equipment will not be permitted, unless the asphalt paver is of such design that the material will fall into a hopper which has a movable bottom conveyor to feed the screed and the loading equipment is constructed so that substantially all of the material deposited on the roadbed is picked up and deposited in the paving machine.

Pneumatic Rollers

In addition to the requirements for pneumatic rollers in Section 39-5.02 of the State Standard Specifications, the roller shall be equipped so that the air pressure in all tires may be regulated uniformly by the operator while the roller is in motion.

Rolling Agents

A rolling agent in the proportions recommended by the manufacturer of such agent shall be added to the lubricating water used in the pneumatic-tire roller. The use of rolling agents and lubricating water will not be required if the pneumatic-tire roller is equipped with a tire heating device that will preheat the tire to a temperature of 105 degrees Fahrenheit.

Spreading, breakdown and compaction shall be in accordance with Section 39-6 of the State Standard Specifications and shall be completed while the temperature of the asphaltic concrete is 225 degrees Fahrenheit.

Asphalt Paths

Asphalt paths shall be no less than 2" of 1/2" maximum, medium asphalt concrete (type A or B) over no less than 4" of Class II aggregate base (95% relative compaction). An asphaltic seal coat shall be placed on all paths.

4. Concrete

All Portland cement concrete used for construction of curbs, gutters, sidewalks, and driveways shall be Class A (6 sack) concrete containing two pounds of carbon black or equivalent integral coloring per cubic yard. The maximum slump shall be 3"; minimum compressive strength at 28 days shall be 3,000 lbs. per square inch.

Cement shall contain 20 to 40 percent pre-consumer recycled content consisting of:

1. Fly ash, Class F (ASTM C618, C311 and D5759); or at contractor's option:
2. Slag Cement, Grade 100 (ASTM C989).
3. Silica Fume (ASTM C1240).

Aggregate shall contain 20 to 40 percent pre or post-consumer recycled content.

All expansion joints material for installation in curb, gutters, sidewalks and driveways shall conform to Town Standard Plans.

Curing Compound

Curing compound shall white pigmented conforming to ASTM Designation C 309, Type 2, Class B. Type II, , and shall not impart a slippery surface thereto. The liquid shall contain a coloring matter which does not permanently alter the natural color of the concrete, but which colors sufficiently at the time of application to indicate the areas covered. The use of any membrane material which would impart slippery surface to the pavement or alter its natural color will not be permitted.

Adhesive

Adhesives used to bind new concrete to existing concrete or asphaltic concrete surface shall be used only after approval of the Town Engineer.

Forms

Forms shall be true and shall have a smooth, straight upper edge. Timber forms shall be surfaced on the side placed next to the concrete, shall have true surfaced upper edge and shall be not less than one and five-eights inches (1 5/8") after being surfaced. All forms shall be thoroughly cleaned and coated with form oil to prevent the concrete from adhering to them. The depth of forms for back of curbs shall be equal to the full back face height of curb. Lower rear edge of front face form for curb shall be milled to a 1" radius. Forms shall be carefully set to alignment and grade and shall conform to the required dimension. Forms shall be held rigidly in place. Clamps, spreaders and braces shall be used where required to insure rigidity in the forms. Benders or thin plank forms may be used on grade changes or for curb returns. Back forms for curb returns may be made of 1/2" thick benders cleated together for the full depth of the curb. Side forms for sidewalks, local depressions and driveways shall not be removed less than 12 hours after the finishing has been completed.

Finish

All exposed surfaces shall have a medium broom finish except as specified or noted on the plans.

5. Curb and Gutter

Curbs and gutters shall be constructed in accordance with STD DWG ST 4 and driveway entrances shall be provided for driveways to existing and proposed facilities.

Weakened plane joints shall be constructed at 20-foot intervals, except that when Portland cement concrete pavement is adjacent thereto, or to be constructed adjacent thereto, the joints shall coincide with the weakened plan joints in the adjacent pavement. The joints shall be constructed to a minimum depth of one and one-half inches. Scoring shall be with a tool which will leave the corners rounded and insure free movement of the concrete at the joint, or by sawing the hardened concrete and covering the exposed area with curing compound.

