

SECTION 00920

ADDENDUM NO. 2

Dated: April 3, 2025

**BRIARWOOD WATER MAIN REPLACEMENT PROJECT
ALBEMARLE COUNTY SERVICE AUTHORITY**

TO ALL HOLDERS OF THE CONTRACT DOCUMENTS:

Your attention is directed to the following interpretations of, changes in, and additions to the Contract Documents for the construction of the Briarwood Water Main Replacement Project.

This addendum is issued in accordance with the Information for Bidders Section of the Contract Documents, Section 00490, and Article 9 of the Agreement.

Except as may be otherwise described, bidding requirements, materials, and workmanship for the work described herein shall conform to all requirements of the original Contract Documents. The following Addendum to the Contract Documents are made a part of the project and take precedence over the section of the specifications, in part, and/or the drawings as originally written.

This Addendum consists of thirty-eight (38) pages.

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC



Maggie L. Hopkins, P.E.
Project Officer

A. PROJECT MANUAL

1. Modification: **DELETE** Section 00400 (Bid Form) in its entirety and replace with the Bid Form attached and included herein.
2. Modification: **DELETE** Section 01 02 00 (Measurement and Payment) in its entirety and replace with the Section 01 02 00 attached and included herein.
3. Modification: **DELETE** Section 32 01 00.91 (Restoration of Surfaces) in its entirety and replace with the Section 32 01 00.91 attached and included herein.
4. Modification: **DELETE** Section 33 11 13.13 (Ductile Iron Pipe) in its entirety and replace with the Section 33 11 13.13 attached and included herein.

B. GENERAL CLARIFICATIONS

1. The horizontal and vertical alignment as depicted in the Contract Drawings are designed to meet specific project requirements and standards. Therefore, it is generally expected that the construction will follow these specified alignments. The precise information, such as vertical and horizontal deflections, indicated on the drawings should not be interpreted as imposing a severe or precise alignment expectation for construction installation. We understand that fittings to achieve such slight deflections do not exist. Therefore, the labeled deflections are illustrative and intended to guide the general layout. We understand that on-site conditions can sometimes necessitate field modifications. If such modifications are required, they must be discussed and approved by the ASCA before implementation. Any deviations from the Contract Drawings without prior approval will not be accepted. All changes should be captured in final as-builts/reline drawings, reference Section 00700 (General Conditions), paragraph 6.12.
2. All existing meter components and boxes shall be replaced in accordance with the Contract Documents, including removal and disposal of the existing meter boxes.
3. New single-tap service lines shall be installed for each new meter. All new service lines from the new water main to the new meters are to be installed as shown on the drawings. Specifically, one service line should be connected from the new water main to each new meter box as indicated in the Contract Documents.
4. Bids for Briarwood Water Main Replacement can be submitted either electronically, or as sealed hard copy submittal.
5. Electronic bids may be submitted via eVA system.
6. Hard copy bid submittal is to ACSA office, 168 Spotnap Road, Charlottesville, VA, 22911.
7. Deadline for bid receipt: 2:00 pm, prevailing time, April 8, 2025, whether electronic or hard copy.
8. Bids will be read aloud via virtual MS Teams meeting at 2:30 pm, April 8, 2025.
9. MS Teams virtual bid opening, see link at:
<https://serviceauthority.org/rfp/briarwood-wmrp/>
10. ACSA will coordinate receipt of original (physical) documents that accompany any apparent low responsive-responsible digital bid as a follow-up activity similar to qualification statement (Sec 00431) and contractor's financial statement (Sec 00432).

C. QUESTIONS FROM CONTRACTORS

1. Question: Do the bolt and nut in the MJ Accessory kits used with the megalugs need to be the blue bolt type or special coated type?

Answer: Yes. All mechanical joint bolts and nuts shall be coated with a blue corrosion-resistant finish or a similar protective coating that meets or exceeds ASTM B633 Class 1, Type III. See Specification Section 33 11 13.13 (Ductile Iron Pipe) included herein.

2. Question: Will the bid date push beyond 4/8/25?

Answer: No, the bid date will not be pushed beyond April 8, 2025. All bids are due 2:00 pm, prevailing time, April 8, 2025, whether electronic or hard copy.

3. Question: Bid Bond form indicated a value must be entered. We typically identify the bid bond value at 5% of total bid; will this suffice?

Answer: Specification Section 00430 (Bid Bond) requires a value be provided in an amount equal to five percent (5%) of the bid. Per the Advertisement for Bidders, included in the Project Manual, all bids shall be accompanied by a bid guarantee in the form of a bid bond, certified check, or cash escrow in an amount equal to five percent (5%) of the bid.

4. Question: Would you consider classifying rock excavation/trench rock?

Answer: Excavation is considered unclassified and the Contractor will not be reimbursed for rock excavation. Please see Specification Section 01 02 00 (Measurement and Payment) and Geotechnical Report (provided for Contractors' informational purposes only).

Receipt of this addendum shall be acknowledged on the form provided in Section 00490.

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**ADDENDUM NO. 2 – SUPPORTING DOCUMENTS
BRIARWOOD WATER MAIN REPLACEMENT PROJECT**

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PRE-BID CONFERENCE ATTENDEE LIST

WATER

NAME	ORGANIZATION	TELEPHONE	E-MAIL
John Anderson	ACSA	434-977-4511 Ext. 118	janderson@serviceauthority.org
Jeremy Lynn	ACSA	434-977-4511	jlynn@serviceauthority.org
Tonya Foster	ACSA	434-977-4511	tfoster@serviceauthority.org
Maggie Hopkins	Ramboll	804-822-4223	maggie.hopkins@ramboll.com
Don Simmons	Ramboll	804-822-4219	don.simmons@ramboll.com
Cheryl Stockton	McKim & Creed	434-328-2169	CStockton@mckimcreed.com
Thomas Till	Caton Construction Group, Inc.	434-244-0250	ttill@ccg-builds.com
Taylor Shoemaker	Rocktown Excavating	540-280-0189	tshoemaker@rocktownexcavating.com
Tony Gutierrez	Sagres Construction, Corp.	703-924-7220	tonyg@sagresconstruction.com
Whitney Hoffacker	Caton Construction Group, Inc.	434-270-4950	whoffacker@ccg-builds.com

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SECTION 00400

BID FORM

TO: ALBEMARLE COUNTY SERVICE AUTHORITY

FOR: Briarwood Water Main Replacement Project (ACSA Project Number 2021-01)

The undersigned, bidder, proposes to enter into a contract with the ACSA in accordance with the attached documents, to furnish all necessary materials, equipment, machinery, tools, and labor necessary to complete the work described herein.

