

DIVISION V
WATER DISTRIBUTION

SECTION 52

VALVES, HYDRANTS, AND ACCESSORIES

52.1 GENERAL

All valves, hydrants, and appurtenances shall be products of well established firms who are fully experienced and qualified in the manufacture of the particular item to be furnished. The equipment shall be designed, constructed, and installed in accordance with the best practices and methods and shall comply with these SPECIFICATIONS as applicable. All valves shall open by turning the operator nut counter clock wise.

52.2 RESILIENT SEAT GATE VALVES

52.2.1 GENERAL

All gate valves twenty four (24) inches and smaller shall be resilient seat gate valves. Such valves shall be manufactured to meet or exceed the requirements of AWWA C515, latest revision, and in accordance with the following SPECIFICATIONS. Valves shall have an unobstructed waterway equal to or greater than the full nominal diameter of the valve. See Appendix C. Valves shall be mechanical joint, except where other configurations are approved by the DIRECTOR.

52.2.2 MATERIAL

The valve body, bonnet, and bonnet cover shall be ductile or cast iron in accordance with ASTM A126, Class B. All ferrous inside and outside surfaces shall have a fusion-bonded epoxy coating. A two (2) inch wrench nut shall be provided for operating the valve, except for handle operated valves as indicated in the STANDARD DRAWINGS. All valves are to be tested in strict accordance with AWWA C515.

52.2.3 MISCELLANEOUS REQUIREMENTS

The valves shall be non-rising stem, except where otherwise approved by the DIRECTOR, with the stem made of cast, forged, or rolled bronze as specified in AWWA C515. Two or three stem seals shall be provided and shall be of the o-ring type. The stem nut must be independent of the gate.

The resilient sealing mechanism shall provide zero leakage at the water working pressure when installed with the line flow in either direction.

DIVISION V
WATER DISTRIBUTION

52. 3 BUTTERFLY VALVES

52. 3. 1 GENERAL

All shut-off valves thirty (30) inches and larger shall be butterfly valves. Butterfly valves and operators shall conform to the AWWA Standard Specifications for Rubber Seated Butterfly Valves, Designation C504, except as hereinafter specified. Valves, except as specified hereinafter, shall be Class 150A or B. See approved manufacturers' list in Appendix C.

52. 3. 2 MATERIAL

The valve body shall be constructed of close grain cast iron per ASTM A126, Class B or equivalent material. All retaining segments and adjusting devices shall be of corrosion resistant material. Valve seats shall be a natural rubber or synthetic rubber compound. Valve seats thirty (30) inches and larger shall be field adjustable and replaceable without dismounting operator disc or shaft and without removing the valve from the line. All retaining segments and adjusting devices shall be of corrosion resistant material. Valves twenty four (24) inches and smaller shall have bonded or mechanically restrained seats as outlined in AWWA C504.

52. 3. 3 FACE TO FACE DIMENSION

The face-to-face dimensions of valves shall be in accordance with above mentioned AWWA specification for short-body valve.

52. 3. 4 VALVE SHAFT

The valve shaft shall be turned, ground, and polished constructed of 18-8 stainless steel and designed for both torsional and shearing stresses when the valve is operated under its greatest dynamic or seating torque. Shaft shall be of either a one piece unit extending full size through the valve disc and valve bearing or it may be of a stub shaft design.

52. 3. 5 VALVE OPERATOR

In general, the butterfly valve operators shall conform to the requirements of AWWA Standard Specifications for Rubber Seated Butterfly Valves, Designation C504, insofar as applicable.

DIVISION V
WATER DISTRIBUTION

52.4 VALVE INSTALLATION

All valves shall be inspected upon delivery in the field to insure proper working order before installation. They shall be set and jointed to the pipe in the manner as set forth in the AWWA Standards for the type of connection ends furnished. All valves and appurtenances shall be installed true to alignment and rigidly supported. Any damage to the above items shall be repaired to the satisfaction of the CITY before they are installed.

Valves shall be installed in a vertical position and be provided with a standard valve box so arranged that loads will not be transmitted to the valve. The box shall be vertically centered over the operating nut, and the cast iron box cover shall be set flush with the finished pavement surface or final grade in unpaved areas.

After installation, all valves shall be subjected to the field test for piping as outlined in Section 51 of these specifications. Should any defects in materials or workmanship appear during these tests, the CONTRACTOR shall correct such defects to the satisfaction of the CITY.

The CONTRACTOR shall provide one (1) valve wrench of the appropriate length to the CITY for each development based on the depth of the deepest valve actuating nut.

Flanged joints shall be made with hot dipped galvanized bolts, nuts and washers. Mechanical joints shall be made with mild corrosion resistant alloy steel bolts and nuts. All exposed bolts shall be painted the same color as the pipe. All buried bolts and nuts shall be heavily coated with two (2) coats of bituminous paint.

