SUBMIT BIDS TO:	CITY OF TUSCALOOSA P.O. BOX 2089 TUSCALOOSA, AL 35403	PURCHASING OFFICE 2201 UNIV. BLVD. TUSCALOOSA, AL 35401	**INVITATION TO BID**
BID TITLE **VARIOUS INFRASTRUCTURE SUPPLIES**			BID NO. **9070-091918--1**
PAGE 1 OF 34 PAGES	**BIDS WILL BE OPENED AT 2:00 PM ON SEPTEMBER 19, 2018 IN THE OFFICE OF THE PURCHASING AGENT, 2201 UNIVERSITY BLVD. TUSCALOOSA, AL 35401 AND MAY NOT BE WITHDRAWN FOR THIRTY (30) DAYS AFTER SUCH DATE & TIME.**		ISSUE DATE **08/30/2018**

City of TUSCALOOSA

MAYOR
WALTER MADDOX

COUNCIL MEMBERS

PHYLLIS W. ODOM	MATTHEW CALDERONE
RAEVAN HOWARD	KIP TYNER
CYNTHIA LEE ALMOND	EDDIE PUGH
SONYA McKINSTRY	

PURCHASING AGENT
DAVID COGGINS

Vendor Information

(SECTION TO BE COMPLETED BY VENDOR)

_____
Company Name (Please Print)

_____ _____
Phone Number **Fax Number**

_____
Email Address

GENERAL CONDITIONS OF INVITATIONS TO BID

1. PREPARATION OF BIDS

Bids will be prepared in accordance with the following:

(a) Our enclosed Bid forms are to be used in submitting your bid.

(b) All information required by the Bid form shall be furnished. The bidder shall print or type his name and manually sign the schedule and each continuation sheet on which any entry is made.

(c) Unit prices shall be shown and where there is an error in extension of price, the unit price shall govern.

(d) Proposed delivery time must be shown and shall include Sundays and holidays.

(e) Bidder will not include federal taxes nor State of Alabama sales, excise, and use taxes in bid prices as the City is exempt from payment of such taxes. An exemption certificate will be signed where applicable upon request.

(f) Bidders shall thoroughly examine the drawings, specifications, schedule, instructions and all other contract documents.

(g) Bidders shall make all investigations necessary to thoroughly inform themselves regarding plant and facilities for delivery of material and equipment as required by the bid conditions. No plea of ignorance by the bidder of conditions that exist or that may hereafter exist as a result of failure or omission on the part of the bidder to make the necessary examinations and investigations, or failure to fulfill in every detail the requirements of the contract documents, will be accepted as a basis for varying the requirements of the City or the compensation to the vendor.

(h) Bidders are advised that all City Contracts are subject to all legal requirements provided for in the Purchasing ordinance and/or State and Federal Statutes.

2. DESCRIPTION OF SUPPLIES

(a) Any manufacturer's names, trade names, brand name, or catalog numbers used in specifications are for the purpose of describing and establishing general quality levels. SUCH REFERENCES ARE NOT INTENDED TO BE RESTRICTIVE. Bids will be considered for any brand which meets the quality of the specifications listed for any items.

(b) Bidders are required to state exactly what they intend to furnish, otherwise they shall be required to furnish the items as specified.

(c) ***Bidders will submit, with their proposal, data necessary to evaluate and determine the quality of the item(s) they are bidding.***

3. SUBMISSION OF BIDS

(a) **Bids and changes thereto shall be enclosed in sealed envelopes addressed to David Coggins, Purchasing Agent, 2201 University Blvd., Tuscaloosa, Alabama 35401. The name and address of the bidder, the date and hour of the bid opening and the material or service bid on shall be placed on the outside of the envelope.**

(b) Bids must be submitted on the forms furnished. Telegraphic bids will not be considered.

4. REJECTION OF BIDS

(a) The City may reject a bid if:

1. The bidder misstates or conceals any material fact in the bid, or if,
2. The bid does not strictly conform to the law or requirement of bid, or if,
3. The bid is conditional, except that the bidder may qualify his bid for acceptance by the City on an "all or none" basis, or a "low item" basis. An "all or none" basis bid must include all items upon which bids are invited.

(b) The City may, however, reject all bids whenever it is deemed in the best interest of the City. The City may also waive any minor informalities or irregularities in any bid.

5. WITHDRAWAL OF BIDS

(a) Bids may not be withdrawn after the time set for the bid opening for a period of time as specified.

(b) Bids may be withdrawn prior to the time set for the bid opening.

6. LATE BIDS OR MODIFICATIONS

(a) Bids and modifications received after the time set for the bid opening will not be considered.

(b) Modifications in writing received prior to the time set for the bid opening will be accepted.

7. CLARIFICATIONS OR OBJECTION TO BID SPECIFICATIONS

If any person contemplating submitting a bid for this contract is in doubt as to the true meaning of the specifications or other bid documents of any part thereof, he may submit to the Purchasing Agent on or before five (5) days prior to scheduled opening a request for clarification. All such requests for information shall be made in writing and the person submitting the request will be responsible for its prompt delivery. Any objection to the specifications and requirements as set forth in this bid must be filed in writing with the Purchasing Agent on or before five (5) days prior to scheduled opening.

8. DISCOUNTS

(a) Bidders may offer a cash discount for prompt payment; however, such discounts shall NOT be considered in determining the lowest net cost for bid evaluation purposes. Bidders are encouraged to reflect cash discounts in the unit prices quoted.

(b) In connection with any discount offered, time will be computed from the date of receipt of supplies or services or from the date a correct invoice is received, whichever is the later date. Payment is deemed to be made on the date of mailing of the check.

9. SAMPLES

Samples, when required, must be submitted within the time specified at no expense to the City of Tuscaloosa. If not destroyed or used up during testing, samples will be returned upon request at the bidder's expense, unless stated otherwise in Special Conditions or Specifications. Each individual sample must be labeled with bidder's name and manufacturer's brand name and number.

10. AWARD OF CONTRACT

(a) The contract will be awarded to the lowest responsible bidder based upon the following factors: quality; conformity with specifications; purpose for which required; terms of delivery; transportation charges; dates of delivery.

(b) The city reserves the right to accept and award item by item, and/or by group, or in the aggregate, unless the bidder qualifies his bid by specified limitations. Re Par.4(a)3.

(c) If two or more bids received are for the same total amount or unit price, quality and service being equal, the contract shall be awarded to a local bidder.

(d) Prices quoted must be FOB Destination to Tuscaloosa with all transportation charges prepaid unless otherwise specified in the Invitation to Bid.

(e) A written award of acceptance (Purchase Order), mailed or otherwise furnished to the successful bidder shall result in a binding contract.

11. DELIVERY

(a) Deliveries are to be FOB Destination unless otherwise specified in the Invitation to Bids.

(b) Deliveries are to be made during regular business hours.

12. CONDITION OF MATERIALS AND PACKAGING

All items furnished must be new and free from defects. No others will be accepted under the terms and intent of this bid. All containers shall be new and suitable for storage or shipment, and price bid shall include standard commercial packaging.

13. CLAIMS

Successful bidder(s) will be responsible for making any and all claims against carriers for missing or damaged items.

14. LOCAL, STATE, AND FEDERAL COMPLIANCE REQUIREMENTS

Bidders shall comply with all local, state, and federal directives, orders and laws as applicable to this bid and subsequent contract(s).

15. PROVISION FOR OTHER AGENCIES

Unless otherwise stipulated by the bidder, the bidder agrees when submitting his bid to make available to all City agencies, departments, and in-city municipalities the bid prices he submits, in accordance with the bid terms and conditions, should any said department, agency, or municipality wish to buy under this proposal.

16. COLLUSION

The bidder, by affixing his signature to this proposal, agrees to the following: "Bidder certifies that his bid is made without previous understanding, agreement, or connection with any person, firm, or corporation making a bid for the same items and is in all respects fair, without outside control, collusion, fraud, or otherwise illegal action".

17. VARIANCE IN CONDITIONS

Any and all special conditions and specifications attached hereto which vary from General Conditions shall have precedence.

18. MINORITY / DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

The City of Tuscaloosa has voluntarily adopted a Minority / Disadvantaged Business Enterprise ("MBE/DBE/WBE") Program called Tuscaloosa Builds, which is designed to encourage the participation and development of minority and disadvantaged business enterprises and to promote equal business opportunities to the fullest extent allowed by state and federal law. To learn more about this program, visit the City's website at www.tuscaloosa.com.

** **PRELIMINARY BID TAB WILL BE POSTED ON THE CITY'S WEBSITE ONCE AVAILABLE at https://www.tuscaloosa.com/bids.**

SPECIAL CONDITIONS

The General Conditions of Invitations to Bid and any Special Conditions stated shall be considered as part of the specifications of the bid.

Reference to brand names and numbers is descriptive, but not restrictive, unless otherwise specified. Bids on equivalent items meeting the standards of quality thereby indicated will be considered, providing the bid clearly describes the article offered and indicates how it differs from the referenced brands. Descriptive literature and manufacturer's specifications plus any supplemental information necessary for comparison purposes must be submitted with the bid or the bid on that item will be rejected. Reference to literature submitted with a previous bid or on file with the Division of Purchasing will not satisfy this requirement. The burden is on the bidder to demonstrate that the item bid is equivalent to the item specified in the ITB. Any exceptions taken to any item(s) must be fully explained in written detail on bidders' letterhead and attached to the bid when submitted.

Awards shall be made or contracts entered into with the lowest responsible bidder(s) meeting all specifications and terms and conditions established by the Division of Purchasing. The Division of Purchasing reserves the right to determine the lowest responsible bidder on the basis of an individual item or group of items. Delivery dates may be a factor in awards. Local Bidder Preference will be used in bid evaluation in accordance with State of Alabama Bid Law Section 41-16-50(a).

The issuance of a City of Tuscaloosa Purchase Order or Purchasing Card is required to constitute a contract between the vendor and the City of Tuscaloosa, which shall bind the vendor to furnish and deliver the commodities and/or services ordered at the prices, terms, and conditions quoted.

Questions concerning the bid process should be directed to David Coggins at (205) 248-5186 or dcoggins@tuscaloosa.com (e-mail is preferred). Questions concerning Specifications should be directed to Amy Whitson at (205) 248-5251 or awhitson@tuscaloosa.com.

Any addendums issued for this bid will be posted on the City Of Tuscaloosa website at http://www.tuscaloosa.com/bids. It is the responsibility of the bidder to check this page for any addendums before submitting their bid.

Vendor to submit the following:

- **Signed Special Conditions page**
- **Any necessary descriptive literature and/or specifications information as outlined above and/or elsewhere in this document**
- **Signed Bid Item Work Sheets with Submitted Bids**
- **Completed and signed Bidder's Response Form**

NOTE: Sheet(s) submitted without Company Name & Signature WILL NOT be considered for bid award.

VENDOR MUST SUBMIT AN ORIGINAL BID AND ONE COMPLETE COPY OR THE BID MAY BE REJECTED.

Bid submissions shall be submitted in a sealed envelope and addressed to: David Coggins, Purchasing Agent, 2201 University Blvd., Tuscaloosa, AL 35401. The name and address of the bidder, the date and hour of the bid opening and the Bid Title shall be placed on the outside of the envelope.

CONTRACT INFORMATION

The term of contracts resulting from this ITB shall be from date of award through September 30, 2019.

