ISSUING DEPARTMENT INPUT DOCUMENT
CONTRACT/PROJECT MEASURE ANALYSIS AND RECOMMENDATION

☑ New ☐ OTR ☐ Sole Source ☐ Bid Waiver ☐ Emergency Previous Contract/Project No.: 9711-0/23

☐ Re-Bid ☐ Other – Access of Other Entity Contract LIVING WAGE APPLIES: ☐ YES ☐ NO

Requisition No./Project No.: RTQ-02251 TERM OF CONTRACT: 5 YEAR(S) WITH: YEAR(S) OTR

Requisition /Project Title: PIPES & FITTINGS WATER & WASTEWATER SERVICES PRE-QUAL

Description:

The purpose of this solicitation is to prequalify products and bidders for future pricing competition for the purchase of pipe and fittings for water and wastewater service. This initial solicitation provides for the submission of documents and forms intended to verify that bidders meet or exceed the minimum requirements, and that the offered products meet the technical specifications, set forth throughout this solicitation. Bidders who meet or exceed the requirements established in this solicitation may be placed on a prequalification of bidders list that will be accessed by the Water and Sewer Department to obtain quotes for the purchase of the prequalified products.

Issuing Department: ISD Contact Person: YESENIA GOMEZ Phone: 305-375-3069

Estimate Cost: $58,857,400.00

Funding Source:	GENERAL	FEDERAL	OTHER
			ROPRIETARY

ANALYSIS

Commodity Codes: 670 | 67000 | 670001

Contract/Project History of previous purchases three (3) years

Check here ☐ if this is a new contract/purchase with no previous history.

	EXISTING	2ND YEAR	3RD YEAR
Contractor:			
Small Business Enterprise:			
Contract Value:			

Comments:

Continued on another page (s): ☐ YES ☐ NO

RECOMMENDATIONS

	Set-Aside	Subcontractor Goal	Bid Preference	Selection Factor
SBE				

Basis of Recommendation:

Signed: YESENIA GOMEZ	Date sent to SBD: 3/18/22
	Date returned to SPD:

SECTION 2

2.1 PURPOSE

This Request to Qualify (RTQ) will establish a Prequalified Pool of Vendors (Pool) that will be used to solicit for future pricing competition for the purchase of pipe and fittings for water and wastewater service for Miami-Dade County (County). Placement in the Pool is not a contract between the County and the Vendor, but an acknowledgement that the Vendor meets the qualifications as outlined throughout this RTQ. Vendor Submittals are accepted throughout the term of the RTQ for placement in such Pool.

2.2 DEFINITIONS

Invitation to Quote (ITQ) – Shall refer to the solicitation of quotes from the Pool for specific goods and/or services; and awarded based on lowest price, or other quantifiable criteria.

Prequalified Pool of Vendors (Pool) – Shall refer to business entities/individuals determined by the County's Internal Services Department, Strategic Procurement Division, as meeting the minimum standards of business competence, financial ability, and/or product quality for placement in the Pool, and which may submit quote or proposal, at the time of need.

Submittal – Shall refer to all information, attachments and forms submitted in response to this RTQ.

Vendor – Shall refer to a business entity/individual responding to this RTQ.

Work Order Proposal Request (WOPR) – shall refer to a competitive process involving the solicitation of proposals, by the Internal Services Department Strategic Procurement Division, from the Pool for specific goods and/or services; and evaluated and awarded based on best value.

2.3 TERM

The Pool shall be established on the first calendar day of the month succeeding approval by the Board of County Commissioners, or designee, unless otherwise stipulated in the Blanket Purchase Order issued by the Internal Services Department, Strategic Procurement Division. The Pool shall expire on the last day of the last month of the five-year term.

2.4 QUALIFICATION CRITERIA

Vendor shall meet the following criteria to be considered for placement in the Pool and for participation in future solicitations:

A. Vendor shall be regularly engaged in the business of providing pipe and fittings for water and wastewater services. Vendor shall provide at least three (3) references. The reference(s) listed shall be from current or former customers receiving the goods described in this solicitation within the past three years. Reference(s) shall be listed in the Vendor's Submittal (see Section 4). A department of Miami-Dade County is an acceptable reference; however, the other two references shall be from customers other than Miami-Dade County. The references shall include the customer's company name, and the name, title, address, email address and telephone number of the contact person who can verify that the Vendor has successfully provided the goods that the Vendor is offering under this solicitation. These references shall

ascertain to the County's satisfaction that the Vendor has sufficient experience and expertise in supplying drainage materials. The County, at its sole discretion, may request additional information to assess Vendor responsibility.

B. Maintain an office equipped with modern office equipment, especially a facsimile (FAX) machine or an e-mail address. Either resource must be available twenty-four (24) hours a day to provide immediate support and expedite quotes and deliveries. The bidder's office address, and fax number and/or e-mail address shall be included in their submittal.

C. Be authorized by the manufacturer, or their designee, as an agent, dealer, distributor, or equivalent, for the products proposed to the County. Bidders are required to submit proof of the manufacturer's authorization. The proof may be in the form of any of the following:

Current correspondence from the manufacturer designating the bidder as an agent, dealer, distributor, or equivalent or:

1. A copy of an executed agreement between the manufacturer and the bidder, designating the bidder as an agent, dealer, distributor, or equivalent or:

2. The web address of the page in the manufacturer's internet website, where the manufacturer clearly lists the bidder as an agent, dealer, distributor, or equivalent.

3. Have at least one product accepted by the County under this solicitation. A product must meet the solicitation's technical specifications, as described in Section 3, to be accepted and prequalified under this solicitation. Bidders will identify their proposed products by entering the product description as requested in Section 4 Bid Submittal Form. Bidders may propose any product, or group of products, specified in Section 3 Technical Specifications.

4. Evaluation data the Bid Submittal shall be accompanied by two (2) complete sets of Evaluation Data, as defined in Section 3 Technical Specifications, for each product, or group of products, proposed by the bidder. All supporting documentation submitted by the bidder must, in total, meet the specifications set forth in this solicitation.

The County will determine the total number of prequalified bidders under the contract. During the term of any contract resulting from this solicitation, the County may receive and evaluate submittals, and add prequalified bidders and products. If the County adds bidders, the bidders must meet the same requirements established for the original competition.

Vendor shall provide all the specified information, documents and attachments listed above with their Submittal as proof of compliance with the requirements of this RTQ. However, the County may, at its sole discretion and in its best interest, allow Vendors to complete, supplement or supply the required documents throughout the term of the RTQ. It shall be the sole right of the County to determine the number of Vendors which will be included in the Pool. During the term of the RTQ, the County reserves the right to add or delete Vendors as it deems necessary, and in its best interest.

The County may verify the information submitted by the bidders and may obtain and evaluate additional information, as it deems necessary to ascertain the bidders' ability to

perform under the contract and a product's compliance to the technical specifications. The County shall be sole judge of a bidder's ability to perform and a product's compliance, and its decision shall be final.

2.5 METHOD OF PAYMENT

The bidder must submit an original invoice as follows to:

Water and Sewer Department
Attention: Accounts Payable Unit
Post Office Box 330316
Miami, Florida 33233-0316

All invoices must reference the corresponding packing slip/delivery ticket number that was signed by an authorized representative of the Water and Sewer Department at the time the item was delivered and accepted by the delivery site. If an item is delivered by the US Mail or a private carrier e.g., US Postal Service, Federal Express, Carolina Freight, etc., the carrier's corresponding receipt ticket/mailing ticket/bill of lading number must be referenced on the invoice. The Water and Sewer Department also requires all invoices to reference specific data from the corresponding Water and Sewer Department Requisition Form which is sent to the bidders to confirm an order i.e., purchase order/small purchase number, requisition number, quantity, unit cost, and total cost. Refer to Special Terms and Conditions Section 1, Paragraph 1.36 Invoices for further information.

2.6 SHIPPING TERMS AND PRODUCT ACCEPTANCE

The products to be purchased through any contract resulting from this solicitation shall be delivered to the County in excellent condition and shall be in full compliance with the specifications and requirements set forth in this solicitation and subsequent requests for quote. If a product does not meet specifications, it will be returned to the bidder as exchange for suitable merchandise or for full credit at no additional cost to the County. The bidder shall be responsible for arranging all shipping, or pick-up, and bear all costs associated with the return of products that are deemed unacceptable by the County. Product acceptance by the County will take place after the bidder executes the delivery of the product, and the County performs the product's inspection and installation. In the event the bidder fails to pick-up products that are deemed unacceptable by the County or fails to arrange to have such material shipped back to the bidder within a reasonable period of time, the County shall cause such material to be shipped to the bidder, and the bidder shall be liable for any cost of shipping incurred by the County. Damaged Goods When Shipping Will Be Provided by Bidder, the bidder shall be responsible for filing, processing, and collecting all damage claims against the shipper.

2.7 DELIVERIES

Bidders shall make deliveries as prescribed in the request for quote.

2.8 AVAILABILITY OF CONTRACT TO OTHER COUNTY DEPARTMENTS

Although this solicitation is specific to the needs of the Water and Sewer Department, it is hereby agreed and understood that any County department or agency may avail itself of this contract and purchase any prequalified product, or ancillary item, from the prequalified bidders. The bidder will obtain the necessary delivery and invoicing information from the County department or agency.

2.9 SECURITY REQUIREMENTS FOR THE WATER AND SEWER DEPARTMENT

On April 23, 2002, the Miami-Dade Board of County Commissioners approved Ordinance Number 02-68 entitled "Provide Rules and Regulations Governing Security at the Water and Sewer Department Facilities" which created Article IX of Chapter 32 of the Miami-Dade County Code. In accordance with the Ordinance, the standard procedures for receiving cartons/boxes/packages, etc. are as follows:

Items Delivered by the Awarded Bidders

The bidder must enclose a complete packing slip or delivery ticket with any items to be delivered in conjunction with this contract. The packing slip must include, at a minimum, the following information: purchase order number; date of order; Department requisition number; a complete listing of the items being delivered; and, if authorized, the back-order quantities and the delivery date of the backorder.

Failure to prepare and enclose packing slips with the items in the prescribed manner may result in the shipment being refused and ordered off the property by the facility's security forces. The Water and Sewer Department shall not be responsible for delays, redelivery fees, restocking fees or any other additional cost incurred by noncompliance with these requirements.

Items Delivered to the Various Water and Sewer Department Storerooms by the US Mail or a Private Carrier (i.e., US Postal Service, UPS, Federal Express, Carolina Freight)

The bidders must enclose a complete packing slip or delivery ticket with items to be delivered, in conjunction with this solicitation, for the bidder by a private carrier. The packing slip must be enclosed with the shipping cartons, which contain the items being delivered. The packing slip must include, at a minimum, the following information: purchase order number; date of order; Department requisition number; a complete listing of the items being delivered; and, if authorized, the back-order quantities and the delivery date of the backorder. In addition, the bidders must print the purchase order number and the Department requisition number in an obvious, prominent space in the "Ship To" portion of the private carrier's receipt ticket/mailing ticket/bill of lading. This action will allow the storeroom personnel to immediately identify the items being delivered. If there is any question regarding the private carrier's receipt ticket, the bidder's packing slip enclosed with the items being delivered can be immediately examined.

Failure to include the purchase order number and the Department requisition number on the private carrier's receipt ticket and to enclose a packing slip to the items being delivered in the prescribed manner may result in the shipment being refused and ordered off the property by the facility's security forces. The Water and Sewer Department shall not be responsible for delays, redelivery fees, restocking fees or any other additional cost incurred by noncompliance with these requirements.

2.10 CHANGES IN MANUFACTURER DESIGNATION DURING THE CONTRACT TERM

Prequalified bidders will report to the County any changes in their authorization as manufacturer agents, dealers, distributors, or equivalent for the products in the contract. Should a bidder cease to be authorized by a manufacturer for a product in the contract, the product or service will be removed from the list of prequalified products available from the bidder. Should a bidder become authorized by a manufacturer during the contract term, the

bidder may submit proof of their firm's authorization, in accordance with Paragraph 2.6.2.2, for the County's evaluation.

2.11 DEMURRAGE CHARGES WILL NOT BE ALLOWED

The County shall not incur separate demurrage charges from bidders who supply containers on an interim basis to the County in conjunction with this bid. Any rental or demurrage costs for such containers that are normally charged by the bidder must be reflected in the unit prices offered by the bidder.

