

CITY OF GRIFFIN 2023 CDBG RUSHTON MILL REDEVELOPMENT AREA  
PHASE II  
BID # 24-010

FROM: PARAGON CONSULTING GROUP, INC.  
350 AIRPORT ROAD  
GRIFFIN, GA 30224

TO: ALL BIDDERS OF RECORD

RE: Addendum No. 1, dated April 12, 2024

This Addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated April 2024.

This Addendum consists of one (1) page, a revised 'Agreement Between Owner and Contractor' consisting of eight (8) pages, and a revised Water Distribution specification section consisting of twelve (12) pages.

CONTRACT DOCUMENTS AND SPECIFICATIONS

Add. 1.1 Modification: A revised 'Agreement Between Owner and Contractor' is attached to this Addendum and becomes a part of the Contract Documents.

Add. 1.2 Modification: A revised 'Water Distribution' specification section is attached to this Addendum and becomes a part of the Contract Documents.

End of Addendum No. 1

**AGREEMENT  
BETWEEN OWNER AND CONTRACTOR**

THIS AGREEMENT is by and between \_\_\_\_\_ CITY OF GRIFFIN \_\_\_\_\_ (“Owner”) and  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (“Contractor”).

Owner and Contractor hereby agree as follows:

**ARTICLE 1 – WORK**

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Installation of approximately 5,751 linear feet of 6-inch C900 PVC water main and related appurtenances. Also included in the project is the abandonment of 2,305 linear feet of 6” A/C water main and 3,541 linear feet of 2-inch galvanized water main. The project also includes sanitary sewer point repairs consisting of replacing 140 feet of 8-inch sanitary sewer main at 7 locations. The project will be finalized with milling and overlaying the streets within the project area. The quantity of milling and overlay area is approximately 11,400 square yards.

**ARTICLE 2 – THE PROJECT**

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

**CITY OF GRIFFIN  
2023 CDBG RUSHTON MILL REDEVELOPMENT AREA  
PHASE II  
BID #24-010**

2.02 The Project has been designed by Paragon Consulting Group, Inc. (Engineer), which is to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

**ARTICLE 3 – CONTRACT TIMES**

3.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Days to Achieve Substantial Completion and Final Payment*

- A. The Work will be substantially completed within 180 days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within 210 days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$1,000.00 for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$1,000.00 for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

**ARTICLE 5 – CONTRACT PRICE**

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraphs 5.01.A below:

- A. For all Work, at the prices stated in Contractor’s Bid, attached hereto as an exhibit.

SUM OF ALL UNIT PRICES AS STATED IN CONTRACTOR’S BID:

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(words & figures)

As provided in paragraph 11.03 of the General Conditions estimated quantities are not guaranteed, and determinations of actual quantities and classification are to be made by Engineer as provided in paragraph 9.08 of the General Conditions. Unit prices have been computed as provided in paragraph 11.03B of the General Conditions.

## **ARTICLE 6 – PAYMENT PROCEDURES**

### *6.01 Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

### *6.02 Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 10th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.
  - 1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions.
    - a. Ninety-five percent (95%) of Work completed (with the balance being retainage; and
    - b. Ninety-five percent (95%) of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

### *6.03 Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

## **ARTICLE 7 – INTEREST**

- 7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest equal to the Current Market Rate for ninety (90) day certificates of deposit at Wells Fargo Bank of Griffin, Georgia as of the effective date of this Agreement.

## **ARTICLE 8 – CONTRACTOR’S REPRESENTATIONS**

- 8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:
- A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
  - B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
  - C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
  - D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-4.06 of the Supplementary Conditions as containing reliable "technical data."
  - E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor’s safety precautions and programs.
  - F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
  - G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
  - H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

