**THRU BLOCK AREA REQUIRED**

<table>
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<tr>
<th>FITTINGS</th>
<th>ALLOWABLE SOIL BEARING VALUE</th>
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<tr>
<td>6&quot; LINE OR SMALLER</td>
<td>&quot;A&quot; &quot;B&quot;</td>
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<tr>
<td>22 1/2</td>
<td>1'-6&quot; 1'-6&quot;</td>
</tr>
<tr>
<td>45'</td>
<td>2'-0&quot; 2'-0&quot;</td>
</tr>
<tr>
<td>90'</td>
<td>3'-0&quot; 2'-6&quot;</td>
</tr>
<tr>
<td>TEE OUTLET</td>
<td>2'-6&quot; 2'-0&quot;</td>
</tr>
<tr>
<td>DEAD END</td>
<td>2'-6&quot; 2'-0&quot;</td>
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<tr>
<td>45'</td>
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<tr>
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<td>45'</td>
<td>4'-0&quot; 4'-0&quot;</td>
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<tr>
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<td>TEE OUTLET</td>
<td>5'-0&quot; 4'-0&quot;</td>
</tr>
<tr>
<td>DEAD END</td>
<td>5'-0&quot; 4'-0&quot;</td>
</tr>
</tbody>
</table>

**NOTES:**

1. ALL THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL.
2. RESTRAINT SYSTEM FOR VERTICAL PIPE BENDS SHALL BE APPROVED BY THE CITY ENGINEER.
3. THRUST RESTRAINT SYSTEMS FOR PIPES LARGER THAN 12" SHALL BE DESIGNED ON A CASE BY CASE BASIS AND SHALL BE APPROVED BY THE CITY ENGINEER.
HYDRANTS

CLOW "MEDALLION" AMERICAN DARLING MODEL B–62B, KENNEDY GUARDIAN K81A MUELLER "CENTURION", "MODERN CENTURION" M&H VALVE CO. STYLE 129 WATEROUS PACER. (2) 2–1/2" AND (1) 4" NST OUTLETS (OPEN COUNTERCLOCKWISE). 1–1/4" PENTAGON OPERATING AND CAP NUTS. DRIP PLUGS, IF ANY, SHALL BE PLUGGED. HYDRANTS SHALL BE LOCATED AT P/L EXTENSION, AT END OF CURB RETURN, 3' MIN. FROM DRIVeways OR AS SHOWN ON PLANS.

HYDRANT "T" TO DUCTILE IRON PIPE OR PVC C–900 FOR NEW DEVELOPMENT

CITY WATER SYSTEM:
RING TITE BY RING TITE BY FLANGE.
CALIFORNIA WATER SERVICE CO.:
GRIP TITE BY GRIP TITE BY FLANGE.

CONTACT RESPECTIVE WATER SYSTEM REGARDING CONNECTION TO PIPE BY OTHER MATERIAL.

GATE VALVES

CLOW "RESILIENT WEDGE"
MUELLER "RESILIENT SEAT"
AMERICAN DARLING
KENNEDY RESILIENT
WATEROUS SERIES 500
IF THE LENGTH OF THE CUL-DE-SAC IS:

A. LESS THAN 250'-0'',
   THEN THE FIRE HYDRANT SHALL BE PLACED WITHIN 100'-0'' OF THE CUL-DE-SAC
   ENTRANCE AND NO FIRE HYDRANT SHALL BE PLACED IN THE CUL-DE-SAC (SEE
   LOCATION A, BELOW).

B. GREATER THAN 250'-0'' BUT LESS THAN 400'-0'',
   THEN THE FIRE HYDRANT SHALL BE PLACED AT THE CUL-DE-SAC ENTRANCE AND
   NO FIRE HYDRANT SHALL BE PLACED IN THE CUL-DE-SAC (SEE LOCATION B, BELOW).

