

privilege at no cost to the County. At the conclusion of the improvement work and prior to acceptance of the improvements, the developer shall assign the privilege to the County.

The design engineer representing the developer shall evaluate and certify as to the adequacy of the irrigation facility as a disposal system.

### C. WATER SYSTEMS

#### 1. Source of Water

When the source of water is other than an existing system approved by either the State Department of Health Services or the County Department of Health Services, construction of the source facilities shall comply with the requirements of Bulletin No. 74, Water Well Standards, State of California, Department of Water Resources.

#### 2. Quantity of Water

The quantity of water delivered to the distribution system within a subdivision from all source and storage facilities for a period of two (2) hours shall be the maximum domestic demand plus a fire flow quantity of not less than 500 gpm for single family residential, 1500 gpm for multi-family residential-commercial-light manufacturing, and 2500 gpm for heavy manufacturing. For systems up to 625 customer units the domestic quantity shall not be less than  $Q = 100 \text{ plus } 25 \sqrt{N}$ , and  $Q = 100 \text{ plus } N$  for more than 625 customer units at sufficient pressure to provide a minimum pressure of .25 p.s.i.g. to each lot served; where Q equals the rate of flow in gallons per minute delivered from the combined source facilities to the distribution system, and N equals the total number of customer units where each customer unit is equivalent to one for a single family dwelling on a normal subdivision lot. Other types of development shall be assigned appropriate customer unit values by the Engineer as experience with the distribution system or locality indicates. The minimum source and domestic demand storage design requirements shall be in accordance with Plate No. WS-11 of Section IV.

### 3. Quality of Water

The quality of water supplied for human consumption shall conform to Sections 3, 4 and 5 of the latest United States Public Health Service Drinking Water Standards.

Samples will be taken and tests made by the County Department of Health Services for bacteriological determination of potability.

Chemical and physical tests for potability shall be performed by a commercial laboratory certified by the State Department of Health Services for performance of chemical and physical analysis, and the costs thereof shall be borne by the subdivider.

Construction plans shall show provision for adequately treating the water in order to meet water quality requirements of this section; or before the Engineer shall approve and sign the plans, the Tulare County Health Officer shall certify that the water supply meets the quality requirements of this section.

Installation of water treatment or water conditioning equipment will be accomplished by personnel properly licensed by the State of California.

### 4. Use of Water

Connection of house services to service laterals and subsequent use of water, either temporarily or permanently, shall not be allowed prior to approval of the distribution system by the County Health Officer and County Public Works Director.

### 5. Piping and Appurtenances

a. General - The design of water systems shall be based on good engineering practice and the requirements of these Standards, and shall be approved by the Engineer prior to any construction. If the design engineer of the water system can provide satisfactory information and calculations to substantiate that reduced sizes and substitute material will meet the quantity and quality requirements of these standards, the County Public Works Director may allow use of alternate methods

and materials. All distribution systems shall be designed to permit circulation of water flows throughout, except where impractical because of a cul-de-sac, or like conditions, or the incomplete development of a grid system. All dead end runs shall be provided with a means of flushing.

b. Water Main Size - The water mains shall be of adequate size and so designed in conjunction with related facilities to maintain a minimum operating pressure of 25 p.s.i.g. for each customer at the time of maximum domestic and fire flow demands in the system.

All water mains in valley subdivisions shall have a minimum nominal diameter of six (6) inches for single-family residential, ten (10) inches for multi-family - commercial - light manufacturing, and twelve (12) inches for heavy manufacturing except cul-de-sacs or other streets not required to have a fire hydrant, and serving six (6) lots or less, in which case a minimum size of four (4) inches nominal diameter shall be permitted. Water mains for mountainous areas shall have a minimum nominal diameter of four (4) inches and shall be designed to provide a loop system to maintain adequate pressure for fire protection. Any stub line over 660 feet in length or supporting more than one fire hydrant shall be 6 inches. A four (4) inch waterline from the street main shall be provided to the hydrant outlet.

c. Location - In general, when mains are to be placed in the traveled portion of streets, they shall be as parallel as possible to, and between four (4) and fourteen (14) feet from street centerline, but shall in no case be closer than three (3) feet from the lip of the gutter or edge of pavement.