## **ARTICLE 9 – CONTRACT DOCUMENTS**

### 9.01 *Contents*

- A. The Contract Documents consist of the following:
  1. This Agreement (pages AG-1 to AG-8, inclusive).
  2. Contractor’s Bid (pages BF-1 to BF-6, inclusive and Exhibit A).
  3. Payment bond (pages Exhibit B-1 to Exhibit B-3, inclusive).
  4. Performance bond (pages Exhibit C-1 to Exhibit C-3, inclusive).
  5. CDBG Contract Clauses and Wage Rates (pages 1 to 34, inclusive).
  6. General Conditions (pages 1 to 65, inclusive).
  7. Supplementary Conditions (pages 1 to 7, inclusive).
  8. Specifications as listed in the table of contents of the Project Manual.
  9. Drawings consisting of 19 sheets with each sheet bearing the following general title:  
CITY OF GRIFFIN 2023 CDBG RUSHTON MILL REDEVELOPMENT AREA PHASE II
  10. Addenda (numbers \_\_\_\_\_ to \_\_\_\_\_, inclusive).
  11. Exhibits to this Agreement (enumerated as follows):
    - a. Other exhibits to this Agreement marked EXHIBIT D, EXHIBIT E and EXHIBIT F.
  12. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
    - a. Work Change Directives.
    - b. Change Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.

- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

## **ARTICLE 10 – MISCELLANEOUS**

### 10.01 *Terms*

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

### 10.02 *Assignment of Contract*

- A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

### 10.03 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

### 10.04 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

### 10.05 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
  1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.



IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

This Agreement will be effective on \_\_\_\_\_ (which is the Effective Date of the Agreement).

OWNER:

CITY OF GRIFFIN

By: \_\_\_\_\_

Title: \_\_\_\_\_

Attest: \_\_\_\_\_

Title: \_\_\_\_\_

Address for giving notices:

100 SOUTH HILL STREET

GRIFFIN, GA 30223

\_\_\_\_\_

CONTRACTOR:

\_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: \_\_\_\_\_

Title: \_\_\_\_\_

Address for giving notices:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

License No.: \_\_\_\_\_

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

Agent for service of process:

\_\_\_\_\_

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## SECTION 02510 – WATER DISTRIBUTION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. All of the Drawings and general provisions of the Contract, including Section AD-General Conditions, Section AE-Supplementary Conditions, Section AF-Special Conditions and Sections 01010 through 02930 apply to the Work of this Section.

#### 1.2 SUMMARY

- A. This Section includes piping and specialties for combined municipal potable-water and fire-protection water service.

#### 1.3 DEFINITIONS

- A. The following industry abbreviations apply:

1. PVC: Poly Vinyl Chloride
2. DIP: Ductile Iron Pipe
3. HDPE: High Density Poly Ethelene Pipe
4. MJ: Mechanical Joint

#### 1.4 SYSTEM PERFORMANCE REQUIREMENTS

- A. Minimum Working Pressures: The following are minimum pressure requirements for piping and specialties, unless otherwise indicated:
  1. Combined Potable-Water and Fire-Protection Water Service: 200 psig.
  2. 2” and smaller HDPE – 160 psig.
  3. 2” Schedule 80 PVC – 200 psig.

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## 1.5 SUBMITTALS

### A. Product Data: For the following:

1. Pipe and fittings
2. Valves
3. Fire hydrants, including tee and extension parts
4. Tapping sleeve and tapping valve
5. Valve boxes for gate valves
6. C. I. Meter boxes
7. Service assembly components
8. Clean-out assembly
9. Clean-out concrete rings
10. Asphalt mix
11. Location wire.

### B. Record Drawings: At Project closeout of installed water-service piping.

### C. Test Reports: All testing as required by the City of Griffin regulations.

### D. Purging and Disinfecting Reports: As specified in "Cleaning" Article in Part 3 and as required by City of Griffin regulations.

### E. Maintenance Data: For specialties to include in the maintenance manuals specified in Division 1. Include data for the following:

1. Valves.
2. Hydrants

## 1.6 QUALITY ASSURANCE

### A. Product Options: Drawings indicate size, profiles, and dimensional requirements of water-service piping specialties and are based on specific types and models indicated. Other manufacturers' products with equal performance characteristics may be considered. Refer to Division 1 Section "Substitutions."