C. GREATER THAN 400'-0'',
   THEN THE FIRE HYDRANT SHALL BE PLACED AT THE PROPERTY LINE (SEE LOCATION
   C BELOW).

FIRE HYDRANT LOCATION ON CUL-DE-SACS

NOTES:

1. FIRE HYDRANTS SHALL BE LOCATED ON ALL REQUIRED ACCESS ROADWAYS
   AND CITY STREETS ACCORDING TO THE FOLLOWING REQUIREMENTS:
   a) 300'-0'' ON CENTER FOR ALL COMMERCIAL/INDUSTRIAL PROPERTIES.
   b) 400'-0'' ON CENTER FOR GROUP R-1 OCCUPANCIES AS DEFINED IN
      THE UBC (UNIFORM BUILDING CODE).
   c) 600'-0'' ON CENTER FOR GROUP R-3 OCCUPANCIES AS DEFINED IN
      THE UBC (UNIFORM BUILDING CODE).

2. DOG-LEGGED CUL-DE-SACS REQUIRE FIRE HYDRANT(S) TO BE LOCATED
   BY THE FIRE MARSHAL.
STANDARDS FOR FIRE PROTECTION SYSTEMS

GENERAL:

1. ALL PRIVATE UNDERGROUND FIRE SYSTEMS, INCLUDING HYDRANT SYSTEMS AND UNDERGROUND MAINS FOR SPRINKLER SYSTEMS AND FIRE PUMPS SERVING SPRINKLER SYSTEMS, CROSS-CONNECTED TO UNAPPROVED WATER SOURCES AND CONNECTED TO DOMESTIC WATER MAINS SHALL HAVE BACKFLOW PREVENTION AS REQUIRED BY AWWA M-14 FOR CLASSES III, IV, V AND VI FIRE SYSTEMS.

2. PLANS SHALL BE SUBMITTED FOR APPROVAL BY THE FIRE DEPARTMENT AND CITY MUNICIPAL UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION. "AS BUILT" DRAWINGS SHALL BE PROVIDED PRIOR TO CONSTRUCTION TO THE PUBLIC WATER SYSTEM. (THE SAME PLAN SUBMITTAL REQUIREMENTS APPLY TO INSTALLATIONS CONNECTED TO CALIFORNIA WATER SERVICE COMPANY MAINS.)

3. ALL UNDERGROUND FIRE PROTECTION SYSTEMS SHALL BE DISINFECTED PRIOR TO CONNECTING TO PUBLIC WATER SYSTEM IN ACCORDANCE WITH CITY OF STOCKTON STANDARD SPECIFICATION SECTION 76.

4. WITHIN THE CITY WATER SERVICE AREA, ALL ON-SITE FIRE HYDRANT SYSTEMS 300”-0” OR MORE FROM THE PROPERTY LINE SHALL HAVE A DETECTOR CHECK LOCATED AT THE PROPERTY LINE IMMEDIATELY DOWNSTREAM OF THE MAIN SHUT OFF VALVE. PLANS AND SPECIFICATIONS SHALL BE SUBMITTED FOR APPROVAL BY THE MUNICIPAL UTILITIES DEPARTMENT.

5. SYSTEM DESIGN SHALL BE BASED ON THE CALIFORNIA FIRE CODE, APPLICABLE PROVISION OF NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS 13 AND 24, AND REQUIREMENTS OF THE STOCKTON FIRE DEPARTMENT. NOTE: CALIFORNIA WATER SERVICE COMPANY MAY HAVE OTHER REQUIREMENTS WHEN CONNECTION TO THEIR MAINS. THRUST BLOCK LOCATION AND THRUST BLOCK SIZE, HYDRANT SPACING, PIPE SIZES AND LENGTHS AND OTHER RELEVANT INFORMATION IS REQUIRED ON THE PLANS. PLANS MUST CLEARLY SHOW THAT BOLTS AND TIE RODS WILL BE COATED WITH A BITUMINOUS MATERIAL AND WRAPPED PRIOR TO COVERING.

