DIVISION 1200

RECYCLED WATER

SECTION 1201 – RECYCLED WATER PIPE AND FITTINGS
SECTION 1202 – HYDRAULIC VALVES
SECTION 1203 – CURRENTLY NOT USED
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SECTION 1201

RECYCLED WATER PIPE AND FITTINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Recycled water transmission and distribution pipe, fittings, materials, installation, and testing.

B. Thrust blocks and pipe anchors.

1.2 RELATED SECTIONS

A. Section 301 – Trench Excavation.

B. Section 304 – Trench Foundation Stabilization.

C. Section 305 – Pipe Bedding.

D. Section 306 – Trench Backfill.

E. Section 402 – Hydraulic Valves.

F. Section 404 – Water Service Line and Meters.

G. Section 405 – Non-Potable Water Line Separation.

H. Section 505 – Pressure Sewers.

I. Section 703 - Cast-in-Place Concrete.

1.3 REFERENCES

A. ANSI/AWWA C 104: Cement-Mortar Lining for Ductile-Iron Pipe and Fittings, for Water.

B. ANSI/AWWA C 105: Polyethylene Encasement for Ductile Iron Pipe Systems.

C. ANSI/AWWA C 110: Ductile Iron and Gray-Iron Fittings 3 inch through 48 inches for Water and Other Liquids.

D. ANSI/AWWA C 111: Rubber Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

E. ANSI/AWWA C 115: Flanged Ductile Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.

F. ANSI/AWWA C 151: Ductile Iron Pipe, Centrifugally Cast for Water.

G. ANSI/AWWA C 153: Ductile Iron Compact Fittings, 3 inch through 24 inch and 54 inch through 64 inch for Water Service.

H. ANSI/AWWA C 213: Fusion–Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines.

I. ANSI/AWWA C 550: Protective Interior Coatings for Valves and Hydrants.

J. ANSI/AWWA C 600: Installation of Ductile-Iron Water Mains and Their Appurtenances.

K. ANSI/AWWA C 605: Installation of Polyvinyl Chloride Pressure Pipe and Fittings.

L. ANSI/AWWA C 900: Polyvinyl Chloride (PVC) Pressure Pipe 4 inch through 12 inch for Water Distribution.

M. ANSI/AWWA C 905: Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameters 14 inch through 36 inch.

N. ANSI/AWWA C 906: PE Pressure Pipe for Water Distribution.

O. ANSI/AWWA C 907: Polyvinyl Chloride (PVC) Pressure Fittings for Water, 4 inch through 8 inch.

P. ANSI B 16.3: Malleable Iron Threaded Fittings.

Q. ASTM A 53: Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated (Galvanized), Welded and Seamless.

R. ASTM D 1248: Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable.

S. ASTM F 1674: Standard Test Method for Joint Restraint Products for Use with PVC Pipe.

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T. ASTM D 2774: Standard Practice for Underground Installation of Thermoplastic Pressure Piping.

U. ASTM D 3261: Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.

V. ASTM F 477: Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

W. ASTM F 2164: Field Leak Testing of Polyethylene (PE) Pressure Piping Systems using Hydrostatic Pressure.

X. ASTM D 1784: Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

Y. ASTM D 1785: Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

Z. IDAPA 58.01.17 Recycled Water Rules

1.4 SUBMITTALS

A. Submit shop drawings for materials to be installed under this section.

B. Submit manufacturer's certification that pipe and fittings meet or exceed specified requirements including all requested test results and material identifications.

C. Submit manufacturer's installation instructions and maintain copy at the jobsite.

1.5 PROJECT RECORD DOCUMENTS

A. Accurately record actual location of constructed pipelines and other encountered utilities in relation to existing permanent benchmarks.

B. Provide copy of record documents to Owner prior to issuance of substantial completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Handle and store pipe per manufacturer’s recommendations and in a manner which prevents shock, damage or excessive exposure to sunlight and weather.

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B. Protect gasket material from damage, sunlight and contamination.

PART 2 MATERIALS

2.1 PIPE AND FITTINGS; SIZE, TYPE, AND STRENGTH

A. Comply with pipe and fitting size, type and strength classification indicated in the Contract Documents.

B. If type and strength classifications are not indicated in the Contract Documents, contact the Engineer.

C. Notify the Engineer if installation conditions such as trench width, depth, soils, and bedding conditions do not match those contemplated by the Contract Documents.

2.2 POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

A. PVC Pressure Pipe Sizes 4 inch through 12 inch for Water Distribution: ANSI/AWWA C 900.

1. Pressure Class: DR18, Minimum.

2. Outside Diameter Basis: Cast iron (CI) pipe equivalent.

3. Joints: Bell and spigot end with ASTM F 477-02 elastomeric gaskets.

4. Color: Pipe to be purple in color, Pantone 512, 522 or equivalent.

5. Markings: Pipe shall be stamped every ten (10) feet “Caution: Recycled Water - Do Not Drink” or equivalent signage in both Spanish and English.

B. PVC Pressure Pipe 14 inch through 36 inch for Water Transmission: ANSI/AWWA C 905

1. Pressure Class: DR25, Minimum

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2. Outside Diameter Basis: Cast iron (CI) pipe equivalent.

3. Joints: Bell and spigot end with ASTM F 477-02 elastomeric gaskets.

4. Color: Pipe to be purple in color, Pantone 512, 522 or equivalent.

5. Markings: Pipe shall be stamped every ten (10) feet "Caution: Recycled Water - Do Not Drink" or equivalent signage in both Spanish and English.

