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LETTER OF TRANSMITTAL

TO:	National Water Services	edwardgshort@aol.com Harvard@national-water.com
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	UWS, Inc.	zach.hughes@uwsinc.net
	Talley Construction Co., Inc.	tfountain@talleyconstruction.net
	EFI Solutions	mroberts@efi-solutions.com
	The Blue Book	emcveigh@mail.thebluebook.com
	Dodge Data & Analytics	dodge.bidding@construction.com
	Builders Exchange of Tennessee	heather@bxtn.org
	Associated General Contractors	planroom@agcetn.org
	ConstructConnect	rachael.taylor@constructconnect.com
	Brandon Whitley, General Manager	brandon_w@walkercountywsa.com

FROM: Philip R. Schofield, P.E.

DATE: May 6, 2024

PROJ. NO.: G21022

SUBJECT: Addendum No. 1
Walker County Water & Sewerage Authority
McLemore Water Line Extension

PAGES: 26 pages to follow, plus Drawings

PLEASE RESPOND ➔ ➔ ➔ ➔	**TO CONFIRM RECEIPT OF THIS ADDENDUM NO. 1** **PLEASE SIGN AND EMAIL TO CTI** **vvisco@ctiengr.com** **Company** _____ **Signature** _____ **Title** _____ **Date** _____

ID 826120

ADDENDUM NO. 1

MCLEMORE WATER LINE EXTENSION

WALKER COUNTY WATER & SEWERAGE AUTHORITY
FLINTSTONE, GEORGIA
CTI PROJECT NO. G21022

The following changes shall be made to the Contract Documents, Specifications, and Drawings:

I. CONTRACT DOCUMENTS

A. ***Section 00 01 05, List of Drawings.***

1. DELETE Page 00 01 15-1 and REPLACE with the attached Page 00 01 15-1.1.

B. ***Section 00 11 00, Advertisement for Bids.***

1. DELETE Page 00 11 0-1 and REPLACE with the attached Page 00 11 00-1.1. The new bid date is May 23, 2024, at 2:00 PM.

C. ***Section 00 42 00, Bid Schedule.***

1. DELETE Pages 00 42 00-1 thru 00 42 00-9 and REPLACE with attached Pages 00 42 00-1.1 thru 00 42 00-9.1

II. SPECIFICATIONS

A. ***Section 01 11 00, Summary of Work,*** INSERT the following paragraph on Page 01 11 00-1, Paragraph 1.1.A

The project includes 12-inch ductile iron and steel pipe with all appurtenances, temporary and permanent gravel drives, arch aluminum driveway culvert over Mill Creek, New Pump Station Installation, asphalt roadway pavement repair, and other work shown on the drawings.

B. ***Section 01 22 00, Measurement and Payment***. INSERT the following paragraph on Page 01 22 00-2, Paragraph 3.1.B.

B. Partial payment for large lump sum work items may be based on the percent complete as agreed to by the Engineer.

C. ***Section 01 32 33, Construction Photographs***. DELETE Section 01 32 33 in its entirety.

D. ***Section 01 50 00, Temporary Facilities and Controls***. DELETE the following sentence on Page 01 50 00-2, Paragraph 1.6.A, “The staging area is shown on the plans and will not be expanded.”

E. ***Section 01 65 00, Transportation and Handling***. CLARIFICATION that the Booster Pumping Station is to be supplied and installed by the contractor. The contractor is responsible for purchase, delivery, unloading, handling and installation of the booster pump station in accordance with the manufacturer's recommendations.

F. ***Section 33 11 06, Steel Pipe***. DELETE Pages 33 11 06-1 thru 33 11 06-5 and REPLACE with the attached Pages 33 11 06-1.1 thru 33 11 06-5.1.

G. ***Section 40 05 13.13, Stainless Steel Pipe and Copper Tubing.*** DELETE Pages 40 05 13.13-1 thru 40 05 13.13-4 and REPLACE with the attached Pages 40 05 13.13-1.1 thru 40 05 13.13-4.1.

H. ***Section 33 14 43.10, Section Factory Built High Pressure Booster Pump Statio***n. DELETE Pages 33 14 43.10-1 and 33 14 43.10-11 and REPLACE with the attached Pages 33 14 43.10-1.1 and 33 14 43.10-11.1.

I. ***Section 40 05 33, Pipe Couplings and Expansion Joints.*** DELETE Page 40 05 33-1 and REPLACE with the attached Page 40 05 33-1.1.

III. DRAWINGS

A. ***Drawing C005.02, Plan Layout***, CLARIFY the following:
   a. The leader on the drawing noting the "creek crossing" culvert should be pointed at the existing bridge location.
   b. A temporary stream crossing shall be installed prior to the removal of the existing bridge. Access to residences must be maintained at all times during the installation of the bottomless culvert that is replacing the bridge.
   c. The trees lining the existing driveway between Station 97+00 and Station 100+00 shall not be disturbed. All wide loads shall be brought into the site along the easements.

B. ***DELETE Drawing No. C006.02, Plan Layout***, SUBSTITUTE therefor Drawing No. C006.03 attached.

C. ***DELETE Drawing No. C007.02, Plan Layout***, SUBSTITUTE therefor Drawing No. C007.03 attached.

D. ***DELETE Drawing No. C010.02, Plan Layout***, SUBSTITUTE therefor Drawing No. C010.03 attached.

E. ***DELETE Drawing No. Q101.2, Pump Station Plan***. SUBSTITUTE therefor No. Drawing No. Q101.03 attached.

F. ***DELETE Drawing No. C401.00, Proposed Culvert Plan and Profile***, SUBSTITUTE therefor Drawing No. C401.01 attached.

G. ***DELETE Drawing No. C501.00, Culvert Details***, SUBSTITUTE therefor Drawing No. C501.01 attached.

H. ***Drawing C503.00, Culvert Details***, CLARIFY the following items:
   a. Reinforced concrete footing is required.
   b. Concrete invert is not allowed; the culvert is to be open bottomed.

I. ***Drawing D102, Standard Details,*** ADD the following attached details:
   a. D102, Detail DA, Gravel Driveway Section
   b. D102, Detail DB, Asphalt Driveway Section
   c. D102, Detail DC, Concrete Driveway Section

J. ***Drawing D105, Escarpment Details***, the following details shall be ADDED/ REPLACE details on Drawing D105 and D106:
   a. Figure 1
   b. Detail 1
   c. Section G
   d. Section H

K. ***Drawing D107, Section View - Escarpment***, ADD the following note:
   Profile Elevations from Station 155+25 to Station 157+50 were determined by field survey. Profile Elevation below Station 155+25 based on Geographical Information System Data. Contractor to verify all elevations prior to beginning construction of the elevation pipe system.

Date: May 6, 2024

Walker County Water & Sewerage Authority
/s/ Brandon Whitley, General Manager

SECTION 00 01 15

LIST OF DRAWINGS

Title	**G21022 Drawing No.**
Title Sheet	G101
General Notes	G102
Water Line Plans and Details	
Overall Area Map	C001
Plan Layout (9 Sheets)	C002-C010
Booster Pump Station Plan and Details	
Proposed Booster Station Site Plan	C201
Piping Details	C301
Foundation Plan and Sections (3 Sheets)	S101-S103
Pump Station Plan	Q101
Culvert Plan and Details	
Proposed Culvert Plans and Profile	C401
Culvert Details (3 Sheets)	C501-C503
Construction Details and Sections	
Standard Details (6 Sheets)	D101-106
Section View – Escarpment	D107
Erosion, Sedimentation and Pollution Control Plans and Details	
ESPC Notes	ES001
ESPC Initial Plan	ES101-ES102
ESPC Intermediate Plan	ES201-ES202
ESPC Final Plan	ES301-ES302
ESPC Drainage Map	ES401
GWSCC Checklist	ES501
ESPC Details	ES601-ES605
Pump Station Electrical Site Plan and Details	
Feeder Diagram	E1
Details	E2
Site Plan – Electrical	SE1

ADVERTISEMENT FOR BIDS

Owner: Walker County Water and Sewerage Authority, Flintstone, Georgia

Separate sealed Bids for furnishing of all materials, labor, tools, equipment, and appurtenances necessary for the Water Line Extension will be received by the Owner at Walker County Water & Sewerage Authority, 4655 Happy Valley Road, Flintstone, GA 30725, until 2 p.m., local time, on **May 23, 2024**, and then at said office publicly opened and read aloud.