6. THE STOCKTON FIRE DEPARTMENT REQUIRES CLASS 200 C–900 PIPE FOR PRESSURIZED UNDERGROUND MAINS. POST INDICATOR VALVES AND FIRE DEPARTMENT CONNECTIONS FOR SPRINKLER SYSTEMS SHALL BE AT LEAST 40 FEET FROM BUILDINGS. SECTIONAL VALVES SHALL BE UL LISTED FIRE PROTECTION VALVES. ALL VALVES CONTROLLING WATER SUPPLIES TO SPRINKLER SYSTEMS SHALL BE MONITORED BY A UL LISTED CENTRAL STATION. THIS REQUIRES THE CONTRACTOR TO PROVIDE PVC PIPE FOR LOW VOLTAGE CONNECTION OF THE VALVE’S TAMPER SWITCH TO THE FIRE ALARM PANEL NORMALLY LOCATED IN THE BUILDING. THIS REQUIREMENT IS MANDATORY, REGARDLESS IF THE BUILDING CONTAINS LESS THAN 100 SPRINKLER HEADS. TRACER WIRE IS REQUIRED FOR ALL UNDERGROUND MAINS FOR BOTH HYDRANT AND SPRINKLER SYSTEMS.
STANDARDS FOR FIRE PROTECTION SYSTEMS

1. FIRE HYDRANTS, ON-STREET AND/OR ON SITE, SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF STOCKTON STANDARD SPECIFICATIONS. INSPECTION APPROVAL BY FIRE DEPARTMENT IS REQUIRED PRIOR TO ANY BACKFILL.

2. A MATERIALS INSPECTION IS REQUIRED BEFORE ASSEMBLING UNDERGROUND FIRE PROTECTION SYSTEMS. STOCKTON FIRE DEPARTMENT PLAN APPROVAL IS REQUIRED PRIOR TO CONSTRUCTION.

3. A PRESSURE TEST AT 200 P.S.I. FOR 2 HOURS WITNESSED BY THE STOCKTON FIRE DEPARTMENT IS REQUIRED FOR ALL SYSTEMS. PLEASE NOTE THAT THE UNDERGROUND FIRE PROTECTION SYSTEM CAN ONLY BE FILLED USING A JUMPER EQUIPPED WITH A BACKFLOW PREVENTION DEVICE ACCORDING TO CITY OF STOCKTON STANDARDS. PIPE MAY BE CENTER LOADED FOR THIS INSPECTION, HOWEVER, ALL THRUST BLOCKS AND JOINTS MUST BE EXPOSED. PLEASE ALSO NOTE THAT COATING AND WRAPPING OF BOLTS AND TIE RODS, IF REQUIRED, MUST BE COMPLETED BEFORE CALLING FOR AN INSPECTION.

4. A SUCCESSFUL BACTERIAL TEST AND FLUSHING WITNESSED BY THE STOCKTON FIRE DEPARTMENT IS REQUIRED BEFORE CONNECTING TO THE PUBLIC MAIN IS PERMITTED.

5. SEPARATE SUBMITTALS TO THE STOCKTON FIRE DEPARTMENT ARE REQUIRED FOR ABOVE GROUND FIRE PROTECTION SYSTEMS.

6. VALVES ON BACKFLOW DEVICES ARE NOT TO BE USED TO SUBSTITUTE FOR VALVES SHOWN ON DIAGRAM. BACKFLOW DEVICES MUST REMAIN IN ORIGINAL CONFIGURATION AS PURCHASED FROM MANUFACTURER.
FIRE DEPT. CONNECTION WITH CHECK VALVE PER CITY OF STOCKTON FIRE DEPT. REQUIREMENTS.

GUARD POSTS AS REQUIRED.

P/L

30" x 48" CONCRETE VAULT.

POST INDICATOR

FLOW

CITY VALVE.

CHECK VALVE.

POST INDICATOR VALVE.

TO BLDG.

TEE.

THRUST BLOCK.