### B. Comply with standards of authorities having jurisdiction (City of Griffin) for potable water-service piping. Include materials, installation, testing, and disinfection.

### C. Comply with NSF 61, "Drinking Water System Components--Health Effects," for materials for potable water.

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- D. Comply with standards of authorities having jurisdiction for fire-protection water-service piping. Include materials, hose threads, installation, and testing.
- E. Provide listing/approval stamp, label, or other marking on piping and specialties made to specified standards.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:
  - 1. Ensure that valves are dry and internally protected against rust and corrosion.
  - 2. Protect valves against damage to threaded ends, flange faces, and MJ fittings.
  - 3. Set valves in best position for handling. Set valves closed to prevent rattling.
  - 4. High Density Poly Ethelene pipe with fused joints meeting ASTM F714
- B. During Storage: Use precautions for valves, including fire hydrants, according to the following:
  - 1. Do not remove end protectors, unless necessary for inspection; then reinstall for storage.
  - 2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.
- C. Handling: Use sling to handle valves and fire hydrants whose size requires handling by crane or lift. Rig valves to avoid damage to exposed valve parts. Do not use handwheels or stems as lifting or rigging points.
- D. Deliver piping with factory-applied end-caps. Maintain end-caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
- E. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.
- F. Protect flanges, fittings, and specialties from moisture and dirt.
- G. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

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## 1.8 PROJECT CONDITIONS

- A. Perform site survey, research public utility records, and verify existing utility locations. Contact utility-locating service for area where Project is located.
- B. Verify that water-service piping may be installed to comply with original design and referenced standards.
- C. Coordinate road closing, if required, with City of Griffin, City of Griffin Public Works (Street Department), and Emergency Agencies two (2) days prior to road closing.

## PART 2 - PRODUCTS

### 2.1 PIPES AND TUBES

- A. General: Applications of the following pipe and tube materials are indicated in Part 3 "Piping Applications" Article.
- B. PVC, Push-On Joint Pipe: AWWA C900, Pressure Class 235, DR 18.
- C. PVC, Glue Joints: Schedule 80-ASTM D1785.
- D. Service Lines (in ROW from water main to meter) – type K copper tubing.
- E. Service Lines (from meter to house) – schedule 40 PVC pipe with glued joints.

### 2.2 PIPE AND TUBE FITTINGS

- A. General: Applications of the following pipe and tube fitting materials are indicated in Part 3 "Piping Applications" Article.
- B. Ductile-Iron, Mechanical-Joint Fittings: AWWA C110, ductile-iron or cast-iron; or AWWA C153, ductile-iron, compact type. Include cement-mortar lining and seal coat according to AWWA C104 and glands, rubber gaskets, and bolts and nuts according to AWWA C111.
- C. Ductile-Iron, Deflection Fittings: Compound coupling fitting with sleeve and flexing sections, gaskets, and restrained-joint ends complying with AWWA C110 or AWWA C153. Include 250-psig minimum working-pressure rating; cement-mortar lining or epoxy, interior coating according to AWWA C550; deflection of at least 20 degrees; and glands, rubber gaskets, and bolts and nuts according to AWWA C111.
- D. HDPE Fused fittings – End Cap and 90 degree bends. N/A

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- E. Schedule 80 PVC – Bends, transition to valves, end caps. ASTM D2467.

### 2.3 JOINING MATERIALS

- A. General: Applications of the following piping joining materials are indicated in Part 3 "Piping Applications" Article.
- B. Ductile-Iron Piping: The following materials apply:
  - 1. Mechanical Joints: AWWA C111 ductile-iron or gray-iron glands, high-strength steel bolts and nuts, and rubber gaskets.
  - 2. Mechanical Joint Restraints: Megalug Series 1100 or equal retainer glands with required bolts.
  - 3. Restrained Joint Gaskets: American “Fast-Grip Gasket” or approved equal with a working pressure of 350psi for 4” – 18” pipe and meeting or exceeding AWWA requirements.
- C. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