Bid items are grouped into schedules by product group/type. It is the City's intention to award this bid by schedule. In order to be considered for award of a schedule, bidder must submit a bid for all items in that schedule. The City reserves the right to make award by item or group of items if it is in the best interest of the City to do so.

The parts/supplies listed in the bid are the ones most commonly purchased by the City. If awarded a schedule, bidder(s) must agree to extend similar pricing/discounts for those same product types in sizes/models not specifically listed. For example, if awarded the schedule for Tap Sleeves, awarded bidder will sell Tap Sleeves in sizes not listed in the bid at the same price/discount levels as the sizes listed in the bid.

The City intends to award this bid to Primary Bidder(s). The City may also choose to make an award to a Secondary Bidder to be used in the event the Primary Bidder is unable to provide an item within a reasonable amount of time as determined by the City. The Secondary Bidder shall be obligated to all applicable terms and conditions contained herein. By submitting a bid, all bidders agree to become Secondary Bidder if determined as such by the City.

Awarded bidders not honoring bid prices for the entire contract period will have their bid award rescinded for the remainder of the awarded contract period.

The successful bidder shall guarantee full delivery within 30 days of receipt of order. If deliveries are not made at the time agreed upon, the City reserves the right to cancel and purchase from Secondary Bidder; or the next lowest bidder, if applicable. Consistent failure to meet delivery times will constitute grounds for the termination of the awarded section of the contract. This declaration may result in the rejection of any future bids submitted by the vendor.

Bidders must include with their bid any descriptive literature and specifications information necessary for product evaluation. Determination as to whether an item submitted for bid meets specifications shall be the sole responsibility of City personnel. Failure to include this information will subject a bid to rejection.

UNBALANCED BIDDING: The City will reject any bid that is unbalanced if it is in the best interest of the City to do so. A bid will be considered unbalanced when, in the opinion of the Purchasing Agent, the bid allocates a disproportionate share of costs to the price of one or more bid items in order to reduce the costs to the price of another bid item or items, and if there is a reasonable possibility that the bid will not result in the lowest overall cost to the City.

MATERIAL SPECIFICATIONS

PIPE, COPPER

All copper pipe must be equivalent to the following:

- Pipe to be seamless.
- Must conform to ASTM Specification B-88-62 "TYPE K SOFT"
- ¾" & 1" pipe must be in 60 foot rolls only.
- 2" pipe to be in 40 or 60 foot rolls as requested by purchaser.
- Price must be on a per foot basis.

PIPE, BRASS

All brass pipe must be equivalent to the following:

- Pipe to be seamless.
- Must conform to ASTM Specification B-43 Red Brass (Copper Alloy C230)
- Price must be on a per foot basis.

PIPE, PVC PRESSURE

All PVC Pipe must be equivalent to or better than the following:

- SDR 21 - CL 200 PVC
- ASTM - D1784-69 PVC Resins
- ASTM - D72.2-67 for PVC Pipe

All pipe to be in 20' lengths.

Gaskets are to be permanently attached to couplings.

Sufficient lubricant must be supplied with pipe.

Bids must be on a price per linear foot basis.

PIPE, DUCTILE IRON

Compression type joint.

Pipe must meet requirements of ANSI, AWWA C150/A21.50, and Federal Specifications.

Plain end of pipe should be beveled.

Pipe must come complete with gaskets (ANSI, AWWA C150/A21.50) and joint lubricant.

Pipe is to be cement lined in accordance with Specifications ASA A21.4 (AWWA C104) and/or Federal Specifications WW-P-421B.

Pipe is to have a bituminous seal coat, NSF 61.

Bids must be on a price per linear foot basis.

APPROVED MANUFACTURERS:

American Cast Iron Pipe Co.
U. S. Pipe
Approved Equal

HDPE PIPE

These specifications are for HDPE dual wall pipe in various diameters for use in non-pressure gravity flow applications, including storm sewers, culverts, highway drains, and other gravity flow drainage applications. Bid prices will be on a per foot basis.

This HDPE pipe shall be manufactured using high-density polyethylene conforming to the requirements of ASTM D3350, with a minimum cell class of 335420C. Materials also must conform to ASTM D5397.

This HDPE pipe and attached gasket shall meet or exceed specifications set forth in AASHTO M294, Type S; AASHTO M252; ASTM F477; and ASTM F2306. Bidders shall include specifications information with their bid for the pipe submitted for consideration.

This HDPE Pipe shall be joined using a bell & spigot joint system that is both soil-tight and water-tight. This joint will incorporates a rubber gasket, compressed between the bell and spigot ends. The gasket shall be bi-directional and made of polyisoprene conforming to ASTM F477. Gaskets shall be pre-installed on HDPE pipe prior to shipment and protected by plastic wrap.

FITTINGS, DUCTILE IRON, MECHANICAL JOINT

All fittings need to be Ductile Iron.

All fittings are to have mechanical joint ends.

Must meet all applicable terms and provisions of standards ANSI/AWWA C153/A21.53-84 and ANSI/AWWA C111 ANSI A21.11 (current revisions). Specifications and Federal Specifications WW-p-421B.

Plain ends of all mechanical joint fittings to be beveled.

All mechanical joint fittings 4 through 36 inch must be at least 250 psig working pressure.

Mechanical joint fittings are to have a bituminous seal coat, NSF 61.

NOTE: Fittings are to be compact or standard (NO LONG RADIUS) and consist of tees, bends, wye branches, crosses, reducers and increasers, etc., without accessories.

Bids must be on a price per fitting less accessories basis to be acceptable.

Bids for mechanical joint caps and plugs must include center tapped with a 2 inch iron pipe thread tap.

FITTINGS TO BE ORDERED AS NEEDED.

APPROVED MANUFACTURERS:

American Cast Iron Pipe
Clow
U. S. Pipe
Tyler Union Foundry
Approved equal

FITTINGS, DUCTILE IRON, FLANGED JOINT

All fittings need to be Ductile Iron.

All fittings are to have flanged ends.

Must meet all applicable requirements to ANSI/AWWA C110/A21.10 (current revisions) Specifications and Federal Specifications WW-p-421B.

All flanged fittings 4 through 36 inch must be at least 250 psig working pressure.

Flanges are to be ANSI Class 125 B16.1.

Flanged fittings are to come without accessories.

Flanged fittings are to have a bituminous seal coat, NSF 61.

NOTE: Fittings consist of tees, bends, wye branches, crosses, reducers and increasers, etc.

Bids for flanged joint caps and plugs must include center tapped with a 2 inch iron pipe thread tap.

Fittings to be compact or standard (NO LONG RADIUS); ANSI, AWWA, C153/A21.53-84.

FITTINGS ARE TO BE ORDERED AS NEEDED.

APPROVED MANUFACTURERS:

American Cast Iron Pipe
Clow
U. S. Pipe
Tyler Union Foundry
Approved equal

TAPPING SLEEVES, STAINLESS STEEL

Tapping sleeve shall be fabricated from 304 Stainless Steel or its equivalent, CF8 Cast Stainless Steel. They shall have a pass through bolt design and provide 360 deg. seal around the pipe. Sleeve shall be fully passivized to return the stainless steel to its highest corrosion resistance. Flange outlets shall be indexed per MSS-SP60 to accept tapping valve. The lugs shall have a pass-through bolt design, to avoid alignment problems and allow tightening from either side of the pipe. Bolts shall not be integrally welded to the sleeve. Bolting lug shall be triangular design with a maximum of 3" bolt center spacing. Bolting hardware shall be a minimum of 304 Stainless Steel.

Body: Stainless Steel, 18-8 Type 304

Flange: CF8 Cast Stainless Steel - equivalent to 18-8 Type 304 Stainless Steel. ANSI 150lb. Drilling, recessed for tapping valve per MSS-SP 60.

Bolts: Stainless Steel, 18-8 Type 304

Branch Outlet: Schedule 10 Stainless Steel Pipe

Gasket: Full circumferential Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with water, salt solutions, mild acids and bases. Per ASTM D-2000 M4AA 607. Standard temperature range from -40 deg. to 150 deg. F (-40 deg. to 65 deg. C) constant, maximum intermittent 180 deg. F (82 deg. C).

Sleeve pressure rating with standard CF8 cast stainless steel flange: Sleeves 4” – 24” nominal pipe sizes: 175 PSI working pressure, hydrostatic test pressure of 218 PSI (pressures per ANSI/AWWA C207 Standard).

APPROVED MANUFACTURERS:

JCM
Ford Meter Box
Romac

TAPPING SLEEVES, MECHANICAL JOINT DUCTILE IRON

Tapping sleeves shall be ductile iron construction meeting ASTM A536. Sleeve shall be coated with asphaltic varnish in compliance with NSF-61. Tapping sleeves shall be of the mechanical joint type. The mechanical joint ends shall be sealed by neoprene gaskets, compressed tightly around mains by means of a second flange or gland bolted to the end flange of the sleeve. Gasket and its seat inside the end flange of the sleeve shall be tapered or wedge shaped. The gasket shall be totally confined to prevent cold-flow when gland is tightened.

Tapping sleeves shall be suitable for use on pipe with AWWA specifications as follows: C102-53, C105-53, and C108-53.

Tapping sleeves shall have a working pressure of 200 psig.

The side outlet or branch connection outlet shall be machined and with a machined recess to match the machined projection of the tapping valve flange to assure correct alignment regardless of valve brand.

The longitudinal or side gaskets shall be of neoprene and shall be confined in a cored grove.

APPROVED MANUFACTURERS:

American 2800-C
Mueller H-615

GLANDS, MEGALUG

Mechanical joint restraint shall be incorporated in the design of the follower gland and shall include a restraining mechanism which, when actuated, imparts multiple wedging action against the pipe, increasing its resistance as the pressure increases.

Flexibility of the joint shall be maintained after burial. Glands shall be manufactured of ductile iron conforming to ASTM A 536-80. Restraining devices shall be of ductile iron heat treated to a minimum hardness of 370 BHN. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee-head bolts conforming to ANSI/AWWA A21.11 and ANSI/AWWA/A21.53 of latest revision. Twist-off nuts shall be used to insure proper actuating of the restraining devices. The mechanical joint restraint device shall have a working pressure of at least 250 psig with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc., MEGALUG, UNIFLANGE or approved equal.

APPROVED MANUFACTURERS:

EBAA Iron, Inc.
Tyler Union Foundry
Sigma
Ford Meter Box

COUPLINGS FOR 4" - 36" PIPE

Couplings should meet the specifications set forth in AWWA Standard C219

Followers shall meet Ductile Iron ASTM A536 or Steel ASTM A36. Middle ring shall meet Ductile Iron ASTM A536 or Steel ASTM A36.

Middle ring lengths stated for Items 900 - 929 are ***minimum acceptable lengths***.

Gaskets Styrene Butadiene Rubber (SBR) for water in accordance with ASTM D2000

Bolts minimum 5/8 inch and shall meet AWWA C111, ANSI A21.11 or ASTM A242

Minimum corrosion resistant shop coat NSF 61 approved

APPROVED MANUFACTURERS:

- Ford Meter Box
- JCM Industries
- Romac Industries

VALVES, PRESSURE REGULATING

Sizes - 3/4", 1", 1 1/2" and 2".
Pressure reducers to have spring range of 24 - 75 psi.
Pressure reducers are to be preset at 50 psi.
Shall have all bronze body and bell housing.
Shall have a built in by-pass to prevent buildup of excessive system pressure caused.
Shall be serviceable in-line.
Shall be Female Iron Pipe thread by Female Iron Pipe Thread (FIP x FIP).