2.12 TESTING OF RANDOM SAMPLES

Samples of delivered items may be randomly selected and tested for compliance with the solicitation's specifications. The Water and Sewer Department may periodically check products obtained through this solicitation for conformance to specifications, to include materials testing, pressure testing, verifying dimensions, tolerances and component weights, markings, finish, and fit, and such other matters as are necessary to assure that the products meet the specifications. If it is found that the delivered commodities do not conform to the specifications, the County shall require immediate replacement. The County may charge the bidder for the cost of testing or re-testing products that are found to be non-conforming to specifications.

2.13 OMISSION FROM THE SPECIFICATIONS

The apparent silence of this solicitation and any addendum regarding any details or the omission from the solicitation of a detailed description concerning any point shall be regarded as meaning that only the best commercial practices are to prevail, and that only materials and workmanship of the first quality are to be used. All interpretations of this solicitation shall be made upon the basis of this agreement.

2.14 INSURANCE

Insurance is **not** required in order to be prequalified under this RTQ. Insurance requirements will be detailed in the subsequent ITQ or WOPR.

2.15 SPOT MARKET QUOTES

Vendors in the Pool will be invited to participate in future spot market competition, as needed for the purchase of Ancillary items from the prequalified bidders under this solicitation. Ancillary items include gaskets, ties, connectors, bands, actuators, adapters, bearings, bolts, nuts, brackets, discs, valve fittings, hinges, keys, levers, rebuild/repair kits, and stuffing boxes. These ancillary items may be subject to technical evaluation but do not have to be listed as prequalified products to be quoted under the contract. The County may award the ancillary items to a prequalified bidder or acquire the items through a separate solicitation.

The spot market competition will be in the form of an ITQ or WOPR that will include the specific goods and/or services required, and may include provisions, as applicable, such as:

- Small Business Enterprise (SBE) Measures
- Warranty Requirements
- Liquidated Damages
- Living Wage

For federally funded projects/programs, additional provisions may apply in accordance with the funding source. The following provisions from Section 1, General Terms and Conditions shall be exempted from such solicitations, as indicated in the ITQ or WOPR.

- Article 1.2(H) Prompt Payment Terms
- Article 1.11 Local Preference
- Article 1.29 Office of the Inspector General *(only the cost of the random audits, as specified)*
- Article 1.37 County User Access Program (UAP)
- Article 1.45 Small Business Enterprise (SBE) Measures
- Article 1.46 Local Certified Veteran's Business Enterprise Preference
- Article 1.47 Application of Preferences
- Article 1.49 First Source Hiring Referral Program (FSHRP)

SECTION 3

SCOPE OF WORK/TECHNICAL SPECIFICATIONS

3.1 SCOPE OF WORK

It is the intent of this solicitation to identify and make available to the county, vendors capable of providing for the purchase of pipe and fittings for water and wastewater services for Miami-Dade County Water and Sewer Department, on an "as needed basis."

Pipe and fittings for water and wastewater service that conform to American National Standards Institute, American Society for Testing and Materials, and/or American Water Works Association standards, as modified in these Technical Specifications.

3.2 DEFINITIONS

3.2.1 "Approved Equal" shall be defined as having the same, or higher quality, standards of performance, design, and requisites (no variances) as required for the requested product.

3.2.2 "AISI" denotes the American Iron and Steel Institute.

3.2.3 "ANSI" denotes the American National Standards Institute.

3.2.4 "AWWA" denotes the American Water Works Association.

3.2.5 "ASTM" denotes the American Society for Testing and Materials.

3.3 TECHNICAL SPECIFICATIONS FOR VALVES

"Evaluation Data" for Valves shall be as defined as consisting of all three of the following items of information (Excerpted from AWWA Standard for Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service (ANSI/AWWA C515-01), by permission. Copyright © 2001, American Water Works Association. Complete document available from AWWA at 800-926-7337 or www.awwa.org.). The word "purchaser" shall be construed to mean the Water and Sewer Department in either direct purchase or an owner's representative situation. Butterfly valves require an operator, and all of the data shall be supplied on the operator as well as the valve itself for this type of unit.

Catalogue Data - The manufacturer shall supply catalogue data, including illustrations and a parts list that identifies the materials used for various parts. The information shall be in sufficient detail to serve as a guide in the assembly and disassembly of the valve and for ordering repair parts.

Weight information - The manufacturer shall provide a statement of the net assembled weight for each size of valve exclusive of joint accessories.

Assembly Drawings - The manufacturer or bidder shall submit to the purchaser one set of drawings showing the principal dimensions, construction details, and materials used for all parts of the valve. All work shall be done, and all valves shall be provided in accordance with these drawings after the drawings have been reviewed and accepted by the purchaser.

General Requirements for all Valves:

Bidders are advised to carefully read the specification requirements contained in this solicitation, and coordinate with manufacturers to propose products that fully conform to these specifications.

All valves shall conform to ANSI/NSF Standard 61, "Drinking Water System Components-Health Effects".

Grades B and C bronze, as listed in Table 1 of AWWA C500-93, or brass, shall not be used in the fabrication of any of the valve types listed in these specifications. Aluminum bronze, if used, shall not dealuminize, and the method of preventing this shall be fully described in the bidder's submittal.

3.4 Non-Conformance with Specifications

Should a product's submitted evaluation data show that the item does not conform with the specifications, the non-conformance will be classified by the Water and Sewer Department in one of two category levels: Basic Design Non-Conformance and Correctable Non-Conformance.

Two examples of Basic Design Non-Conformance are: 80 % port rather than the 100 % port specified for a particular plug valve and bolting through the rubber seat of a butterfly valve. The deficiencies in both examples are non-correctable in that, without major redesign of the valve, neither the bidder nor the manufacturer can supply a valve that meets the established requirements.

If Basic Design Non-Conformance is discovered during the evaluation process the product will be rejected.

The second category level of non-conformance will be termed Correctable Non-Conformance. Common instances of Correctable Non-Conformance include the use of materials or alloys in the various parts of a valve which do not conform with the specification requirements. Two examples of Correctable Non-Conformance are: plain carbon steel exterior bolting instead of the specified hot dip galvanized or stainless steel and, the use of Type 304 stainless steel where Type 316 is required by the specifications to provide increased corrosion resistance. Most manufacturers show only the standard and least expensive materials in their standard catalogue diagrams but have the capability to supply other more durable materials when required by the end user. In many instances only the standard catalogue diagrams are submitted without correction with the bidder's submittals and are therefore rejected for non-conformance. To correct this situation, with its inherent delays and subsequent rejections, the Water and Sewer Department will use "approved as noted" procedures to technically evaluate these submittals. If Correctable Non-Conformance is found during evaluation, the bidder-supplied information and/or specification sheets will be marked to show the necessary corrections to conform with the specified requirements. These corrected materials (evaluation data) will be returned marked "Approved as Noted" and will be returned to the bidder. These corrections will be binding, and products supplied by the bidder shall in every way conform to the County's specifications, particularly as indicated on the "Approved as Noted" submittal information. The Internal Services Department Procurement Management Division will forward the corrected materials (evaluation data) to the bidder. The bidder must acknowledge compliance to the "Approved as Noted" materials and return them to the Department of Internal Services Procurement

Management Division, within a specified time. Bidders are advised that no additional delivery time, compensation, or revisions to bidder-proposed pricing will be allowed as a result of bidder's compliance with the specified requirements. The Water and Sewer Department Chief, Engineering Division, or his designee, shall be the sole judge of whether a product conforms to the technical specifications in this solicitation.

3.5 Butterfly Valves

Butterfly valves shall be manufactured in accordance with the applicable provisions of ANSI/AWWA Standard C504-06, "Rubber-Seated Butterfly Valves", as modified herein. Valves shall be designed for installation in a horizontal line with shafts horizontal and operator input shaft vertical. Thus, hydrostatic torque must be considered in operator sizing. In the closed position, the valve disc will be in an approximately vertical plane. This shall be considered by the design of the valves. The shaft, disc, rubber seal and bearings shall be designed and manufactured such that no excess or insufficient clearances are developed at the top, bottom, or sides of the seating areas. The valves will be installed under buried and submerged conditions. Valves shall be pressure-tight in either direction. All valve components shall be designed for all these specified conditions as a minimum. Valves 72-inch and smaller shall be AWWA Class 150B.

Valve Bodies shall be made of cast or ductile iron shall conform to ASTM Standard A126-04, "Gray Iron Castings for Valves, Flanges and Pipe Fittings", Class B, or ASTM A48-03R08, "Gray Iron Castings", Class 40. Ductile iron shall conform to ASTM A395-99R09 grade 60-40-18, or ASTM A536-84R09, Grade 65-45-12, 70-50-05 or 80-55-06. Valve body gaskets shall be rubber or rubber composition. Inorganic mineral fiber or paper are not acceptable. Rubber and rubber composition materials shall be suitable for use in water containing chlorine or chloramines. No disc stops shall be allowed on the body.

Mechanical Joint Valves shall have ends complying with ANSI/AWWA Standard C111/A21.11-07, "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings". Mechanical joint gaskets, glands, tee-head bolts hex and nuts shall be included with the valve. Follower glands held in place with set screws will not be accepted. Bolt holes in the flanges of the mechanical joints shall be equally spaced and shall straddle the vertical centerline. Gaskets shall be shipped separately in suitable protective containers.

Flanged Valves shall have ends faced and drilled in conformance with ANSI Standard B16.1, "Cast Iron Pipe Flanges and Flanged Fittings", Class 125. Hollow back flanges are not acceptable. Bolt holes shall not be tapped, except as may be required by the shaft hubs. Flanged valves shall have short bodies with laying lengths as specified in Table 1 of ANSI/AWWA Standard C504-06. Since this standard does not address sizes over 72-inch, laying lengths for valves above 72-inches shall be submitted by the bidder with his submittal. Bolt holes in the flanges shall be equally spaced and shall straddle the vertical and horizontal centerlines. Others will furnish all joint materials for flanged valves.

Valve Shafts shall be one piece straight through, or two-piece stub-type, American Iron and Steel Institute (AISI) Type 316 stainless steel or Monel construction for valves 72-inch and smaller. The valve shafts for 84-inch and larger, if ordered, shall be AISI Type 316 stainless steel or stainless-steel bar conforming with ASTM A564/A564M-04R09, "Hot-Rolled and Cold-Finished Age-Hardening Stainless and Heat-Resisting Bars and Shapes", Type 630, condition H1100 construction. The shaft diameter and torque capabilities for 84-inch valves and larger shall be determined in accordance with AWWA Manual of Water Supply Practices, M49, "Butterfly Valves, Torque, Head Loss, and Cavitation Analysis", but shall not

be less than the 8½-inch value given in ANSI/AWWA Standard C504-06, Table 3, for 72-inch, Class 150B, valves. Shaft design and sizing shall preclude any disc edge-to seal excess or insufficient clearance due to "sag", "play" or "tolerance add up" in the disc-shaft assembly. All nuts, bolts, pins, or other items within the valve or in contact with water shall be of AISI Type 316 stainless steel or approved equal.

Pins connecting the disc and the shaft of all valves shall be mechanically secured. All valves with one-piece through shafts shall have at least two pins. Valves 24-inch and smaller with two-piece stub type shafts shall have one or two pins in the primary or operating shaft, and at least one pin in the secondary shaft. Valves 30-inch and larger with two-piece stub type shafts shall have at least two pins in the primary or operating shaft and at least one pin in the secondary shaft. Each pin on the primary or operating shaft shall be sized to take full design load imposed on the disc. Pins shall be either force fit or mechanically locked. Mechanical locking shall be by lock washers, lock nuts, force fit or other sturdy and corrosion resistant means. Roll pins will not be accepted. Riveted or welded type pins will not be accepted.