Expansion joints, 1/2" wide, shall be constructed at each side of structures, at the ends of curb returns, ends of driveways and elsewhere on 60 foot centers. Where possible, expansion joints in curb and gutter shall be set co-linear with the joints of the sidewalk. Expansion joint filler shall be pre-molded material conforming to the Standard Plans. Expansion joint material shall be shaped to the cross section of the curb and gutter and shall be installed at right angles to the curb face. A construction joint shall be installed when the delay between successive pours exceed the time of initial set.

Concrete shall be placed and compacted in forms without segregation. Prior to the removal of the forms, the surface shall be finished true to grade by means of a straight edge float, no less than 10 feet in length, operated longitudinally over the surface of the concrete. Form clamps shall be constructed so as not to interfere with the operation of this float. Immediately after removing the front curb form, the face of the curb shall be troweled smooth and then finished with a steel trowel. The top shall be finished and front and back edges rounded as shown on the Standard Plans. After the face of the curb has been troweled smooth, it shall be given a final brush finish with brush strokes parallel to the line of the curb. The top and face of the finished curb shall be true and straight and the top surface of the curb shall be of uniform width, free from bumps, sags, or other irregularities. When a straightedge ten feet (10') long is laid on top of the face of the curb, or on the surface of the gutter, the surface shall not vary more than 0.01 foot from the edge of the straightedge, except at grade changes or curves. Where the grade is less than one percent (1%), a water flow test will be required to determine depressions in the gutter. Exposed surfaces of curbs and gutters shall be cured by the pigmented curing compound. The Contractor shall clean, at his own expense, all discolored concrete. The concrete may be cleaned by abrasive blast cleaning.

Repairs shall be made by removing and replacing the entire unit between scoring lines or joints. Repaired sections shall be doweled to existing curb and gutter by the use of dowels or, when the repair length is ten feet or more, by application of epoxy adhesive to the existing concrete.

6. Sidewalk and Driveway

Driveway entrances shall be provided for driveways to existing and proposed facilities in accordance with STD DWG ST 3. The entrances shall be of the dimensions shown on the Standard Plans. Fresh concrete shall be struck off and compacted until a layer of mortar has been brought to the surface. The surface shall be finished to grade and cross sectioned with a wood or aluminum float, troweled smooth and finished with a broom.

The surface of the sidewalk shall be marked into rectangles of not more than five (5) lineal feet in length, with one-half inch (1/2") scoring tool which will leave the edges round. Driveway approaches shall be scored at the bottom of the curb breakdowns and evenly across the apron.

Expansion joints one-quarter inch (1/4") wide shall be constructed at all returns and opposite expansion joints in adjacent, where driveways abut driveway approaches, and as shown on the Standard Plans. Expansion joint filler shall be shaped to fit the concrete that is being placed.

7. Aggregate Base

Base material under asphalt concrete, concrete sidewalk and curb and gutter shall be Class II aggregate base and conform to the provision in Section 26-1.02B of the State Standard Specifications and shall be placed and compacted in conformance with the requirements specified in the Standard Plans.
The table of values of quality requirements in Section 26-1.02B, "Class 2 Aggregate" for Sand Equivalent is revised to read: Individual Test Result - 30 Minimum, Moving Average - 32 Minimum.

Aggregate may include material processed from reclaimed asphalt concrete, portland cement concrete, lean concrete base, cement treated base or a combination of any of the materials. The amount of reclaimed material shall not exceed 25% of the total volume of aggregate used. Aggregate shall conform to the grading and quality requirements specified in Section 26,"Aggregate Base," of the Standard Specifications. With approval of the Engineer, existing base material may be re-used and recompacted, if not contaminated.

8. Pavement Striping, Marking & Markers

Centerline, lane line, edgelines and bikelane striping and marking shall be no less than two coats of water borne paint, with raised pavement markers where shown on the Stardard Plans and as required by the Town. Stop bars, crosswalks, pavement symbols, and other pavement markings shall be thermoplastic unless otherwise specified.