### 2.4 VALVES

- A. Nonrising-Stem Gate Valves, 6-Inch NPS and Larger: UL 262, FM approved, iron body, bronze mounted with a compression resilient seat manufactured in accordance with AWWA STD C507, latest revision, bronze seating material, inside screw, 200-psig working pressure, and mechanical-joint ends and tabs for rod connections.
- B. Valve Boxes: Cast-iron box with top section and **cover painted blue with lettering “WATER,”** bottom section with base of size to fit over valve and barrel approximately 5 inches in diameter, and adjustable cast-iron extension of length required for depth of bury of valve.
- C. Tapping Sleeve and Tapping Valve: Complete full circle stainless steel flange/mechanical joint assembly, including tapping sleeve, tapping valve, and bolts and nuts and meeting City of Griffin requirements. Use sleeve and valve compatible with tapping machine.
- D. Residential Services Valves
  - 1. Curb Stop: A.Y. McDonald Mfg. Co. Series 76102WT
  - 2. Corporation Stop: A.Y. McDonald Mfg. Co. Series 74701T

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## 2.5 ANCHORAGES

- A. Clamps, Straps, and Washers: ASTM A 506, stainless steel.
- B. Rods: ASTM A 575, steel.
- C. Rod Couplings: ASTM A 197, malleable iron.
- D. Bolts: ASTM A 307, steel.
- E. Cast-Iron Washers: ASTM A 126, gray iron.
- F. Concrete Reaction Backing: Portland cement concrete mix, 3000 psig.
  - 1. Cement: ASTM C 150, Type I.
  - 2. Fine Aggregate: ASTM C 33, sand.
  - 3. Coarse Aggregate: ASTM C 33, crushed gravel.
  - 4. Water: Potable.

## 2.6 IDENTIFICATION

- A. Refer to Division 2 Section "Earthwork" for underground warning tape materials.
- B. Arrange for detectable warning tapes made of solid blue film with metallic core and continuously printed black-letter caption "CAUTION--WATER LINE BURIED BELOW."
- C. Install 1299 copper detector wire secured to PVC water mains. Wire is to be connected to hydrants and valves at bolted connections.
- D. Install temporary markers at bend locations outside of paved areas for location during construction and to aid in the as-built drawing process. Markers must be 2" PVC 8' in length (4' exposed) or 8' 2x4 painted blue.

## PART 3 - EXECUTION

### 3.1 EARTHWORK

- A. Refer to Division 2 Section "Earthwork" for excavation, trenching, and backfilling.

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### 3.2 PIPING APPLICATIONS

- A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications:
- B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used in applications below, unless otherwise indicated.
- C. Do not use flanges or keyed couplings for underground piping.
  - 1. Exception: Piping in boxes and structures, but not buried, may be joined with flanges or keyed couplings instead of joints indicated.
- D. Flanges, keyed couplings, and special fittings may be used on aboveground piping.
- E. Potable Water-Service Piping and Fire Protection Piping: Use the following:
  - 1. 4 to 8-Inch NPS: PCV, AAWA C900, Pressure Class 235, DR 18 meeting City of Griffin specifications.
  - 2. 2-Inch NPS: Schedule 80 PVC – ASTM D1785; PVC plastic with solvent fittings, fitting at 2” G.V. to be threaded/solvent fitting.
- F. Water Main Abandonment:
  - 1. Permanently cap abandoned mains at connection to source main. ***See detail for means to cap. Method is to be recorded on record drawings and photographed for the City of Griffin GIS Department.***
  - 2. Contractor to contact Engineer and City of Griffin representative to photograph and inspect termination.

### 3.3 VALVE APPLICATIONS

- A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
  - 1. Underground Valves, 2-Inch NPS and Larger: AWWA, gate valves, nonrising stem, with valve box meeting City of Griffin Specifications. All valves to have a 2” square nut.