The bidder hereby agrees to commence work under this bid when given the "Notice to Proceed" and to fully complete the contract within 210 consecutive calendar days. The bidder agrees that they will not make any claim for extra compensation should completion of work under the contract be affected in advance of the time specified.

The Bidder has carefully examined the site of the Work and that, from his own investigations, has been satisfied as to the nature and location of the Work; the character, quality and quantity of existing materials and all conditions likely to be encountered; the kind and extent of equipment and other facilities needed for the performance of the Work; the general and local conditions; and all other items which reasonably may be expected to affect the Work or its performance.

The undersigned, as Bidder, also declares that they have carefully examined and fully understand all the component parts of the Contract Documents and agrees to execute the Contract and furnish Performance and Payment Bonds and Insurance, if required by the Contract Documents, and will completely perform the Work in strict accordance with the terms of the Contract Documents for the prices set forth on the following page(s).

The bidder agrees that, upon receipt of a "Notice of Award" from the ACSA, they will, within fifteen (15) days from receipt of such notice, execute the Standard Form of Agreement bound herein, and will furnish with the Agreement the following: Certificate of Insurance coverage of all of their operations associated with the project, Performance Bond, and Payment Bond.

The bidder understands that the ACSA reserves the right, in the ACSA's sole discretion to reject any or all bids, to waive any informality in any bid, and to accept any bid considered to be advantageous to the ACSA.

The bidder agrees that this bid shall not be withdrawn for a period of ninety (90) calendar days after the date set for receipt of bids, except as allowed by law.

The undersigned, as bidder, hereby declares that the name (or names) of the only person (or persons) interested in this proposal, as principal (or principals), is (are) as herein below set out and that no person other than that (or those) herein below stated has any interest in the proposal, or in the Agreement to be entered into, that this proposal is made without connection with any other person, firm, or corporation making a proposal; and that it is in all respects fair, in good faith, and without collusion or fraud.

ALBEMARLE COUNTY SERVICE AUTHORITY
 Briarwood Water Main Replacement Project

INSTRUCTIONS: The Bidder shall fill in all blanks providing the following: The Bidder's proposed amount of cost per Unit Price in words; the Bidder's proposed Unit Price in figures; and the Bidder's proposed computed total price in figures, for each Contract Item described below. (The computed total price is obtained by multiplying the Estimated Quantity by the Bidder's Unit Price.) Written amounts shall govern in case of discrepancy between the amounts stated in writing and the amounts stated in figures. In case of discrepancy between unit prices and totals, unit prices will prevail. Refer to Section Advertisement for Bids for a detailed description of each contract item number.

All blanks shall be filled in:

CONTRACT ITEM NO.	DESCRIPTION OF WORK PRICE IN WORDS	ESTIMATED QUANTITY	UNIT PRICE	COMPUTED TOTAL PRICE
1	Mobilization (Item not to exceed <u>3%</u> of computed total amount for all contract items) ____ Dollars and ____ Cents	1 LS	\$ _____	\$ _____
2	4-Inch Ductile Iron Water Main ____ Dollars and ____ Cents	288 LF	\$ _____	\$ _____
3	4-Inch Gate Valves w/ Boxes ____ Dollars and ____ Cents	2 EA	\$ _____	\$ _____
4	6-Inch Ductile Iron Water Main ____ Dollars and ____ Cents	2,166 LF	\$ _____	\$ _____
5	6 - inch Gate Valves with Boxes ____ Dollars and ____ Cents	3 EA	\$ _____	\$ _____

CONTRACT ITEM NO.	DESCRIPTION OF WORK PRICE IN WORDS	ESTIMATED QUANTITY	UNIT PRICE	COMPUTED TOTAL PRICE
6	8-Inch Ductile Iron Water Main _____ Dollars and _____ Cents	3,446 LF	\$ _____	\$ _____
7	8- inch Gate Valves with Boxes _____ Dollars and _____ Cents	26 EA	\$ _____	\$ _____
8	8-Inch Tapping Sleeve and Valve _____ Dollars and _____ Cents	3 EA	\$ _____	\$ _____
9	1-Inch Copper Water Service Line _____ Dollars and _____ Cents	3,458 LF	\$ _____	\$ _____
10	Water Service Connection - Not In Pavement _____ Dollars and _____ Cents	209 EA	\$ _____	\$ _____
11	Fire Hydrant Assembly _____ Dollars and _____ Cents	9 EA	\$ _____	\$ _____

CONTRACT ITEM NO.	DESCRIPTION OF WORK PRICE IN WORDS	ESTIMATED QUANTITY	UNIT PRICE	COMPUTED TOTAL PRICE
12	Blow-off Assembly _____ Dollars and _____ Cents	2 EA	\$ _____	\$ _____
13	Air Release Valve Assembly _____ Dollars and _____ Cents	1 EA	\$ _____	\$ _____
14	Flowable Fill _____ Dollars and _____ Cents	75 CY	\$ _____	\$ _____
15	Asphalt Pavement Restoration – Asphalt Base Course (Type IM-19.0) _____ Dollars and _____ Cents	1,450 TON	\$ _____	\$ _____
16	Asphalt Pavement Restoration – Asphalt Surface Course (Type SM-9.5A) _____ Dollars and _____ Cents	19,000 SY	\$ _____	\$ _____
17	Manhole Frame and Cover Replacement – In Pavement _____ Dollars and _____ Cents	7 EA	\$ _____	\$ _____
18	Traffic Control _____ Dollars and _____ Cents	1 LS	\$ _____	\$ _____

CONTINGENT BID ITEMS				
CONTRACT ITEM NO.	DESCRIPTION OF WORK PRICE IN WORDS	ESTIMATED QUANTITY	UNIT PRICE	COMPUTED TOTAL PRICE
19	Additional Excavation Below Specified Subgrade _____ Dollars and _____ Cents	200 CY	\$ _____	\$ _____
20	Test Pits Ordered by Engineer _____ Dollars and _____ Cents	5 EA	\$ _____	\$ _____
21	Select Fill - Aggregate Stone _____ Dollars and _____ Cents	200 CY	\$ _____	\$ _____
22	Select Fill – Suitable Earth _____ Dollars and _____ Cents	100 CY	\$ _____	\$ _____
23	Temporary Pavement Restoration – Outside of Trench Excavation _____ Dollars and _____ Cents	10 SY	\$ _____	\$ _____
24	PRV Replacement – Behind Water Meter _____ Dollars and _____ Cents	15 EA	\$ _____	\$ _____

<p>Computed Total Amount for All Contract Items (Sum of Contract Items 1 through 24 above)</p> <hr/> <hr/> <hr/> <p>Dollars and _____ Cents</p>	
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The Bid must be sworn to by the person signing it in one of the following forms:

(Form of affidavit where Bidder is an individual)

_____ of _____
(City or County) (State or Commonwealth)

being duly sworn, deposes and says: That I am the person described in and who executed the foregoing Bid
and that the several matters therein stated are in all respects true.