The Project consists of the following major elements: New 12-inch ductile iron and steel water main and booster pumping station to provide additional water to the top of Lookout Mountain at the McLemore Resort.

Copies of the Contract Documents and Specifications, including bidding documents and requirements and Contract Drawings may be examined at the offices of the Engineer, CTI Engineers, Inc., 1122 Riverfront Parkway, Chattanooga, TN 37402 (phone 423/267-7613, www.ctiengr.com). Copies may be obtained there upon payment of $200.00 for each set. This payment is not refundable. Copies also at the Owner's office shown above.

Bidders must be listed on Engineer's list of planholders who have purchased the Contract Documents, Specifications, and Drawings.

Engineer shall be provided with the following information: mailing address for U.S. Postal Service, physical delivery address, telephone number, FAX number, email address, and name of contact person.

A Bid Bond of 5% of the total project cost is to be included in the proposal package. The Successful Bidder will be required to furnish performance and payment bonds with the executed Agreement meeting the requirements of the Contract Documents and executed on the forms attached to the Agreement. The terms and time for payment are set forth in the Agreement.

Surety and insurance companies must have an AM Best rating of A-10 or greater, be listed in the Federal Registry of Companies holding Certificates of Authority and Acceptable Sureties on Federal Bonds, be licensed by the Georgia Insurance Department and the Georgia Secretary of State to do business in the State of Georgia.

Contractor must have minimum Worker's Comp and General Liability Insurance in full force and effect. No proposal will be considered unless it is accompanied by satisfactory evidence that the Bidder holds Georgia State Contractor's License of proper classification and in full force and effect, in compliance with the provisions of O.C.G.A. Sec. 43-14-2 et seq. Pursuant to O.C.G.A. § 13-10-91, all contractors and sub-contractors performing work within the State of Georgia on a contract with a public employer must register and participate in a federal work authorization. Walker County Water & Sewerage Authority will require certification from contractor that this requirement has been met.

Each Respondent shall submit with its proposal a copy of current Business License and/or Occupational Tax Certificate issued in the state it resides. If bidder cannot prove this license, it will be required to obtain one from Walker County Water & Sewerage Authority if it is the Awarded Respondent.

Walker County Water & Sewerage Authority reserves the right to accept or reject any and all proposals, to waive formalities, technicalities or irregularities and to re-advertise if necessary. The contract between Walker County Water & Sewerage Authority and the selected responder shall be subject to the payment agreement drawn up between Walker County Water & Sewerage Authority and the selected responder.

Walker County Water & Sewerage Authority
/s/ Brandon Whitley, General Manager

Date: March 27, 2024
April 10, 2024

BID SCHEDULE FOR UNIT PRICE
McLEMORE WATER LINE EXTENSION
WALKER COUNTY WATER & SEWERAGE AUTHORITY
FLINTSONE, GEORGIA

Item No.	ITEM DESCRIPTION	Unit	Total Units	Unit Price	Item Total
SCHEDULE I - PIPE INSTALLATION					
00 66 13	**Performance and Payment Bonds** (Maximum 2% of Bid)	LS	1	$	$
00 72 00	**General Conditions,** Including Project Management, Shop Drawings Submittals, Site Security & Safety, Sanitary Facilities, Maintenance, and Supervision	LS	1		
01 11 00	**Mobilization** (Maximum 2.5% of Bid), Including Equipment and Material Handling, Locating and Excavating (Pot-holing) the Existing Utilities, Project Layout and Staking	LS	1		
01 22 00a	**Traffic Control Devices for Traffic Control and Road Closure** in Accordance with MUTCD and GDOT Requirements, Including Coordination with the Walker County Road Department and the Georgia Department of Transportation.	Month	9		
01 32 38	**Pre-Construction Video Taping** of Existing Ground Conditions Along the Path of the Proposed Water Line Route	LF	22,700		
01 78 39	**Temporary Field Office,** Including Weather-Tight Structure or Trailer with Desks, Chairs, Plan/Drawing Table, Garbage Can, Temporary Power, Water, Heat, AC Air, Temporary Sanitary Facilities for Workers and Visitors, Project Sign, and Memo Board for Workers and Public Notifications	Month	9		
01 80 00	**Field Survey of Steel Alignment Sta 12+80 to Sta 162+00**	LF	3,720		
03 30 00	**Cast-In-Place Concrete**				
03 30 00a	**3,000 PSI Class B Concrete for Utility Crossings, Thrust Blocks, Pipe Encasement, and Pipe Protection,** Including Concrete Material, Labor, and Equipment Needed for Complete in Place as Shown on Drawings or as Directed by Engineer	CY	36		
03 30 00b	**4,000 PSI Class A Concrete, 4" Thick for Sidewalks, Slabs, and Driveways**, Including Excavation, Stone Bedding, Formwork, and all Materials and Labor	SF	500		
03 30 00c	**4,000 PSI Class A Concrete, 6" Thick with Reinforcement Wire for Slabs and Driveways**, Including Excavation, Stone Bedding, Formwork, and all Materials and Labor	SF	2,500		
03 30 00d	**Class A (4,000 psi) Concrete for Streets and Heavy-Duty Driveway Aprons, 8" Thick with Reinforcement Wire**, Including Excavation, Bedding, Form Work, Concrete Mix, Pour and Finish Rubbing, Complete In Place as Shown in Detail on the Plans and as directed by the Engineer.	SF	300		

Item No.	ITEM DESCRIPTION	Unit	Total Units	Unit Price	Item Total
03 30 00e	**4,000 PSI Class A Concrete for Concrete Header Curb or Curb and Gutter Repair,** Including Excavation, Bedding, Form Work, Concrete Mix, Pour and Finish Rubbing, Complete In Place as Shown in Detail on the Plans and as directed by the Engineer.	LF	200		
03 30 00f	**Flowable Fill,** Including Concrete Mix and Placement as Directed by Engineer or Shown on Plans	CY	54		
03 30 00g	**Class A (4,000 psi) Extruded Concrete Curb**, Including Excavation, Bedding, Form Work, Concrete Mix, Pour and Finish Rubbing, Complete In Place as Shown in Detail on the Plans and as directed by the Engineer.	LF	200		
31 00 00	**Earthwork**				
31 10 00a	**Under Cutting, in Areas of Unsuitable Soil,** Including Excavation and Disposal of Unsuitable Material	CY	225		
31 10 00b	**Compacted Fill Dirt**, Including Hauling, Placing, and Compacting Initial Backfill Dirt Material in Rock Trench where Suitable Backfill Soil does not Exist as Directed by Engineer	CY	450		
31 11 00a	**Clearing and Grubbing**				
31 11 00a-1	**Clearing and Grubbing in Wooded Area for Installation of 12-Inch DIP Beginning at Approximate Station 96+00 on Drawing C005.01,** Including Stripping Topsoil and Stockpiling, Hedge, Brush, Tree and Stump Removal, Mulching, and Disposal	LF	2,900		
31 11 00a-2	**Clearing and Grubbing in Wooded Area for Installation of Welded Steel Pipe Beginning at Approximate Station 125+00 on Drawing C006.01,** Including Stripping Topsoil and Stockpiling, Hedge, Brush, Tree and Stump Removal, Mulching, and Disposal	LF	3,700		
31 11 00a-3	**Clearing and Grubbing Along Highway 157 Road Right-of-Way Beginning at Approximate Station 215+00 to Approximate Station 228+00,** Including Traffic Control, Stripping Topsoil and Stockpiling, Hedge, Brush, Tree and Stump Removal, Mulching, and Disposal	LF	1,300		
31 11 00b	**Tree Removal for Areas Along Roads not in Wooded Areas**				
31 11 00 b-1	**Standard Tree Removal 18-inch minimum up to 32-inch Diameter**, Including Stump Removal or Grinding, and Disposal	EA	2		
31 11 00 b-2	**Large Tree Removal over 32-inch Diameter**, Including Stump Removal or Grinding, and Disposal	EA	2		
31 11 00 b-3	**Decorative / Fruit Tree Replacement 2.5-inch caliper,** Including Existing Tree Removal, Excavation, New Tree Planting, and Mulching, Complete in Place	EA	3		
31 11 00 b-4	Landscape Repair Allowance	LS	1	$ 10,000.00	$ 10,000.00