Where centerline markers have been removed on existing streets temporary markers shall be placed prior to the end of the work day. Temporary marking shall be 4" yellow reflective paint or tape no more than sixteen feet on center.

On existing Town streets, permanent centerline marking shall be placed within 72 hours of placing the surfacing.

VI. DRAINAGE AND GRADING STANDARDS

1. Drainage Design

Drainage facilities shall be constructed to meet Napa County Flood Control & Water Conservation District and Town criteria.

The minimum slopes of pipes allowed are:

Diameter	Minimum Slope
15" and smaller	0.00375
18"	.0030
24"	.0020
30"	.0015
36"	.0012
42"	.0009
48" and larger	.0008

Storm drain pipes within Town maintained roads shall be minimum 18" diameter, except laterals to single inlets may be 12" in diameter.

Minimum cover over pipe shall be 24". For pipes with less than 24" cover in traveled way Class 5 pipe and "D" load calculations or concrete backfill are required. The maximum allowable cover shall be limited to 11 feet for all pipe sizes.

2. Storm Drain Construction

Pipe

Storm drain conduits shall be reinforced concrete pipe conforming to Caltrans Standard Specification Section 65. Cast in place concrete pipe, High Density Polyethylene (HDPE) and Polyvinyl Chloride(PVC) SDR 26 plastic storm drain conduit are accepted alternates to Class III RCP only. However, cast in place pipe shall not be used in existing roadways and HDPE and PVC may not be used within the paved areas of Washington, Yount, Madison or California Streets or Yountville Crossroad. HDPE pipe shall have silt tight gasketed couplings & PVC pipe shall have rubber gaskets.

Excavation and Backfill

Reinforced concrete pipe and cast-in-place storm drain pipe shall be placed and backfilled in accordance with Caltrans Standard Plans Drawing A62D.

Excavation and backfill for plastic pipe shall conform to the provisions in Section 19-3 of the Caltrans Standard Specifications dated May 2006, as shown on Standard Plan A62F and in accordance with manufacturers' recommendations.

HDPE storm drain pipe bedding and backfill shall conform to the manufacturer's specification. Pipe bedding material, filled and compacted to the spring line of the pipe, shall conform to the following specification:

Sieve	Size	Percen Passing Min.	Max.
	1-1/2"	100	100
	1"	95	100
No.	1/2"	0	30
No.	4	0	4

Pea gravel or clean sand may be used for bedding material if allowed by the pipe manufacturer and with approval from the Town Engineer.

Material shall have a minimum durability index of 35 and a minimum sand equivalent of 20. Material shall be free of organic material.

Pipe backfill material, filled and compacted to no less than 6" above the pipe, shall conform to the above specification for bedding material, unless otherwise specified by the pipe manufacturer.

Installation of Pipe

Pipe laying shall proceed upgrade without break from structure to structure as shown on the drawings, and each pipe length shall be checked to grade.

Each length of pipe shall be laid on a firm bed and have a true bearing for its length. Adjustment of pipe to line and grade shall be made by fine grading the bedding material. No wedging or blocking to support the pipe will be permitted.

When pipe laying is not in progress, the forward end of the pipe shall be kept effectively closed with an approved temporary closure.

Storm Drain Manholes and Inlets

Storm drain manholes and inlets shall consist of a precast unit, or a cast-in-place unit in conformance with Section 51 of the State Standard Specifications, or a combination thereof. Inlet tops shall be precast except as approved by the Town Engineer.

Manholes shall be fitted with either an eccentric cone or a flat "reducer" slab. Manholes shall be adjusted to match the finished grade with no less than two precast grade rings fitted with a cast iron frame and cover not less than 24" in diameter.

The inside diameter of the manhole shall be of such a size that it accommodates the outside diameter of the largest adjoining pipe, however, in no cast shall the inside diameter of any manhole be less than 48 inches. All pipe ends shall be rounded and all joints grouted. No pipe ends shall extend into the barrel of the manhole.