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### 3.4 JOINT CONSTRUCTION

- A. Ductile-Iron Piping, Gasketed Joints: According to AWWA C600 and C111.
- B. Ductile-Iron Piping, Gasketed Joints for Fire-Service Piping: According to UL 194 and AWWA C600 and C111
- C. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, OD, and system working pressure. Refer to "Piping Systems - Common Requirements" Article below for joining piping of dissimilar metals.
- D. PVC: glued joints

### 3.5 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. General Locations and Arrangements: Drawings indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated, unless deviations to layout are approved on Coordination Drawings.
- B. Install warning tape above all piping.
- C. Install components with pressure rating equal to or greater than system operating pressure.
- C. Locate groups of pipes parallel to each other, spaced to permit valve servicing.
- E. Install fittings for changes in direction and branch connections.

### 3.6 PIPING INSTALLATION

- A. Water-Main Connection: Tap water main with size and in location as indicated according to requirements of water utility.
- B. Make connections 6-inch and larger with tapping machine according to the following:
  - 1. Install tapping sleeve and tapping valve according to manufacturer's written instructions.
  - 2. Install tapping sleeve on pipe to be tapped. Position flanged outlet for gate valve.

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3. Install gate valve onto tapping sleeve. Comply with AWWA C605. Install valve with stem pointing up and with cast-iron valve box.
  4. Use tapping machine compatible with valve and tapping sleeve; cut hole in main. Remove tapping machine and connect water-service piping.
  5. **Contact City of Griffin Water Department to be on-site for observation and take possession of the coupon.**
- C. Comply with NFPA 24 for fire-protection water-service piping materials and installation.
- D. Install C900 PVC according to AWWA C605.
- E. Install AWWA PVC plastic pipe according to AWWA M23 and ASTM F 645.
- F. Bury piping 6” and larger with depth of cover over top at least 48 inches unless directed by Engineer before placement.
- G. All mechanical joint bends are to be restrained using concrete blocking and Megalug Series 1100 Mechanical Joint Restraints or equal.

### 3.7 ANCHORAGE INSTALLATION

- A. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:
  1. Gasketed-Joint, C900 PVC, Potable-Water Piping: According to AWWA C605.
- B. Apply full coat of asphalt or other acceptable corrosion-retarding material to surfaces of installed ferrous anchorage devices.

### 3.8 VALVE INSTALLATION

- A. General Application: Use mechanical-joint-end valves for 4” NPS and larger underground installation. Use bronze corporation stops and valves, with ends compatible with piping, for 1-inch NPS and smaller installation.
- B. AWWA-Type Gate Valves: Comply with AWWA C500. Install underground valves with stem pointing up and with cast-iron valve box.

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### 3.9 IDENTIFICATION INSTALLATION

- A. Install continuous plastic underground warning tape during back-filling of trench for underground water-service piping. Locate 16 inches below finished grade, directly over piping.
- B. Install detector wire wrapped around PVC pipe.

### 3.10 FIELD QUALITY CONTROL

#### A. Piping Tests:

- 1. Conduct piping tests before joints are covered and after thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
- 2. All lines designed to operate under pressure shall be successfully tested. Tests of installed piping shall consist of leakage and disinfection tests.
- 3. All piping to be tested must satisfactorily comply with the pressure tests before being eligible for acceptance.
- 4. Tests shall be conducted in accordance with AWWA Standard C605 except as otherwise herein specified.

#### B. Hydrostatic Tests:

- 1. After all piping has been placed; the contractor in the presence of a City Inspector shall test each pipe run. Tests shall be continued until all leaks have been made tight to the satisfaction of the Inspector. The contractor shall furnish all necessary meters, pumps, gauges, bulkheads and other materials and appliances necessary to conduct the required tests. Every precaution must be taken to valve-off or otherwise protect control equipment in or attached to the pipeline to prevent damage or injury thereto.
- 2. Before applying the specified test pressure, all air shall be expelled from the pipe. If hydrants, blow-offs or air release valves are not available at the high places, the contractor shall make the necessary taps at points of highest elevation before the test is made and insert plugs after the test has been completed.
- 3. Prior to the pressure test, pipe laid in trenches shall be adequately backfilled to secure the pipe during the test. Any observed leakage shall require corrective measures to pipe lines and/or joints as to the satisfaction of the Inspector.
- 4. The City will furnish the necessary water for testing and disinfection of the lines. However, any water lost through breakage of lines, or unnecessary or excessive flushing of lines, will be charged to the contractor at the current residential rate. All lines shall be tested to a pressure of 200 psi for a minimum time of two (2) hours. Test pressure shall