Item No.	ITEM DESCRIPTION	Unit	Total Units	Unit Price	Item Total
31 20 00b	**Crushed Stone Backfill in Trench for Sewer Lines in Streets, Parking Lots, and Driveways from Top of Bedding to Finished Grade**				
31 20 00b-1	**Crushed Rock Backfill Material, For 12-Inch Water Lines Installed in Streets, Driveways, or Parking Lots,** Including Materials, Placement, Compaction, and Maintenance	LF	7,860		
31 20 00b-2	**Crushed Stone Bedding** in Excess of that Required for Standard Bedding and Haunching	CY	180		
31 20 00b-3	**Compacted Crushed Base Stone** (Pug Mix) for Gravel Driveway Repair and Fine Grading for Transitions to Existing Driveways.	TONS	180		
31 20 00c	**Trench Rock Excavation by Drill & Blast, Rock Trenching, or Hoe-Ramming Methods**				
31 20 00c-1	**Trench Rock Excavation for 12-Inch DIP or Steel Pipe at 0 to 8.0 Feet Deep,** Including all Materials, Labor, and Equipment Necessary to Drill, Blast, Hoe-Ram, Excavate Trench Rock, and Dispose of Excess Spoil Rock Debris	LF	5,700		
31 20 00c-2	**Trench Test Drilling (in Dirt @ 5' to 8' intervals) without Blasting,** 0' to 8' Deep	LF	7,200		
31 20 00c-3	**Pre- Blast Survey for Houses and Structures**	LS	1		
31 20 00d	**Final Grading and Cleanup (Not Including Grassing and Mulch)**				
31 20 00d-1	**Final Grading and Cleanup.** Areas Outside Sidewalks, Driveways, Parking Lots, and Roads (Not Including Grassing and Mulch)	LF	16,100		
31 20 00d-2	**Topsoil,** Sifted Friable Loam Material Free of Stiff Clay, Hard Clods, Rocks, and Other Debris such as Cement, Asphalt, and Wood with a pH range From 5.5 to 7.0, or Approved by Engineer.	CY	405		
31 20 00d-3	**Mailbox Removal, Re-setting, or Replacement,** Including New Mailbox if Necessary, Complete-in-Place	EA	1		
31 25 00	**Slope Protection and Erosion Control**				
31 25 00a	**Temporary Silt Fence (Sd1-NS); Type "Non-Sensitive" Silt Fence**, Including Trenching, Installation, Posts, Filter Fabric, and Bracing. Includes Maintenance and Removal	LF	3,900		
31 25 00b	**Temporary Silt Fence (Sd1-S); Type "Sensitive" Silt Fence**, Including Trenching, Installation, Posts, Filter Fabric, Woven Wire Fence Backing, Tie Wire, and Bracing. Includes Maintenance and Removal		1,500		
31 25 00c	**Rip Rap Check Dams (Cd-S)**, Including Installation, Maintenance, and Removal as Needed or Directed by Engineer	Each	83		
31 25 00d	**Baled Straw Checks and Barriers**, Including Hay Bales, Stakes, Chinking, Maintenance, and Removal	Bales	45		
31 25 00e	**Riprap Stone (Rp)**, Complete-in-place where shown on plans for Outlet Protection, Slope Protection, Check Dams, and as Directed by the Engineer, Including Excavation and Filter Fabric Installation	Tons	360		
31 25 00f	**Construction Exit (Co)**, Including but not Limited to, Excavation, Geotextile Fabric, and Clean Washed Stone (2" to 4" in Size), Where Required or as Directed by Engineer as Shown on Drawing ES601.00.	EA	2		

Item No.	ITEM DESCRIPTION	Unit	Total Units	Unit Price	Item Total
31 25 00g	**Concrete Washout Structure,** Including Installation, Maintenance, and Removal**.**	EA	3		
31 25 00h	**Straw Matting for Slope or Ditch Stabilization,** Including Staples	SY	13,150		
31 25 00i	**Straw Wattles / Tubes,** Including Overlap and Staking	LF	1,800		
31 25 00j	**Dewatering Structure,** Including Stone, Fabric, Filter Bag	EA	2		
31 25 00k	**Temporary Stream Crossing,** Including Pipe, Stone, Fabric, and Rip Rap Placement **(Rip Rap Stone to Paid Separately) Per Drawing E605**	EA	1		
31 25 00l	**No. 3 Surge Stone**, Complete in Place Where Shown of Plans and as Directed by Engineer, Including Filter Fabric	Tons	90		
31 25 00m	**Installation of Turbidity Curtain in Creeks and Streams**, Including Labor, Equipment, and Materials to Install, Maintain, and Remove Turbidity Curtains as Required and Shown on Drawing ES604.01.	EA	1		
31 25 00n	**Clay or Flowable Fill Check Dams at Ditch, Stream, or Creek Crossings,** Including Labor, Equipment for Excavation and Backfill, Materials for Check Dam, Complete in Place Installation	EA	2		
31 49 00	**Major Creek Crossings, Including Installation of 12" Restrained Joint Ductile Iron Pipe, Concrete Encasement, Sand Bag Diversion Dam, Excavation, Backfill, Concrete Encasement, Dewatering, Waste Disposal, Stream Bank Stabilization, and Site Restoration. (Rock Excavation to be paid in Item 31 20 00c, Earthwork - Trench Rock Excavation)**				
31 49 00b-1	**Mill Creek Crossing at Approximate Station 100+00 to Station 102+00**, Including all Material, Labor, and Equipment for Excavation, Flow Diversion, Stream Bank Stabilization, and all Other Necessary Items to Complete Creek Crossing per Detail on Drawing ES0604.00. **Pipe and Rip Rap Stone to be Paid Separately**.	LS	1		
31 49 00b-2	**Creek Crossing Sampling Port**, Including Water Main Tap, Copper Tubing, Meter Box, Post, etc.	Each	1		
32 10 00	**New and Replacement Paving**				
32 10 00a	**Asphalt Pavement Replacement for Driveways and Parking Lots, Trench Width Repair and Driveway Apron Replacement with 12.5 mm GDOT mix, 3" Thick,** Including Saw-cutting and Base Stone Compaction, Complete in Place	Tons	100		
32 10 00b	**Heavy Duty Asphalt Pavement Replacement for Roads, Trench Width Repair with 2.5" of 19 mm Binder Mix and 1.5" of 9.5 mm GDOT mix**, Including Saw-cutting and Base Stone Compaction, Complete in Place	Tons	1,290		
32 10 00c	**Asphalt Driveway Overlay, Min. 2" of 12.5mm GDOT mix**, Including leveling and surface prep, Complete in plan	Tons	100		
32 31 13	**Fencing Repair and Replacement, including Removal of Existing Fence, Fence Materials, Re-Installation**				
32 31 13a	Temporary Construction Fence	LF	500		
32 31 13b	Barbed Wire Fence Repair or Replacement	LF	500		
32 31 13c	Chain-link Fence Repair	LF	200		
32 31 13d	Wooden Fence Removal, Repair, or Replacement	LF	200		