Valve Discs shall seat at an angle of 90 degrees to the pipe axis. Valve discs shall be made of cast iron (conforming to ASTM Standard A48-03R08, Class 40, "Gray Iron Castings"; ASTM Standard A126-04, "Gray Iron Castings for Valves, Flanges and Pipe Fittings", Class B; or ASTM Standard A536-84R09, "Ductile Iron Castings", Grade 65-45-12; of cast steel conforming to ASTM Standard A216-08, "Steel Castings, Carbon Suitable for Fusion Welding for High-Temperature Service", Grade WCB, or of alloy cast iron conforming to ASTM Standard A436-84R06, "Austenitic Gray Iron Castings", Type 1 or 2; or ASTM Standard A439-83R09, "Austenitic Ductile Iron Castings", Type D2, and with a maximum lead content of 0.003 percent. The Seating edge of the disc for its full width shall be AISI Type 316 stainless steel, Monel metal, or nickel-chrome (18-20) applied by the plasma arc-weld process. Valves with angle seating or fabricated steel discs are not acceptable. Sprayed metal seating edges are not acceptable. Welded seating edges shall be at least 3/32-inch thick.

Valve Seats shall be secured to the valve body only. Seats secured to the valve discs will not be accepted. Valve seats shall be made of new synthetic rubber and may be reinforced by the manufacturer. Rubber seats on valves 24-inch and smaller shall be secured to the valve bodies by vulcanizing, or by cementing and clamping. On valves 30-inch and larger, the seat shall be mechanically held by means of grooves machined or cast in the valve body and shall be designed in such a way as to hold the seats from popping out when secured, or when subjected to compression. The seats shall be fully adjustable and replaceable with the valve installed. All parts of clamps and fastening devices shall be made of AISI Type 316 stainless steel or other approved equal non-corrodible material. Bolts may be used to hold rubber-seat clamps in place, but the bolts shall not go through the rubber seat itself. Durometer hardness, reinforcement, dimensions, and section of the rubber seat shall be selected and matched to the valve size and clearances such that adequate seal contact pressure is generated without excessive amounts of seal material being extruded into the annulus between the disc edge and body. In addition to meeting the above conditions, bidders may be required to present conclusive evidence proving that seats of the proposed design are being successfully used in similar 30-inch and larger butterfly valves furnished by the same manufacturer. Sprayed or plated mating seat surfaces will not be accepted.

Valve bearings shall be self-lubricating, corrosion resistant, sleeve type, and with thrust bearings as required by Section 4.3.6 of ANSI/AWWA Standard C504-06. Shaft to bearing clearances under maximum loads shall be such that excessive or insufficient clearances cannot develop between disc and seat surfaces particularly when the disc is in the sealed (vertical) position.

All External Ferrous Items, except cast iron, shall be hot-dipped galvanized in accordance with ASTM Standard A123-09, "Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products", or ASTM Standard A153-09, "Zinc Coating (Hot-Dip) on Iron and Steel Hardware", or stainless steel.

Shaft Seals shall be as required by Section 4.3.7 of ANSI/AWWA Standard C504-06.

3.6 Operators

Manual operators for valves 24-inch and smaller shall be of totally enclosed worm gear or traveling-nut type, permanently lubricated, suitable for buried or submerged operation in accordance with ANSI/AWWA Standard C504-06. Manual operators shall be provided with completely enclosed mounting brackets or adapters. The operators for valves through 24-inch shall be sized to provide the maximum torque required by the valve they are to operate, and that torque shall be calculated by the methods used in AWWA Manual of Water Supply Practices, M49, "Butterfly Valves, Torque, Head Loss, and Cavitation Analysis". All valve torque requirements shall be calculated using the maximum pressure differential and velocity for Class 150B valves

Manual operators for valves 30-inch and above shall be totally enclosed worm gear operators, permanently lubricated, suitable for buried and submerged operation, and shall be Lim torque Type HBC (no substitutions), in accordance with ANSWI/AWWA Standard C504-06, with AWWA Input Shaft Stop. The valve manufacturer shall insure that any gear lash, tolerance, or other mechanism creating movement or "play" in the operator/valve control system does not adversely affect the valve seal. As previously specified, no disc stops are allowed on the body. Manual operators shall be provided with completely enclosed mounting brackets or adapters. The operators for 30 through 72-inch valves shall be sized to provide the maximum torque required by the valve they are to operate, and that torque shall be calculated by the methods used in AWWA Manual of Water Supply Practices, M49, "Butterfly Valves, Torque, Head Loss, and Cavitation Analysis". All valve torque requirements shall be calculated using the maximum pressure differential and velocity for Class 150B valves.

The 84-inch and larger valves, operators and accessories shall be designed for the following conditions, in accordance with AWWA Manual of Water Supply Practices, M49, "Butterfly Valves, Torque, Head Loss, and Cavitation Analysis", but shall not be less than the 8½-inch minimum shaft diameter value given in ANSI/AWWA Standard C504-06, Table 3, for 72-inch, Class 150B, valves.

Fluid handled:	Water at ambient temperature
Velocity through valve:	8 feet per second, bi-directional

Shut-off pressure:	150-PSIG minimum on either side
Opening or closing time:	6 minutes
Operator torque calculations	Per AWWA Manual of Water Supply Practices, M49, "Butterfly Valves, Torque, Head Loss, and Cavitation Analysis"

In addition to the above, the operator shall be capable of withstanding an input torque of 300 ft. lbs. on the operating nuts and all operators on valves 30-inch and larger shall be equipped with an AWWA input shaft stop. The operator shall be equipped with adjustable stops to prevent over travel of the disc in both the closed and opened positions, with standard AWWA 2-inch square operating nuts with skirts. All valves shall open by turning the operating nuts counterclockwise. Each operator for the valves 30-inch and larger shall be equipped with a brass plate die-stamped with letters and numerals, at least ½-inch high, indicating the number of turns necessary to fully open the valve from a full closed position as determined by factory test. The plate shall be secured to the operator so that it may be read from the top when the valve is in an installed position. As previously specified, operators shall be for buried, submerged conditions which precludes installation of a position indicator. However, where valves and operators are ordered for above grade service, a position indicator shall be in the top of the operator to show the position of the butterfly valve. This indicator shall remain synchronized during operation. The position indicator shall be weatherproof.

After mounting, each operator shall be factory adjusted to ensure that the valve will operate from a fully open to a fully closed (seated) position without further adjustment by the installer. An affidavit shall be furnished with each valve from the manufacturer certifying this. The affidavit shall also state the number of turns required to fully open the valve from a fully closed position as determined by factory test and certify that the valve is set to open in a counterclockwise direction. For valves of 54-inch and above, two copies of this certification shall be signed, sealed, and dated by a licensed professional engineer registered to practice in the state where the tests and adjustments are performed.

3.7 Torque Limiting Device

Each valve shall be provided with a torque-limiting device designed to protect the actuator and valve parts. The device shall consist of an over torque protection mechanism enclosed in a hermetically sealed cast iron housing. The mechanism shall be permanently lubricated, and factory set to trip between 200 and 220 ft. lbs. of applied torque. The housing shall have integrally cast, 2-inch AWWA operating nut and matching socket to operate and to fit over the actuator or extension shaft nuts, respectively. The socket shall be provided with a setscrew to fit the device. The direction of rotation shall be permanently shown with word and arrow next to the operating nut. The entire device shall be coated inside and out with a 2-part epoxy. The torque limiting device shall be as manufactured by Annspach Controls Company of St. Louis, Missouri, or approved equal.

The Interior Coating of the valve bodies shall be a two-part epoxy specially formulated for potable water service and applied according to the coating manufacturer's recommendations. The coating shall conform to ANSI/AWWA C550-01, "Protective Interior

Coatings for Valves and Hydrants", and shall not contain coal tar. All parts of the interior of the valve body and disc, except for rubber or stainless steel, shall be so coated.

Exterior Painting shall be asphalt varnish conforming to Federal Specification TT-C-494A as required by Section 4.4.2.2 of ANSI/AWWA Standard C504-06.

3.8 Testing

The butterfly valves shall be tested in accordance with ANSI/AWWA C504-06, Section 5, Subsection 5.1. The performance test (Subsection. 5.1.1) and the hydrostatic test (Subsection. 5.1.3) shall be performed as stated, but the leakage test (Subsection. 5.1.2) shall be performed bi-directionally; first on one side of the valve, and then on the other.

For valves 54-inch and above, the bidder shall provide certification that the valves have been further subjected to factory hydrostatic testing at their rated pressure of 150 psi while standing in the vertical (installation) position, bi-directionally; first on one side of the valve, and then on the other, with operator installed and operational. Duration of the test for each direction shall be a minimum of ten minutes and no leakage is permitted. The manufacturer shall not make any special modifications or special provisions to prevent leakage past the seat or elsewhere during this test.

The bidder shall include a certified manufacturer's test report with each shipped valve, stating that the valve has met the requirements of each of the various tests. For 54-inch and above valves, the certification shall be signed, dated, and sealed by a licensed professional engineer registered to practice in the state where the valve is manufactured, or if different, where the valve is tested. Failure to provide this certification will be cause for rejection by the Water and Sewer Department of the particular valve shipment.

The bidder is hereby notified that, upon delivery, the installer shall be required to pressure test the valve and cycle the valve as a test of function above grade, prior to installation. It is fully expected and required by the Water and Sewer Department that the valve shall be manufactured, tested, and shipped such that upon testing by the installer, no leakage will be discovered, and no readjustment of the operator will be required. To this end, on large valves, the bidder may desire to have a factory technician present for delivery and installer testing of the valve and operator. The Water and Sewer Department will cooperate with a request of this sort to the extent of minor coordination with the installer. However, all costs for such personnel and activities shall be borne by the bidder, including insurance, and shall be included in its quoted price.

3.9 Witnessed Testing

Witnessed testing shall be performed within the Continental United States. The Water and Sewer Department may send a representative to witness such test. If the Water and Sewer Department opts to witness such test, the bidder will be notified within forty-five (45) calendar days of when the order is placed. If multiple valves are ordered, they shall be tested consecutively, so that the Water and Sewer Department's representative may be able to witness all tests in one trip. Test valves shall be complete with nameplates and serial numbers. The bidder shall bear all costs associated with the testing. The Water and Sewer Department shall bear all travel costs associated with the County representative visiting the test site. The bidder shall notify the Water and Sewer Department's representative at least twenty-one (21) days prior to the test, so that travel arrangements may be made. The bidder shall pre-test the valves prior to the witnessed test. If it becomes necessary for the Water and Sewer Department's representative to

return to witness a repeated test on a valve that has previously failed such test, the travel-related costs associated with the Water and Sewer Department representative's return trip will be deducted from the monies owed to the bidder.

The butterfly valves shall conform to the appropriate AWWA Standard as modified in the Technical Specifications herein, and as manufactured by DeZurik, Henry Pratt, Olson or approved equal.

3.10 Gate Valves, General

All valves specified herein, whether manufactured under the provisions of AWWA C500-09 "Metal-Seated Gate Valves for Water Supply Service"; C509-09 "Resilient-Seated Gate Valves for Water Supply Service" or C515-09 "Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service" shall be furnished with an Affidavit of Compliance from the manufacturer as required by Section 6.3 of AWWA C515-09. This Affidavit of Compliance shall state that the valve and all materials used in its construction conform to the applicable requirements of the standard under which the valve is manufactured and the Water and Sewer Department's specifications and that all tests specified in the applicable standard have been performed and all test requirements met. The Affidavit shall accompany the packing list for the valves purchased by the Water and Sewer Department.

All work performed, except prototype testing, shall be subject to inspection and acceptance by the Water and Sewer Department or its representatives who shall have access to all places of manufacture where these valves are being produced and tested. Bidders shall, with their shop drawing submittals, submit the company name and location of the actual manufacturer of the valve which shall include Country, City, and street address of the manufacturer. Where components of the valves are outsourced, the same data shall be supplied for the manufacturers of the various components if so, required by the Water and Sewer Department. The records of all tests as specified in Section 4.2.4 of AWWA C500-09, 4.2.3 of AWWA C509-09 and AWWA C515-09 shall be made available to the Water and Sewer Department if so required. Where valves are not domestically produced and tested, the Water and Sewer Department may require that the Affidavit of Compliance be signed and sealed by a Professional Engineer, licensed to practice in the state of where the importing firm is located or the State of Florida. When this is required, the Water and Sewer Department's decision as to its necessity shall be final and no extra compensation will be allowed.