(Signature)

STATE OF VIRGINIA
CITY/COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of ____, ____, by _____
_____.

Notary Public

My Commission Expires: _____

Notary Registration Number: _____

(SEAL)

(Form of affidavit where Bidder is a partnership)

_____ of _____
(City or County) (State or Commonwealth)

being duly sworn, deposes and says: That I am a general partner of

the partnership described in and which executed the foregoing Bid; that I duly subscribed the name of the partnership thereunto on behalf of the partnership; and that the several matters therein stated are in all respects true.

(Signature)

STATE OF VIRGINIA

CITY/COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of ____, ____, by _____
_____.

Notary Public

My Commission Expires: _____

Notary Registration Number: _____

(SEAL)

(Form of affidavit where Bidder is a corporation)

_____ of _____
(City or County) (State or Commonwealth)

being duly sworn, deposes and says: That I reside in the City of _____; that I am the _____
_____ of _____
(Title) (Name of Company)

the corporation described in and which executed the foregoing instrument; that I know the seal of the corporation; that the seal affixed to this instrument is such corporate seal and was so affixed by order of the Board of Directors of the corporation; that I signed my name thereto by like order; and that I have knowledge of the several matters therein stated and they are in all respects true.

(Signature)

STATE OF VIRGINIA
CITY/COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of ____, ____, by _____
_____.

Notary Public

My Commission Expires: _____

Notary Registration Number: _____

(SEAL)

END OF SECTION 00400

SECTION 01 02 00

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 BASIS FOR MEASUREMENT AND PAYMENT

Measurement and Payment will be made for only those items included in the Contract Bid Form or Contract Change Order(s) for the Project.

- A. All Measurement for payment will be for completed work performed according to Contract Drawings, Specifications, Construction Details and the Bid Form. The Owner shall measure the work in accordance with the methods outlined below.
- B. Payment for any item is full compensation for furnishing all labor, materials and equipment required to acceptably complete the item of the work. Any work and material paid for under one item will not be paid for under another item though the work and material may enter another item.

PART 2 – CONTRACT ITEMS

Contract Items include those items which are fully defined in the contract drawings and specifications and anticipated to be required for completion of the work.

2.1 MOBILIZATION (BID ITEM NO. 1)

- A. Measurement
 - 1. Measurement for mobilization shall be the job, with no accrual unit of measure taken, and shall include:
 - a. Movement to, placement and set-up on project site of personnel of any type, equipment, supplies, and accessory items.
 - b. Establishment of Contractor offices, buildings, proper sanitary facilities and other needed project facilities plus utility work and connections needed for these facilities.
 - c. Scheduling details, coordination, and any other work and expense appropriate that is prior to the start of work under contract pay items.
 - d. The cost of required insurance and bonds and/or any initiation of the contract work is also included in this item.
 - e. The cost of acquiring required permits and approvals as necessary in order to complete the Work.
 - f. Site preparation and set up including clearing and grubbing, removal of temporary utilities, and site restoration.
 - g. Installation of sediment and erosion control measures and removal of same upon completion of the work.
 - h. All labor, materials, and equipment required to control and maintain traffic patterns in a safe and efficient manner on roadways, parking lot areas, public access ways, and paved roadway shoulders during installation activities.
 - i. Pre- and post-construction photographic and video documentation.

- j. Demobilization from project site, including removal of personnel, equipment, supplies, and accessories.
 - k. All other work required for a complete project, which is not included in other bid items.
 - 2. No additional payment will be made for demobilization and remobilization due to shutdowns, suspensions of the work or for other mobilization activities. The Contractor's total price for Mobilization shall not exceed three percent (3%) of the total bid price for the project, including contingent items.
- B. Payment
- 1. Payment for Mobilization will be made at the Lump Sum price as stated in the Bid Form.
 - 2. Payment shall be made in two installments. The first fifty percent (50%) of the amount bid for this Item shall be made payable to the Contractor as part of the Contractor's first progress payment request. The second and final payment of fifty percent (50%) of the amount bid for this Item shall be made payable to the Contractor in conjunction with Final Payment of the project.
 - 3. Payment of the Contract lump sum price for mobilization and furnishing all labor, materials, tools, and equipment needed to complete work will not be made more than once, regardless of the fact that the Contractor may have, for any reason, shut down his work on the project or moved equipment away from the project and then back again.

2.2 FURNISH AND INSTALL DUCTILE IRON WATER MAIN (BID ITEMS NO. 2, 4, AND 6)

- A. Measurement
- 1. Unit of Measurement for Ductile Iron Pipe shall be the linear foot of each size installed and accepted following testing. Measurement shall include all labor, materials, and equipment required to install ductile iron pipe and fittings as shown on the Contract Documents and as specified herein.
- B. Payment
- 1. Payment for ductile iron pipe shall be at the contract unit price per linear foot installed, including all fittings and appurtenances as shown on the Contract Drawings. Payment and price shall constitute full compensation for all labor, materials, equipment, tools and incidentals necessary to complete the work as indicated on the Contract Documents including, but not limited to:
 - a. Survey, layout and measurement;
 - b. Test pits;
 - c. Excavation (including rock), dewatering, bedding, and suitable backfill/select fill, aggregate stone, and aggregate base course.
 - d. Replacing utility segments that are damaged or removed during the installation;
 - e. Temporary road restoration for all trenches, as required;
 - f. Concrete and mechanical thrust restraint systems;
 - g. Insulation and polyethylene encasement, as specified;
 - h. Concrete cradle, as specified;
 - i. Water main disinfection and testing; leakage testing; and compaction testing;
 - j. Abandonment of existing water mains, indicated in the Contract Documents;

- k. Removal/disposal of existing fire hydrants, meter boxes, valves, blow-offs and associated appurtenances as indicated in the Contract Documents.
- l. Site clearing and grubbing, including tree removal.
- m. Surface restoration, including restoration of asphalt driveways, concrete sidewalks, concrete curbs and gutters, and/or concrete v-ditch.
- n. Temporary water service, as required.
- 2. Excavation shall be made in accordance with the trenching details provided in the Contract Documents. Additional excavation due to the Contractor's means and methods for construction or when not required due to unknown utility conflicts shall be not paid as additional work. No payment shall be made for unsuitable backfill not ordered or approved by the Engineer.