Item No.	ITEM DESCRIPTION	Unit	Total Units	Unit Price	Item Total
32 31 13e	Page Wire Fence Repair, Replacement, and Re-installation	LF	500		
32 92 19	**Seeding & Mulching including Topsoil, Seed, Fertilizer, Lime, Straw Mulch, & Water**				
32 92 19a	**Temporary Mulching (Ds1),** As Shown on Drawing ES602.01	LF	8,050		
32 92 19b	**Temporary Seeding and Mulching (Ds2),** As Shown on Drawing ES602.01	LF	16,100		
32 92 19c	**Permanent Seeding and Mulch,** Including Topsoil Placement, Seed, Fertilizer, Limestone, Mulch, and Water Using Table Shown on Drawing ES602.01.	LF	16,100		
32 92 19d	**Grass Sod for Yard Stabilization,** Including Staples or Anchorage for Fescue or Bermuda Sod, Where Shown, Required, or as Directed by Engineer	Pallet	8		
33 05 23	**Utility Crossings of Railroad, Highways, Roads, or Driveways**				
33 05 23a	**Jack and Bore for 12-inch Steel Water Line Under Highway 157 (Approximate Station 214+45 to 215+05, 60 LF),** Complete Installation by Bore and Jack Method, Including **24" Steel Casing,** Casing Spacers, End Caps, Excavation of Bore and Receiving Pits, Shoring, Concrete, Backfill, Grading, Compaction, Site Restoration of Disturbed Area, Topsoil Placement, Seeding, and Straw Mulch	LF	60		
33 11 00	**High Density Polyethylene (HDPE) Sleeve (Poly-Wrap) - Including Materials**				
33 11 00a-1	HDPE Poly Wrap for 12-Inch Ductile Iron Pipe	LF	700		
33 11 00b-2	HDPE Poly Wrap for 12-Inch Welded Steel Pipe	LF	3,270		
33 11 06	**Steel Pipe for Water Line (Steel Pipe Furnished by CONTRACTOR)**				
33 11 06a-1	**12-Inch Welded Steel Pipe Installed in Trench,** Including Labor, Equipment, and Material for Excavation, Pipe Installation, Backfill, Testing, Flushing, and Disinfection	LF	3,300		
33 11 06a-2	**12-Inch Flanged Steel Pipe Installed Above Ground on Pipe Support Piers,** Including Labor, Equipment and Material to Install Pipe on Piers, Apply Exterior Coatings, Fill, Perform Test, Flush, and Disinfect Pipe	LF	400		
33 11 06a-3	**Welded Joints for 12-Inch Welded Steel Pipe Installed in Trench or Above-Ground,** Including Labor, Equipment, and Materials to Complete Each Weld	EA	100		
33 11 06a-4	**Flanged Joints for Elevated Steel Section**	EA	1		
33 11 06b	**Steel Pipe Fittings (Fittings Shall be Furnished by Contractor), Including All Materials, Labor, and Equipment for Complete Installation with all Pipe Welding, Coatings (Interior and Exterior), and Reinforced Couplings.**				
33 11 06b-1	**12-Inch Welded Steel Angled Pipe Fittings Between 22 1/2-Degree to 45-Degree Bend,** Including All Labor, Material, and Equipment for Complete Installation with Pipe Cutting, Grinding, Welding, and Coatings (Interior and Exterior)	EA	6		

Item No.	ITEM DESCRIPTION	Unit	Total Units	Unit Price	Item Total
33 11 06b-2	**12-Inch Welded Steel Angled Pipe Fittings Between One Degree to 22 1/2-Degree Bend,** Including All Labor, Material, and Equipment for Complete Installation with Pipe Cutting, Grinding, Welding, and Coatings (Interior and Exterior)	EA	6		
33 11 06b-3	**12-Inch Welded Steel to 12-Inch Ductile Iron Pipe Connection,** Including All Labor, Material, and Equipment for Complete Installation with all Pipe Welding, Fitting Accessories, and Coatings (Interior and Exterior)	EA	1		
33 11 06b-4	**Cathodic Protection Installation,** Including Engineered Design Submittal and Complete Installation with Anodes, #10 Copper Wire, Theromoweld Connections, and Test Stations with Panels as Needed for Complete Design and Installation	LS	1		
33 11 06b-5	**Steel Pipe Weld Inspection by X-Ray or Phased Array Testing,** Including all Labor, Materials, and Equipment to Perform Test on Each Weld and to Furnish Complete Report and Test Results	EA	100		
33 12 19	**Hydrants Including all Materials Except Fire Hydrant Furnished by Owner**				
33 12 19a	Fire Hydrants Installed Complete, with all Materials Including Anchor Coupling, Valve, Thrust Restraint, Piping, and Stone Bedding **(Fire Hydrant Shall be Furnished by Owner; Anchor Tee Paid in Separate Pay Item)**	EA	3		
33 40 00	**Storm Sewerage**				
33 40 00a	**Installation of Aluminum Bottomless Arch Culvert at Approximate Station 101+00**, Including All Labor, Equipment, and Materials Necessary for Complete Installation as Shown on Drawings C401, C501, C502 and C503 with Stream Stabilization, Aluminum Headwalls, Concrete Foundations, and Headwal Caps	LS	1		
33 40 00b	**Demolition/Removal** of the existing bridge and abutments to prepare for the installation of the Bottomless Culvert at Approximate Station 101+00	LS	1		
40 05 13.53	**Ductile Iron Pipe, Fittings, And Connections**				
40 05 13.53a (Owner)	**Owner-Supplied Ductile Iron Pipe (DIP), Gasket Joint, Installed in Trench**				
40 05 13.53a-1	**12-Inch Ductile Iron Pipe Installed in Trench**, Including Labor, Equipment, Storage, and Handling of Owner-Supplied Material **(Ductile Iron Pipe Furnished by WCWSA)**	LF	19,200		
40 05 13.53b (Owner)	**Contractor-Supplied Ductile Iron Pipe, Installed in Casing**				
40 05 13.53b-1	**12-Inch Ductile Iron Pipe Installed in Casing**, Including Labor, Equipment, Material Storage & Handling of Owner-Supplied Material **(12-inch Ductile Iron Pipe Furnished by WCWSA)**	LF	60		