TYPICAL FIRE SPRINKLER LINE WITH POST INDICATOR VALVE

CITY OF STOCKTON
DEPARTMENT OF PUBLIC WORKS

REV. NO. 2  REV. DATE 6/1/2000  REV. BY CHL/RH
DIGITIZED 7/1/91  DWG. BY RC  SCALE NONE
CK. BY

REVISION APPROVED BY CITY ENGINEER

DATE: 01/09/02
SUPERcedes DWG. DATED 10/7/93
DRAWING NO. 103A
INSTALL WIRE MESH SCREEN AT END OF ½" STEEL PIPE

24" x 36" PRECAST CONCRETE COVER BOX WITH TRAFFIC RATED COVER. BROOKS 67T, CHRISTY OR EQUAL. MARK "WATER" IN 2" LETTERS ON COVER

FINISH GRADE

AIR RELEASE VALVE APCO #200 OR APPROVED EQUAL (REFER TO NOTES 1 AND 2)

BRONZE GATE VALVE

SLOPE UP

WATER MAIN

VARIES

3’-6”

VALVE BOX

10 GA STEEL PL. WELD TO PIPE AND GRIND SMOOTH

6” STEEL PIPE VENT (GAF) DRILL 18-½” HOLES IN 3 ROWS (6 HOLES IN EACH ROW)

6” GSP CPLG

DRILL 1” DRAIN HOLE AT BASE

4-2”X4” ANCHOR CLIPS, WELD TO CPLG

METAL FRAMING CHANNEL SUPPORTS, UNISTRUT P1000, HOT DIP GALV.

6” THICK CRUSHED ROCK

COPPER PIPE (TYPE K)

CORP STOP WITH SADDLE

VENT PIPE

NOTES:
1. 1” AIR RELEASE VALVE FOR PIPE SIZES 12” AND 16”
2. 2” AIR RELEASE VALVE FOR PIPE SIZES 18” THROUGH 36”

AIR RELEASE VALVE
WATER MAINS 12” - 36” DIAMETER

CITY OF STOCKTON
DEPARTMENT OF PUBLIC WORKS
NOTES:

1. SEE DWG NO. 94 AND 94A FOR FITTINGS.
2. SERVICE LINE SHALL BE A DEDICATED LINE FOR THE SAMPLING STATION UNLESS PRIOR APPROVAL OF MUNICIPAL UTILITIES DEPARTMENT.
3. SAMPLING STATION MAY BE PLACED ADJACENT TO PROPERTY OR EASEMENT LINE WITH PRIOR APPROVAL OF MUNICIPAL UTILITIES DEPARTMENT.
4. SEE DWG NO. 94, NOTES 4 & 5, FOR METER BOX & LID TYPE.
5. PLASTIC SERVICE PIPE TO BE CONTINUOUS WITH NO SPLICING ALLOWED.
6. 1" DIAMETER MINIMUM LINE FOR EACH STATION.
7. STATION ENCLOSURE SHALL BE PROVIDED BY CITY OF STOCKTON.
ELECTRICAL IMPROVEMENT PLAN STANDARDS

ALL IMPROVEMENT PLANS INVOLVING THE INSTALLATION OR RELOCATION OF A STREET LIGHTING SYSTEM SHALL INCLUDE THE FOLLOWING DETAILED INFORMATION:

1. LOCATION OF ALL UNDERGROUND CONDUITS.
2. THE SIZE AND TYPE OF ALL CONDUITS.
3. THE NUMBER, SIZE AND TYPE OF ALL CONDUCTORS IN EACH CONDUIT.
5. THE LOCATION OF EACH STREET LIGHT FIXTURE.
6. THE LOCATION OF EACH PULLBOX.
7. THE VOLTAGE FOR EACH CIRCUIT AND THE WATTAGE OF EACH LUMINAIRE.
8. THE WIRE SIZE CALCULATIONS WHERE MULTIPLE CIRCUITS ARE USED.
9. A SUBDIVISION MASTER PLAN SHOWING ALL STREET LIGHTS SHALL BE REQUIRED FOR DEVELOPMENTS HAVING MORE THAN ONE FINAL MAP OR AS REQUIRED BY THE CITY ENGINEER.