Street mains shall be laid in the streets on which the property to be served fronts, and in subdivisions such mains shall be run to the limits of the subdivision on stub roads so that adjacent future development will not require excavation of the improved street within the subdivision.

The mains shall be kept a minimum of ten (10) feet from

the sewers.

d. Gate Valves - Gate valves shall be of the same size as the pipeline in which they are installed and a minimum of three valves shall be placed at a cross and two valves at a tee and shall be placed on the projection of the edge of pavement or lip of gutter. Valves on distribution systems shall be so located that any single break, accident, or repair will not necessitate shutting off from service a length of main greater than 800 feet for the valley and 1320 feet in the mountainous areas, except that in commercial or industrial areas, the Engineer may require a maximum length of 500 feet.

e. Air and Vacuum Valves - Air release and vacuum valves of adequate size shall be provided where necessary at all high points on mains. Suitable housing and protection for valves shall be provided and a shut off valve shall be provided in conjunction with each air release and vacuum valve to permit removal of valves for maintenance and servicing.

f. Flexible Couplings - Sufficient flexible couplings shall be provided in all piping adjacent to structures to permit differential settling of the foundations of piping and structures without damage to the piping.

g. Service Laterals - A service lateral shall be provided to each lot in the subdivision. Main water pressure, type of development and expected rate of water consumption shall determine the size of the service lateral, but in no case shall said lateral be smaller than a nominal diameter of 3/4-inch. Service laterals shall be placed perpendicular to the main and within the limits of the projection of the property lines of the property to be served. A "T" lateral may be allowed for two adjacent lots if the design engineer can provide calculations and information that the minimum pressure and volume can be maintained.

h. Fire Hydrants - Spacing of said hydrants shall be uniform throughout the subdivision with maximum spacing such that the maximum run of hose required between any hydrant and

the nearest available point on the extreme lot shall not exceed 330 feet for single family and 150 feet for other types of development.

In the SRA, fire hydrants serving any building shall be not less than 50 feet nor more than one-half mile by road from the building it is to serve and located at a turnout or turnaround along the driveway to that building or along the road that intersects with that driveway.

Fire hydrants in valley areas shall be placed with the centerline of the hydrant 18 inches behind the face of the curb. If sidewalk is to be constructed or if the subdivision is within an Urban Improvement Area, then hydrants shall be located at the back edge of the sidewalk. For mountainous areas, the hydrants shall be located between 2 and 5 feet beyond the edge of pavement. Hydrants shall be located at street intersections in conformance with Standard Drawings with additional hydrants located at sufficient intervals along the streets to comply with the spacing requirements of these Standards.

In the SRA, fire hydrants shall be 8 feet from flammable vegetation, between 4 and 5 feet beyond the edge of pavement, and in a location where fire apparatus using it will not block the roadway. Furthermore, within a SRA hydrants located along a road or private vehicular access shall be required to have a reflectorized blue marker, with a minimum dimension of 3 inches, mounted on a fire retardant post. Said post shall be within 3 feet of the hydrant with the marker no less than 5 feet above established grade in a position visible from the roadway.

i. Thrust Blocks - All tees, bends, plugs, fire hydrants and other sections of piping and appurtenances that might be capable of being displaced by the action of either working pressures or test pressures within the water system shall be anchored in place by the use of thrust blocks, thrust backing or harnesses as shown on the standard drawings. The bearing areas of thrust blocking on the supporting soil shall

not exceed that allowable for the soil involved. The pressure used to determine the required size of thrust blocks bearing area shall be no less than the test pressure required in Section III herein. Required thrust block bearing areas shall be in accordance with Plates WS-6 and WS-8 in Section IV.

### SECTION III

#### CONSTRUCTION

##### A. CONTROL OF THE WORK

All work accomplished and all materials furnished under these Improvement Standards shall be subject to the inspection and approval of the Engineer. Such inspection and approval of work and materials shall not relieve the developer of any of his obligations to complete the work as specified. Work and materials not meeting these requirements shall be made good and