2.3 FURNISH AND INSTALL GATE VALVES AND BOXES (BID ITEM NO. 3, 5, AND 7)

- A. Measurement
 - 1. Unit of measure for Gate Valves shall be for each gate valve, valve box, and valve box extension installed and shall include all labor, materials, and equipment required to install the gate valve, riser, valve box and appurtenances in accordance with the Contract Documents. Measurement will be based on the actual number of gate valves installed. Gate valves and valve box installed as part of a Fire Hydrant Assembly are not included.
- B. Payment
 - 1. Payment for gate valves and boxes shall be at the contract unit price per each installed. Payment and price shall constitute full compensation for excavation (including rock), suitable backfill, thrust restraint, valve, riser, valve box, all labor, materials, equipment, tools and incidentals necessary to complete the work as indicated on the Contract Documents.

2.4 8-INCH TAPPING SLEEVE AND VALVE (BID ITEM NO. 8)

- A. Measurement
 - 1. Unit of measure for 8-Inch Tapping Sleeve and Valve shall be for each tapping sleeve, tapping valve, valve box, and valve box extension installed and shall include all labor, materials, and equipment required to install the tapping sleeve and valve on the existing water main, tap the main, install riser, valve box and appurtenances in accordance with the Contract Documents. Measurement will be based on the actual number of tapping sleeves and valves installed.
- B. Payment
 - 1. Payment for tapping sleeve and valve shall be at the contract unit price per each installed. Payment and price shall constitute full compensation for excavation (including rock), cleaning existing pipe, suitable backfill, thrust restraint, tapping sleeve, tapping valve, riser, valve box, all labor, materials, equipment, tools and incidentals necessary to complete the work as indicated on the Contract Documents

2.5 FURNISH AND INSTALL 1-INCH COPPER WATER SERVICE LINE (BID ITEM NO. 9)

- A. Measurement

1. Unit of measurement for 1-inch copper water service line shall be per linear foot installed. Measurement shall include all labor, materials and equipment required to install 1-inch copper water service pipe and fittings to provide service to the current and future customers. Measurement will be the actual linear foot of 1-inch copper pipe installed and accepted following testing. Measurement includes fittings, piping, fill material, 2-inch casing pipe (PVC SDR 21 or HDPE DR11) and appurtenances.

B. Payment

1. Payment for water 1-inch copper water service line shall be at the contract unit price per linear foot installed. Payment and price shall constitute full compensation for all labor, materials, excavation (including rock), dewatering, bedding, suitable backfill/select fill, aggregate stone, and aggregate base course, surface restoration, tools and equipment required to install 1-inch copper water service pipe, fittings, and incidentals necessary to instate the new water service and to complete the work as indicated on the Contract Documents. Unless otherwise indicated, excavation shall be made in accordance with the details as provided in the Contract Documents. Unless otherwise indicated

2.6 FURNISH AND INSTALL WATER SERVICE CONNECTION - NOT IN PAVEMENT (BID ITEM NO. 10)

A. Measurement

1. Unit of measurement for water service connections – not in pavement shall be for each meter installed and water service connection furnished and installed in an unpaved surface. Measurement shall include all labor, materials and equipment required to locate and install the meter box with lid, water meter (5/8" – 1"), meter setter, corporation stop, tap and all related appurtenances; and to reconnect water service, including installation of 1" HDPE pipe (PE3408, DR 9) from the existing service to new meter, as shown on the Contract Documents. Proposed water meters will be provided by Albemarle County Service Authority for Contractor to install. Restoration of asphalt pavement surfaces in public roads is not included.

B. Payment

1. Payment for the water service connection – not in pavement shall be at the contract unit price per each installed. Payment and price shall constitute full compensation for all labor, materials, excavation (including rock), dewatering, bedding, suitable backfill, surface restoration (including restoration of asphalt driveways, concrete sidewalks, concrete curbs and gutters, and concrete v-ditch), tools and equipment required to locate and install the meter box, and incidentals necessary to reconnect the water service and complete the work as indicated on the Contract Documents. Unless otherwise indicated, excavation shall be made in accordance with the details as provided in the Contract Documents.

2.7 FURNISH AND INSTALL FIRE HYDRANT ASSEMBLY (BID ITEM NO. 11)

A. Measurement

1. Unit of measure for fire hydrant assembly shall be for each fire hydrant assembly installed and shall include all labor, materials and equipment required to install the fire hydrant; vertical riser piping; tees/taps from the water main; lead and branch pipe; valve, valve box, and valve box

extension; bends on lead piping; and other related appurtenances for the complete and functional installation of the fire hydrant assembly as shown on the Contract Documents

B. Payment

1. Payment for fire hydrant assembly shall be at the contract unit price per each fire hydrant assembly installed. Payment and price shall constitute full compensation for excavation (including rock), suitable backfill/select fill, aggregate stone, and aggregate base course, thrust blocks, fittings, restraining; testing; painting, salvaging of the existing fire hydrant, and all labor, materials, equipment, tools and incidentals necessary to complete the work as indicated on the contract drawings and in the Contract Documents.

2.8 BLOW-OFF ASSEMBLY (BID ITEM NO. 12)

A. Measurement

1. Unit of measure for blow-off assembly shall be for each blow-off assembly installed and shall include all labor, materials and equipment required for the complete and functional installation of the blow-off assembly as shown on the Contract Documents.

B. Payment

1. Payment for blow-off assembly shall be the contract unit price per each blow-off assembly installed. Payment and price shall constitute full compensation for excavation (including rock), suitable backfill/select fill, aggregate stone, and aggregate base course, fittings, testing, painting, all labor, materials equipment, tools and incidentals necessary to complete the work as indicated in the Contract Documents.

2.9 FURNISH AND INSTALL AIR RELEASE VALVE ASSEMBLY (BID ITEM NO. 13)

A. Measurement

1. Unit of measure for air release valve assembly shall be for each air release valve assembly installed and shall include all labor, materials and equipment required to install the air release valve, copper pipe, manhole cone section and lid, corporation stop, brass/bronze pipe and other related appurtenances for the complete and functional installation of the air release valve assembly as shown on the Contract Documents.

B. Payment

1. Payment for air release valve assembly shall be the contract unit price per each air release valve assembly installed. Payment and price shall constitute full compensation for excavation (including rock), suitable backfill/select fill, aggregate stone, and aggregate base course, fittings, testing, painting, all labor, materials, equipment, tools and incidentals necessary to complete the work as indicated on the Contract Documents.

2.10 FLOWABLE FILL (BID ITEM NO. 14)

A. Measurement

1. Unit of measure for flowable fill shall be for each cubic yard of flowable fill placed and shall include all labor, equipment and materials required to abandon existing water mains, as indicated on the Contract Documents,

and remove them from service following acceptance of the new mains.