Item No.	ITEM DESCRIPTION	Unit	Total Units	Unit Price	Item Total
40 05 13.53d	**12-Inch Mechanical Joint Bends, Tees, and Fittings**				
40 05 13.53d-1	12-Inch MJ - 11 1/4 Degree Bend	EA	16		
40 05 13.53d-2	12-Inch MJ - 22 1/2 Degree Bend	EA	25		
40 05 13.53d-3	12-Inch MJ - 45 Degree bend	EA	18		
40 05 13.53d-4	12-Inch MJ - 90 Degree bend	EA	2		
40 05 13.53d-5	12-Inch x 6-Inch MJ Anchor Tee for Valve	EA	1		
40 05 13.53d-6	12-Inch x 8-Inch MJ Anchor Tee for Valve	EA	1		
40 05 13.53d-7	12-Inch MJ Restrained Joint Devices	EA	118		
40 05 13.53d-8	12-Inch Foster Adaptors	EA	1		
40 05 13.53d-9	12-Inch MJ Sleeve	EA	2		
40 05 13.53d-10	12-Inch x 8-Inch MJ Reducer	EA	2		
40 05 13.53d-11	12-Inch Anchor / Swivel Coupling	EA	3		
40 05 13.53d-12	12-Inch Bell or Pipe Restrained Joint Devices	EA	254		
40 05 13.53e	**Connections to Existing Water Lines**				
40 05 13.53e-1	**Connect New 12" Water Line to Existing 8" Water Line at West Cove Road with 8-Inch Tapping Sleeve and Valve,** Including 8x12 increaser Excavation, Shoring, Traffic Control, Backfill, Grading, Clean-up, Seeding, and Straw Mulch	EA	1		
40 05 13.53e-2	**Connect New 12" Water Line to Existing 8" Water Line at Tatum Road with 8-Inch Tapping Sleeve and Valve,** Including 8x12 increaser Excavation Shoring, Traffic Control, Backfill, Grading, Clean-up, Seeding, and Straw Mulch	EA	1		
40 05 13.53e-3	**Connect New 12" DIP Water Line and New 12-Inch Welded Steel Pipe to Proposed Booster Pump Station,** Including Materials, Excavation, Shoring Traffic Control, Backfill, Grading, Clean-up, Seeding and Straw Mulch as Shown on Drawing C201.00	EA	1		
40 05 13.53e-4	**Connect New 12" Water Line to Existing 12" at Proposed Water Tank Site,** Including 12" Pipe and Fittings for Connection, Excavation, Shoring, Traffic Control, Backfill, Grading, Clean-up, Seeding, and Straw Mulch as Shown on Drawing C010.01	EA	1		
40 05 13.53f	**Miscellaneous Ductile Iron (DI) Mechanical Joint Fittings Not Itemized**				
40 05 13.53f-1	Misc. 12-Inch DIP Fittings not Specified	LBS	1,000		
40 05 13.53f-2	Misc. 8-Inch DIP Fittings not Specified	LBS	1,000		
40 05 13.53f-3	Misc. 6-Inch DIP Fittings not Specified	LBS	500		
40 05 23	**Valves**				
40 05 23a Owner	**Owner-Supplied Gate Valves, Including Labor & Equipment, Material Storage & Handling of Owner-Supplied Material (Valves Furnished by WCWSA)**				
40 05 23a-1	**12-Inch Gate Valve,** Including Labor and Equipment to Install Valve, Materials for Valve Box, Cover, Restrained Joint Couplings, Concrete Support Block, Thrust Block, & Valve Box Extensions **(Valve Furnished by WCWSA)**	EA	6		

Item No.	ITEM DESCRIPTION	Unit	Total Units	Unit Price	Item Total
40 05 23a-2	**8-Inch Gate Valve,** Including Materials, Labor and Equipment to Install Valve, Materials for Valve Box, Cover, Restrained Joint Couplings, Concrete Support Block, Thrust Block, & Valve Box Extensions	EA	2		
40 05 23b	**Air Release Valves**				
40 05 23b-1	**1-inch Air Release Valve,** including Valve Box, Tapped Saddle, Isolation Valve, Valve Cover, & Accessories	EA	1		
40 05 23c	**Check Valves**				
40 05 23c-1	**12-Inch Check Valve Installed on 12-Inch DIP**, Including all Pipe Fittings, Pipe Supports, Pipe Restraint Devices, and Pre-Cast Concrete Structure	EA	2		
40 05 23c-2	**12-Inch Check Valve Installed on 12-Inch Welded Steel Pipe**, Including all Pipe Fittings, Pipe Supports, Pipe Restraint Devices, and Pre-Cast Concrete Structure	EA	1		
40 05 53	**Elevated Steel Pipe Sta 153+00 to Sta 156-+50**				
40 05 53a	**Steel Pipe Bottom Abutment Support Structure**, Including All Labor, Materials, and Equipment for Excavation, Rock Bolt Installation, Concrete Form Work, Fabricated Metals, Reinforcement Steel, Anchorage, Bearing Pad, Hardware, Backfill, and Final Grading for Complete Installation	LS	1		
40 05 53b	**Concrete Pipe Support Pier for Steel Pipe**, Including All Labor, Materials, Equipment, for Excavation, Rock Bolt Installation, Concrete Form Work, Reinforcement Steel, Fabricated Metals, Pipe Flange Bracket, Anchorage, Hardware for Complete Installation	EA	7		
40 05 53c	**Steel Pipe Top Abutment Support Structure**, Including All Labor, Materials, and Equipment for Excavation, Rock Bolt Installation, Concrete Form Work, Reinforcement Steel, Fabricated Metals, Pipe Saddle, Pipe Flange Bracket, Anchorage, Hardware, Backfill, and Final Grading for Complete Installation	EA	1		
	TOTAL SCHEDULE I - PIPE INSTALLATION			**$**	
	SCHEDULE 2 - BOOSTER PUMP STATION FOUNDATION AND INSTALLATION				
1	Furnish All Labor, Materials, Equipment, and Supervision Necessary **(except those specifically furnished by WCWSA or others)** for Complete Pump Station Installation, Including Pump Station Unit, Site Clearing and Grubbing, Site Grading, Excavation, Concrete Formwork and Concrete Reinforcement for Booster Pump Station Foundation, Pump Installation and Anchorage, Pipe Connections, Electrical (except Electrical Supply specifically furnished by WCWSA or others), Final Grading, 18-Inch Storm Drain Pipe with Headwalls, Fencing, and Site Restoration, and All Necessary Appurtenances to Construct, Install, and Place into Satisfactory Operation the Booster Pump Station with Start-up and Operation Training, Complete, as Shown and/or as Specified in the Contract Documents for a Lump Sum	LS	1		

Item No.	ITEM DESCRIPTION	Unit	Total Units	Unit Price	Item Total
2	**Booster Pump Station Access Driveway.** Complete Installation of the New Access Driveway from the Existing Gravel Driveway to Fenced Area of the Pump Station as Shown on Drawings, Including all Grading Cut and Fill, Compacted Fill Dirt Material, Placing and Compacting 6" of GAB Base Stone as shown on Drawing C006-02	LS	1		
3	Landscaping Allowance	LS	1	$5,000.00	$5,000.00
4	**Booster Pump Station Generator, Complete Installation,** Including Generator, Fuel Tank, Grading, Foundation Excavation, Concrete Formwork and Reinforcment Steel for Concrete Pad, Associated Electrical Conduits, Wiring, Connections, Start-up, and Operations Training	LS	1		
TOTAL FOR SCHEDULE 2 - BOOSTER PUMP STATION INSTALLATION				**$**	
TOTAL SCHEDULE I - PIPE INSTALLATION				**$**	
TOTAL SCHEDULE I AND SCHEDULE II				**$**	

Notes:
1. Bidders shall submit a bid on a unit price basis.
2. Contract will be awarded (if it is awarded) to the responsible and responsive bidder submitting the lowest bid.

BIDDER DATE

BY (Signature) TITLE

ADDRESS

CITY STATE ZIP CODE

PHONE FAX E-MAIL

SECTION 33 11 06

STEEL PIPE

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to install the welded steel water line piping as specified herein in the locations shown on the Drawings.

1.2 RELATED WORK

A. Section 33 11 05, Ductile Iron Pipe and Fittings

1.3 QUALIFICATIONS

A. All pipe shall be furnished by a manufacturer who is fully experienced, reputable, and qualified in the manufacture of the items to be furnished. The equipment shall be designed, constructed, and installed in accordance with ASTM and AWWA methods and shall comply with these Specifications.

1.4 SUBMITTAL

A. Shop drawings shall be submitted to the Engineer for approval in accordance with these Specifications and shall include dimensioning and technical specification for all piping to be furnished.