3.11 Copper Alloys

Copper alloys containing more than 16 percent zinc shall not be used in the fabrication of any of the various valve types listed in this specification. Copper alloys containing 16 percent or less of zinc shall not contain less than 79 percent copper. Aluminum bronzes, if used, shall not dealuminize and the method of preventing this shall be fully described in the submittal.

AWWA Standard C500-09 lists a number of copper alloys for valve stems, gates and thrust collars. Of these the Water and Sewer Department will accept alloys with the following Unified Numbering Series (UNS) numbers; C66100, C87500, C87600, C99400 and C99500. This same standard list other copper alloys for Stem Nuts and Gates. Of these the Water and Sewer Department will accept alloys with the following UNS numbers; C83450, C83600, C84400, C87600, C87610, C95200, C95300, C95500, C99400 and C99500.

AWWA Standard C509-09 lists a number of copper alloys for valve stems, gates and thrust collars. Of these the Water and Sewer Department will accept alloys with the following Unified Numbering Series (UNS) numbers; C66100, C87500, C87600, C87610, C95200, C95300, C95500, C99400 and C99500. This same standard list other copper alloys for Stem Nuts and Gates. Of these the Water and Sewer Department will accept alloys with the following UNS numbers; C83450, C83600, C95200, C95500, C95800 C99400 and C99500.

AWWA Standard C515-09 lists a number of copper alloys for valve stems, gates and thrust collars. Of these the Water and Sewer Department will accept alloys with the following Unified Numbering Series (UNS) numbers; C66100, C865002, C87500, C87600, C87610, C95200, C95300, C95500, C99400 and C99500. This same standard list other copper alloys for Stem Nuts and Gates. Of these the Water and Sewer Department will accept alloys with the following UNS numbers; C83600, C83450, C84400, C87500, C87610, C95200, C95300, C95500, C95800 C99400 and C99500.

Other copper alloys not listed in the standards may be used but must meet the performance requirements of the standard, including but not limited to, minimum yield strength, chemical requirements, and corrosion. The Water and Sewer Department requires that alloys containing more than sixteen (16) percent zinc or less than 79 percent copper shall not be used. No alloy containing more than eight (8) percent lead may be used.

3.12 Valve Position and Gearing

In instances where cover over the main and the height of the valve together permit the gate valve, if installed vertically, to have a minimum cover of two feet six inches (2'-6") or greater over the top of the valve, the valve may be installed with stem vertical and equipped with spur rather than bevel gearing. Note that mains shall not be deliberately lowered for this reason.

3.13 Double Disc Gate Valve

Gate valves 3-inch and larger shall be manufactured in accordance with the applicable provisions of ANSI/AWWA Standard C500-09, "Metal-Seated Gate Valves for Water Supply Service", as modified herein. The valves are to be installed under buried and/or submerged conditions.

All gate valves shall be bronze-mounted, and shall have a cast or ductile iron body, parallel or inclined seats, double discs, and a non-rising stem. Stem shall be bronze. Valve body and bonnet gaskets shall be rubber or rubber composition, inorganic mineral fiber and paper are not acceptable. Rubber and rubber composition materials shall be suitable for use in water containing chlorine or chloramines and in sanitary sewage. All 16-inch and larger gate valves shall be equipped with gearing and extended gear cases conforming with Section 4.4.14 of AWWA C500-09. It is anticipated that the normal configuration will be bevel gearing. However, the Water and Sewer Department may order straight gearing when suitable for a specific application with no change in pricing allowed. Disk spreading devices shall be Monel, AISI type 316 stainless steel or bronze. Valves shall open by rotating the valve stem counterclockwise and shall have an AWWA 2-inch square operating nut with skirt.

All External Ferrous Items, except cast iron, shall be hot-dipped galvanized in accordance with ASTM Standard A123-09, "Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel

Products", or ASTM Standard A153-09, "Zinc Coating (Hot-Dip) on Iron and Steel Hardware", or stainless steel.

“O”-Ring Stem Seals shall be neoprene, Buna-N, Nitrile or approved equal. No natural rubber compounds will be acceptable. The stem seals shall be of design that permits the replacement of the “O”-ring seals while the valve is in service, without undue leakage.

Flanged Valves shall have ends faced and drilled conforming to ANSI Standard B16.1, Class 125. Bolt holes in the flanges shall be equally spaced and shall straddle the vertical and horizontal centerlines. Joint materials for flanged valves will be furnished by others.

Mechanical Joint Valves shall have ends complying with ANSI/AWWA Standard C111/A21.11-00, “Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings”. Mechanical joint gaskets, glands, tee-head bolts, and hex nuts shall be included with the valve. Segmented glands or follower glands held in place with set screws will not be acceptable. Bolt holes in the flanges of the mechanical joint shall be equally spaced and shall straddle the vertical centerline. Gaskets shall be shipped separately in suitable protective containers. Valves for use in sewerage shall have neoprene gaskets.

Gate Valves 20-inch and Larger shall have bypass gate valves sized in accordance with Table 8 of ANSI/AWWA Standard C500-93. The bypass valves shall conform to the applicable requirements for the gate valves specified herein, and with the requirements listed below. The bypass valves shall be one of the following types:

The valve shall have ANSI Standard B16.1, Class 125, end flanges for connecting to adapter fittings which in turn connect to bosses on the main valve. Joint materials shall be ANSI sized and approved, 1/8-inch thick full-faced rubber gaskets and hot-dip galvanized steel or stainless-steel bolts and nuts.

The valve shall be integral with the bypass unit which connects directly to bosses on the main valve without the use of adapter fittings. Joint materials and the shape of the gasket may be the manufacturer's standard, except that the gasket shall be at least 1/8-inch thick, full-faced and the bolts and nuts shall be hot-dip galvanized steel or stainless steel.

The bypass valve shall be completely mounted to the gate valves specified herein by the manufacturer.

Testing - All prototype Proof of Design Testing as called for in ANSI/AWWA C500-09 Sections 5.1.1.1, Torque Test, and 5.1.1.2, Leakage Test, together with 5.1.2, Operation Test, shall have been performed for each size of valve supplied. All production tests shall be performed on all valves supplied without exception. Hydrostatic tests shall be performed as specified in Sections 5.1.3.1 and 5.1.3.2 (as applicable to the design of valve being purchased) of ANSI/AWWA C500-09. An Affidavit of Compliance as specified in Section 6.3 of C500-09 shall be furnished to the Water and Sewer Department with the packing list for the valves purchased by the Water and Sewer Department.

The gate valves shall conform with the appropriate AWWA standard as modified herein and as manufactured by U.S. Pipe and Foundry Co., American Flow Control, Mueller or approved equal.

3.14 Resilient-Seated Gate Valves

Resilient-seated gate valves shall be manufactured in conformance with the applicable provisions of ANSI/AWWA Standard C509-09, "Resilient-Seated Gate Valves for Water Supply Service", as modified herein or in conformance with the applicable provisions of ANSI/AWWA Standard C515-09 "Reduced-Wall Resilient-Seated Gate Valves for Water Supply Service" as modified herein.

Valves shall have non-rising stems (NRS) and are to be installed under buried and/or submerged conditions. For valves manufactured in conformance with the provisions of AWWA C509 as modified herein, the design working water pressure shall be a minimum of 200 psig for valves of 3-inch through 12-inch size and 150 psig for 16 through 36-inch sizes. For valves manufactured in conformance with the provisions of AWWA C515 as modified herein, the design working water pressure shall be a minimum of 200 psig for all sizes. In addition to the pressure requirements, for valves manufactured under either standard, the valve assembly and mechanism shall be capable of withstanding an input torque of 250 ft. lbs. for valves 4-inch and smaller, 350 ft. lbs. for 6 through 12-inch, 400 ft. lbs. for 16 through 24-inch, 500 ft. lbs. for 30-inch, 600 ft. lbs. for 36-inch, 700 ft. lbs. for 42-inch and 800 ft. lbs. for 48-inch valves. With the valve open the unobstructed waterway shall have a diameter not less than the full nominal diameter of the valve.

3.15 Valve Body and Bonnet

All resilient-seated gate valves manufactured in conformance with AWWA C509-09 shall be iron-bodied and shall conform to ASTM Standard A126-04(2009), "Gray Iron Castings for Valves, Flanges, and Pipe Fittings", Class B; ASTM Standard A395-99(2009), "Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures"; or ASTM Standard A536-84(2009), "Ductile Iron Castings". Valve body and bonnet thickness shall conform with the requirements of AWWA Standard C509-09.

Valves manufactured in conformance with AWWA C515-09 shall be iron-bodied and shall conform to ASTM Standard A395-99(2009), "Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures" or ASTM Standard A536-84(2009) "Ductile Iron Castings". Body and bonnet thickness shall conform with the requirements of AWWA Standard C515-09.

All ferrous metal items in contact with the line fluids, except gray or ductile cast iron, shall be AISI Type 316 stainless steel. Valve body and bonnet gaskets shall be rubber or rubber composition, inorganic mineral fiber and paper are not acceptable. Rubber and rubber composition materials shall be suitable synthetic for use in water containing chlorine or chloramines and in sanitary sewage. No natural rubber containing compounds shall be used.

Gates shall be made of ductile iron, grey iron or copper alloys as specified for their particular standard in Paragraph 3.6, “Gate Valves, General”.

Stems, thrust collars, stem nuts and gates (if made of copper alloy) shall be constructed of the alloys listed for those items in Section 3.04, "Gate Valves, General" section of this specification. The same items for valves made in conformance with C515-09 shall be made of the alloys specified for that standard in the same section. The stem diameter shall conform to Table 7 of either C509 or C515 as appropriate. All valves shall be equipped with an ANSI/AWWA standard 2-inch square operating nut with skirt, or handwheel when required for above-ground service. Valve stems shall rotate counterclockwise to open. All

valves 16-inch and larger shall be equipped with gearing conforming with their particular AWWA standard. It is anticipated that the normal configuration will be bevel gearing. However, the Water and Sewer Department may order straight gearing when suitable for a specific application with no change in pricing allowed.

"O"-Ring Stem Seals shall be neoprene, Buna-N, or approved equal. No natural rubber compounds will be acceptable. The stem seals shall be of design that permits the replacement of the "O"-ring seals while the valve is in service, without undue leakage.

All External Ferrous Items, except gray or ductile cast iron, shall be hot dipped galvanized in accordance with ASTM Standard A123-09, "Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products", or ASTM Standard A153-09, "Zinc Coating (Hot-Dip) on Iron and Steel Hardware", or stainless steel.

Resilient Seats shall be applied to the gate only and shall seat against a corrosion-resistant surface. The surface shall be nonmetallic, applied in a manner to withstand the action of line fluids and the operation of the sealing gate under long-term service and shall coat all surfaces in contact with the liquid. The nonmetallic surface interior surface coating shall conform with ANSI/AWWA Standard C550-05, "Protective Interior Coatings for Valves and Hydrants". Resilient seats shall be bonded or mechanically attached to the gate. No natural rubber products will be acceptable. Seat materials shall be Neoprene, EPDM, Nitrile or approved equal and shall have excellent resistance to sewage combined with good to excellent resistance to compression set. The method used for bonding or vulcanizing the resilient seat material to its substrate shall be proven by ASTM Standard D429-08, "Test Methods for Rubber Property-Adhesion to Rigid Substrates", Method A or B. For method A, the minimum strength shall not be less than 250 PSI. When Method B is applicable, the peel strength shall not be less than 75 lb/in. All exposed mechanical attaching devices and hardware used to retain the resilient seat shall be of AISI Type 316 stainless steel.

Flanged Valves shall have ends faced and drilled conforming to ANSI Standard B16.1, Class 125. Bolt holes in the flanges shall be equally spaced and shall straddle the vertical and horizontal centerlines. Hollow back flanges shall not be acceptable. Joint materials for flanged valves will be furnished by others.

Mechanical Joint Valves shall have ends complying with ANSI/AWWA Standard C111/A21.11-07, "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings". Mechanical joint gaskets, glands, tee-head bolts, and hex nuts shall be included with the valve. Segmented glands or follower glands held in place with set screws will not be acceptable. Bolt holes in the flanges of the mechanical joint shall be equally spaced and shall straddle the vertical centerline. Gaskets shall be shipped separately in suitable protective containers. Valves for use in sewage shall have neoprene gaskets.