B. Payment

1. Payment for flowable fill will be the contract unit price per cubic yard of flowable fill. Payment and price shall constitute full compensation for all excavation (including rock), suitable backfill/select fill, labor, materials, equipment, tools and incidentals necessary to completely abandon existing water mains to the limits indicated on the Contract Documents.

2.11 ASPHALT PAVEMENT RESTORATION – ASPHALT BASE COURSE (TYPE IM-19.0) (BID ITEM NO. 15)

A. Measurement

1. Unit of measure for asphalt base course shall be the actual tonnage of IM-19.0 pavement mix that is satisfactorily placed, as specified and/or detailed in the Contract Documents. Measurements shall include labor, materials, tools, equipment, and services necessary, including pavement milling where required, to complete the work specified.

B. Payment

1. Payment for asphalt base course shall be made at the Contract unit price per ton of IM-19.0 pavement mix that is satisfactorily placed, as specified and/or detailed in the Contract Documents. Price and payment shall include labor, materials, tools, equipment, and incidentals needed, including pavement milling where required, to complete the work specified.

2.12 ASPHALT PAVEMENT RESTORATION – ASPHALT SURFACE COURSE (TYPE SM-9.5A) (BID ITEM NO. 16)

A. Measurement

1. Unit of measure for asphalt surface course shall be the actual square yardage of SM-9.5A pavement mix that is satisfactorily overlaid on top of the existing pavement surface, as specified and/or detailed on the Contract Documents. Measurements shall include labor, materials, tools, equipment, and services necessary, including pavement milling where required, to complete the work specified.

B. Payment

1. Payment for asphalt surface course shall be made at the Contract unit price per square yard of SM-9.5A pavement mix that is satisfactorily overlaid on top of the existing pavement surface, as specified and/or detailed on the Contract Documents. Price and payment shall include labor, materials, tools, equipment, and incidentals needed, including pavement milling where required, to complete the work specified.

2.13 REPLACING EXISTING FRAME AND COVERS (BID ITEM NO. 17)

A. Measurement

1. Unit of measure for replacing existing frame and covers will be the actual number of each type of frame and cover replaced and shall include all materials, equipment and work required to replace existing frames and covers in paved areas as specified and in accordance with Specification Sections 33 05 13 – Precast Concrete Manhole and 33 01 30.81 – Manhole

Rehabilitation.

B. Payment

1. Payment for replacing existing frame and covers will be based on the unit price bid per each frame and cover replaced, which price and payment shall include all labor, materials, tools, equipment and incidentals needed to complete the work specified.

2.14 TRAFFIC CONTROL (BID ITEM NO. 18)

A. Measurement

1. Unit of measure for Traffic Control shall be on a lump sum basis for providing, operating and maintaining VDOT approved arrow boards, message boards, water filled barriers and/or crash trucks where required by VDOT and/or as directed by the Engineer and/or Owner, and shall include all labor, materials, tools, equipment, and services necessary to complete the work as specified and in accordance with VDOT standards.
2. All other traffic control measures (i.e. cones, flaggers, signs, etc.) will not be measured separately for payment but will be considered incidental to the work being performed.

B. Payment

1. Payment for traffic control will be made at the contract unit price per lump sum, which, price and payment shall include all labor, materials, tools, equipment and incidentals needed to complete the work specified
2. Traffic control measures utilized under this Bid Item must be approved by the Engineer and/or Owner prior to the work being performed. If these Bid Items are used without approval, no payment will be made.

PART 3 – CONTINGENT ITEMS

Contingent items include those items which may be required during the course of the performance of the work.

3.1 ADDITIONAL EXCAVATION BELOW SPECIFIED SUBGRADE (BID ITEM NO. 19)

A. Measurement

1. Where excavation below specified grade is performed as directed by the Owner or Engineer, measurement and payment shall be for each cubic yard of specified subgrade excavated. This item shall include all labor, equipment and disposal for removal of additional material.

B. Payment

1. Basis of Payment shall be for each cubic yard of specified subgrade excavated. Payment and price shall constitute full compensation for excavation (including rock) including all labor, equipment, tools and incidentals necessary to complete the work as directed by the Owner or Engineer, including removal and disposal of spoil. No payment shall be made for excavation not specifically directed by the Owner or Engineer.

3.2 TEST PITS ORDERED BY ENGINEER (BID ITEM NO. 20)

- A. Measurement
 - 1. This work shall consist of the labor, materials and equipment necessary for, and incidental to the provision and excavation of test pits as directed by Engineer or Owner including, but not limited to excavation (including rock), backfilling, and all restoration required in obtaining depth and location of existing structures or utilities. For the purpose of the bid price, the Contractor shall assume an excavation and backfill quantity of 1 cubic yard for each test pit, whether or not this number is actual. Method of Measurement shall be on a per each basis including all excavation, backfill, etc. required to complete the work. Locations for test pits will be as designated or directed by Engineer or Owner.
 - B. Payment
 - 1. Basis of payment for test pits shall be at the contract unit price for each test pit excavated. Payment and price shall constitute full compensation for excavation, backfill, and paving, furnishing all labor, equipment, tools and incidentals necessary to complete the work. No payment under this item shall be made for test pits not ordered by the Engineer or Owner.
- 3.3 SELECT FILL – AGGREGATE STONE (BID ITEM NO. 21)
- A. Measurement
 - 1. This work shall include all stone backfill below specified grade when required by unforeseen trench conditions as set forth in the Contract Documents. Aggregate Stone will be measured based on the actual cubic yardage of aggregate stone placed and approved for use by the Owner and shall include all labor, materials, tools, equipment, and services necessary to complete the work specified.
 - B. Payment
 - 1. Basis of payment for Aggregate Stone shall be at the contract unit price for each cubic yard of stone placed, as ordered by Owner or Engineer. Price and payment shall be inclusive of all labor, materials, tools, equipment and incidentals needed to complete the work as specified. No separate payment will be made for standard bedding; it is an incidental part of the work element to which it applies.
- 3.4 SELECT FILL – SUITABLE EARTH (BID ITEM NO. 22)
- A. Measurement
 - 1. This work shall include all select fill placed and compacted below specified grade when required by unforeseen trench conditions as set forth in the Contract Documents and as directed by Owner or Engineer. Select fill will be measured based on the actual compacted cubic yardage of material placed, inclusive of all labor, materials, tools, equipment, and services necessary to complete the work specified.
 - B. Payment
 - 1. Basis of payment for select fill shall be at the contract unit price for each cubic yard of material placed, as ordered or approved by Owner or Engineer. Price and payment shall be inclusive of all labor, materials, tools, equipment and incidentals needed to complete the work as specified. No separate payment will be made for standard bedding; it is an incidental part of the work element to which it applies.