APPROVED MANUFACTURERS:

- Watts
- Wilkins

VALVES, GATE 2" (Ductile Iron Cast)

All gate valves must comply with the latest revision of AWWA Standard C-509/C-515 for Water Works Distribution Resilient Seat Valves.

All gate valves must have "O" Ring seals.

All gate valves must open left (counterclockwise) with 2" square operating wrench nut.

All gate valves should have a minimum working pressure of 200 psi and prior to shipment from the factory, each valve shall be tested by hydrostatic pressure equal to the requirements of ANSI/AWWA C-509/C-515 (and UL/FM where applicable).

All gate valves to be non-rising stem.

All 2" gate valves are to have threaded ends in accordance with ASME B16.4, Class 125.

The stem must be capable of being removed without disassembly of the valve and shall interchange with all valves of the same nominal pipe size, as produced by each representative manufacturer.

The valve shall be coated with an applied fusion-bonded epoxy coating in accordance with AWWA C-550 and be NSF 61 certified.

APPROVED MANUFACTURERS:

- American Cast Iron Pipe
- Clow
- U. S. Pipe
- M & H Valve Company
- Mueller

VALVES, GATE 3" AND LARGER (Ductile Iron Cast)

All gate valves must comply with the latest revision of AWWA Standard C-509/C-515 for Water Works Distribution Resilient Seat Valves.

All gate valves must have "O" Ring seals.

All gate valves must open left (counterclockwise) with 2" square operating wrench nut.

All gate valves should have a minimum working pressure of 200 psi and prior to shipment from the factory, each valve shall be tested by hydrostatic pressure equal to the requirements of ANSI/AWWA C-509/C-515 (and UL/FM where applicable).

All gate valves to be non-rising stem.

All gate valves to have mechanical joint ends or flanged ends.

The stem must be capable of being removed without disassembly of the valve and shall interchange with all valves of the same nominal pipe size, as produced by each representative manufacturer.

The valve shall be coated with an applied fusion-bonded epoxy coating in accordance with AWWA C-550 and be NSF 61 certified.

APPROVED MANUFACTURERS:

American Cast Iron Pipe
Clow
U. S. Pipe
M & H Valve Company
Mueller

VALVES, TAPPING

All tapping valves shall comply with AWWA Specifications C-509 for resilient seat valves and the following design specifications.

All tapping valves are to be non-rising stem - open left.

Tapping valves 12 inch and smaller shall have a working pressure of 200 psig and tested at 400 psig and tap valves 14" and larger shall have a working pressure of 150 psig and test pressure of 300 psig.

All tapping valves shall be furnished with "O" Ring seals.

Tapping valves shall have an outlet end connection of the mechanical joint type. Inlet ends shall have an inlet flange for attaching to a sleeve or cross. A machine projection on this flange shall be made with a machined recess in the tapping sleeve outlet flange to assure correct alignment.

Seat opening of tapping valves shall be larger than the nominal size to permit full diameter cuts to be made.

All valves to have tap sleeve ends complete with bolts, glands and 1/8" thick rubber gaskets.

APPROVED MANUFACTURERS:

American Cast Iron Pipe
Clow
U. S. Pipe
M & H Valve Company
Mueller

VALVE BOXES

Valve boxes shall be adjustable from 18" to 24" and 24" to 36".

Valve boxes shall be made from cast iron.

Valve boxes tops shall have the word "water" cast into the top.

The inside diameter shall be at least 5 1/4".

The adjustable top shall be the screw type.

The valve box top must have 2 slots for hooks to open top.

The bottom section must have a flair bottom to prevent settling.

***Valve boxes shall be shipped fully assembled*.**

APPROVED MANUFACTURERS:
- Opelika Foundry #4905
- Tyler-Union Foundry #6850
- Bingham & Taylor #4905

BACKFLOW PREVENTERS

All types, General Specifications

ALL BACKFLOW PREVENTERS 3" AND LARGER SHALL COME COMPLETE WITH RESILIENT SEAT (RS) GATE VALVES.

Shall have replaceable seats.

Shall be serviceable in-line.

Backflow preventers shall consist of two independently operating, internally loaded check valves.

All Backflow Preventers/Check Valve assemblies shall conform to applicable sections of the ANSI/AWWA, ASSE and USC Foundation for Cross-Connection Control and Hydraulic Research.

DOUBLE CHECK VALVE BACKFLOW PREVENTER 2-1/2" – 12"

Double Check Valve Backflow Preventers shall conform to ANSI/AWWA C510, and ASSE 1015, latest revisions. All assemblies shall be approved by both ASSE and the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research, and shall be supplied only in approved configurations, including shut-off valves.

Double Check Valve Backflow Preventers shall consist of two line-sized independently acting check valves, internally force loaded to a normal closed position, designed and constructed to operate under intennittent or continuous pressure conditions. Body shall be stainless steel and contain necessary test cocks.

Unless specified otherwise at the time of order, all assemblies shall be supplied with non-rising stem gate valves.

Approved Manufacturers/Models (or Part Numbers):
1. Ames Series 2000SS
2. Conbraco DCLF 4A
3. Watts 774
4. Wilkins 350AST

DOUBLE DETECTOR CHECK VALVE BACKFLOW PREVENTER 2-1/2" – 12"

Double Detector Check Valve Backflow Preventers shall conform ANSI/AWWA C5IO, and ASSE 1015 and 1048, latest revisions. All assemblies shall be approved by both ASSE and the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research, and shall be supplied only in approved configurations, including shut-off valves.

The Double Detector Check Backflow Preventer shall be composed of a line-sized approved Double Check Backflow Preventer assembly with piping for a by-pass water meter and a meter-sized approved Double Check Backflow Preventer. All assemblies shall be supplied complete. By-pass meter will be a standard 5/8" x ¾" meter. By-pass piping shall be constructed of brass and shall include properly spaced meter nut connections for insertion of water meter with no modifications. Assembly shall be designed such that by- pass meter shall register all low flow demands of 3 CF or less, with static pressure drop across by-pass assembly at least 2 psi less than static pressure drop across the line size assembly in order to assure accurate measurement of low flow demands. Check valves should be accessible from the top of the device for maintenance without removing the device from in-line. All assemblies shall be supplied with O.S. & Y. gate valves.

Approved Manufacturer/Models (or Part Numbers):

1. Ames 3000SS
2. Conbraco DCDA2LF 4A
3. Watts 774DCDA
4. Wilkins 350ASTDA

REDUCED PRESSURE ZONE DOUBLE CHECK VALVE BACKFLOW PREVENTER

Reduced Pressure Zone Double Check Valve Backflow Preventers ANSI/AWWA C511, and ASSE 1013, lalest revisions. All assemblies shall be approved by both ASSE and the University of Southern California Foundation for Cross-CoMection Control of Hydraulic Research, and shall be supplied only in approved Configurations, including shut-off valves.

Reduced Pressure Zone Double Check Valve Backflow Preventors shall consist of two line-sized independently acting check valves, internally force loaded to a normal closed position, and separated by an intermediate chamber (or zone) in which there is a hydraulically operated relief means for venting atmosphere, which is internally force loaded to a normally open position.

Unless specified otherwise at the time of order, all assemblies shall be supplied with non-rising stem gate valves.

1-1/2" & 2" assemblies shall be constructed of Lead-Free Brass.
2-1/2" – 12" assemblies shall have stainless steel bodies.

Approved Manufacturers/Models (or Part Numbers):

1-1/2" & 2"	2-1/2" – 12"
1. Ames 4000B	1. Ames 4000SS
2. Conbraco RPLF4A	2. Conbraco RPLF4A
3. Watts LF009	3. Watts 994
4. Wilkins 375XL	4. Wilkins 375AST

DUAL CHECK VALVE BACKFLOW PREVENTER

Dual Check Valve Backflow Preventers shall conform to ANSI/AWWA C506, and ANSI/ASSE 1024, latest revisions.

Dual Check Valve Backflow Preventers shall consist of two independently acting poppet type check valves, internally force loaded to a normal closed position, designed and constructed to operate under intermittent or continuous pressure conditions. Unless otherwise specified, Dual Check Valves shall be of the straight-body design and shall be designed such that check assemblies may be field replaced without removal of valve body from line. Rated working pressure for Dual Check Valves shall be a minimum of 175 psi.

Unless specified otherwise at the time of order, Dual Check Valves shall show female iron pipe threads on inlet connections as well as outlet (FIP x FIP).

Approved Manufacturers/Models (or Part Numbers):

¾" – 1"	1-1/2" – 2"
1. A.Y. McDonald 711	1. Ames LF2000B
2. Conbraco DUCLF4N	2. Conbraco DCLF4A
3. Watts LF7	3. Watts LF007
4. Wilkins 700XL	4. Wilkins 350XL

IMPORTANT INFORMATION: No-Lead Brass Fittings

a. All fittings and valves shall be manufactured in accordance with AWWA Standard C-800, latest revision, and as further specified in these technical specifications.

a.i Exception: Any brass part of the fitting or valve in contact with potable water shall be made of a "No-Lead Brass", defined for this specification as UNS Copper Alloy No. C89520 or C89833 in accordance with the chemical and mechanical requirements of ASTM B584 and AWWA C-800. This "No-Lead Brass" alloy shall not contain more than nine one hundredths of one percent (0.25% or less) total lead content by weight.

a.ii Any Brass part of the fitting or valve not in contact with potable water shall be made of 85-5- 5-5 brass as defined for this specification as UNS Copper Alloy C83600 per ASTM B62, ASTM B584 and AWWA C-800.

MALE IRON PIPE X COMPRESSION ADAPTERS

All adapters shall fully comply with the AWWA C800 specifications.

All adapters shall have FULL 3/4" or 1" opening.

Adapters shall have compression nut with gripper ring and gasket providing a water tight seal by compressing of gasket around tubing and compressing the gripper ring providing high pull out resistance.

Compression nuts requiring a split type clamp with screw or bolt will not be accepted.

CURB STOPS

Curb valves shall be of the closed bottom design and sealed against external leakage at the top and port by utilizing non-adjustable resilient seals. Shut off shall be affected by a resilient pressure actuated seal placed in the key or plug as to completely enclose the inlet port flow way in the closed position. All curb valves shall have the open/closed positions controlled by check lugs which are integral parts of the key and the body. Curbs Stops shall be of a 300 psi rating.

Curb Stops shall have compression nut with gripper ring and gasket providing a water tight seal by compressing gasket around tubing and compressing the gripper ring providing high pull out resistance.

Compression nuts requiring a split type clamp with screw or bolt will not be accepted.

Valves for the respective installation (s) must have the following laying lengths to facilitate change-outs at a minimum of cost and time:

FIP X FIP VALVES	SIZE	LENGTH (IN.)
	3/4"	3.21" + or - 0.0625
	1"	3.96" + or - 0.0625
COMPRESSION X FIP	3/4"	.84" + or - 0.0625
	1"	4.35" + or - 0.0625

NOTE: ALL CURB VALVE OPENINGS SHALL BE ***FULL PORT OPENING***.
(3/4" X 3/4" X 3/4") AND (1" X 1" X 1")

Curb Stops shall be Ball Valve type with Lock Wing.

METER COUPLINGS

All meter couplings shall be fully machined both inside and out, meeting ASTM B-62, with each component easily interchanging with all existing meters/meter couplings. Laying lengths shall be specified at time of ordering or the 2 1/2" length shall be supplied unless notified.