Painting and Coatings shall conform to the requirements of Fed. Spec. TT-C-494B or AWWA C550 on exterior ferrous surfaces, and ANSI/AWWA Standard C550-05 for the interior of the valve. Interior and exterior coatings shall conform with AWWA C515-01, Section 4.5.2 "Coating".

3.16 <u>Testing</u>

All prototype Proof of Design Testing as called for in ANSI/AWWA C509-09 and AWWA C515-09 Sections 5.1.1.1, Hydrostatic Test; 5.1.1.2, Torque Test; 5.1.1.3, Leakage Test; and 5.1.1.4 Hydrostatic Shell Test; shall have been performed for each size of valve supplied. All

production tests shall be performed on each valve supplied without exception. Operation Test, Shell Test and Seat Test shall be performed as specified in Sections 5.2.1, 5.2.2 and 5.2.3 respectively on valves manufactured under C509 and the same tests as specified in Sections 5.1.2.1, 5.1.2.2 and 5.1.2.3 respectively of C515. An Affidavit of Compliance as specified in Section 6.3 of both C509-09 and C515-09 shall be furnished to the Water and Sewer Department with the packing list for the valves purchased by the Water and Sewer Department.

The gate valves shall conform with the appropriate AWWA standard as modified herein and as manufactured by U.S. Pipe and Foundry Co., American Flow Control, Mueller or approved equal.

3.17 Tapping Valves

Tapping valves, including the bypass valves for double-disc tapping valves 20-inch and larger, shall conform to the applicable requirements for the gate valves specified herein, and also with the requirements listed below.

With the valve open, an unobstructed waterway shall be provided, the diameter of which shall be at least the full nominal diameter of the valve, to permit taps to be made through the valve.

Tapping valves shall have a mechanical joint outlet end conforming to ANSI/AWWA Standard C111/A21.11-00, "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings" or a flanged outlet conforming to ANSI Standard B16.1 Class 125 (as called for in the particular valve order), for connection to new piping and a flanged inlet with centering ring (for all valves of 12-inch diameter and smaller and for all larger valves where the manufacturer produces a centering ring flange in that size), for connecting to the tapping sleeve. For tapping valves 12-inch and smaller, the sleeve shall be in compliance with all applicable provisions of MSS Standard Practice SP 60, latest revision, as developed and approved by the Manufacturers Standardization Society of the Valve and Fittings Industry, 127 Park Street N.E., Vienna, Virginia 22180. For tapping valves larger than 12-inch, the connecting flanged joint between the tapping sleeve and the tapping valve shall be industry standard; however, the tapping valve must provide a matching fit with tapping sleeves by other manufacturers.

The tapping valves, including bypass valve when applicable, shall be furnished complete with all joint materials. Joint materials for the flanged inlets shall be ANSI-sized and approved and shall include 1/8-inch-thick full faced gaskets and hot-dip galvanized carbon steel bolts and nuts with internal threads tapped or retapped after galvanizing or stainless-steel bolts and nuts. The flanged inlet gaskets shall conform to the gasket material and property requirements set forth in ANSI/AWWA Standard C111/A21.11-00. All inlet flange and pipe connection gaskets for use in sewer applications shall be neoprene and SBR for potable water applications. Natural rubber shall not be used in any application. Seal shall be neoprene, Buna-N, Nitrile, EPDM or approved equal, but not natural rubber. The mechanical joint outlets shall include the necessary joint materials conforming to the requirements of joint materials for mechanical joint ended gate valves of the appropriate type specified herein (neoprene for use with sewer). Bolt holes in the flanges of the mechanical joint shall be equally spaced and shall straddle the vertical centerline. Gaskets shall be shipped separately in suitable protective containers.

Valve operators for tapping valves 20-inch and larger shall be located to the right or left (when looking into the mechanical joint outlet end) as ordered by the Water and Sewer Department. In instances where cover over the main and the height of the valve together permit the tapping valve, if installed vertically, to have a minimum cover of two feet six inches (2'-6") or greater

over the top of the valve, the valve may be installed with stem vertical and equipped with spur rather than bevel gearing. Note that mains shall not be deliberately lowered for this reason.

The valves shall be suitable for use with ductile-iron pipe conforming to ANSI/AWWA Standard C151/A21.51-09, "Ductile-Iron Pipe, Centrifugally Cast".

The tapping valves shall conform with the appropriate AWWA valve standard as modified herein and as manufactured by U.S. Pipe and Foundry Co., American Flow Control, Mueller or approved equal.

Testing - All prototype Proof of Design Testing as called for in ANSI/AWWA C509-09 and AWWA C515-09 Sections 5.1.1.1, Hydrostatic Test; 5.1.1.2, Torque Test; 5.1.1.3, Leakage Test; and 5.1.1.4 Hydrostatic Shell Test; shall have been performed for each size of valve supplied. All production tests shall be performed on each valve supplied without exception. Operation Test, Shell Test and Seat Test shall be performed as specified in Sections 5.2.1, 5.2.2. and 5.2.3 respectively on valves manufactured under C509 and the same tests as specified in Sections 5.1.2.1, 5.1.2.2 and 5.1.2.3 respectively of C515. An Affidavit of Compliance as specified in Section 6.3 of both C509-09 and C515-09 shall be furnished to the Water and Sewer Department with the packing list for the valves purchased by the Water and Sewer Department.

The tapping valves shall conform with the appropriate AWWA valve standard as modified herein and as manufactured by U.S. Pipe and Foundry Co., American Flow Control, Mueller or approved equal.

3.18 <u>Check Valves</u>

The swing-check valves shall be standard (plain), outside lever-and-weight or outside lever-and-spring types, for normal horizontal installations, conforming to all the applicable requirements of ANSI/AWWA Standard C508-09, “Swing-Check Valves for Waterworks Service, 2-In. (50mm) through 24 In. (600mm) NPS”, as modified herein. The valves shall be iron body, bronze mounted and of the buried service type.

Valve bonnet opening shall be large enough to allow ample clearance for direct removal of disc by hand.

All External Ferrous Items, except cast iron, shall be hot-dipped galvanized in accordance with ASTM Standard A123-09, “Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products”, or ASTM Standard A153-09, “Zinc Coating (Hot Dip) on Iron and Steel Hardware”, or stainless steel.

Flanged Valves shall have ends plain faced and drilled conforming to ANSI Standard B16.1, “Cast Iron Pipe Flanges and Flanged Fittings”, Class 125. Bolt holes in the flanges shall be equally spaced and shall straddle the vertical and horizontal centerlines. Others will furnish all joint materials for flanged valves.

The check valves shall be so constructed that the clapper swings clear of the waterway when the valve opens, permitting a full flow through the valve equal to the nominal diameter of the pipe.

The body and clapper-seating surface shall be metal to metal and shall be bronze.

The clapper disc and the clapper hinge arm, including the clapper disc cap screw, shall be bronze or cast iron (clapper disc screw may also be Type 316 stainless steel). Clapper to hinge arm connection shall be such that the unit cannot be unscrewed by fluid flow.

The Clapper Hinge Pin shall be AISI Type 316 stainless steel. The clapper hinge pin shall rest in bronze bushing and for check valves with outside lever, shall extend through the casing on the right-hand side when facing the valve inlet. The clapper hinge pins shall rest in bronze bushings provided with a packing type seal ("O"-rings are not acceptable) and shall extend through the casing on the right-hand side when facing the valve inlet. An opening shall be provided in each of two bosses on the body for easy access to either end of the hinge pin. The openings shall be tapped and provided with plugs.

Besides check valves for new installations, the Water and Sewer Department will be replacing a number of check valves in its existing water and sewer systems. The replacement valves, in addition to the requirements specified herein above for valves used in new installations, must be of the same laying length (flange face to flange face) as the valve it is to replace, to insure a proper fit between the pipeline flanges in the existing mains.

Testing- All check valves shall be tested at the factory in accordance with Section 5.2 of ANSI/AWWA Standard C508-09 and a Certified Test Report shall be furnished with each valve.

3.19 Plug Valves

All valves specified herein shall be furnished with an affidavit from the manufacturer certifying that the valves furnished under this contract comply with all applicable provisions of the AWWA specifications as revised and cited below. The affidavit shall accompany the packing slip for the valves.

The plug valves shall be of the non-lubricated eccentric type, with resilient faced plugs, and shall be designed for a minimum design pressure in accordance with ANSI/AWWA C517-09 "Resilient-Seated Cast-Iron Eccentric Plug Valves"; IE 175 psig for 3 inch through 12 inch and 150 psig for 14 inch through 72 inch. Plug valves 20-inch and smaller shall have an 80 percent minimum port area. Plug valves 24-inch and larger shall be full opening with 100 percent port area. Plug valves, 8-inch and smaller shall be designed for operation in a horizontal pipeline with the valve shaft in a vertical position. Plug valves larger than 8-inch shall be designed for operation in a horizontal pipeline, with the valve shaft in the horizontal position and the operator (actuator) shaft in the vertical position.

The plug valves shall be as manufactured by DeZurik, or approved equal, and shall be the standard product of a manufacturer which has produced and sold such equipment for a period of at least five (5) years. Valves shall be suitable for buried, submerged service.

Flanged valves shall have ends plain faced and drilled conforming to ANSI Standard B16.1, "Cast Iron Pipe Flanges and Flanged Fittings", Class 125. Bolt holes in the flanges shall be equally spaced and shall straddle the vertical and horizontal centerlines. All joint materials for flanged valves will be furnished by others.

Mechanical joint valves shall have ends complying with ANSI/AWWA Standard C111/A21.11-00. "Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings". Mechanical joint gaskets, glands, tee-head bolts, and hex nuts shall be included with the valve. Segmented glands or follower glands held in place by set screws will not be

acceptable. Bolt holes in flanges of the mechanical joint shall be equally spaced and shall straddle the vertical centerline. Gaskets shall be shipped separately in suitable protective containers. Valves for use in sewage shall have neoprene gaskets.

Plug valve body and plug shall be of cast iron conforming to the requirements of ASTM Standard A126-04 (2009), "Gray Iron Castings for Valves, Flanges and Pipe Fittings", Class B, and all exposed-to-line-fluid nuts, bolts, springs washers, and similar component items shall be AISI Type 316 stainless steel. Resilient plug facing shall be of neoprene.

Plug valves shall be furnished with a corrosion-resistant body seat consisting of a welded-in overlay of high nickel content on all surfaces contacting the plug face and shall comply with ANSI/AWWA Standard C517-09, "Resilient-Seated Cast-Iron Eccentric Plug Valves, Section 4.3.3.4.

Plug valves shall be furnished with replaceable, sleeve-type AISI Type 316 stainless steel bearings in the upper and lower journals and shall comply with ANSI/AWWA Standard C517-09 Sections 4.3.3.6, 4.4.6 and thrust bearings shall comply with Sections 4.4.3.6 and 4.4.8.

Plug valve shaft seals shall be designed for replaceable, manually adjustable, multiple ring "V" or "U" type packing of Buna-N or neoprene. The valves shall be of the bolted-bonnet type and shall comply with ANSI/AWWA Standard C517-09 Section 4.4.1.

Plug valves shall have stops at the fully opened and fully closed positions.

Plug valves shall be designed for drip-tight shut-off in wet service applications at pressure differentials up the full rating of the valve with pressure in either direction. Plug valves shall be provided with a manual operator sized to suit the maximum differential pressure across the valves. Minimum plug valve operator output torques shall equal or exceed the values specified in the table below:

PLUG VALVE SIZE	REQUIRED ACTUATOR OUTPUT TORQUE	
	100 PSI	150 PSI
12"	1,063 FT-LBS	1,438 FT-LBS
14"	1,638 FT-LBS	2,225 FT-LBS
16"	2,213 FT-LBS	3,013 FT-LBS
18"	3,300 FT-LBS	4,500 FT-LBS
20"	4,388 FT-LBS	5,975 FT-LBS
24" (100%)	10,000 FT-LBS	12,790 FT-LBS
30" (100%)	15,875 FT-LBS	19,550 FT-LBS
36" (100%)	27,000 FT-LBS	38,750 FT-LBS
42" (100%)	45,000 FT-LBS	63,195 FT-LBS
48" (100%)	45,000 FT-LBS	63,195 FT-LBS
54" (100%)	65,000 FT-LBS	92,860 FT-LBS
60" (100%)	65,000 FT-LBS	92,860 FT-LBS
72" (69%)	65,000 FT-LBS	92,860 FT-LBS

Manufacturer shall supply operators producing larger output torque values if so, required by their valves, but in no case shall operator output torque be less than that shown for the particular valve size and pressure. Actuators shall be designed to produce the required

operating torque with a maximum rim pull of 80 lb. on the handwheel or a maximum input torque of 150 ft-lbs on the wrench nut.