3.5 TEMPORARY PAVEMENT RESTORATION – OUTSIDE OF TRENCH EXCAVATION (BID ITEM NO. 23)

A. Measurement

1. Unit of measure for temporary pavement restoration will be the square yard of temporary pavement (Aquaphalt or equal) placed that is satisfactorily installed as directed by Owner or Engineer. The work shall include all labor, materials, tools, equipment and services necessary to complete the work specified.

B. Payment

1. Payment for temporary pavement restoration will be made at the contract unit price per square yard of temporary pavement (Aquaphalt or equal) placed as designated, which price and payment shall include all labor, materials, tools, equipment and incidentals needed to complete the work. No payment shall be made under this item unless temporary pavement restoration is ordered or directed by Owner or Engineer.

3.6 FURNISH AND INSTALL PRESSURE REDUCING VALVE (PRV) – BEHIND WATER METER (BID ITEM NO. 24)

A. Measurement

1. Unit of measurement for furnishing and installing pressure reducing valve (PRV) – behind water meter shall be for each PRV installed. Measurement shall include all labor, materials and equipment required to locate and install the PRV and all related appurtenances; and to reconnect water service. Proposed PRVs will be provided by Albemarle County Service Authority for Contractor to install. Restoration of asphalt pavement surfaces in public roads is not included.

B. Payment

1. Payment for the furnishing and installing pressure reducing valve (PRV) – behind water meter shall be at the contract unit price per each installed. Payment and price shall constitute full compensation for all labor, materials, excavation (including rock), dewatering, bedding, suitable backfill, surface restoration (including restoration of asphalt driveways, concrete sidewalks, concrete curbs and gutters, and concrete v-ditch), tools and equipment required to locate and install the PRV, and incidentals necessary to reconnect the water service and complete the work as indicated on the Contract Documents. Unless otherwise indicated, excavation shall be made in accordance with the details as provided in the Contract Documents.

END OF SECTION

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SECTION 32 01 00.91

RESTORATION OF SURFACES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes restoration and maintenance of all types of surfaces, sidewalks, curbs, gutters, culverts and other features disturbed, damaged or destroyed during the performance of the work under or as a result of the operations of the Contract.
- B. The quality of materials and the performance of work used in the restoration shall produce a surface or feature equal to the condition of each before the work began.

1.2 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
 - 1. American Society for Testing and Materials (ASTM)
 - a. D698 - Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³)
 - 2. Virginia Department of Transportation
 - a. Roads and Bridge Specifications (Current Edition)

1.3 SUBMITTALS

- A. In addition to those submittals identified in the General Provisions, the following items shall be submitted:
 - 1. A schedule of restoration operations shall be submitted for approval. After an accepted schedule has been agreed upon it shall be adhered to unless otherwise revised with the approval of the Engineer.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 GENERAL

- A. In general, permanent restoration of paved surfaces will not be permitted until one months' time has elapsed after excavations have been completely backfilled as specified. A greater length of time may be allowed to elapse before permanent restoration of street surfaces is undertaken, if additional time is required for shrinkage and settlement of the backfill.

- B. The replacement of surfaces at any time, whether as scheduled or as directed by the owner or his project representative, shall not relieve the Contractor of responsibility to repair damages by settlement or other failures.
- C. Work performed on private property shall be confined to the easements obtained.

3.2 TEMPORARY PAVEMENT

- A. Immediately upon completion of backfilling of the trench or excavation, the Contractor shall place a temporary pavement over all disturbed areas of streets, driveways, sidewalks, and other traveled places where the original surface has been disturbed as a result of his operations.
- B. Unless otherwise specified or directed the temporary pavement shall consist of compacted crusher run aggregate (limestone) to such a depth as required to withstand the traffic to which it will be subjected.
- D. The Contractor shall treat all surfaces for dust prevention, and as frequently as may be required.
- E. The temporary pavement shall be maintained by the Contractor in a safe and satisfactory condition until such time as the permanent paving is completed. The Contractor shall immediately remove and restore all pavements that have become unsatisfactory.

3.3 PERMANENT PAVEMENT REPLACEMENT

- A. The permanent and final repaving of all streets, driveways and similar surfaces where pavement has been removed, disturbed, settled or damaged by or as a result of performance of the Contract shall be repaired and replaced by the Contractor, with a new and similar pavement.
 - 1. The top surface shall conform to the grade of the existing adjacent pavement. The entire replacement shall meet the current specifications of the VDOT or the local community which ever has jurisdiction for the particular types of pavements being replaced.
 - 2. Where the local community has no specification for the type of pavement being replaced, the work shall be done in conformity with the VDOT's Road and Bridges Specifications, most current addition. The Engineer shall determine which portion of the specifications most closely conforms to the type of surface being replaced.

3.4 PREPARATION FOR PERMANENT PAVEMENT

- A. When scheduled and within the time specified, the temporary pavement shall be removed, as necessary to facilitate permanent pavement, and a base prepared for the permanent pavement. The depth of the base course shall conform to the requirements of the local community or the VDOT Permit. To receive the permanent pavement:
 - 1. The base shall be brought to the required grade and cross-section and thoroughly compacted before placing the permanent pavement.
 - 2. Any base material that has become unstable for any reason shall be removed and replaced with compacted base materials.

- B. Prior to placing the permanent pavement all service boxes, manhole frames and covers and similar structures within the area shall be adjusted to the established grade and cross-section.
- C. Edges of the existing asphalt pavement shall be saw cut a minimum of 1 foot beyond the excavation or disturbed base whichever is greater.
 - 1. All saw cuts shall be parallel or perpendicular to the centerline of the street.

3.5 ASPHALT PAVEMENT

- A. The permanent asphalt pavement for streets, driveways and parking area surfaces shall be of bituminous materials of the same depth and kind as the existing pavement unless otherwise specified.
- B. Prior to placing of any bituminous pavement, a sealer shall be applied to the edges of the existing pavement and other features.
- C. Furnishing, handling and compaction of all bituminous materials shall be in accordance with the VDOT's Road and Bridge Specifications most current edition.

3.6 CONCRETE PAVEMENT AND PAVEMENT BASE

- A. Concrete pavements and concrete bases for asphalt, brick or other pavement surfaces shall be replaced with VDOT Class "A3" Concrete, air-entrained.
- B. Paving slabs or concrete bases shall be constructed to extend 1 foot beyond each side of the trench and be supported on undisturbed soil. Where such extension of the pavement will leave less than 2 feet of original pavement slab or base, the repair of the pavement slab or base shall be extended to replace the slab to the edge of the original pavement or base unless otherwise indicated on the Contract Drawings.
- C. Where the edge of the pavement slab or concrete base slab falls within the excavation, the excavation shall be backfilled up to the base of the concrete with Special Backfill. The Special Backfill shall be compacted to 95% maximum dry density as determined by ASTM D 698.
- D. The new concrete shall be of the same thickness as the slab being replaced and shall contain reinforcement equal to the old pavement.
 - 1. New concrete shall be placed and cured in accordance with the applicable provisions of the VDOT's Road and Bridge Specification most current edition.