NOTE: Meter couplings to be full opening.
3/4" coupling to have 3/4" inside diameter opening.
1" coupling to have 1" inside diameter opening.

CORPORATION STOP

All components of the corporation stops shall be manufactured of certified ingot, conforming to AWWA C-800.

The stem and retaining nut shall be so designed that failure from over-tightening of the nut results in thread stripping rather than stem fracture.

Corporation stops shall be of a 300 psi rating.

Corporation Stops shall have compression nut with gripper ring and gasket providing a water tight seal by compressing of gasket around tubing and compressing the gripper ring providing high pull out resistance.

Compression nuts requiring a split type clamp with screw or bolt will not be accepted.

Corporation stops shall be **BALL VALVE** type.

ALL CORPORATION STOPS TO BE ***FULL PORT OPENINGS.***

METER, WATER - ELECTROMAGNETIC

5/8" - 1" ELECTROMAGNETIC WATER METERS

Meters shall be electromagnetic flow measurement technology with an operating range as shown below in **Specifications**.

Must conform to the following standards as most recently revised: American Water Works Standard C-700 and C-710 for accuracy and pressure loss requirements; NSF Standard 61 Annex G.

Construction

External housing shall be thermal plastic. The encased measuring device shall be comprised of a polyphenylene sulfide alloy flow tube with externally-threaded spud ends. Embedded in the flow tube shall be magnetic flow sensors and a replaceable strainer screen. The register shall be all electronic, programmable, and hermetically sealed with a tempered glass cover. The meter system shall have a twenty (20) year life cycle, along with a twenty (20) year battery life guarantee. Meter must prevent removal of the register and have a means to indicate any attempt to tamper with the meter.

Electronic register

- Must read in cubic feet
- Must have AMR output from a single register
- Must be supplied with three AMR connections (red, green, black wires)
- Connection between register and meter transceiver unit shall be accomplished with use of all three terminals & Touch Coupler connection (or approved equivalent)
- AMR output data format shall be 7-bit ASCII (American Standard Code of Information Interchange) digital, plus an even parity bit

- Upon AMR interrogation the meter shall transmit a reading (# of digits customer specified) and an eight (8) digit register identification number which is to be factory programmed as to protect the system integrity and eliminate possible field programming duplication
- AMR resolution units fully programmable
- Highest AMR Resolution Required: 5/8" – 1" = .1 (Hundredths) Cubic Feet & 4" – 8" = 1 (Single) Cubic Foot
- Integral data logging capability
    - 1056 data points minimum
    - Interval available: 15 minutes, hourly, or daily
    - Logged information to include date, time, hourly max flow, hourly consumption, max flow, average flow, average consumption, and total consumption
- Large, easy-to-read LCD display that includes battery life and empty pipe indicators
- 20-year battery life and accuracy guarantee

Performance

Meters shall operate up to a working pressure of 200 pounds per square inch, without leakage or damage to any parts. Accuracy shall not be affected by variations in pressure up to 200 psi. The meter shall be accurate and perform for twenty (20) years from date of shipment.

AMR/AMI Systems

Meter must be compatible with current Sensus (or approved equivalent) AMR/AMI systems.

Specifications

Service	Measurement of cold water with flow in one direction only
Normal Operating Flow Range (100% +/- 1.5% of actual throughput)	5/8" (DN 15mm) size: 0.11 to 25 gpm (0.02 m^3h to 5.7 m^3h) ¾" (DN 20 mm) size: 0.11 to 35 gpm (0.02 m^3h to 8.0 m^3h) 1" (DN 25mm) size: 0.4 to 55 gpm (0.09 m^3h to 12.5 m^3h)
Low Flow Registration (95%-101.5%)	5/8" (DN 15mm) size: 0.03 gpm (0.007 m^3h) ¾" (DN 20 mm) size: 0.03 gpm (0.007 m^3h) 1" (DN 25mm) size: 0.11 gpm (0.025 m^3h)
Maximum Pressure Loss	5/8" (DN 15mm) size: 4 psi at 15 gpm (0.3 bar at 3.4 m^3h) ¾" (DN 20 mm) size: 2 psi at 15 gpm (0.1 bar at 3.4 m^3h) 1" (DN 25mm) size: 2 psi at 25 gpm (0.1 bar at 5.7 m^3h)
Maximum Operating Pressure	200 psi (13.8 bar)

Guarantee

All meters will be guaranteed to perform accuracy levels above for a period of 20 years from the date of shipment.

Intent

Subject meter specifications are designed to establish minimum guidelines for selecting an extremely critical metering device. Areas of concern to be evaluated in the selection process include, but are not limited to, ease of installation, operational features and benefits, readability, and future system maintenance expense. A design which reflects longevity of proper operation in all elements and high degree of sustained accuracy within the entire range of the meter assembly is to be considered mandatory. Enhanced accuracy levels and performance are desired and will not be compromised.

METER, WATER – TURBINE

1 1/2" - 10" TURBINE WATER METERS

The meter package shall meet or exceed all requirements of ANSI/AWWA Standard C701 for Class II turbine meter assemblies as well as ANSI/AWWA C700 Residential Standard. Each meter assembly shall be performance tested to ensure compliance.

Maincases

The meter main case shall be of epoxy coated ductile iron composition. The epoxy coating shall be provided as standard fusion-bonded and adhere to NSF for No-lead regulation compliance.
A built-in test port is mandatory. Must be available in these various laying length options:
1 ½" – 13", 2" – 15 ¼" & 17", 3" – 17" & 19", 4" – 20" & 23", 6" – 24" & 27", 8" – 31 1/8", 10" – 41 1/8"

Performance

The meter assembly shall have performance capability of continuous operation up to the rated maximum flows as listed below without affecting long-term accuracy or causing any undue component wear. The meter assembly shall also provide a 25% flow capacity in excess of the maximum flows listed for intermittent flow demands. Maximum headloss through the meter / strainer assembly shall not exceed those listed in the **Operating Characteristics** table per meter size.

Measuring Chamber

The measuring chamber shall consist of a measuring element, removable housing, and an all-electronic register. The measuring element shall be mounted on a horizontal, stationary stainless steel shaft with sleeve bearings and be essentially weightless in water (only one moving part). The measuring element comes integrated with the advanced Floating Ball Technology design. The measuring chamber shall be capable of operating within the above listed accuracy limits without calibration when transferred from one main case to another of the same size. The measuring shall be so configured to capture all flows as specified below, without the requirement of an automatic valve. Meters with manual calibration adjusters will not be accepted.

Operating Characteristics

Meter Size	Low Flow (95% Min)	Operating Range (98.5-101.5%)	Intermittent Flows (98.5-101.5%)	Pressure Loss (Not to Exceed)
1 ½"	0.75 gpm	1.25 to 160 gpm	200 gpm	6.9 psi @ 160 gpm
2"	1.0 gpm	1.5 to 200 gpm	250 gpm	7.0 psi @ 200 gpm
3"	1.5 gpm	2.5 to 500 gpm	650 gpm	5.1 psi @ 500 gpm
4"	2.0 gpm	3.0 to 1000 gpm	1250 gpm	8.7 psi @ 1000 gpm
6"	2.5 gpm	4.0 to 2000 gpm	2500 gpm	8.2 psi @ 2000 gpm
8"	4.0 gpm	5.0 to 3500 gpm	4700 gpm	5.1 psi @ 3500 gpm
10"	5.0 gpm	6.0 to 5500 gpm	7000 gpm	7.2 psi @ 5500 gpm

Direct Magnetic Drive System

The direct magnetic drive shall occur between the motion of the measuring element blade position and the electronic register. The direct drive system with Floating Ball Technology is designed to extend service life, enhance low flow sensitivity and provide extended flow capacity and overall accuracy of the meter assembly. Any and all additional intermediate, magnetic or mechanical, drive couplings or gearing are not acceptable.

Electronic Register

- Must read in cubic feet
- Must have AMR & pulse outputs from a single register
- Must be supplied with three AMR connections (red, green, black wires)

- Connection between register and meter transceiver unit shall be accomplished with use of all three terminals & Touch Coupler connection (or approved equivalent)
- AMR output data format shall be 7-bit ASCII (American Standard Code of Information Interchange) digital, plus an even parity bit
- Upon AMR interrogation the meter shall transmit a reading (# of digits customer specified) and an eight (8) digit register identification number which is to be factory programmed as to protect the system integrity and eliminate possible field programming duplication
- AMR resolution units fully programmable
- Highest AMR Resolution Required: 1.5” – 3” = .1 (Tenths) Cubic Feet & 4” – 10” = 1 (Single) Cubic Feet
- Pulse output frequency fully programmable
- Highest Pulse Resolution Required: 1.5” – 3” = .1 (Tenths) Cubic Feet & 4” – 10” = 1 (Single) Cubic Feet
- Integral data logging capability
- Integral resettable meter accuracy testing feature
- Large, easy-to-read LCD display
- 10-year battery life guarantee

Maximum Operating Pressure

The meter assembly shall operate properly without leakage, damage, or malfunction up to a maximum working pressure of 200 pounds per square inch (psig).

Strainers

The meter strainer shall be integral and cast as part of the meter’s main case. The strainer’s screen shall have a minimum net open area of at least two (2) times the pipe opening and be a V-shaped configuration for the purpose of maintaining a full unobstructed flow pattern. The strainer body shall be a coated ductile iron fusion-bonded epoxy identical to that of the meter’s main case. All fasteners shall be stainless steel capable of maintaining the following static pressure ratings and physical dimensions:

Meter Size	Maximum Operating Pressure	Centerline to Strainer Base	Overall Length (Not to Exceed)
1 ½”	200 psig	2 5/16”	13”
2”	200 psig	2 5/16”	17”
3”	200 psig	4 1/8”	19”
4”	200 psig	4 ¾”	23”
6”	200 psig	5 ¾”	27”
8”	200 psig	6 ¾”	30 1/8”
10”	200 psig	8 1/2”	41 1/8”

Straightening Vanes

A straightening vane assembly is mandatory and shall be positioned directly upstream of the measuring element. The straightening vane assembly shall be an integral component of the measuring chamber.

Connections

Flanges for the 1-1/2" and 2" size meter assemblies shall be of the 2-bolt oval flange configuration. The 3", 4", 6”, 8” & 10” size meter assemblies shall have flanges of the Class 125 round type, flat faced and shall conform to ANSI B16.1 for specified diameter, drilling and thickness.

Certifications and Markings

All sizes of meter packages shall display the sizes, model, manufacturer name, and direction of flow. Such display shall be

cast on the side of the meter main case.

Guarantee

All meters will be guaranteed against defects in materials and workmanship for a period of one (1) year from the date of shipment.

Intent

Subject meter specifications are designed to establish minimum guidelines for selecting an extremely critical metering device. Areas of concern to be evaluated in the selection process include, but are not limited to, ease of installation, operational features and benefits, readability, and future system maintenance expense. A design which reflects longevity of proper operation in all elements and high degree of sustained accuracy within the entire range of the meter assembly is to be considered mandatory. Enhanced accuracy levels and performance are desired and will not be compromised.

METER, WATER – COMPOUND

1 1/2" - 10" COMPOUND WATER METERS

The meter package shall meet or exceed all requirements of ANSI/AWWA Standard C701 and C702 for Class II compound and turbine meter assemblies. Each meter assembly shall be performance tested to ensure compliance.