In addition, the operator shall be capable of withstanding an input torque of 300-ft. lbs. on the operating nuts or a pull of 200 pounds on the handwheel without damage to operator components between the input and the stops. Operators on valves 30-inch and larger shall also be equipped with an AWWA input shaft stop.

All external ferrous items, except cast iron, shall be hot-dipped galvanized in accordance with ASTM Standard A123-89a, "Zinc (Hot-Galvanized) Coatings on Iron and Steel Products", or ASTM Standard A153-82 (1987), "Zinc Coating (Hot-Dip) on Iron and Steel Hardware", or stainless steel.

Manual operators for valves 8-inch and smaller shall be lever actuated.

Manual operators for valves 10-inch to 24-inch shall be totally enclosed traveling-nut or worm gear type, permanently lubricated, suitable for buried and/or submerged conditions.

Manual operators for valves 30-inch and larger shall be totally enclosed worm gear operators, permanently lubricated, suitable for buried and/or submerged conditions, and shall be Limitorque type HBC (no substitutions).

Manual operators shall be provided with completely enclosed mounting brackets or adapters. The operators shall be equipped with adjustable stops to prevent overtravel in both the open and closed position with standard 2-inch square operating nuts with skirts or with handwheels, and with a shear pin designed to protect the operator from damage due to overload. All plug valves shall open by turning the operating nut or handwheel counterclockwise.

All operator components between the operating nut and the adjustable stops shall be designed to withstand, without damage, an input torque of 300 ft. lbs.

The combination centering-identification plate, with a drilled or punch center hole, shall be slipped onto the shaft prior to the attaching the operating nut or handwheel. Each operator for valves 24-inch and larger shall be equipped with a plate die-stamped with letters and numerals, at least 3/8-inch high, indicating the number of turns necessary to fully open the valve from a full closed position as determined by factory test. The plate shall be secured to the operator so that it may be read from the top when the valve is in an installed position. The plate shall be 1/8-inch thick AISI Type 316 stainless steel with an outside diameter of 6-3/4 inches. The top of the plate shall be buffed to remove mill scale, and the following information shall be stamped into the top of the plate in letters and numerals; valve manufacturer, valve type, size and class, direction to open, and number of turns to fully open from a fully closed position.

Each valve, 20-inch and larger, shall be provided with a torque limiting device designed to protect the actuator and valve parts. The device shall consist of an over torque protection mechanism enclosed in a hermetically sealed cast iron housing. The mechanism shall be permanently lubricated, and factory set to trip between 200 and 220 ft. lbs. of applied torque. The housing shall have an integrally cast, 2-inch AWWA operating nut and matching socket to operate and to fit over the actuator or extension shaft nuts, respectively. The socket shall be provided with a set screw to fit the device. The direction of rotation shall be permanently shown with word and arrow next to the operating nut. The entire device shall be coated inside and out

with a 2-part epoxy. The torque limiting device shall be as manufactured by Aunspach Controls Company of St. Louis, Missouri, or approved equal.

The exterior valve surfaces shall be shop painted with two coats of asphalt varnish conforming to Federal Specifications TT-C-434A.

The plug valves shall be tested in accordance with ANSI/AWWA C517-09, Subsection 5.2. The Shell Test (5.2.1.1) shall be performed as stated, but the Seat Test (5.2.1.2, 5.2.1.3 and 5.2.1.4) shall be performed for both direct and reverse pressure at the either 150 or 100 psi minimum test pressure as specified for the valve(s) being purchased. The manufacturer shall furnish a certified test report with every valve stating that the particular valve has met the requirements of the production tests and that all proof of design tests and requirements as called for in Sections 5.2.2 and its Subsections for that size valve were successfully met. Final payment by the Water and Sewer Department will not be made until after receipt of these test reports.

Witnessed testing shall be performed within the continental United States. The Water and Sewer Department may send a representative to witness such test. If the Water and Sewer Department opts to witness such test, the bidder will be notified at the time the orders are placed. Every time a group of valves is ordered, they shall be tested consecutively, so that the Water and Sewer Department representative may be able to witness all tests in one trip.

Valves to be tested shall be complete with nameplates and serial numbers. Testing shall be at bidder's cost. The time and trip of the Water and Sewer Department's representative shall be at the Water and Sewer Department's expense. The bidder shall notify the Water and Sewer Department's representative at least 21 days prior to the tests, so that travel arrangements may be made. The bidder shall test the valves prior to the witness test. If it becomes necessary for the Water and Sewer Department's representative to return to witness a repeated test on a valve that has previously failed such test, the County representative's additional trip will be charged to the bidder at the rate of $300.00 per day plus travel, local transportation, accommodations, and meal expenses.

3.20 Experimental, Trial and Replacement Valves

Small numbers of a variety of valves are at times required for experimental and trial use by the Water and Sewer Department to keep up with developments in the industry and to check on manufacturer claims for their equipment. The Water and Sewer Department must also maintain in stock small numbers of non-standard valves as replacements for valves already built into the system. Further, at times valves of sizes, types and configurations not listed herein must be purchased as dictated by situations. The specifications for valves given herein shall apply, except where such specifications conflict with the design of the experimental, special, or replacement valve being ordered. However, all other requirements of that specification shall apply to the valve unless they are not applicable due to the basic design of the valve or are cancelled by the ordering entity.

3.21 Valve Parts

All parts supplied shall be new and must be of Original Equipment Manufacturer (OEM) as recognized by the valve manufacturer. The following is a representative listing of the valve manufacturers presently in use by the Water and Sewer Department: Dezurik, Pratt, Olson, Keystone, Mueller, Kennedy, Dresser M+H, American Darling and Smith and Loveless. The preceding list is neither exclusive nor should be considered complete.

3.22 TECHNICAL SPECIFICATIONS FOR CAST DUCTILE-IRON AND CAST GRAY-IRON PIPE AND FITTINGS

"Evaluation Data" for Cast Ductile-Iron and Cast Gray-Iron Pipe and Fittings shall be defined as complete sets of factory information sheets (specifications, brochures, etc.), and catalog data (information showing construction of a typical length of pipe including details of standard and thrust resistant finished joints, and details of the fittings, specials, and appurtenances). The Evaluation Data must provide sufficient data to allow the County to ascertain that the proposed products meet all specifications.

3.23 General Requirements for Cast Ductile-Iron and Cast Gray-Iron Pipe and Fittings

All pipe and fittings to be furnished hereunder shall conform to the referenced ANSI and/or AWWA Standard, as modified in these Technical Specifications.

All markings required on pipe and fittings, shall be clearly legible and located such that they will not be hidden or destroyed when assembled into the intended system.

3.24 Pipe

All pipes shall be ductile iron pipe conforming to ANSI/AWWA Standard C151/A21.51-02, "Ductile-Iron Pipe, Centrifugally Cast, for Water". All pipe and fittings for water applications shall be in full compliance with ANSI/NSF 61, "Drinking Water System Components-Health Effects" and must be certified by NSF International.

The pipe thickness and outside diameter of pipe for sanitary sewer and water usage shall conform to Tables 1 and 2 (for push-on and mechanical joint pipe, respectively) of ANSI/AWWA Standard C151/A21.51-02 for the following sizes (The pressure class specified is the minimum permitted):

Size	Pressure Class
4-inch through 12-inch	350
14-inch through 20-inch	250
24-inch	200
30-inch through 54-inch	150

For restrained joint pipe, the thickness of the pipe barrel remaining after grooves are cut, if required in the design of restrained end joints, shall not be less than the nominal wall thickness of equal sized non-restrained joint pipe as shown above.

Each piece of pipe shall be marked as required in Subsection 4.6 of AWWA C151-02. Letters and numerals on pipe sizes 12-inch and smaller shall be not less than 3/8-inch.

The County may require the use of "thickness" class pipe or higher-pressure class pipe in applications where in the opinion of the Engineer (i.e., the Chief, Engineering Division, Water and Sewer Department or his representative) such use is in the best interest of the Department. The Engineer's decision in this regard shall be final.

A sufficient quantity of non-toxic vegetable soap lubricant shall be supplied with each order of pipe. The soap lubricant shall be suitable for use in sub aqueous trench conditions.

For flanged ductile-iron pipe with integrally cast flanges or threaded flanges, the nominal wall thickness of the pipe barrel shall be as specified in Paragraph 3.4.5.6 Flanged Joints.

The single gasket push-on pipe shall be shipped in standard 18-foot or 20-foot lengths, but not both. The restrained single-gasket push-on joint pipe shall be shipped in standard 18 or 20-foot lengths as specified above, or fabricated lengths as noted in each order. At least two lengths of each size of single gasket push-on pipe furnished under each order shall be tested with circumferential gauges to ensure that the pipe may be cut at any point along its length and have an outside diameter which will be within the manufacturer's standard design dimensions and tolerances for plain pipe. These lengths shall be identified with an easily distinguished, painted marking, longitudinally along the full length of the pipe.

3.25 Fittings

Fittings conforming to ANSI/AWWA C110/A21.11-98 (Water & Sewer Use): - Restrained push-on joint fittings shall be cast ductile iron for use with ductile-iron pipe as specified above. Standard mechanical joint, push-on joint and flanged joint fittings shall also be ductile iron for use with ductile-iron pipe as specified above. Cast ductile-iron fittings in the 3-inch through 24-inch size range shall be pressure rated at 350 psi, minimum; (except flange-joint fittings shall be rated at 250 psi, minimum); and in the 30-inch through 48-inch size range shall be pressure rated at 250 psi, minimum. All fittings with mechanical joints, flange joints and push-on joints shall conform to ANSI/AWWA Standard C110/A21.10-98, "Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In., for Water and Other Liquids". In addition, fittings with mechanical joints and push-on joints shall conform to ANSI/AWWA Standard C111/A21.11-00, "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings".

The weight of fittings shall be as given in ANSI/AWWA C110/A21.11-98 for ductile-iron fittings. The weight of mechanical joint fittings shall be as established in Tables 3 through 12. The weight of flanged joint fittings shall as be established in Tables 13 through 20.

Fittings Conforming to ANSI/AWWA C153/A21.53-00 (Water & Sewer Use) - All fittings shall be cast ductile-iron for use with ductile-iron pipe as specified above. Fittings in the 3-inch through 24-inch size range shall be pressure rated at 350 psi, minimum; 30-inch through 48-inch size range shall be pressure rated at 250 psi, minimum; and in the 54-inch through 64-inch size range shall be pressure rated at 150 psi, minimum (except for those fittings such as plugs, caps, and sleeves which are normally rated at a higher pressure). No flanged fittings or mixtures of flanged with other end type fittings will be allowed in the range of 3-inch through 48-inch since they are not covered in the AWWA Standard. Flanged fittings conforming with and covered by this standard are allowed in sizes, 54, 60 and 64-inch. In conformance with the standard, 54, 60 and 64-inch flanged tees, crosses, and reducers with outlets of smaller dimension as listed in ANSI/AWWA C153/A21.53-00 are permitted. All fittings with mechanical joints, flange joints and push-on joints shall conform to ANSI/AWWA Standard C153/A21.53-00, "Ductile-Iron Compact Fittings for Water Service". In addition, fittings with mechanical joints and push-on joints shall conform to ANSI/AWWA Standard C111/A21.11-00, "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings" except as otherwise allowed in C153. Mechanical joint glands shall be ductile iron only.