B. Submit samples of all materials specified herein to the Engineer for approval when requested.

1.5 RECEIVING, HANDLING, AND STORAGE

A. Receiving, handling, and storage of steel pipe shall be in accordance with Section 01 65 00, Transportation and Handling, and Section 01 66 00, Storage and Protection.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pipe shall be black steel Extra Strong (XS) Pipe having a wall thickness of 0.5 inch for 12-inch pipe conforming to the requirements of ASTM A53 Type E or S, Grade B, AWWA C200, and pass a test pressure of 1650 psi.

B. Pipe interior and exterior shall be abrasive cleaned to SSPC-SP-10, Near White Blast, prior to applying protective coatings.

C. Interior lining shall be NSF approved for potable water and shall be two-component liquid epoxy applied in two coats having an 8 mils dry film thickness for each coat.

Materials and application shall conform to AWWA C205. Field welded joints shall be lined in accordance with AWWA C205.

D. Exterior coating shall include two coats, including a first coat of 20 mils dry film thickness (DFT) of a mill-applied fusion-bonded epoxy and a second coat of 25 mils DFT of fusion-bonded epoxy. The materials and installation shall conform to AWWA C213. Joints shall be coated after welding with catalyzed liquid epoxy applied to a DFT of 25 mils using brush or roller.

E. Abrasion-resistant Overcoat. As an extra abrasion-resistant barrier, the FBE coated pipe shall be overcoated with an epoxy-based polymer concrete (Powercrete). The material may be applied at a mill or with a portable yard coating machine to a minimum thickness of 40 mils. Girth weld and coating damaged areas should be field coated with an epoxy-based polymer concrete compatible with the overcoat. Patch materials shall be feathered into the original coating. An alternate material is Pipe Clad 2040, manufactured by Lilly Industries, Inc., of North Kansas City, MO, applied at 30 mils DFT.

F. One hundred (100) percent of the exterior surface of steel pipe shall be “holiday tested.” repairs to small damaged areas shall be made with a polymeric melt stick patching material. Holidays larger than 1 inch diameter shall be repaired using a two-component catalyzed liquid epoxy.

2.2 FITTINGS

A. Fittings shall be Fabricated Bends in conformance with AWWA C207.

B. Fittings shall have same interior and exterior coating as the pipes.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Alignment and Grade. All pipe shall be laid to, and maintained at, the established lines and grades with a minimum cover of 12 inches. Fittings shall be installed at the required locations.

B. Trench Construction

1. Stockpiling Excavated Material: All excavated material shall be stockpiled in a manner that will not endanger the work.

2. Trench Width: Trench width at the ground surface may vary depending on depth, type of soil, and position of surface structures. The minimum clear width of the trench, sheeted or unsheeted, measured at the springline of the pipe shall be 1 foot greater than the outside diameter of the pipe. The maximum recommended clear width of the trench at the top of the pipe is equal to the pipe outside diameter plus 2 feet. If the maximum recommended trench width must be exceeded or if the pipe is installed in a compacted embankment, then pipe embedment shall be compacted to a point of at least 2½ pipe diameters from the pipe on both sides of the pipe or to the trench walls, whichever is less.

3. Dewatering: Where conditions are such that running or standing water occurs in the trench bottom or the soil in the trench bottom displays a "quick" tendency, the water shall be removed by pumps and other suitable means (such as well points or pervious underdrain bedding) until the pipe has been installed and the backfill has been placed to a sufficient height to prevent flotation of pipe. Generally, a depth of backfill over the top of the pipe equal to 1½ pipe diameters is sufficient to prevent flotation.

4. Preparation of Trench Bottom: The trench bottom shall be constructed to provide a firm, stable, and uniform support for the full length of the pipe. Bell holes shall be provided at each joint to permit proper assembly and pipe support. Any part of the trench bottom excavated below grade shall be backfilled to grade and shall be compacted as required to provide firm pipe support. When an unstable subgrade condition is encountered that could provide inadequate pipe support, additional trench depth shall be excavated and refilled with suitable foundation material. Ledge rock, boulders, and large stones shall be removed to provide 6 inches of cushion on all sides of the pipe and accessories.

5. Laying of Pipe: To prevent damage, proper implements, tools, and equipment shall be used for placement of the pipe in the trench. Under no circumstances shall pipe or accessories be dropped into the trench. All foreign matter or dirt shall be removed from the pipe interior. Pipes shall be butt-welded in accordance with AWWA C206. When pipe laying is not in progress, open ends of installed pipe shall be closed to prevent entrance of trench water, dirt, foreign matter, or small animals into the pipeline.

6. Final Backfill: After placement and compaction of pipe embedment materials and initial backfill, the balance of backfill materials may be machined placed. The material shall contain no large stones or rocks, frozen material or debris. Proper compaction procedures shall be exercised to provide required 90 percent density, standard proctor.

C. Exposed Piping

1. All exposed piping shall be firmly anchored and supported by pipe supports or anchors as shown or required. Pipe supports shall be furnished as shown on the Drawings or in accordance with the requirements of these Specifications. All pipe shall be carefully placed to the proper lines and grades as shown on the Drawings.

2. Full lengths of pipe shall be used and only spliced where indicated on Drawings. Short lengths of pipe with couplings will not be permitted. Pipe shall be cut to exact measurement and shall be installed without forcing or springing.

3. The interior of all piping shall be free from obstructions and protrusions. All burrs shall be removed from the inside and outside edges of all cut pipe by reaming. Cutting shall be done in such a manner so as to leave a smooth end at right angles to pipe threads. Tool marks and unnecessary pipe threads shall be avoided. Cuttings and other foreign material shall be removed from the inside of the pipe prior to installation.

D. Joining of Pipe

1. All pipe to be joined using full penetration butt joint welds (unless otherwise noted on Drawing) per AWWA C206.

2. All joints will be tested by 100 percent radiograph.

3. Contractor shall furnish a certified welding inspector (CWI) in accordance with the provisions of AWS QC1.

4. All radiograph results shall be made available to the Owner's field representative for review.

5. The Owner's field representative shall be provided full access to observe all welding and testing activities. Contractor shall provide all necessary personal safety equipment for Owner's representative including safety-climbing equipment.

3.2 TESTING

A. To prevent floating of the pipe, sufficient backfill shall be placed prior to filling pipe with water and subsequent field testing. Where local conditions require that the trenches be backfilled immediately after the pipe has been laid, the testing may be carried out after backfilling has been completed, but before placement of permanent surface.

At least seven days shall elapse after the last concrete thrust or reaction blocking, if used, has been cast with normal (Type I) portland cement. The elapsed time may be reduced to three days with the use of a high-early-strength (Type III) portland cement. It is suggested that testing be conducted first on short lengths of installed pipe line, thereby permitting the installer to verify that proper installation and joint assembly techniques have been employed.

1. Filling, Drainage, and Air Relief of Mains: Water mains shall be drained through drainage branches or blow-offs. Drainage branches and blow-offs shall be provided with valves and shall be located at low points and dead ends. Drainage branches or blow-offs must not be connected to any sewer, submerged in any stream, or be installed in any other manner that can permit back siphonage into the distribution system. Lines shall be filled slowly with maximum velocity of 2 fps, preferably 1 fps, while venting all air. After filling, lines shall be flushed at hydrants, blow-offs, and dead ends at minimum velocity of 2.5 fps. Valves shall be closed very slowly to prevent surges.

2. Procedure: The following procedure is based on the assumption that the pressure and leakage tests will be performed at the same time. The specified test pressure shall be 900 psi and applied by means of a pump connected to the pipe. The test pressure shall be maintained (by additional pumping if necessary) for the specified time. While the line is under pressure, the system and all exposed pipe, fittings, valves, and hydrants shall be carefully examined for leakage. All defective elements shall be repaired or replaced and the test repeated until all visible leakage has been stopped and the allowable leakage requirements have been met.