52.5 VALVE BOXES

All buried valves shall have cast-iron three piece adjustable valve boxes. Valve boxes shall be provided with suitable heavy bonnets and shall extend to such elevation at or slightly above the finished grade surface as directed by the CITY. The barrel shall be two-piece, sliding type, having 5-1/4-inch shaft. The upper section shall have a flange at the bottom having sufficient bearing area to prevent settling and shall be complete with a cast iron covers. Covers shall have "WATER", "RECLAIMED WATER", or "SEWER" cast into the top for all such mains, as appropriate. The actuating nuts for deeper valves shall be extended to come up to within four (4) feet of the finished grade.

Care shall be taken installing valve boxes to ensure that valve stems are vertical and the cast iron box has been placed over the stem with base bearing on compacted fill and top flush with final grade. Boxes shall have sufficient bracing to maintain alignment during backfilling. CONTRACTOR shall remove any sand or undesirable fill from valve box prior to final inspection.

DIVISION V
WATER DISTRIBUTION

52. 6 AIR RELEASE VALVES

The air release valves for use in water mains shall be installed as shown on the STANDARD DRAWINGS. The valves shall have a cast iron body, cover and baffle, stainless steel float, bronze water diffuser Buna-N or Viton seat, and stainless steel trim. Valves shall be provided with a vacuum check to prevent air from reentering the line. The fittings shall be threaded.

52. 7 FIRE HYDRANTS

52. 7. 1 MATERIAL

Fire hydrants shall have 5 1/4 inch valve opening and shall comply with AWWA Standard C502 for fire hydrants for water works service, unless in conflict with this MANUAL, in which case this MANUAL shall govern. Each hydrant shall have 6-inch mechanical joint ends with harnessing lugs ("dog-ears") and shall open by turning to the left (counter-clockwise). Fire hydrant shall be of ample length for a 3-1/2 foot depth of bury. It shall be provided with two 2-1/2-inch hose nozzles and one 4-1/2-inch pumper nozzle, all having national standard hose threads. Nozzles shall have caps attached by chains. Operating nuts shall be AWWA Standard which is pentagonal, measuring 1-1/2-inch point to flat. Fire hydrants shall be equipped with "O-Ring" packing. See Appendix C.

52. 7. 2 PAINTING

All iron parts of the hydrant both inside and outside shall be painted by the CONTRACTOR in accordance with AWWA C-501. All inside surfaces and the outside surfaces below the finished ground elevation shall be coated with bituminous paint. They shall be covered with two coats, the first having dried thoroughly before the second is applied.

The outside of the hydrant above the finished ground elevation shall be thoroughly cleaned and thereafter painted by the CONTRACTOR with one coat of primer paint with a durable composition.

Private hydrants shall have a final coat of fire engine red paint applied by the CONTRACTOR.

Hydrants to be owned by the CITY shall be painted lime-yellow from Ames Research, Inc PH# 888-345-0809, FAX# 503-364-2380
Web Site: www.amesresearch.com (Reflective Safety Paint & Coating)
Listed as SANFORD GREEN (Stock # RP1GN WITH AND THE GLASS BEADS).

DIVISION V
WATER DISTRIBUTION

52. 7. 3 **INSTALLATION**

Hydrants shall be plumb and shall be set so that the lowest hose connection is between eighteen (18) and twenty four (24) inches above the surrounding finished ground elevation.

All hydrants shall be inspected in the field upon delivery to the job to insure proper operation before installation. The resetting, moving, and reconnecting of existing hydrants shall be handled in a manner similar to a new installation. Hydrant shall be constructed in accordance with the STANDARD DRAWINGS.

The CONTRACTOR shall supply one (1) hydrant wrench to the CITY for every three (3) new hydrants installed. In the event there are less than three (3) hydrants, a minimum of one (1) hydrant wrench shall be supplied.

52. 7. 4 **LOCATION**

Fire hydrants shall be located in the general location as shown on the DRAWINGS. Final field location of all hydrants shall be as approved by the CITY. All hydrants shall be located no less than four (4) and no more than eighteen (18) feet from the edge of pavement of the adjacent roadway and no less than four (4) feet from any physical feature which may obstruct access or view of any hydrant unless otherwise approved by the CITY.

52. 7. 5 **IDENTIFICATION**

All hydrants ports and bonnets within the CITY shall be color coded so as to comply with N.F.P.A. 291 Chapter 3-2 "Hydrant Color Flow Chart" as stated below:

CLASS AA	Blue	1500 or more G.P.M.
CLASS A	Green	1000 to 1499 G.P.M.
CLASS B	Orange	500 to 999 G.P.M.
CLASS C	Red	499 or less G.P.M.

The flow rate shall be determined by the CITY's Fire Department. Public fire hydrants shall have their ports and bonnets painted by the CONTRACTOR as directed by the CITY's Fire Department.

A traffic rated blue reflective pavement marker (R.P.M.) shall be properly installed by the CONTRACTOR on the center line of the adjacent roadway that the main port faces so that the hydrant can be found at night from either direction of travel.