Since the C153 Standard provides only minimum dimensions, fully detailed drawings of all fittings proposed shall be supplied by the manufacturer with his bid. The tabulated nominal weight of each size and type of fitting shall also be supplied by the manufacturer for all items proposed. This weight shall be that of the bare casting prior to application of any lining or coating. Since the weight of fittings listed in the Standard are calculated based on nominal wall thickness and minimum laying lengths, these will be considered as the minimum acceptable weight of fittings submitted. Thus, any fitting submitted with a nominal weight less than that of the same fitting listed in C153-00 will not be acceptable. The weight of a fitting supplied under the

contract shall not be less than the greater of ninety-five (95) percent of the weight supplied by the manufacturer for that fitting or one hundred (100) percent of the weight of that fitting as specified in Standard C153. Further, the weight of fittings supplied shall not be more than five (5) percent above the tabulated nominal weight supplied with the bidder's submittal.

3.26 Joints and Accessories

Push-On Type Joints (Single Gasket and Single Gasket with Gasket Restraint) - Push-on joints shall conform to ANSI/AWWA Standard C111/A21.11-00, except that the gaskets for pipe and fittings shall be neoprene where so specified.

The required number of gaskets for each push-on joint pipe plus one extra for every 50 joints or fraction thereof, shall be furnished with each order. The gaskets shall be shipped in suitable protective containers. All single gasket pipes shall be as manufactured by United States Pipe and Foundry Company (Tyton), by the American Cast Iron Pipe Company (Fastite), by McWane, Inc. (Mix of Tyton and Fastite), Tyler/Union (Tyton).

Push-on joints together with both their regular and gasket-restraint gaskets shall be of the design, dimensions, and tolerances of either those provided by American Cast Iron Pipe Company (Fastite/Fast-Grip) or those provided by United States Pipe and Foundry Company (Tyton/Field Lok). No other designs shall be acceptable. If required by the Water and Sewer Department, the bidder shall supply complete design drawings, with dimensions, tolerances, and materials of the joint and gasket being supplied within fourteen (14) calendar days of the date of receipt of the letter, fax or E-mail requiring said submission. If so, required by the Water and Sewer Department, this submission shall be signed, sealed, and dated by an Engineer registered to practice in the State where the manufacturer is located. If the pipe is of non-domestic origin, signing, sealing, and dating of the submission, when required, shall be performed by an Engineer registered in the state where the bidder's main office is located or the State of Florida, at the discretion of the Chief, Engineering Division, Water and Sewer Department or his designee.

3.27 Mechanical Joints

Mechanical joints for fittings shall conform to ANSI/AWWA Standard C111/A21.11-00, except that the gaskets for each fitting under Groups D and D1 shall be neoprene. Bolt holes for mechanical joints shall be equally spaced and shall straddle the vertical centerline. Tee head bolts and hexagonal nuts for all mechanical joints in fittings shall be of high strength low-alloy steel with composition, dimensions and threading as specified in ANSI/AWWA Standard C111/A21.11-00. Glands shall be of ductile-iron construction for ductile iron fittings and cast gray iron or ductile iron for cast gray-iron fittings.

The proper number of gaskets, glands, bolts, and nuts, all conforming to ANSI/AWWA Standard C111/A21.11-00, plus one extra gasket for every 10 joints or fraction thereof, shall be furnished with each order. The gaskets and joint accessories shall be shipped in suitable protective containers. Follower glands held in place with set screws will not be acceptable. Segmented glands will not be acceptable.

3.28 Restrained Push-on Joints (Single Gasket Non-Gasket Restrained)

Restrained joints in pipe and fittings shall be of the single gasket push-on type and shall conform to all applicable provisions of ANSI/AWWA Standard C111/A21.11-00, except that gasket for pipe and fittings shall be neoprene, where so specified, and the following requirements:

Thickness of the pipe barrel remaining at grooves cut, if required in the design of restrained end joints, shall not be less than the nominal wall thickness of equal sized non-restrained pipe as specified in Paragraph 3.4.3 above.

Restrained joints using field welding, set screws, or gaskets with expanding metal inserts will not be acceptable.

The restraining components, when not cast integrally with the pipe and fittings, shall be ductile iron or a high strength non-corrosive alloy steel.

Tee head bolts and hexagonal nuts for all restrained joints in pipe and fittings shall be of high strength low-alloy steel with composition, dimensions and threading as specified in ANSI/AWWA Standard C111/A21.11-00, except that the length of the bolts shall meet the requirements for the restrained joint design.

The proper number of gaskets, bolts, nuts, and all necessary joint material, plus one extra gasket for every 10 joints or fraction thereof, shall be furnished with each order. The gaskets and joint accessories shall be shipped in suitable protection containers.

Each thrust-resistant joint and the pipe and fitting of which it is a part, shall be designed to withstand the axial thrust from an internal pipeline pressure of at least 150 psi at bulkhead conditions without reduction because of its position in the pipeline nor for support from external thrust blocks.

Restrained push-on joint pipe and fittings shall be capable of being deflected after assembly. During deflection, all components in the restrained system shall be in contact to provide an equal force on all contact areas.

When restrained spigot ends are ordered, the corresponding bell ends of the pipe to be restrained shall be furnished with the required matching restraining features at no additional cost other than the price bid per foot of pipe.

3.29 Flanged Joints

Connecting pieces with one end flanged and the other end either plain-end or mechanical joint, shall conform to ANSI/AWWA Standard C110/A21.10-98. Joint material for both the flanged end and the mechanical joint accessories for connecting pieces with a mechanical joint end shall be furnished as specified.

Other types of flanged fittings, and flanged pipe, shall conform to the following requirements unless otherwise stated in the order:

Flanged fittings shall conform to ANSI/AWWA Standard C110/A21.10-98, as specified hereinabove.

Flanged ductile-iron pipe with integrally cast flanges shall be manufactured in accordance with ANSI/AWWA Standard C151/A21.51-02, and with provisions contained hereinabove for centrifugally cast ductile iron pipe and shall be furnished with ANSI Standard Class 125 flanges, plain faced, and drilled, conforming to ANSI Standard B16.1, "Cast Iron Pipe Flanges and Flanged Fittings", latest revision. Hollow back flanges are not acceptable.

Flanged ductile-iron pipe with threaded flanges shall be manufactured in accordance with ANSI/AWWA Standard C115/A21.15-99, "Flanged Ductile-Iron Pipe with Ductile-Iron or Grey-Iron Threaded Flanges" and shall be rated for a working pressure of 250 psi, minimum. The nominal thickness of flanged ductile-iron pipe, 6-inch and larger, shall not be less than those

shown in Table 1 of ANSI/AWWA Standard C115/A21.15-99. The nominal thickness of 4-inch flanged ductile-iron pipe shall be Class 54 (min.) conforming to Tables 3 and 4 of ANSI/AWWA Standard C151/A21.51-02. The pipe shall be furnished with ANSI Standard Class 125 flanges, plain faced, and drilled, conforming to ANSI Standard B16.1, latest revision. Hollow back flanges and grey-iron flanges shall not be acceptable for use as threaded flanges. Threaded flanges shall be individually fitted, and machine tightened on the threaded pipe by the manufacturer and shall not be interchangeable in the field. Pipe lengths shall be as ordered. Removal of flanges, cutting and re-threading the pipe, and re-installing the flanges will not be permitted in any case.

All flanges on ductile-iron pipe and fittings shall be of ductile iron. All joint materials for flanged pipe and fittings, shall be supplied with all pipe or fittings ordered. Bolts and nuts shall comply with all requirements of Appendix Section A.1 of ANSI/AWWA Standard C115/A21.15-99 except that both shall be stainless steel. Unless ring gaskets are specifically called for in the order, gaskets shall be full-faced, and gaskets shall be of 1/8-inch thickness. Gaskets shall fully conform with the requirements of ANSI/AWWA Standard C115/A21.15-99 Appendix Section A.2 except that gasket shall be SBR for water and neoprene for sewer usages.

3.30 Linings and Coatings

Asphaltic Coating - All pipe and fittings shall be outside-coated with an asphaltic material applied by means of the airless spray method. The exterior coating shall meet AWWA Specifications for this type of coating, shall be smooth without pinholes, thin, bare, or overly thick areas. Smoothness shall be such that when hand rubbed, no “sandpaper” feeling will be experienced and such that the spigot area will readily slide through the gasket without pulling, tearing, rolling, or otherwise disturbing the sealing capabilities of the gasket. Spigot ends shall be beveled prior to painting and to an extent that will permit ready insertion of the spigot through the gasket area.

Cement-Mortar Lining - Pipe and fittings where so specified shall be cement-lined and seal-coated in accordance with ANSI/AWWA Standard C104/A21.4-95, "Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water".
Ceramic Epoxy Lining and Polyethylene Lining

Pipe and fittings where so specified shall be lined with either ceramic epoxy or virgin polyethylene. A bidder may supply one or the other material but not in the same order.

Polyethylene shall be compounded with carbon black to resist exposure to the ultraviolet rays during open-air storage, and comply with ASTM Standard D1248-00a, "Polyethylene Plastics Molding and Extrusion Materials". Ceramic epoxy shall contain pigmentation to resist ultraviolet exposure under the same conditions.

3.31 Ceramic Epoxy

All ductile iron pipe and fittings shall be delivered to the application facility without asphalt, cement lining or other lining on the interior surface or the first 6 inches on the spigot end of the pipe exterior.

The only ceramic epoxy material approved by the Department at this time is a high-build multi-component Amine cured Novalac epoxy, Protecto 401, by Vulcan Painters, Inc. of Bessemer, AL 35021.

Material must meet the following criteria and be accompanied by certification of the following test results:

i. A permeability rating of 0.00 when tested according to Method A of ASTM E96-00 "Test Method for Water Vapor Transmission of Materials", Procedure A with a test duration of 30 days.

ii. The following test must be run on coupons from factory lined ductile iron pipe:

1. ASTM B117 Salt Spray (scribed panel) - Results to equal no more than 0.5mm undercutting after one year.

2. ASTM G95 Cathodic Disbandment 1.5 volts @ 77 degrees F. Results to equal no more than 0.5mm undercutting after 30 days.

3. Immersion Testing rating using ASTM D714-87 (1994).

a. 20% Sulfuric Acid - No effect after one year.
b. 25% Sodium Hydroxide - No effect after one year.
c. 160-degree F. Distilled Water - No effect after one year.
d. 120-degree F. Tap Water (scribed panel) - 0.0 undercutting after one year with no effect.

iii. A statement from the manufacturer attesting to the fact that at least 20% of the volume of the lining contains ceramic quartz pigment.

iv. A statement concerning recoat ability and repair to the lining.
Application

The lining shall be applied by a competent firm with a successful history of applying linings to the interior of ductile iron pipe and fittings.

Surface Preparation - Prior to abrasive blasting, the entire area which will receive the protective compound shall be inspected for oil, grease, etc. Any areas where oil, grease or any substance which can be removed by solvent is present shall be solvent cleaned using the guidelines outlined in SSPC-1 Solvent Cleaning. After the surface has been made free of grease, oil or other substances, all areas to receive the protective compounds shall be abrasive blasted using compressed air nozzles with sand or grit abrasive media. The entire surface to be lined shall be struck with the blast media so that all rust, loose oxides, etc., are removed from the surface. Only slight stains and tightly adhering annealing oxide may be left on the surface. Any area where rust reappears before coating must be re-blasted to remove all rust.

Lining - After the surface preparation and within 8 hours of surface preparation, the interior of pipe and

Fittings shall receive a minimum forty (40) mils dry film thickness of the protective lining. No lining shall take place when the substrate or ambient temperature is below 40 degrees Fahrenheit. The surface also must be dry and dust free. If flange ends are included in the Project, the linings must not be used on the face of the flange; however, full face gaskets must be used to protect the ends of the pipe. The 40-mil system shall not be applied in the gasket grooves.

Coating of Gasket and Spigot Ends - Due to the tolerances involved, the gasket area and exterior of the spigot end for 6 inches back from the end of the spigot must be coated with six (6) mils minimum, ten (10) mils maximum of Protecto Joint Compound. This coating shall be applied by brush to ensure coverage. Care should be taken that the coating is smooth without excess buildup in the gasket groove or on the spigot end. All material for the gasket groove and spigot end shall be applied after the application of the lining as specified in the preceding paragraph.

Number of Coats - The number of coats of lining material applied shall be as recommended by the lining manufacturer. However, in no case shall this material be applied above the dry thickness per coat recommended by the lining manufacturer in printed literature. The time between coats shall never exceed that time recommended by the lining material manufacturer. No material shall be used for lining which is not indefinitely recoatable with itself without roughening the surface.