Maincases

The meter main case shall be of epoxy coated ductile iron composition. The epoxy coating shall be provided as standard fusion-bonded and adhere to NSF for No-lead regulation compliance.
A built-in test port is mandatory. Must be available in these various laying length options: 1-½" – 13", 2" – 15 ¼" & 17", 3" – 17" & 19", 4" – 20" & 23", 6" – 24" & 27", 8" – 31-1/8", 10" – 41-1/8"

Performance

The meter assembly shall have performance capability of continuous operation up to the rated maximum flows as listed below without affecting long-term accuracy or causing any undue component wear. The meter assembly shall also provide a 25% flow capacity in excess of the maximum flows listed for intermittent flow demands. Maximum head loss through the meter / strainer assembly shall not exceed those listed in the following table per meter size.

Measuring Chamber

The measuring chamber shall consist of a measuring element, removable housing, and an all-electronic register. The measuring element shall be mounted on a horizontal, stationary stainless steel shaft with sleeve bearings and be essentially weightless in water (only one moving part). The measuring element comes integrated with the advanced Floating Ball Technology design. The measuring chamber shall be capable of operating within the above listed accuracy limits without calibration when transferred from one main case to another of the same size. The measuring shall be so configured to capture all flows as specified above, without the requirement of an automatic valve. Meters with manual calibration adjusters will not be accepted.

Operating Characteristics

Meter Size	Low Flow (95% Min)	Operating Range (98.5-101.5%)	Intermittent Flows (98.5-101.5%)	Pressure Loss (Not to Exceed)
1 ½"	0.25 gpm	0.5 to 160 gpm	200 gpm	6.9 psi @ 160 gpm
2"	0.25 gpm	0.5 to 160 gpm	200 gpm	4.3 psi @ 160 gpm
3"	0.5 gpm	1.0 to 400 gpm	500 gpm	3.2 psi @ 400 gpm
4"	0.75 gpm	1.5 to 800 gpm	1000 gpm	6.4 psi @ 800 gpm
6"	1.5 gpm	3.0 to 1600 gpm	2000 gpm	5.5 psi @ 1600 gpm
8"	2.5 gpm	4.0 to 2700 gpm	3400 gpm	4.0 psi @ 2700 gpm
10"	3.5 gpm	5.0 to 4000 gpm	5000 gpm	4.5 psi @ 4000 gpm

Direct Magnetic Drive System

The direct magnetic drive shall occur between the motion of the measuring element blade position and the electronic register. The direct drive system with Floating Ball Technology is designed to extend service life, enhance low flow sensitivity and provide extended flow capacity and overall accuracy of the meter assembly. Any and all additional intermediate, magnetic or mechanical, drive couplings or gearing are not acceptable.

Electronic Register

- Must Read in Cubic Feet
- Must have AMR & Pulse outputs from a single register
- Must be supplied with three AMR connections (Red, Green, Black wires)
- Connection between register and meter transceiver unit shall be accomplished with use of all three terminals & Touch Coupler connection (or approved equivalent)
- AMR output data format shall be 7-bit ASCII (American Standard Code of Information Interchange) digital, plus an even parity bit
- Upon AMR interrogation the meter shall transmit a reading (# of Digits Customer specified) and an eight (8) digit register identification number which is to be factory programmed as to protect the system integrity and eliminate possible field programming duplication
- AMR resolution units fully programmable
- Highest AMR Resolution Required: 1.5” – 3” = .1 (Tenths) Cubic Feet & 4” – 10” = 1 (Single) Cubic Feet
- Pulse output frequency fully programmable
- Highest Pulse Resolution Required: 1.5” – 3” = .1 (Tenths) Cubic Feet & 4” – 10” = 1 (Single) Cubic Feet
- Integral data logging capability
- Integral resettable meter accuracy testing feature
- Large, easy-to-read LCD display
- 10-year battery life guarantee

Maximum Operating Pressure

The meter assembly shall operate properly without leakage, damage, or malfunction up to a maximum working pressure of 200 pounds per square inch (psig).

Strainers

The meter strainer shall be integral and cast as part of the meter’s main case. The strainer’s screen shall have a minimum net open area of at least two (2) times the pipe opening and be a V-shaped configuration for the purpose of maintaining a full unobstructed flow pattern. The strainer body shall be a coated ductile iron fusion-bonded epoxy identical to that of the meter’s main case. All fasteners shall be stainless steel capable of maintaining the following static pressure ratings and physical dimensions:

Meter Size	Maximum Operating Pressure	Centerline to Strainer Base	Overall Length (Not to Exceed)
1 ½”	200 psig	2 5/16”	13”
2”	200 psig	2 5/16”	15 ¼”
3”	200 psig	4 1/8”	17”
4”	200 psig	4 ¾”	20”
6”	200 psig	5 ¾”	24”
8”	200 psig	6 ¾”	30 1/8”
10”	200 psig	8 ½”	41 1/8”

Straightening Vanes

A straightening vane assembly is mandatory and shall be positioned directly upstream of the measuring element. The straightening vane assembly shall be an integral component of the measuring chamber.

Connections

Flanges for the 1-1/2" and 2" size meter assemblies shall be of the 2-bolt oval flange configuration. The 3" and 4" size meter assemblies shall have flanges of the Class 125 round type, flat faced and shall conform to ANSI B16.1 for specified diameter, drilling and thickness.

Certifications and Markings

All sizes of meter packages shall display the sizes, model, manufacturer name, and direction of flow. Such display shall be cast on the side of the meter main case.

Guarantee

All meters will be guaranteed against defects in materials and workmanship for a period of one (1) year from the date of shipment.

Intent

Subject meter specifications are designed to establish minimum guidelines for selecting an extremely critical metering device. Areas of concern to be evaluated in the selection process include, but are not limited to, ease of installation, operational features and benefits, readability, and future system maintenance expense. A design which reflects longevity of proper operation in all elements and high degree of sustained accuracy within the entire range of the meter assembly is to be considered mandatory. Enhanced accuracy levels and performance are desired and will not be compromised.

METER VAULTS

Panel vaults must be constructed of reinforced polymer concrete manufactured in molded structural shapes. The inner surface should consist of a heavy gel coat of polyester resin to provide a smooth non-abrasive working surface. The surface is to be backed by a double layer of heavy weave fiberglass type material.

Each enclosure shall include a one-piece collar to keep the enclosure square during backfill operation or after the ground settles.

The lid shall be a non-locking type with a logo "WATER" imprinted.

Cover shall have a service load of approximately 8,000# over a 10 inch square.

Meter vaults shall be CDR MODEL WA00(SIZE) - one piece only or approved equal.

Meter Vaults 3’ x 5’ x 3’ and larger shall be delivered on individual pallets.

NO DOUBLE STACKED VAULTS WILL BE ACCEPTED.

METER BOXES

STANDARD METER BOXES: PLASTIC METER BOX (10” X 15” X 10”) WITH SOLID, DROP ON, C.I. LID

JUMBO METER BOXES: JUMBO METER BOXES (13” X 20” X 12”) WITH SOLID, DROP ON, C.I. LID

APPROVED MANUFACTURERS:
CARSON – MODEL 1220-12
APPROVED EQUAL

SOLID CAST IRON LIDS:

RUSSELL – MODEL LC2115 OR APPROVED EQUAL

METER BOXES FOR USE IN CONCRETE:

- 11” X 18” X 12” METER BOX & D I LID WITH MAXIMUM READER(MSP)
- 13” X 24” X 12” METER BOX & D I LID WITH MAXIMUM READER(MSP)

APPROVED MANUACTURER:

MID-STATES PLASTICS – MODEL BCF SERIES
APPROVED EQUAL

FIRE HYDRANT

Fire hydrants with M.J. Shoe and fire hydrants with Flanged Shoe will be bid.

All fire hydrants must have test pressure of 300 psig and working pressure of 175 psig.

All fire hydrants must have 4 1/2" valve opening.

All fire hydrants must have 3'0", 3’6”, 4'0", 5'0" bury.

All fire hydrants must have two (2) 2 1/2 hose MOZ GA NS and One (1) 4 1/2" Pumper NOZ GA 4-556.

All fire hydrants must have 1 1/2" Pent open left operating nut (bronze).

All fire hydrants must have 6" M.J. or Flanged Shoe complete with gland and plain rubber gaskets.

All fire hydrants must comply with AWWA Specifications C-502.

All fire hydrants must be painted with fire hydrant red enameled paint completely.

All fire hydrants must be equipped with safety flange (break away traffic model).

All fire hydrants must be equipped with the following:

- Non-kinking chains on nozzle caps with rubber gasket seal or "O" ring seals.
- Double drain valves and double drain openings
- Bronze seat ring with compression type main valve
- Positive stop stem (eliminates over-travel of stem)

The hydrant main valve shall close with the pressure and all operating parts including the stem operating nut, hold down nut, valve top, drain ring, and seat shall be all-bronze.

Friction losses through the hydrant shall not exceed 5.0 psig at 1000 gpm through the pumper nozzle and 2.0 psig through two hose nozzles at 500 gpm, when simultaneously tested as outlined by AWWA C-502. Hydrants shall be such that easy installation of extensions can be accommodated either at the ground line or to connection, without shutting off the water. All hydrants shall utilize integral cast flanges. The hydrant shall have a 6" inlet connection of the mechanical joint type, suitable for all classes of cast iron or ductile iron pipe, unless otherwise noted.

The bonnet assembly shall be one-piece and provided with an oil reservoir and lubrication system that automatically circulates lubricant to all threads and bearing surfaces each time the hydrant is operated. The system shall be completely sealed from the waterway and all external contaminants by two (2) O-ring stem seals and a weather shield attached directly to the operating nut. Hydrants shall be factory pre-filled with a lubricant suitable for a working temperature range of a -60 degree Fahrenheit to a +150 degree Fahrenheit.

The drain valve system shall be fully automatic and free of springs, toggles, or other devices, requiring field adjustment. Both the valve seat ring and drain ring shall have no less than two (2) openings that are forced-flushed during opening and closing

cycles, but are sealed when the hydrant is fully open.

Hydrant shall have a three foot bury unless otherwise noted, with the painting and coating as prescribed in AWWA C-502, with the color painted red enamel above the ground line. The cast iron components below ground shall be asphalt varnish and subscribing to the current standards and practices.

Each proposal shall include an expanded view of the hydrant, which shows all parts and their proper locations. A price list of repair parts may be requested for review purposes.

APPROVED MANUFACTURERS AND MODELS:

American Cast Iron Pipe Co.	Mark 73
Mueller Company	Centurion
M & H Valve Company	Model 129
Clow Valve Company	Medallion
U. S. Pipe Company	Metropolitan 250 M-94

WASTEWATER SUPPLIES

PIPE, P V C SEWER

All PVC Pipe sizes 4”-12” must be equivalent to or better than the following:

- SDR 26 - Heavy wall sewer pipe
- ASTM D-3034 and F-679
- ASTM F477 and ASTM D3139.
- ASTM D-3034 and ASTM D-2729 Standards
- All pipe to be in 14’ lengths.

Gaskets are to be permanently attached to couplings.
Sufficient lubricant must be supplied with pipe.
Bids must be on a price per linear foot basis.

FITTINGS, P V C SEWER

4” through 18” gasket SDR 26 HW sewer fittings shall be manufactured in accordance with ASTM D 3034 and F1336 standards.

Fitting gaskets shall comply with ASTM F 477 or ASTM F 913.