3.7 STONE OR GRAVEL PAVEMENT

- A. All pavement and other areas surfaced with stone or gravel shall be replaced with material to match the existing surface unless otherwise specified.
 - 1. The depth of the stone or gravel shall be at least equal to the existing.

2. After compaction the surface shall conform to the slope and grade of the area being replaced.

3.8 CONCRETE WALKS, CURBS AND GUTTER REPLACEMENT

- A. Concrete walks, curbs and gutters removed or damaged in connection with or as a result of the construction operations shall be replaced with new construction.
 1. The minimum replacement will be a flag or block of sidewalk; 5 feet of curb or gutter; and 5 feet of ditch.
- B. Walks shall be constructed of VDOT Class "B2" concrete, air-entrained and on a 4-inch base of compacted gravel or stone.
 1. The walk shall be not less than 4 inches in thickness or the thickness of the replaced walk where greater than 4 inches. The walk shall have construction joints spaced not more than 25 feet apart, shall have expansion joints spaced not more than 50 feet apart and shall be sloped at right angles to the longitudinal centerline at approximately 1/4 inch per foot of width.
- C. 1/2-inch expansion joint material shall be placed around all objects within the sidewalk area as well as objects to which the new concrete will abut, such as valve boxes, manhole frames, curbs, and buildings.
- D. Walks shall be hand-floated, broom-finished, edged, grooved at the construction joints and at intermediate intervals matching those intervals of the walk being replaced.
 1. The intermediate grooves shall be scored a minimum of 1/4 of the depth of the walk.
 2. The lengths of blocks formed by the grooving tool, and distances between construction and expansion joints shall be uniform throughout the length of the walk in any one location.
- E. The minimum length of curb or gutter to be left in place or replaced shall be 5 feet. Where a full section is not being replaced, the existing curb or gutter shall be saw cut to provide a true edge.
 1. The restored curb or gutter shall have the same shape, thickness and finish as the curb or gutter being replaced. The curb and gutter shall be built of the same material (concrete) with construction and expansion joints as stated above for sidewalks.
 2. New concrete shall be placed and cured in accordance with the applicable provisions of the VDOT's Road and Bridge Specification most current edition.

3.9 LAWNS AND IMPROVED AREAS

- A. The area to receive topsoil shall be graded to a depth as specified but not less than 4 inches below the proposed finished surface.
 1. If the depth of existing topsoil prior to construction was greater than 4 inches, topsoil shall be replaced to that depth.
- B. The furnishing and placing of topsoil, seed and mulch shall be in accordance with the Section 32 93 13, "Topsoil and Seeding".

- C. If required to obtain germination, the seeded areas shall be watered. Watering shall be accomplished in such a manner as to prevent washing out of the seed.
- D. Any washout or damage that occurs shall be regraded and reseeded until a good sod is established.
- E. The Contractor shall maintain the newly seeded areas in good condition. Maintenance shall include as needed regrading, reseeding and watering.

3.10 CULTIVATED AREA REPLACEMENT

- A. Areas of cultivated lands shall be graded to receive topsoil to a depth of not less than the depth of the topsoil before being disturbed. All debris and inorganic material shall be removed prior to the placing of the topsoil.
- B. The furnishing and placing of topsoil shall be in accordance with the Section 32 93 13, "Topsoil and Seeding".
- C. After the topsoil has been placed and graded, the entire area disturbed during construction shall be cultivated to a minimum depth of 12 inches with normal farm equipment.
 - 1. Any debris or inorganic materials appearing shall be removed.
 - 2. The adjacent undisturbed cultivated area shall govern the removal of stones.
- D. Grass areas shall be reseeded using a mixture equal to that of the area before being disturbed, unless otherwise specified.

3.11 OTHER TYPES OF RESTORATION

- A. Trees, shrubs and landscape items damaged or destroyed as a result of the construction operations shall be replaced in like species and size.
 - 1. All planting and care thereof shall meet the standards of the American Association of Nurserymen.
- B. Water courses shall be reshaped to the original grade, cross-section and have all debris removed. Where required to prevent erosion, the bottom and sides of the watercourse shall be protected.
- C. Culverts destroyed or removed as a result of the construction operations shall be replaced in like size, material, and shall be replaced at the original location with the proper grade. When there is minor damage to a culvert, with the consent of the Engineer, a repair may be undertaken. Satisfactory results of the repair must be obtained.
- D. Should brick pavements be encountered in the work, the restoration shall be as directed.

3.12 MAINTENANCE

- A. The finished products of restoration shall be maintained in an acceptable condition for and during a period of one-year following the date of Final Completion or other such date as set forth elsewhere in the Contract Documents.

END OF SECTION

SECTION 33 11 13.13

DUCTILE IRON PIPE

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes centrifugally cast ductile iron pipe and ductile iron fittings as shown and scheduled on the Contract Drawings, complete all and accessories.

1.2 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
1. American National Standards Institute (ANSI)
 2. American Water Works Association (AWWA)
 3. American Society for Testing and Materials (ASTM)

1.3 SUBMITTALS

- A. In addition to those submittals identified in the General Provisions, the following items shall be submitted:
1. Manufacturer's certification that all materials furnished are in compliance with the applicable requirements of the referenced standards and this specification.
 2. Pipe and joint details.
 3. Layout drawings for ductile iron pipe to be installed within structures, showing the location and details of the support system, sleeves and appurtenances.