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not vary by more than  $\pm 5$  psi for the duration of the test. This may require periodic pumping, in which case the added water will be counted as part of the leakage. Lines shall be tested in sections between the valves. Allowable leakage amounts are found in the table below:

**Allowable Leakage Table (gph/1,000 ft. of pipeline\*)**

<b>Pipe Diameter (inches)</b>	2	4	6	8	12
<b>Maximum Leakage</b>	0.21	0.43	0.64	0.85	1.28

*If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage of each size.*

5. Any section of the line not meeting the above test shall have the leaks found and corrected at once and re-tested until the leakage falls within the allowable limits. Leakage testing must be witnessed and approved by the City.
- C. Coordinate with the City of Griffin Water & Wastewater Department for any other required testing prior to approval.
- D. Prepare reports for testing activities.

### 3.11 CLEANING

- A. After leakage testing and all necessary repairs have been made, the lines shall be flushed clean and then disinfected in accordance with AWWA Standard For Disinfecting Water Mains, C651-92, subject to the following special conditions:
  1. The method of disinfection shall be the Continuous – Feed Method in accordance with AWWA C651-92, Section 5.2. The potable water shall be chlorinated so after at 24-hour holding period in the main, there will be a free chlorine residual of not less than 10 mg/L.
  2. The form of chlorine may be either: a one (1) percent solution made from either sodium hypochlorite or calcium hypochlorite. The chlorine shall be pumped and metered into the pipeline. Water must be flowing during the feeding operation and the injection point must be located so the flow of water will disperse the chlorine throughout the pipeline.
  3. The contractor has the option of discharging the highly chlorinated water flushed from the pipeline to the existing sewers (if available) or dechlorinating prior to discharge.

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4. After 24 hours, the line shall be flushed until the chlorine content is not more than two (2) parts per million, and samples taken at various points along the line. The contractor shall deliver the samples to an independent laboratory for analysis. The laboratory must be pre-approved by the owner and hold appropriate certification from Georgia Environmental Protection Division.
5. The City must witness all flushing, disinfection, sampling and dechlorination work. The contractor shall outline his planned procedures for these tasks and obtain approval of the owner before commencing this work.

B. Dechlorination

1. After the disinfection process has been completed and the contractor elects to dechlorinate, the heavily chlorinated water shall be flushed from the main until measurements show that the chlorine concentration in the water leaving the main is no higher than that generally prevailing in the distribution system or is acceptable for domestic use. The area where the chlorinated water is to be discharged shall be inspected. If there is any possibility that the chlorinated discharge will cause damage to the environment, then a neutralizing chemical shall be applied to the water to be wasted to neutralize thoroughly the chlorine residual remaining in the water.
2. The chlorine residual of water being disposed may be neutralized by treating the water with one of the chemicals listed in the table below:

Water Neutralizing Chemicals\*

Chemical	Residual Chlorine Concentrations	Sulfur Dioxide (SO <sub>2</sub> )		Sodium Bisulfate (NaHSO <sub>3</sub> )		Sodium Sulfite (Na <sub>2</sub> SO <sub>3</sub> )		Sodium Thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> H <sub>2</sub> O)	
		lb	kg	lb	kg	lb	kg	lb	kg
Amounts	(mg/L)								
	1	0.8	0.36	1.2	0.54	1.4	0.64	1.2	0.54
	2	1.7	0.77	2.5	1.13	2.9	1.32	2.4	1.09
	10	8.3	3.76	12.5	5.67	14.6	6.62	12.0	5.44
	50	41.7	18.91	62.6	28.39	73.0	33.11	60.0	27.22

\*Amounts of chemicals required to neutralize various residual chlorine concentrations in 100,000 gallons (378.5 m<sup>3</sup>) of water.

- B. Prepare reports for purging and disinfecting activities.

END OF SECTION 02510