Fitting gaskets shall be locked firmly in position to prevent displacement.

4” through 8” fittings shall be injection molded from virgin PVC compound having a minimum cell classification of 12454-B in accordance with, and certified by the National Sanitation Foundation (NSF), to meet ASTM D 1784.

10” through 15” gasket SDR 26 sewer fittings may be injection molded or fabricated from pipe meeting the requirements of ASTM D 3034.

Gasket joints of all fitting sizes must comply with ASTM D 3212 Internal Pressure Test (exfiltration) and Vacuum Test (infiltration) at 5 degrees of gasket joint deflection. Gasket SDR 26 sewer fittings shall be certified by the National Sanitation Foundation (NSF) to meet ASTM D 3034.

STAINLESS STEEL SHIELDED/SHEAR RING REPAIR COUPLINGS

1.0 Flexible Transition Couplings These shall be manufactured from elastomeric materials that comply with the applicable requirements of ASTM C 1173 Standard Specification for Flexible Transition Couplings.

2.0 The **purpose** of Flexible Transition Couplings is to form a leak proof joint between sections plain end pipe or fittings of the same or different materials such as cast iron, clay, ductile iron, concrete and plastic pipe in sizes ranging from 1 ¼" up to 30" with larger sizes available upon request.

3.0 Stainless Steel Hose Clamps Hose clamps should be constructed of series 300 premium grade stainless steel, including the housing and screw to insure a positive seal ranging in size from 1 1/16" through 21". The stainless steel hose clamps shall be tested to withstand the required minimum torque of 60 in-lbs and maximum free running torque of 4 in-lbs as to the applicable requirements in ASTM C 1173.

4.0 Stainless Steel Bolt Clamps Bolt clamps should be constructed of 316 stainless steel, to include the band, nut and screw. The stainless steel bolt clamps range in sizes from 4" through 15" and meet the required minimum torque of 60 in-lbs and maximum free running torque of 4 in-lbs as to the applicable requirements in ASTM C 1173.

5.0 Stainless Steel Shear Ring Shear rings should be manufactured from all series 300 premium grade stainless steel construction to ensure extra rigidity and strength, and provide protection in even the most unstable ground conditions. The shear rings need to be available for several types of piping, in the most popular sizes. They should be available in thicknesses of 0.007" and 0.012". Shear ring couplings need to be manufactured to conform to the functional requirements of ASTM C 1173.

6.0 Sealing Resistance Flexible Transition Couplings shall show no visible leakage while under an internal hydrostatic pressure of 4.3 psi as to the applicable requirements of ASTM C 1173.

7.0 Durometer Hardness Testing Flexible Transition Couplings shall have a shore "A" durometer (hardness) of 50-75 as to the applicable requirements of ASTM C 1173 and ASTM Test Method D 2240.

8.0 Marking Flexible Transition Couplings shall be marked with the manufacturers name or trademark, or both. The type and size of pipe for which the coupling is intended of the manufacturer's product number shall be marked on or attached to each coupling as to the applicable requirements of ASTM C 1173.

APPROVED MANUFACTURERS:

Fernco
Mission Rubber
Indiana Seal

MANHOLE FRAME AND COVER

MATERIAL:	Grey Iron castings shall conform to the requirements of AASHTO M 105 Class 35 B or ASTM A 48 Class 35 B, unless otherwise specified.
MANUFACTURING:	Castings shall be manufactured true to pattern and component parts shall fit together in a satisfactory manner. They shall be smooth and well cleaned by shot blasting. Circular manhole rings, covers and grates shall be furnished with machined horizontal bearing surfaces unless otherwise specified.
TOLERANCES:	As cast dimensions may vary by plus or minus 1/16 inch per foot in critical areas relating to fit, load bearing capacity and drainage openings. Non-critical dimensions may be modified slightly to facilitate proper casting techniques, without notice. Notwithstanding these tolerances, all rings, covers, frames, grates, and curb hoods of the same nominal size are interchangeable.

WEIGHTS: Casting weights are accurate, and shall be within plus or minus 5% of the specified weight.

NOTE: Frame and cover castings shall be clearly marked with the manufacturer's name, product catalog number and Made in the USA in cast letters. All frame and covers shall meet the dimensions specified in standard details provided by the City.

APPROVED MANUFACTURERS AND MODELS:
Vulcan Foundry No. V-1344-1
U.S. Foundry No. USF 420
Approved equal with City of Tuscaloosa Logo.

WATERTIGHT FRAME AND COVER

MATERIAL: Grey Iron castings shall conform to the requirements of AASHTO M 105 Class 35 B or ASTM A 48 Class 35 B, unless otherwise specified.

MANUFACTURING: Castings shall be manufactured true to pattern and component parts shall fit together in a satisfactory manner. They shall be smooth and well cleaned by shot blasting. Circular manhole rings, covers and grates shall be furnished with machined horizontal bearing surfaces unless otherwise specified.

TOLERANCES: As cast dimensions may vary by plus or minus 1/16 inch per foot in critical areas relating to fit, load bearing capacity and drainage openings. Non-critical dimensions may be modified slightly to facilitate proper casting techniques, without notice. Notwithstanding these tolerances, all rings, covers, frames, grates, and curb hoods of the same nominal size are interchangeable.

WEIGHTS: Casting weights are accurate, and shall be within plus or minus 5% of the specified weight.

NOTE: MANHOLE RIM AND COVER SHALL BE WATERTIGHT.

Frame and cover castings shall be clearly marked with the manufacturer's name, product catalog number and Made in the USA in cast letters. All frame and covers shall meet the dimensions specified in standard details provided by the City.

Approx. weight of frame and cover – 350 lbs. minimum.

APPROVED MANUFACTURERS AND MODELS:
East Jordan Iron Works No. V-2358
US Foundry No. 1452
Approved equal with City of Tuscaloosa Logo.

PRECAST CONCRETE MANHOLES

(1.) Precast concrete manholes shall be of reinforced concrete sections manufactured in accordance with ASTM C 478, latest revision. In addition, the fine aggregate used shall be natural silica sand. The concrete when tested in compression shall be not less than 4,000 psi and absorption shall not exceed 9%. Minimum wall thickness of the manhole riser sections shall be as follows:

I.D. Wall thickness:
48" 5"
60" 6"
72" 7"
84" 8"
96" 9"

Cone sections shall be made with minimum wall thicknesses of 5" at the bottom and 8" at the top. The minimum thickness of the bottom slab shall be 6" for all manhole diameters. Manhole diameters to be used shall be as indicated on the plans.

(2.) Joints between the manhole sections will be made with offset joints with rubber gaskets or preformed butyl sealants. Rubber gaskets shall meet the requirements of ASTM C 443, latest revision. Sealants shall meet ASTM C 990 and AASHTO M-198B.
(3.) Steel reinforcement shall conform to ASTM A-82 or A-185. The circumferential reinforcement may consist of either one or two lines of steel. The total steel area per vertical foot shall not be less than 0.0025 times the inside diameter in inches.

(4.) For purposes of handling and placement: The 48" diameter manholes shall have lift inserts which shall be cast in each section. Two lift holes shall be cast in sections larger than 48" in diameter.

(5.) Openings for inlet and discharge sewer pipes shall be provided in the manhole base section and in the riser section for drop-manholes. Openings shall be at positions and elevations as indicated on the plans or predetermined in the field, and may be cast into the manhole wall or mechanically cored on completed sections. Where pipes are to be sealed into the manhole wall with mortar, openings shall be large enough to permit such variations in both horizontal and vertical position as field conditions may dictate. Cored openings shall be sized to accommodate the flexible manhole sleeve specified for the project.

A.) Mortar for sealing pipes into manholes shall be a non-shrink or hydraulic cement grout.

B.) Flexible manhole connectors suitable for use in precast or cored openings utilizing pre-molded shapes positioned with expansion rings shall comply with the requirements of ASTM C 923. Flexible connectors shall be installed as recommended by the manufacturer.

(6.) Manhole steps shall be reinforced plastic step complying with the requirements of ASTM C 478.

APPROVED MANUFACTURERS:

Hanson Pipe & Products
Sherman-Dixie Concrete Industries
Foley Products
Approved equal

BID ITEM WORK SHEETS

Line Item	Part Description		City Part ID	Bid Price
	Schedule 1	**Copper Pipe**		
1	3/4" COPPER PIPE TYPE K SOFT		100	
2	1" COPPER PIPE TYPE K SOFT		101	
	Schedule 2	**Ductile Iron Pipe**		
3	12" CLASS 50 - D. I. PIPE		125	
4	24" CLASS 50 - D. I. PIPE		128	
5	4" CLASS 52 - D. I. PIPE		131	
6	6" CLASS 52 - D. I. PIPE		132	
7	8" CLASS 52 - D. I. PIPE		133	
8	12" STEEL CASING PIPE .375 WALL THICKNESS - 20 FT. LONG		145	
	Schedule 3	**HDPE Pipe**		
9	15" HDPE Pipe (inside diameter) - per foot		n/a	
10	18" HDPE Pipe (inside diameter) - per foot		n/a	
11	24" HDPE Pipe (inside diameter) - per foot		n/a	
12	30" HDPE Pipe (inside diameter) - per foot		n/a	
13	36" HDPE Pipe (inside diameter) - per foot		n/a	
	Schedule 4	**Galvanized Pipe**		
14	3/4" GALV. PIPE (T & C) (10 FT. Long)		107	
15	1" GALV. PIPE (T & C) (10 FT. LONG)		108	
16	1 1/2" GALV. PIPE (T & C) (10 FT. LONG)		110	
	Schedule 5	**Fire Hydrants and Accessories**		
17	FIRE HYDRANTS (SPECIFY BRAND AND MODEL) M. J. 3 FT. BURY		1900	
18	FIRE HYDRANTS (SPECIFY BRAND AND MODEL) M. J. 4 FT. BURY		1901	
19	12" FIRE HYDRANT EXTENSION FOR 4 1/2 AMERICAN HYDRANT		1906	
20	24" FIRE HYDRANT EXT. FOR 4 1/2" AMERICAN HYDRANT		1908	
21	FIRE HYDRANT SAFETY FLANGE REPAIR KITS FOR AM. HYDRANT		1909	
22	FIRE HYDRANT SHOE REPAIR KITS FOR AMERICAN HYDRANT		1910	
23	FIRE HYDRANT SAFETY FLANGE REPAIR KITS FOR MUELLER HYDRANTS		1924	
24	FIRE HYDRANTS (SPECIFY BRAND AND MODEL) M. J. 3 FT 6 IN BURY		3269	
25	6" M. J. Run x 6" Split Gland Hydrant Tees		233	
26	6" FIRE HYDRANT EXT. FOR 4 1/2" AMERICAN HYDRANT		3316	
	Schedule 6	**Manhole Rings, Covers, Risers and Accessories**		
27	MANHOLE RING & COVER, STANDARD		7075	
28	MANHOLE ADJUSTMENT RING 3"		7080	
29	MANHOLE ADJUSTMENT RING 4"		7081	
30	MANHOLE ECCENTRIC CONE TOP 48" X 36"		7091	
31	MANHOLE BAR (KEN-TOOL#33223)		7151	
32	1" ORLANDO RISER RING (23-2-1)		7155	
	Schedule 7	**Meter Accessories**		
33	1 1/2" BRONZE METER FLANGES WITH BOLTS & GASKETS		844	
34	3/4" COMP X FIP CURB STOP MCDONALD 6102WT OR EQUAL		1700	
35	3/4" CORPORATION STOPS MCDONALD 4701T OR EQUAL		1710	
36	3/4" METER COUPLINGS 2" LONG		1715	