Touch-Up and Repair - Protecto Joint Compound shall be used for touch-up or repair. Procedures shall be in accordance with manufacturer's recommendations.

3.32 Inspection

All ductile iron pipe and fitting linings shall be checked for thickness using a magnetic film thickness gauge. The thickness testing shall be done using the method outlined in SSPC-PC-2 Film Thickness Rating.

The interior lining of all pipe and fittings shall be tested for pinholes with a nondestructive 2,500-volt test.

Each pipe joint and fitting shall be marked with the date of application of the lining system and with its numerical sequence of application on the date.

3.33 Certification

The pipe or fitting manufacturer must supply a certificate attesting to the fact that the applicator met the requirements of this specification, and that the material used was as specified, and that the material was applied as required by the specification.

Procedures for Sealing Cut Ends and Repairing Field Damaged Areas:

Remove burrs caused by field cutting of ends or handling damage and smooth out the edge of the lining if rough.

Remove all traces of oil, grease, asphalt, dust, dirt, etc.

Areas of loose or damaged lining associated with field cutting the pipe shall be repaired, if approved by the Engineer, as recommended by the pipe manufacturer. The damaged area shall be stripped back by chiseling or scraping about 1 to 2 inches into the well-adhered lining before patching. The exposed metal and the 1 to 2-inch lining overlap shall be roughened with a coarse grade of emery cloth (#40 grit), rasp or small chisel. Avoid wire brushing or similar buffing since these tend to make the surface too smooth for good adhesion.

With the area to be sealed or repaired absolutely, clean, and suitably roughened, apply a coat of Protector Joint Compound by brush in accordance with the manufacturer's recommendations.

3.34 Polyethylene Lining

The polyethylene shall be fused to the pipe and fittings with heat to form a tightly bonded uniform lining 40 mils thick, minimum, extending from the spigot end to the gasket seat in the bell of push-on, restrained push-on and mechanical type joints.

Prior to preheating the pipe, 75% or more of the high-temperature oxide film shall be removed through proper preparation of pipe interior surface. Fittings shall be sand blasted. Pipe and fittings shall be uniformly preheated to a temperature adequate to provide uniform fusing of the polyethylene powders and proper bonding to the interior of the pipe and fittings.

The lining at the ends (spigot and bell) shall be hermetically sealed with a coal-tar epoxy. This epoxy shall coat the inside of the bell of both pipe and fitting as well as the last six inches on the inside of the spigot end of the pipe and two to three inches on the outside of the spigot end.

The lining of all pipe and fittings shall be subjected to and pass a test for pinholes, bare spots, metal particles, insufficient lining thickness and other defects by a method conforming to ASTM Standard G62-87 (1998), "Holiday Detection in Pipeline Coatings", Method B (high voltage). Other test methods may be submitted to the Department for approval, but no approval will be granted unless it is clearly shown to the satisfaction of the Water and Sewer Department that the method is equivalent to the specified tests insofar as detecting defects and insufficient lining thickness.

The manufacturer shall provide certifications on the holiday test as well as certifications on a uniform (spigot end to gasket seat in bell) minimum 40-mils-thick lining.

3.35 Quality Assurance

All cast ductile-iron and cast gray-iron pipe, fittings and other materials supplied under this solicitation shall be subject to inspection while still on the delivery truck. The bidder shall arrange for this inspection by notifying the order's contact person 48-hours prior to delivery. When so notified, the Water and Sewer Department will make arrangements for inspection of the material upon arrival, or within a reasonable time thereafter. Material will not be unloaded without inspection taking place, either before or, if necessary for examination, during unloading. The County will not be responsible for any delays or additional costs created by a bidder's failure to arrange for the inspection.

Materials shall be delivered in compliance with the AWWA Standards as modified herein, without damage, and shall match or exceed the quality of any samples supplied.

Materials found to be defective, not in strict compliance with the quality standards of samples supplied or these specifications, shall be immediately returned to the bidder at his expense. If defects are discovered later, the bidder shall be required to remove said items and shall bare all costs for so doing together with any replacement costs. Rejection of items may subject the bidder to termination from the contract for default.

Foundries supplying materials shall maintain their metallurgical records for a minimum period of two (2) years after fabrication and firms not doing so may be found in default.

Flaws which provide cause for rejection include but are not limited to; incorrect metallurgy or metallurgy which cannot be verified to the complete satisfaction of the Engineer; foundry identification/location, size, pressure and material identification information lost, removed, non-existent, or not visible when assembled; not in complete compliance with all applicable AWWA

Standards as modified herein and/or these specifications; not in compliance with NSF; not in compliance with approved shop drawings; out of roundness in excess of AWWA requirements; dimensional differences in excess of AWWA requirements; rough exterior coating; chipped, cracked, scratched or otherwise damaged interior or exterior coatings or linings; interior or exterior coatings which are too thin; coatings too thick to allow proper assembly; coatings too thick to allow proper grip by restraining gaskets or other restraining elements; pin holes or honey combing of pipe; weld spatter or excess metal in gasket grooves or the whole of the bell area; bell areas which are distorted or otherwise improperly cast; spigots which are out of round, not of proper dimension, or not beveled to an extent that will allow easy assembly of the pipe joint; gaskets which are defective or of the wrong material; lack of joint materials; improper or defective joint materials; bolting of the wrong material or size; electro galvanizing or other exterior plating when hot-dip galvanizing is required; incorrect, flawed or damaged interior coating or lining; lack or non-submittal of all required certifications; non-timely submission of certifications; incorrect/incomplete certifications or certifications lacking the signature, date and seal of a professional engineer when so required; flanges which are too thin, not a right angles to the pipe centerline, or otherwise distorted; together with all other flaws or defects which in the opinion of the Engineer, who's decision shall be final, adversely affect the assembly and/or function of the piping system as intended.

3.36 Purchase Groups - The Water and Sewer Department typically purchases cast ductile-iron and cast gray-iron pipes and fittings as follows:

Single Gasket Push-On Ductile-Iron Pipe (including 54-Inch Single Gasket Push-On Ductile-Iron Pipe

Cast Ductile-Iron Fittings, Mechanical Joint (Cement-Lined) – Conforming to ANSI/AWWA C110/A21.11-98

Cast Ductile-Iron Fittings, Mechanical Joint (Cement-Lined) – Conforming to ANSI/AWWA C153/A21.53-00

Cast Ductile-Iron Fittings, Mechanical Joint (Polyethylene/Ceramic Epoxy-Lined) – Conforming to ANSI/AWWA C110/A21.11-98

Cast Ductile-Iron Fittings, Mechanical Joint (Polyethylene/Ceramic Epoxy-Lined) – Conforming to ANSI/AWWA C153/A21.53-00
Cast Ductile-Iron Fittings, Restrained Joint – Conforming to ANSI/AWWA C110/A21.11-98 or C153/A21.53-00

Cast Ductile-Iron Fittings, Push-On Joint (Polyethylene/Ceramic Epoxy-Lined) – Conforming to ANSI/AWWA C110/A21.11-98 or C153/A21.53-00 with Neoprene Push-On Joint Restraint Gaskets

Cast Ductile-Iron Fittings, Push-On Joint (Cement-Lined) – Conforming to ANSI/AWWA C110/A21.11-98 or C153/A21.53-00 with Cast Ductile/Gray-Iron Fittings, Push-On Joint (Cement-Lined)

3.37 <u>Notarized Statement</u>

Bidders must provide notarized statements from the manufacturers of the products affirming that all inspections and tests have been performed, that the results are in conformance with all specifications, and that the referenced governing standards have been met by all pipe and fittings

shipped. Statements must include the certifications specified in Paragraph 3.4.3 Linings and Coatings. Statements shall be provided with each invoice and shall identify the pipe and fittings certified by the Water and Sewer Department order number.

The term "manufactured" shall mean the actual casting of the component in question and the "manufacturer" is the foundry performing said casting operation. In this context, assembly of components shall not qualify as manufacture. Materials which are not domestically manufactured, or which have components which are not domestically manufactured shall conform to the following additional requirements:

The bidder shall include the name, casting mark, address and country of the foundry producing each of the components. Further, this foundry shall not be changed without obtaining written permission from the Chief, Engineering Division, Water and Sewer Department. If requested in writing, certified copies of foundry records shall be supplied to Water and Sewer Department within twenty-one (21) calendar days after request at no charge. If not in English, these records shall be accompanied by a certified translation.

Each shipment of non-domestic manufactured materials shall be accompanied by a certification specifically stating that the materials of that shipment comply with all requirements of this solicitation, specifically including dimensions and tolerances, passing all required tests and certifications, materials of manufacture, weights of components, marking and foundry of origin. When required by the Water and Sewer Department this certification shall be signed, dated, and sealed by a registered professional engineer licensed to practice in the state where the supplying firm is located. The original of this certification shall be shipped with the materials and a copy clearly showing the seal, signature, and date or a second original, shall be sent to the Supervisor, Specifications Unit, Miami-Dade Water and Sewer Department, P. O. Box 330316, Miami, Florida 33233-0316. Shipments sent without the certification as required above may not be accepted.

SECTION 4

SUBMITTAL FORM

VENDOR: _____

QUALIFICATION CRITERIA **TO BE COMPLETED BY ALL VENDORS**		
Refer to Section 2.4, Qualification Criteria, to ensure that Submittal complies with solicitation requirements.		
Reference Section	**Requirements**	**Copy Attached**
2.4 (A)	Vendor shall be regularly engaged in the business of providing pipe and fittings for water and wastewater services. Vendor shall provide at least three (3) references. The reference(s) listed shall be from current or former customers receiving the goods described in this solicitation within the past three years. Reference(s) shall be listed in the Vendor's Submittal (see Section 4). A department of Miami-Dade County is an acceptable reference; however, the other two references shall be from customers other than Miami-Dade County. The references shall include the customer's company name, and the name, title, address, email address and telephone number of the contact person who can verify that the Vendor has successfully provided the goods that the Vendor is offering under this solicitation. These references shall ascertain to the County's satisfaction that the Vendor has sufficient experience and expertise in supplying drainage materials. The County, at its sole discretion, may request additional information to assess Vendor responsibility. **Reference Number 1:** Customer's Company Name: _____ Name and Title _____ Address: _____City and State _____ Email Address: _____ Telephone Number: _____	☐

	<u>Reference Number 2</u>: Customer's Company Name: _____ Name and Title: _____ Address: _____City and State _____ Email Address: _____ Telephone Number: _____ **<u>Reference Number 3</u>:** Customer's Company Name: _____ Name and Title: _____ Address: _____City and State _____ Email Address: _____ Telephone Number: _____	
2.4 (B)	Maintain an office equipped with modern office equipment, especially a facsimile (FAX) machine or an e-mail address. Either resource must be available twenty-four (24) hours a day to provide immediate support and expedite quotes and deliveries. The bidder's office address, and fax number and/or e-mail address shall be included in their submittal.	☐
2.4 (C)	Be authorized by the manufacturer, or their designee, as an agent, dealer, distributor, or equivalent, for the products proposed to the County. Bidders are required to submit proof of the manufacturer's authorization. The proof may be in the form of any of the following:	☐

TO BE COMPLETED BY ALL BIDDERS

Enter the information requested for the products proposed by your firm. Do not propose products if they are not fully supported by the required attachments.

Manufacturer / Brand Name ↓	Model No. ↓	Product Description ↓	Size ↓	Describe the proof of manufacturer authorization submitted (Re: Paragraph 2.6.2.2) ↓	Describe the Evaluation Data (Re: Paragraph 2.6.2.3.1 and Technical Specifications) ↓
Ex: EFG	Ex: Model 123	Ex: 150 PSI Flanged Plug Valve with Handwheel	Ex: 4" to 16"	Ex: Visit EFG's website: brandreps@make.com	Ex: Catalogue Data, Weight Information & Assembly Drawings Attached
Ex: HIJ	Ex: N/A	Ex: Single Gasket Push-On Ductile-Iron Pipe, Pressure Class 350, Cement Lined W' SBR Gasket	Ex: 4" to 12"	Ex: Letter from "HIJ" (manufacturer) attached	Ex: Factory Information Sheets and Catalog Data attached

(Copy this page as necessary to list additional products