When the flowline of the manhole is over seven (7) feet below the top of the cover the inside of the manhole will be no less than 60 inches in any direction.

Adjust Town Manholes to Paving Grade

Existing manholes located within the street right-of-way shall be adjusted to conform to finished pavement grades in accordance with Standard Plans.

Inlets

Inlets to be installed shall be in conformance with Town of Yountville Standard Plans and the details as shown on the plans and as directed by the Town Engineer.

Base material under inlets shall be 4" of ¾" crushed rock or Class II aggregate base conforming to the provisions in Section 26-V7 of the Town Specifications and shall be placed and compacted in conformance with the requirements specified in said section.

All work with a stream, waterway or adjacent riparian zone shall be subject to a Department of Fish & Game permit. No work within a stream or waterway shall be performed between October 15 and June 1 without approval of the Department of Fish and Game.

3. Grading Standards

Plans and Permit

All Grading shall conform to the Town Grading and Excavating Ordinance (Town Code Chapter 15.43.010) and Tree Preservation Standards. A grading permit shall be issued by the Town Building Department prior to any grading.

Grading Plans shall be prepared by or under the direction of a person licensed to perform civil engineering in the State of California. Grading Plans shall include the following information:

- Benchmark
- Existing grades (contours)
- Proposed grades contours or spot elevations
- Limits of grading
- Typical sections or details showing how drainage will be dealt with at all the limits of grading and property lines
- Swale and building pad typical plans or details
- Existing trees to be saved and protective fencing around trees to be saved.

All Grading Plans shall also reference the title, preparer and date of the Soils Report on which the plans are based and state that all work shall conform to the report. If the report is not to be used in its entirety, the provisions to be used shall be stated on the plans.

Construction

The Contractor shall be responsible for coordinating his work with the Soils Engineer. All grading shall be performed to the satisfaction of the Soils Engineer and shall be in conformance with the preliminary Soils Report filed with the Building Department and Appendix J "Grading" of the adopted California Building Code.

All work with a stream, waterway or adjacent riparian zone shall be subject to a Department of Fish & Game permit. No work within a stream or waterway shall be performed between October 15 and June 1 without approval of the Department of Fish and Game.

Street subgrade shall be compacted to 95% relative compaction to a depth of no less than 2.5' below the finished roadway surface. Asphalt concrete and Class 2 aggregate base shall be compacted to 95% relative compaction.

The use of the sand cone methods (such as ASTM 1557 or CAL 216) for determining field densities will not be allowed as a substitute for nuclear gauge testing.

Any existing septic system and existing wells shall be destroyed under permit from the Napa County Health Department.

4. Erosion Control

Erosion control shall conform to current *ABAG Manual of Standards for Erosion and Sediment Control Measures, California Department of Fish and Game* and these provisions. All graded areas and exposed soil within this project shall be seeded for erosion control by the Contractor. Seed and mulch will be applied by October 15th to all cut and fill slopes within or adjacent to project roads. Seed and fertilizer will be applied hydraulically or by hand at the rates specified below. On slopes, straw will be applied by blower or by hand and anchored in place by punching. All critical earthwork operations shall be performed during the dry season, from April 15th to October 15th or as otherwise approved by the Town Engineer. The clearing of existing vegetation shall be confined within the limits of actual earthwork. Incremental development shall be required to ensure that the amount of land cleared at any time is limited to the area that can be developed during the construction period. Storm water shall not be allowed to flow directly down unprotected slopes. Energy dissipating structures and erosion control devices shall be placed at all drainage outlets which discharge to natural channels as shown on these plans. All sediment traps shall be maintained by the owner until such time that the Town accepts maintenance responsibility.

Item	Pounds per Acre
"Blando Brome"	30
Annual Rye Grass	20
Fertilizer (16-20-0 & 15% Sulfur)	500
Straw Mulch	4000 or 3500 lbs. of wood cellulose