Line Item	Part Description	City Part ID	Bid Price
37	1" METER COUPLINGS 2 1/2" LONG	1720	
38	3/4" X 1/16" FIBER METER WASHERS	1739	
39	3/4" X 1/32" FIBER METER WASHERS	1740	
40	3 X 5 X 36" METER VAULT	1766	
41	4 X 6 X 48" METER VAULT (927 lb body,391 lb for lids)	1768	
42	STANDARD PLASTIC METER BOX (10"X15"X10") (WITH SOLID C. I. LID)	1772	
43	JUMBO PLASTIC METER BOX (13"X20"X12") WITH	1773	
44	3/4" WILKINS #700 (FIP X FIP) BACKFLOW PREVENTERS OR EQUAL	1774	
45	1" WILKINS #700 (FIP X FIP) BACKFLOW PREVENTERS OR EQUAL	1775	
46	2" WILKINS #950 BACKFLOW PREVENTERS OR EQUAL (19 1/2" long)	1776	
47	1 1/2" BACKFLOW PREVENTER(WATTS 007QT 16 3/4" long)	3049	
48	MSP STANDARD 11" X 18" X 12" Meter Box & Lid	3208	
49	3/4" X 1/8" Thick Rubber Meter Washer	3230	
50	1-1/2" Full Face Meter Gasket	3553	
51	2" Full Face Meter Gasket	3554	
52	HAND PUMP (METER BOX)	3555	
53	3/4" X 1/32" Rubber Meter Washers	3557	
	Schedule 8 Water Meters		
54	3/4" i PERL S METER	1747	
55	3/4" iPERL L METER	1748	
56	1" iPERL (METER)	1749	
57	1 1/2" SENSUS WATER METERS, OMNI R2, CU. FT.	1750	
58	1 1/2" SENSUS WATER METERS, OMNI C2, CU. FT. (13" long)	3438	
59	2" SENSUS WATER METERS, OMNI C2, CU. FT. (15 1/4" long)	3283	
60	2" SENSUS WATER METERS OMNI R2, CU. FT.	1751	
61	3" SENSUS WATER METERS, OMNI C2, CU. FT. (17" long)	1752	
62	4" SENSUS WATER METERS, OMNI C2, CU. FT. (20" long)	1754	
	Schedule 9 Pipe Accessories		
63	2" RED BRASS PIPE (SEAMLESS) (12 FT. LONG)	105	
64	2" GALV. PIPE (T & C) (10 FT. LONG)	111	
65	6" Run x 4" Branch M. J. Tees	201	
66	6" Run x 6" Branch M. J. Tees	202	
67	8" Run x 6" Branch M. J. Tees	204	
68	8" x 6" Concentric M. J. Reducers	242	
69	6" 90 Degree Mechanical Joint Bend	333	
70	8" 90 Degree Mechanical Joint Bend	334	
71	4" 45 Degree Mechanical Joint Bend	341	
72	6" 45 Degree Mechanical Joint Bend	342	
73	6" 22 1/2 Degree Mechanical Joint Bend	351	
74	8" 22 1/2 Degree Mechanical Joint Bend	352	
75	8" 11 1/4 Degree Mechanical Joint Bend	361	
76	6" X 12" ANCHOR COUPLINGS, DUCTILE IRON	369	
77	8" X 12" ANCHOR COUPLINGS, DUCTILE IRON	370	
78	4" MJ Plug with 2" IPT Tap	372	

Line Item	Part Description	City Part ID	Bid Price
79	8" MJ Plug with 2" IPT Tap	374	
80	4" Run x 4" Branch Flanged Tees	396	
81	4" 90 Degree Flanged Bend	493	
82	4" MEGALUG RESTRAINED GLAND, DUCTILE IRON	643	
83	6" MEGALUG RESTRAINED GLAND, DUCTILE IRON	644	
84	8" MEGALUG RESTRAINED GLAND, DUCTILE IRON	645	
85	12" MEGALUG RESTRAINED GLAND, DUCTILE IRON	646	
86	16" MEGALUG RESTRAINED GLAND, DUCTILE IRON	647	
87	4" FLANGE PACK (BOLTS, NUTS, GASKET)	800	
88	3/4" x 3 1/2" Long T-Head Bolt with heavy hex nut	819	
89	3/4" x 4" Long T-Head Bolt with heavy hex nut	820	
90	3/4" x 4 1/2" Long T-Head Bolt with heavy hex nut	821	
91	DUCTILE LUGS DUCTILE IRON (MEETING ASTM A536-80)	823	
92	3/4" HEAVY HEX NUTS	826	
93	4" MJ Gasket for 4" Nominal Diameter Fittings	828	
94	6" MJ Gasket for 6" Nominal Diameter Fittings	829	
95	8" MJ Gasket for 8" Nominal Diameter Fittings	830	
96	12" MJ Gasket for 12" Nominal Diameter Fittings	832	
97	6" Transition Gaskets	840	
98	2" BRONZE METER FLANGES WITH BOLTS & GASKETS	845	
99	6" DRESSER COUPLINGS (C.I.) (12" M. RING)	902	
100	8" DRESSER COUPLINGS (C.I.) (12" M. RING)	904	
101	6" X 6" FULL CIRCLE REPAIR CLAMPS - CI PIPE	933	
102	6" X 12" FULL CIRCLE REPAIR CLAMPS - CI PIPE	934	
103	8" X 12" FULL CIRCLE REPAIR CLAMPS - CI PIPE	937	
104	3/4" X 3" HANDIBAND REPAIR CLAMP FOR STEEL	953	
105	3/4" X 6" HANDIBAND REPAIR CLAMP FOR STEEL	954	
106	1" X 3" HANDIBAND REPAIR CLAMP FOR STEEL	955	
107	2" X 3" HANDIBAND REPAIR CLAMP	961	
108	2" X 6" HANDIBAND REPAIR CLAMP	962	
109	6" FLANGED COUPLING ADAPTER	1004	
110	1/2" GALV COMPRESSION COUPLING	1247	
111	3/4" GALV COMPRESSION COUPLING	1248	
112	1" GALV COMPRESSION COUPLING	1249	
113	1 1/2" GALV COMPRESSION COUPLING	1251	
114	2" GALV COMPRESSION COUPLING (LONG)	1252	
115	2" BRASS PLUGS	1305	
116	2" BRASS CAPS	1312	
117	3/4" X 1/2" BRASS BUSHINGS	1313	
118	1" X 3/4" BRASS BUSHINGS	1315	
119	1" X 3/4" BRASS REDUCERS	1332	
120	1/2" X 2" BRASS NIPPLES	1348	
121	1/2" X 4" BRASS NIPPLES	1349	
122	1/2" X 6" BRASS NIPPLES	1350	

Line Item	Part Description	City Part ID	Bid Price
123	3/4" X 2" BRASS NIPPLES	1351	
124	3/4" X4" BRASS NIPPLES	1352	
125	3/4" X 6" BRASS NIPPLES	1353	
126	1" X 2" BRASS NIPPLES	1354	
127	1" X 4" BRASS NIPPLES	1355	
128	1" X 6" BRASS NIPPLES	1356	
129	2" X 2 1/2" BRASS NIPPLES	1366	
130	2" X 4" BRASS NIPPLES	1367	
131	2" X 6" BRASS NIPPLES	1368	
132	2" X 12" BRASS NIPPLES	1370	
133	3/4" BRASS 90 DEGREE ELLS	1397	
134	1" BRASS 90 DEGREE ELLS	1398	
135	1 1/2" BRASS 90 DEGREE ELLS	1400	
136	2" BRASS 90 DEGREE ELLS	1401	
137	2" BRASS 45 DEGREE ELLS	1417	
138	3/4" BRASS TEES	1421	
139	2" X 1" BRASS TEES	1437	
140	2" X 2" BRASS TEES	1440	
141	1/2" BRASS COUPLINGS	1447	
142	3/4" BRASS COUPLINGS	1448	
143	1" BRASS COUPLINGS	1449	
144	1 1/2" BRASS COUPLINGS	1451	
145	2" BRASS COUPLINGS	1452	
146	2" BRASS UNION	1460	
147	2" X 3/4" BRONZE SADDLES, CC THREAD FOR PVC PIPE (MCDONALD 3892)	1606	
148	2" X 1" BRONZE SADDLES, CC THREAD FOR PVC PIPE (McDONALD 3892)	1607	
149	4" X 2" TAP SADDLES, I.P.T. DOUBLE STRAP FOR C.I. PIPE	1612	
150	6" X 2" TAP SADDLES, I.P.T. DOUBLE STRAP, FOR C.I. PIPE	1613	
151	8" X 2" TAP SADDLES, I.P.T. DOUBLE STRAP, FOR C.I. PIPE	1614	
152	1" FIP X FIP CURB STOPS MCDONALD 6101W OR EQUAL	1703	
153	3/4" SPIGOTS, ARROWHEAD OR EQUAL	1707	
154	3/4" MALE ADAPTERS MCDONALD 4753T OR EQUAL	1708	
155	3/4" FEMALE ADAPTERS MCDONALD 4754T OR EQUAL	1709	
156	3/4" METER COUPLINGS 2 1/2" LONG	1716	
157	3/4" METER COUPLING 2 3/4" LONG	1717	
158	1" METER COUPLINGS 1 1/2" LONG	1719	
159	1" MALE ADAPTERS MCDONALD 4753T OR EQUAL	1722	
160	1" FEMALE ADAPTERS MCDONALD 4754T OR EQUAL	1723	
161	3/4" 3-PART UNIONS MCDONALD 4758T OR EQUAL	1724	
162	1" 3-PART UNIONS MCDONALD 4758T OR EQUAL	1725	
163	1" X 1" X 1" COPPER COMPRESSION TEES MCDONALD 4760T OR EQUAL	1726	
164	1" X 3/4" X 3/4" U-BRANCH MCDONALD 708UQM	1727	
165	1" X 3/4" BRASS COMPRESSION WYES MCDONALD 4768T OR EQUAL	1728	
166	3/4" COMP. X M.I.P. 90 DEGREE BENDS MCDONALD 4779MT OR EQUAL	1729	