3. Allowable Leakage: The duration of each leakage test shall be 2 hours, unless otherwise specified.

Allowable leakage shall be defined in AWWA C600. No installation shall be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{ND\sqrt{P}}{133{,}200}$$

Where: L = allowable leakage, gph
N = length of pipeline tested
D = nominal diameter of the pipe, inch
P = average test pressure during the leakage test, psig

END OF SECTION

SECTION 40 05 13.13

STAINLESS STEEL PIPE AND COPPER TUBING

PART 1 - GENERAL

1.1 SCOPE

A. The work covered by this section includes furnishing all labor, equipment, and materials required to furnish, stainless steel pipe, and copper tubing, including all fittings, sleeves, unions, and accessories, as specified herein.

1.2 GENERAL DESIGN REQUIREMENTS

A. All such work shall be done by competent workmen in a thorough workmanlike manner according to best practice and in compliance with all codes and applicable regulations, with proper provisions for uncoupling, draining, expansion, and contraction.

B. Process piping furnished as an integral part of an item of equipment shall conform to the requirements of the latest edition of ANSI B16.3, "Code for Petroleum Refining Piping," or ANSI B16.4, "Code for Refrigeration Piping," as applicable.

1.3 QUALITY CONTROL

A. Prior to its incorporation into the work, submit to the Engineer written evidence that the pipe furnished under this Specification is in conformance with the material and mechanical requirements specified herein. Certified copies of independent laboratory test results or mill test results from the pipe supplier may be considered evidence of compliance, provided such tests are performed in accordance with the appropriate ASTM, AWWA, or NSF testing standards by experienced, competent personnel. In case of doubt as to the accuracy or adequacy of mill tests, the Engineer may require that the Contractor furnish test reports from an independent testing laboratory on samples of pipe materials.

1.4 SHOP DRAWINGS AND ENGINEERING DATA

A. Complete shop drawings and engineering data on fabricated piping shall be submitted to the Engineer in accordance with the requirements of these Specifications.

1.5 STORAGE AND PROTECTION

A. Piping and accessories shall be stored and protected in accordance with the requirements of these Specifications.

B. All piping, tubing, and accessories shall be stored above ground fully supported so as not to bend or deflect excessively under their own weight. Piping shall be stored with slope so as to be free draining.

1.6 SHOP PAINTING

A. All ferrous piping not specified to be galvanized or otherwise coated shall be cleaned and shop primed or coated in accordance with the requirements of these Specifications.

1.7 GUARANTEE

A. Provide a guarantee against defective equipment and workmanship in accordance with the requirements of Section 01 78 36, Warranties and Bonds.

PART 2 - PRODUCTS

2.1 GENERAL

A. Unless otherwise shown or specified on the Drawings, all piping 2½ inches and smaller shall be copper tubing, except that Schedule 40 red brass threaded nipples with 125-pound forged bronze threaded fittings per ANSI B16.15 are acceptable for short branches to pressure gages and drains. Unless otherwise shown or specified, pipe 3 inches and larger shall be alloy pipe or ductile iron pipe, as specified. Carbon steel pipe shall be used only where approved by the Engineer or where specifically indicated on the Drawings.

B. No broken, cracked, deformed, misshapen, imperfectly coated, or otherwise damaged or defective pipe or fittings shall be used. All such materials shall be removed from the site of the work.

2.2 STAINLESS STEEL PIPE

A. Stainless steel pipe in sizes 10 inches and smaller shall be seamless stainless steel pipe conforming to the requirements of ASTM A 312, Type 304.

B. Stainless steel pipe 1½ inches and smaller shall be screwed, Schedule 40S, unless otherwise specified or shown. Steel pipe in sizes 2 through 10 inches shall be welded, Schedule 10S.

C. Screwed fittings and unions 1½ inches and smaller shall be 3,000-pound forged stainless steel conforming to ASTM A 182, Grade F304 and ANSI B16.11.

D. Welded fittings shall be of the butt-welded type of wrought stainless steel conforming to ASTM A 403, Grade WP304 and ANSI B16.9. Reducing branch connections shall be made using threadolets or weldolets.

E. Flanges shall be 150-pound, forged stainless steel conforming to ASTM A 182, Grade 304 and ANSI B16.5. Bolts shall be heavy hex conforming to ASTM A 193, Grade B8. Nuts shall be heavy hex conforming to ASTM A 194, Grade 8. Gaskets shall be red rubber or compressed asbestos, 1/16 inch thick, conforming to ANSI B16.21. Gaskets for piping operating at temperatures in excess of 150 F shall be compressed asbestos or soft corrugated metal.

2.3 COPPER TUBING

A. Exposed copper tubing for water or gas shall be seamless hard-drawn copper tube conforming to the requirements of ASTM B 88, Type L. Buried copper tubing shall be seamless, annealed copper tube conforming to the requirements of ASTM B 88, Type K. Annealed copper tube may be furnished in straight lengths or coils.

B. Copper tubing for instrument air service in sizes ⅝-inch O.D. and smaller shall be coated, seamless, bright annealed copper tube conforming to ASTM B 68, Type DHP. Wall thickness of copper tube shall be as follows:

Tube O.D. (inch)	Wall Thickness (inch)
1/4	0.030
3/8	0.032
1/2	0.035
5/8	0.040

C. Instrument air tubing shall be factory coated with a layer of black PVC meeting the requirements of ASTM D 1047, IPCEA S-61-402, and applicable UL standards. Minimum coating thickness shall be 0.032 inch. Unless otherwise shown, minimum size of instrument air tubing shall be ⅜-inch O.D.

D. Fittings for copper tube shall be wrought copper conforming to ASTM B 75 and ANSI B16.22 for silver brazed joints. Fittings for annealed copper tube in instrument air service shall be of the flareless, compression type, Hoke "Gyrolok," Crawford "Swagelok," Parker "Trible-Lok," or equal, conforming to ASTM B 16 or B 124.

2.4 STAINLESS STEEL TUBING

A. Stainless steel tubing for sample and process leads shall be seamless, bright annealed stainless-steel tube conforming to ASTM A 269, Type 316 with minimum ⅜-inch O.D. and 0.035-inch wall thickness.

B. Fittings for stainless steel tubing shall be of the flareless, compression type of Type 316 stainless steel.

C. Where process leads or sample tubing are specified to be heat traced, furnish pre-insulated factory-traced and jacketed tubing with 4-watt-per-foot, parallel, self-regulating, electric tracing, glass fiber insulation and black, 105 PVC jacket overall. Tubing shall conform to Part 2.6.A above. Product shall be factory mutual approved for Class I, Division 2 locations and shall operate on 120-volt, 60-hertz, single phase power. All necessary termination and splicing accessories shall be furnished by the tubing manufacturer.

2.5 UNIONS

A. Unions shall be of the ground joint type. Unions in carbon steel and alloy steel piping shall be 300-pound galvanized malleable iron conforming to ASTM A 197 and ANSI B16.3 with bronze to iron seats. Unions in stainless steel piping shall be 3,000-pound forged stainless steel conforming to ASTM A 182, Grade F304 and ANSI B16.11. Unions in copper piping shall be cast red bronze with bronze-to-bronze seats.

2.6 PIPE DOPE

A. All threaded connections shall be made up using Teflon pipe dope applied to the male threads only.

B. Virgin Teflon thread tape shall be Hercules Packing Company "Herculon," 3-M Company "Scotch No. 48," Crane Packing Company "Teflon Thread Tape," or equal.