PART 2 - PRODUCTS

2.1 MATERIALS AND CONSTRUCTION

- A. Ductile iron pipe and ductile iron fittings shall comply with the following standards:

	<u>ANSI/AWWA</u>
Ductile Iron Pipe	C151
Fittings	C110
Joints-Mechanical and Push-On	C111
Joints-Flanged	C115
Cement Lining	C104
Polyethylene Encasement	C105
Compact Fittings	C153

- B. All shipments of material shall be tested in accordance with the provisions for testing in the applicable standards.
- C. All mechanical joint bolts and nuts shall be coated with a blue corrosion-resistant finish or a similar protective coating that meets or exceeds ASTM B633 Class 1, Type III.
- D. All flange material shall be Ductile Iron.
- E. Approved DIP manufacturers shall be U.S. Pipe & Foundry Co., American Cast Iron Pipe Co., Atlantic States Cast Iron Pipe Co. or approved equal.
 - 1. Wall thickness for water mains with pipe diameters 4-inches and less: Thickness Class 53.
 - 2. Wall thickness for water mains with pipe diameters larger than 4-inches: Thickness Class 52.
- F. Approved push-on joint restraint harness shall be Megalug® Series 1700 manufactured by EBBA Iron, Standard International , Tyler Union Foundry Co., and Star Pipe Products, or approved equal.
 - 1. T-bolts shall be made of either ductile iron or Cor-ten steel.
- G. Approved mechanical joint wedge-action restraints shall be:
 - 1. EBAA Iron, Series 1100
 - 2. Star Pipe Products, Series 3000
 - 3. Or approved equal.
- H. Pipe insulation shall be Nomaco Therma-cel® sheet insulation (1/2" thickness meeting ASTM C-1427. Pipe insulation shall be installed for frost protection of water mains if:
 - 1. Minimum of 12" vertical separation is not achieved where storm pipe is between drop inlets.
 - 2. Minimum of 3' vertical separation is not achieved where storm pipe is open ended culvert.
- I. Approved ductile iron pipe fittings shall be manufactured by Tyler Union Foundry Co., American Cast Iron Pipe Cp., U.S. Pipe and Foundry Co., or approved equal.

2.2 ACCESSORIES

- A. Joints
 - 1. The type of joints for ductile iron pipe and fittings shall be as scheduled in the pipe schedule and/or as shown on the Contract Drawings. Concrete thrust blocks will not be allowed for joint restraint unless shown on the Contract Drawings or approved by the Engineer at specific locations.
 - a. Mechanical joints shall be Megalug® assembled in accordance with the Notes on Method of Installation, AWWA C111, Appendix A. All bolts shall be high strength, low alloy steel and shall be tightened by means of torque wrenches such that the follower shall be brought up evenly. If effective sealing is not obtained at the specified torques, the joint shall be disassembled, cleaned and reassembled.
 - b. Restrained joints shall be installed via a mechanical joint restraint system where restrained joint pipe lengths are shown or specified

in the Contract Documents. Allowable mechanical joint restraint systems include:

- 1) Manufacturer's proprietary restrained joint pipe
 - a. TR-Flex, U.S. Pipe and Foundry
 - b. Snap-Lok, Griffin Pipe Products
 - c. Flex-Ring, American Ductile Iron Pipe
 - d. Approved Equal
 - 2) Mechanical wedge action harness restraint
 - a. Megalug Series 1100, EBAA Iron
 - b. Stargrip Series 3100P, Star Pipe Products
 - c. Approved Equal
 - 3) Restrained joint gaskets
 - a. Field Lok 350 Gaskets, U.S. Pipe and Foundry
 - b. Sure Stop 350 Gaskets, American Ductile Iron Pipe
 - c. Approved Equal
- c. Push-on joints shall be assembled using lubricant furnished by the manufacturer. The joint shall be made by guiding the plain end into the bell until contact is made with the gasket and exerting sufficient force to drive the pipe home until penetration is made to the depth recommended by the manufacturer.
- d. Flanged joints shall be assembled with through bolts of the size required for the pipe being installed. Stud bolts shall be used only where shown or required. Connecting flanges shall be in proper alignment and no external force shall be required or used to bring them together.
- 1) Flanges for flanged joints shall be drilled for 125 psi pressure unless otherwise specified.
 - a. Flange bolts and nuts shall be steel, ASTM A307, Grade B, and shall be zinc or hot dipped galvanized except where other materials are called for in the pipe schedule.
 - b. Gaskets for water and sewage piping shall be 1/8 inch thick of the rubber type per AWWA C111 unless otherwise specified. Cloth inserted gaskets shall not be allowed.
 - c. Gaskets for other service shall be as specified.

B. Solid Sleeves

1. Solid sleeves shall be used to connect existing and new piping as shown on the Contract Drawings.
2. Solid sleeves shall conform to AWWA C153 for compact fittings and AWWA C110, unless otherwise specified.
3. Joints for solid sleeves shall be restrained joints.

2.3 COATING, PAINTING AND LINING

A. Coating, painting and lining shall be as follows unless otherwise specified in the pipe schedule:

1. Ductile iron pipe and fittings installed in the ground, encased in concrete, in exposed exterior locations, in contact with water or inside structures but not scheduled for painting:

Interior: Standard thickness cement lining with sealcoat unless otherwise specified.

Exterior: Arc-sprayed zinc coating, in accordance with ISO 8179. Application rate shall be a minimum of 200 grams per

square meter of pipe surface area. A finishing layer topcoat shall be applied to the zinc.

2. Pipe installed inside structures or scheduled for painting:
Interior: Standard thickness cement lining with sealcoat unless otherwise specified.
Exterior: Arc-sprayed zinc coating, in accordance with ISO 8179. Application rate shall be a minimum of 200 grams per square meter of pipe surface area. A finishing layer topcoat shall be applied to the zinc.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Ductile iron pipe shall be installed in accordance with the configuration shown on the Contract Drawings, the pipe manufacturer's installation instructions, and applicable provisions of the Sections 31 23 33, "Trenching, Backfilling, and Compacting" and Section 33 31 01, "Pipeline Installation".
- B. All ductile iron pipe and ductile iron fittings shall be handled with padded slings or other appropriate equipment. The use of cables, hooks or chains will not be permitted.

The standard materials and installation procedures for polyethylene encasement to be applied to underground installations of ductile iron pipe for water or other liquids shall meet ASTM A674. For all ductile iron pipe and ductile iron fittings, polyethylene encasement/sleeve (polywrap) shall be placed on ductile iron pipe to prevent corrosion and shall be installed so that no dirt or bedding material comes in contact with the pipe. All lumps of clay, mud, cinders, etc., on the pipe surface should be removed before the pipe is covered with polyethylene.

If the polyethylene is damaged, it must be repaired before the trench is backfilled. Repairs shall be made in accordance with manufacturer's installation instructions.

Small holes or tears can be repaired with a piece of tape placed over the hole. Large holes or tears should be repaired by taping another piece of polyethylene over the hole.

Overlaps, ends, and repairs can be held in place with tape or plastic tie straps until the trench is backfilled.

- C. Pipe Insulation: Pipe insulation shall be installed per manufacturer's specifications. Poly-wrap shall be installed outside the pipe insulation as additional vapor barrier protection.

3.2 FIELD TESTING AND CHLORINATION

- A. Perform hydrostatic and leakage tests in accordance with the applicable provisions of the Section 33 13 00 "Leakage Tests", at the test pressure specified or scheduled.
- B. Disinfect piping and appurtenances in accordance with the Section 33 13 00, "Chlorination", where specified or scheduled.

END OF SECTION

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