Line Item	Part Description	City Part ID	Bid Price
167	1" COMP. X M.I.P. 90 DEGREE BENDS MCDONALD 4779MT OR EQUAL	1730	
168	3/4" COPPER FLARE X F.I.P. CURB STOPS MCDONALD 6102 OR EQUAL	1731	
169	3/4" BRASS COMPRESSION TEES MCDONALD 4760T OR EQUAL	1733	
170	3/4" STAINLESS STEEL INSERTS (SEE SPECIFICATIONS)	1735	
171	1" STAINLESS STEEL INSERTS (SEE SPECIFICATIONS)	1736	
172	FIRE HYDRANTS (SPECIFY BRAND AND MODEL) M. J. 5 FT. BURY	1902	
173	PIPE LUBRICANT - 1 QUART CONTAINERS	2001	
174	PIPE LUBRICANT - 1 GALLON CONTAINERS	2002	
175	JOMAR PIPE LUBRICANT (GREEN STUFF) - PINT CONTAINERS	2003	
176	WATER LINE MARKERS (6x2 1/2") CARSONITE OR EQUAL	2004	
177	3/4" TAP BIT (DT75)	3004	
178	1" TAP BIT(DT100)	3005	
179	3/4" ALL THREAD ROD	3032	
180	3/4" BRASS HAYES NUTS	3057	
181	1" BRASS HAYES NUTS	3058	
182	6" X 36" LONG FLANGE X FLANGE SPOOL	3074	
183	2" UNIFLANGE 1300-S (RESTRAINT DEVICE)	3160	
184	4" UNIFLANGE 1300-C (RESTRAINT DEVICE)	3161	
185	6" UNIFLANGE 1300-C (RESTRAINT DEVICE)	3162	
186	8" UNIFLANGE 1300-C (RESTRAINT DEVICE)	3163	
187	12" UNIFLANGE 1300-C (RESTRAINT DEVICE)	3165	
188	2" x 7.50" COLLAR LEAK REPAIR CLAMP	3178	
189	3/4" X 6" Bolts For Universal Pipe	3195	
190	12" X 6 " CASING SPACER	3197	
191	LOCATING WIRE (14 GUAGE SOLID COPPER)	3211	
192	4" X 24" Flange x Flange Spool	3218	
193	1" X CLOSE BRASS NIPPLE	3233	
194	3/4"-1 1/4" Chinese Fingers Grip (Part # 185-903)	3240	
195	10 " MEGALUG RESTRAINED GLAND, DUCTILE IRON	3242	
196	3/4" CLOSE BRASS NIPPLE	3276	
197	4" X 36" FLANGE X FLANGE SPOOL	3287	
198	1 1/2" McDonald By Pass Assembly	3302	
199	2" McDONALD METER BYPASS (36" Long)	3303	
200	6" Full Circle Repair Clamp w/ 1" Tap (Ext. Range)	3321	
201	2" X 7-1/2" Full Circle Repair Clamp (F1-263-75)	3342	
202	6" Foster ADPT & ACCESS	3346	
203	8" X 8" SS TAP SLEEVE (JCM #432 or equal) (OD 8.98-9.37)	3354	
204	3" 90 Degree Flanged Bend	3404	
205	3" Run x 3" Branched Flanged Tee	3405	
206	3" Flange Packs (Nuts, Bolts, Gaskets)	3406	
207	4" M.J. x 3" Flanged Reducer	3407	
208	3" FFCA-388 Flange Adapter	3408	
209	3" X 12" FLANGE X PE SPOOL	3410	
210	3" X 24" FLANGE X FLANGE SPOOL	3411	

Line Item	Part Description	City Part ID	Bid Price
211	3" X 36" FLANGE X FLANGE SPOOL	3412	
212	3" X 7" Repair Clamp (For Steel) O.D.3.46-3.70	3419	
213	3" Hymax Dresser Coupling Copper Part# 2000-0433-260	3424	
214	2" Hymax Dresser Coupling For 2" Or 2 1/2" Copper (PART # 2000-0303-260)	3426	
215	1 1/2" X 12" Brass Nipples	3437	
216	4" X 48" Flanged X Flanged Spool	3464	
217	4" HyMax Dresser Coupling Range (4.25-5.63)	3484	
218	8" HYMAX DRESSER COUPLING (OD 8.54-9.84)	3488	
219	6" Hymax Dresser Coupling (O.D. 6.42-7.68)	3489	
220	1 1/2" X 3" WRAP CLAMP REPAIR CLAMP (FSC-190-3R)	3503	
221	1 1/4" X 3" WRAP CLAMP Repair Clamp	3504	
222	2" X 3" Wrap Repair Clamp	3509	
223	2" X 6" Wrap Repair Clamp	3510	
224	34" X 3/4" XS LEAD X MALE COMP COUP (M74753-67)	3539	
225	2" Galvanized Style 65 Dresser Coupling (Short)	3541	
226	3/4" ZINC ROD COUPLING	3552	
227	Water Plug (50 LB Pails)	7023	
228	4" PVC SEWER SOLVENT WELD END CAP (SDR-35)	7050	
229	4" CLAY TO PVC FERNCO SHEAR COUPLING	7063	
230	6" CLAY TO PVC FERNCO SHEAR COUPLING	7064	
231	4" PVC TO PVC FERNCO SHEAR COUPLING	7069	
232	8" PVC TO PVC FERNCO SHEAR COUPLING	7071	
233	WASHER, 1/2id x 7/8OD X 1/32THK (PN: HW267)	7103	
	Schedule 10 PVC Pipe		
234	2" PVC PIPE, CLASS 200	115	
235	6" PVC PIPE, CLASS 200	118	
236	4" Schedule 40 PVC Pipe	7001	
237	12" Schedule 40 PVC Pipe	7005	
238	12" PVC HW Sewer Pipe 14LF	7062	
	Schedule 11 Sewer Pipe Accessories and Related Items		
239	Sewer Manhole Markers	7021	
240	Full Range 3M Marker Waste Water	7053	
241	4" SDR-26 HW SEWER PIPE 14LF	7058	
242	6" SDR-26 HW SEWER PIPE 14LF	7059	
243	8" SDR-26 HW SEWER PIPE 14LF	7060	
244	10" SDR-26 HW SEWER PIPE 14LF	7061	
245	2" SEWER AIR RELEASE VALVE (ARV) APCO MN:402WA.1	7087	
246	4" PVC HW Sewer SXG ST 22 Deg Bend	7089	
247	10" CL-350 Permox Lined DI Pipe	7092	
248	16" DI Pipe w/PERMOX Lining	7120	
249	1" x 10' Leader Hose	7121	
250	TIGER TAIL 3" x 36"	7123	
251	2" Sewer ARV (Crispin MN: SL20) w/backflush valve	7125	
252	4" Gripper Plug (Wing Nut)	7134	

Line Item	Part Description	City Part ID	Bid Price
253	16" MJ Solid Sleeve Permox Lined	7138	
254	8" CL-350 DI PERMOX LINED	7150	
	Schedule 12 Tap Sleeves and Saddles		
255	12" MJ Cap with 2" IPT Tap	392	
256	6" Solid M.J. Sleeves	538	
257	12" Solid M.J. Sleeves	540	
258	12" X 8" TAP SLEEVE (American #AFC-2800 or equal)	611	
259	12" X 2" TAP SADDLES, I.P.T. DOUBLE STRAP, FOR C.I. PIPE	1616	
260	16" X 2" TAP SADDLES, I.P.T. DOUBLE STRAP, FOR C.I. PIPE	1618	
261	6" X 1" TAP SADDLES, CC THREAD, DOUBLE STRAP FOR PVC	1626	
262	6" X 6" SS TAP SLEEVE (JCM #432 or equal)(OD 7.05 -7.40)	3351	
263	6" X 6" SS TAP SLEEVE DI (JCM #432 or equal)(O.D. 6.83-7.16)	3383	
264	8" Solid M.J. Sleeves	539	
265	3" X 3/4" Bronze Tap Saddle for PVC	3466	
	Schedule 13 Valves and Accessories		
266	4" TAPPING VALVES (American 2500 RS or equal)	734	
267	2" VALVE BOX RISERS FOR 7" VALVE BOX	764	
268	2" STOCKHAM B-319 CHECK VALVE OR EQUAL	1812	
269	4" GATE VALVES - (M.J.) (American 2500 RS or equal)	710	
270	6" GATE VALVES - (M.J.) (American 2500 RS or equal)	711	
271	8" GATE VALVES - (M.J.) (American 2500 RS or equal)	712	
272	4" GATE VALVES (FLANGED) (American 2500 RS or equal)	724	
273	6" TAPPING VALVES (American 2500 RS or equal)	735	
274	8" TAPPING VALVES (American 2500 RS or equal)	736	
275	VALVE BOX, 18" X 24" SCREW TYPE W/LID (5-1/4" DIA.)	757	
276	1" ADAPTERS FOR 5 1/4" VALVE BOXES	759	
277	1 1/2" ADAPTERS FOR 5 1/4" VALVE BOXES	760	
278	2" STOCKHAM B103 GATE VALVES OR EQUAL	1805	
279	1" PRESSURE REDUCER VALVES WILKINS #600 OR EQUAL	1817	
280	2" PRESSURE REDUCER VALVES WILKINS #600 OR EQUAL	1819	
281	6" 774 DOUBLE CHECK DETECTOR ASSEMBLY (38" long)	3300	
282	2" Det Check 007-DCDA-OSY-2	3349	
283	3" GATE VALVES (FLANGED) (AMERICAN 865 RS OR EQUAL)	3414	
284	6" X 5 1/4" Valve Box Riser	3431	
285	5 1/4" Valve Box Water Lid Only	3439	
286	3/4" PRESSURE REDUCER VALVES WILKINS #600 OR EQUAL	1816	
287	1 1/2" PRESSURE REDUCER VALVES WILKINS #600 OR EQUAL	1818	
288	2" RS THREADED GATE VALVE	3462	
289	7" PLASTIC ROUND VB W/LID	3548	

BIDDER'S RESPONSE FORM

MESSAGE TO BIDDERS: Please review your bid documents for accuracy, completeness, required documentation, and necessary signatures before submitting. Please label the outer mailing/shipping package with the bid information as directed.

COMPANY NAME: _____

CONTACT PERSON: _____

COMPLETE MAILING ADDRESS: _____

_____

AUTHORIZED SIGNATURE: _____

PRINTED NAME: _____

TELEPHONE NUMBER: _____

E-MAIL ADDRESS: _____

COPIES SUBMITTED:

_____VENDOR MUST SUBMIT AN ORIGINAL BID AND ONE COMPLETE COPY OR THE BID MAY BE REJECTED.

Awarded bidder(s) may be required to obtain a City of Tuscaloosa business license in order to provide goods and/or services in response to this bid and subsequent contract(s). Inquiries regarding business license requirements should be directed to the City's Revenue & Financial Services Division at (205) 248-5200. Failure to obtain and maintain required city business license(s) may result in rescinding of bid award and contract termination.

Note: By signing this contract, the contracting parties affirm, for the duration of the agreement, that they will not violate federal immigration law or knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the agreement and shall be responsible for all damages resulting therefrom.

FAILURE TO COMPLETE ALL OF THE ABOVE WITH AN AUTHORIZED SIGNATURE MAY SUBJECT BID TO REJECTION.

NON-BIDDER RESPONSE FORM

For purposes of maintaining accurate bidder's list and facilitating your firm's response to our invitation for bid, the City of Tuscaloosa is interested in ascertaining reasons for prospective bidders' failure to respond to invitations for bids. If your firm is not responding to this bid, please indicate the reason(s) by checking any appropriate item(s) below and returning this form to Mr. David Coggins, Purchasing Agent, 2201 University Blvd., Tuscaloosa, Alabama 35401. Failure to either submit a bid proposal or return this form may result in removal of your firm's name from our bidder's lists. Thank you for your cooperation.

We are not responding to this invitation for bid for the following reason(s):

____ **Items or materials request not manufactured by us or not available to our company.**

____ **Our items or materials do not meet specifications.**

____ **Specifications not clearly understood or applicable (too vague, too rigid, etc.)**

____ **Quantities requested are too small.**

____ **Insufficient time allowed for preparation of bid.**

____ **Incorrect address used. Correct mailing address is:**

_____

____ **Our branch/division handles this type of bid. Correct name and mailing address is:**

_____

____ **Other reason(s):_____**

Company Name:_____

Address:_____

City/State/Zip:_____

Signature:_____