C. Teflon thread paste may be used in place of tape on very large or very small joints.

2.7 EXPANSION COUPLINGS

A. Expansion couplings for steel and alloy pipe shall conform to the requirements of these Specifications.

B. Expansion couplings shall be furnished where shown on the Drawings, required, or directed by the Engineer.

2.8 COATINGS

A. Cold-applied, plastic tape wrap coatings shall consist of a primer, a cold-applied wrap of laminated polyethylene tape, and a protective wrapping of 90-pound Kraft paper or 50-50-50-pound laminated Kraft paper. Pipe to be coated shall be given a solvent cleaning followed by a commercial blast cleaning in accordance with SSPC SP-6. Primer shall be applied immediately after blasting. Laminated tape wrap shall have an overall thickness of not less than 30 mils and shall overlap each preceding wrap by at least ½ inch. Except for specials, fittings, and field joints, all pipe shall be coated in the shop by mechanical means. Cold-applied plastic tape wrap coatings shall comply with the requirements of AWWA C 210. Plastic tape coatings and materials shall be as manufactured by the Tapecoat Company, Republic Steel Corporation, Polyken Division of Kendall Company, or equal, subject, however, to the requirements of these Specifications.

B. The manufacturers of the coated pipe and field coating materials shall provide the Engineer with written certifications that the pipe coating systems conform to all applicable requirements of AWWA C 203 or AWWA C 210, as appropriate.

2.9 LEAD CONTENT RESTRICTIONS

A. All metal used in the distribution system shall contain less than 8.0% lead content. Any solders and/or fluxes used in the installation of the pipe shall contain less than 0.2% lead content.

2.10 NSF CERTIFICATION REQUIREMENTS

A. All products or materials which will contact drinking water must have NSF/ANSI Standard 61 certification; and all chemicals which will contact drinking water shall have NSF/ANSI Standard 60 certification.

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 33 14 43.10

SECTION FACTORY-BUILT HIGH PRESSURE BOOSTER PUMP STATION

PART 1 - GENERAL REQUIREMENTS

1.1 GENERAL REQUIREMENTS

A. McLemore High Pressure Pump Station, the station will fill a tank on top of Lookout Mountain. The telemetry from WCWSA operations to the high-pressure station will be by others and design of which will be coordinated through the pump station manufacturers. Contractor is responsible for the purchase. transportation, delivery, handling, and installation of the booster pump station.

B. The generator for McLemore Pump Station, the station will ship loose to the jobsite for contractor installation.

1.2 SCOPE OF WORK

A. The contractor shall furnish and install one (1) - factory built, factory delivered, above-ground water booster pump station in a modular building with base frame on a structural base with all necessary internal piping, valves, fittings, supports, meters, control valves, pumps, motors, controls, emergency generator set, automatic transfer switch and other necessary appurtenances as shown on the plans and specified herein.

1.3 PROGRESSIVE PAYMENTS

A. Progressive payments on the part of the equipment manufacturer for the equipment covered in this section will be required in the proposal terms and conditions of the manufacturer’s proposal, as each station is manufactured to the exact requirements for this job and this job only. As the manufacturer could not sell this station to someone else due to the intense specialization required, milestone payments will be required in the terms and conditions of the manufacturer’s proposal including time frame that must be adhered. The Manufacturer shall submit a proper and timely pay request to the Contractor. The pay request shall cover a detailed listing of stored materials and sub-assemblies and work-in-process. Progress payment delays will impede the manufacturer in their efforts to create a smooth factory flow and timely delivery.

B. No more than an aggregate of ninety percent (90%) of the contractor purchase value shall be approved for payment prior to the delivery of the equipment.

2.11 PIPING FLOOR PENETRATIONS

A. Where suction and discharge piping, or any other pressure piping, passes through the station floor plate and base sub-structure, that area of the floor shall be provided with a grout sleeve made up of steel pipe of 9” height and of sufficient annular diameter to pass a full size pipe flange for the pipe size shown.

B. The steel sleeve shall be welded into the floor plate with a 1” projection above the floor in the station. Following installation of the inlet and outlet pipes, the installing contractor shall be responsible for furnishing and installing grout to close the opening around the installed pipe.

2.12 SAFETY FLOOR MATTING

A. The walkway areas (that space from the entrance ladder to the control panel and the entire NEC clearance area) shall be covered with a rubber drainage runner. The runner shall be medium duty, 1/2 inch minimum thickness of open slot design allowing fluids to drain under the standing or walking surfaces. The runner shall have a tread design to promote sure footing. The underside of the runner shall have a raise knob design to permit aeration and drainage, and to reduce runner fatigue. The runner shall not be glued to the floor.

2.13 PUMP OPERATING CONDITIONS - PUMP STATION

A. The pump station shall be capable of delivering the fluid medium at the following capacities and heads when operating at 0 feet minimum suction pressure.

1. PUMPS #1, #2
The pumps shall be, Horizontal Split Case
Design Point: 700 GPM @ 1425 feet TDH; NPSHr: 13 feet;
Suction Pressure: 12.5 PSI;
Discharge Pressure: 600 PSI (Max);
Pump Efficiency at Design Point: 72 %
Pump Power: Non-overloading for 400 rated HP.
Rated Motor Power: 400HP
Motor Speed: 3500 rpm nominal
Manufacturer: Selected By Provider of Pump Station

2.14 PUMPS – HORIZONTAL SPLIT CASE

A. The booster pumps employed within the booster pump station shall be of the multiple stage, double suction, high pressure horizontal split case design and shall be bronze fitted. The pumps shall generally conform to the detailed specifications as set forth below accounting for the minor differences between manufacturers and materials:

B. The pump casing material shall be a minimum of class 35 cast iron. Casing shall be hydrostatically tested at 150% of the maximum working pressure under which the pump could operate at design speed. The bearing bracket supports shall be cast integral with the lower casing half for permanent alignment of bearing and all rotating parts. The suction and discharge flanges shall meet ANSI Class 125. Bronze renewable casing rings shall be furnished, dowelled, and shouldered in the casing.

C. The impeller shall be of the one-piece cast bronze, double suction type. The impeller shall be hydraulically and dynamically balanced, keyed to the shaft with an 18-8

SECTION 40 05 33

PIPE COUPLINGS AND EXPANSION JOINTS

PART 1 - GENERAL

1.1 SUMMARY

A. The work covered by this section includes furnishing all labor, equipment, and materials required to furnish and install pipe couplings and expansion joints, including grooved couplings, flanged adaptors, expansion couplings, and rubber expansion joints, as shown on the Drawings, specified herein, and/or required for proper installation of piping and equipment.

1.2 SHOP DRAWINGS AND ENGINEERING DATA

A. Complete shop drawings and engineering data shall be submitted to the Engineer in accordance with the requirements of the Section 01 33 23, Shop Drawings, Product Data and Samples.

1.3 STORAGE AND PROTECTION

A. Equipment and products stored outdoors shall be supported above the ground on suitable wooden blocks or braces arranged to prevent excessive deflection or bending between supports. Items such as pipe, structural steel, and sheet construction products shall be stored with one end elevated to facilitate drainage.

1.4 SHOP PAINTING

A. Clean, shop prime, and shop paint all pipe couplings as specified herein.

1.5 GUARANTEE

A. Provide a guarantee against defective materials and workmanship in accordance with the requirements of the applicable provisions of Section 01 78 36, Warranties and Bonds.

PART 2 - PRODUCTS

2.1 EXPANSION COUPLINGS

A. Unless otherwise shown or specified, expansion couplings shall be of a gasketed, sleeve type, with a diameter to fit the pipe properly. Expansion couplings shall have a working pressure of not less than 150 psig.

B. Each short sleeve coupling for joining ductile iron or steel pipe shall consist of one cylindrical steel middle ring without pipe stop, two steel follower rings, two rubber-compound, wedge section gaskets, and a sufficient number of track head, electroplated steel bolts to compress the gaskets properly. Steel couplings shall be named Manufacturer on Drawing 105, or approved equal.

C. Where expansion couplings are required for joining ductile iron pipe to steel pipe of the same nominal size, steel transition couplings, Dresser Style 62, Rockwell Style 413, or equal, shall be used.