C. Pipe Fittings: (type as specified in Contract Documents):

1. Ductile Iron Compact Fittings 3 inch through 24 inch: ANSI/AWWA C 153

a. Pressure Class: 350 psi.

b. Petroleum Asphaltic Outside Coating: 1.0 mil minimum thickness.

c. Color: Fittings shall be purple in color Pantone 512, 522 or equivalent.

d. Exterior Coating: Fittings shall be coated with epoxy paint.

2. Ductile or Gray Iron Fittings: ANSI/AWWA C 110

a. Pressure Class: 4 inch to 24 inch = 350 psi, and 30 inch to 36 inch = 250 psi.

b. Petroleum Asphaltic Outside Coating: 1.0 mil minimum thickness.

c. Color: Fittings shall be purple in color Pantone 512, 522 or equivalent.

d. Exterior Coating: Fittings shall be coated with epoxy paint.

3. PVC Fittings 4 inch through 8 inch: ANSI/AWWA C 907.

a. Pressure Class: 150 psi.

D. Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings: ANSI/AWWA C 111.

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2.3 DUCTILE IRON PIPE AND FITTINGS

A. Ductile Iron Pipe, 4 inch through 64 inch, Centrifugally Cast, for recycled water: ANSI/AWWA C 151

1. Thickness Class: As indicated in the Contract Documents.

2. Lining: Cement mortar.

3. Joints: Bell-and-Spigot unless otherwise noted in the Contract Documents.

B. Flanged Ductile Iron Pipe with Ductile Iron or Gray Iron Threaded Flanges: ANSI/AWWA C 115

1. Pressure Class: 250 psi.

2. Lining: Cement mortar.

C. Ductile Iron Compact Fittings Using Mechanical or Flanged joints, 4 inch through 24 inch: ANSI/AWWA C 153

1. Pressure Class: 350 psi.

2. Lining: Cement mortar.

D. Ductile Iron or Gray Iron Fittings Using Mechanical or Flanged joints, 4 inch through 24 inch: ANSI/AWWA C 110

1. Pressure Class for Mechanical Ductile Iron Joints: 350 psi.

2. Pressure Class for Flanged Ductile Iron Joints: 250 psi.

3. Pressure Class for all Gray Iron Joints: 250 psi.

4. Lining: Cement mortar.

E. Ductile Iron or Gray Iron Fittings Using Mechanical or Flanged joints, 30 inches through 48 inch: ANSI/AWWA C 110

1. Pressure Class for all Material and Joint Types: 250 psi.

2. Lining: Cement mortar.

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F. Rubber Gasket Joints Ductile Iron Pressure Pipe and Fittings: ANSI/AWWA C 111

G. Outside Coating for Pipe and Fittings: ANSI/AWWA C 110

1. Petroleum Asphaltic Outside Coating: 1.0 mil minimum thickness.

2. Color: Pipe to be purple in color, Pantone 512, 522, or equivalent.

3. Markings: Pipe shall be stamped every ten (10) feet "Caution: Recycled Water – Do not Drink" or equivalent signage in both Spanish and English.

2.4 CEMENT MORTAR LINING

A. Cement Mortar Lining for Ductile-Iron Pipe and Fittings for Water: ANSI-AWWA C 104

1. Thickness: Standard, single thickness.

2. Seal Coat: Yes.

2.5 POLYETHYLENE PIPE AND FITTINGS

A. PE Pressure Pipe and Fittings for Recycled Water Distribution: ANSI/AWWA C 906.

1. Standard PE Designation: PE 3406.

2. Outside Diameter Base: Steel pipe (IPS).

3. Dimension Ratio: As indicated in the Contract Documents.

4. Fittings: PE 3406, thermal butt-fusion welded per ASTM D 3261.

5. Pipe and fitting shall be purple in color Pantone 512, 522 or equivalent.

2.6 COUPLINGS

A. Couplings: Smith-Blair OMNI 441 coupling system, or approved substitution. Couplings shall be lined and coated with a minimum thickness of 0.012" of fusion-bonded epoxy, or approved substitution. Coating must comply with ASTM C213 and AWWA C550.

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B. Flanged Coupling Adapters: Smith-Blair 912, or approved substitution. Couplings shall be lined and coated with a minimum thickness of 0.012" of fusion-bonded epoxy, or approved substitution. Coating must comply with ASTM C 213 and AWWA C 550.

C. HDPE Couplings: Electrofusion couplings to solid wall HDPE and flange by flange elsewhere or as directed by the Engineer.

2.7 POLYETHYLENE ENCASEMENT

A. Polyethylene Encasement for Ductile Iron Pipe Systems: ANSI/AWWA C105

1. Material: ASTM D 1248 tubular high density cross laminated film.

2. Class: C, Pantone 512, 522 or approved equivalent.

2.8 THRUST BLOCKS

A. Concrete: Per Section 703 – Cast-in-Place Concrete. Minimum compressive strength of 2500 psi.

B. Placement: Per this section and ISPWC Standard Drawing SD-403 – Thrust Block and Anchor Details.

2.9 MECHANICAL RESTRAINT

A. Type: Standard mechanical joint restraint gland, restraint devices for MJ fittings and appurtenances to conform to ANSI/AWWA C111/A21.11 or ANSI/AWWA C153/A21.53.

B. Product: EBAA iron series 2000 PV (PVC Pipe) or EBAA Iron Series 1100 Megalug (Ductile Iron Pipe) or approved substitution, and to meet requirements of ASTM F 1674. An identification number consisting of year/day/plant/shift to be cast into each gland body from which to trace test results.

C. Application: Approved for above-grade installation. Belowground installation as an alternative to thrust blocks is to be only upon approval of the Engineer and the Idaho Department of Environmental Quality based on service and installation conditions.

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2.10 LOCATING WIRE

A. All locating wire and products shall be manufactured in the U.S.A. All locating wire shall have HDPE insulation intended for direct bury and color coated per APWA standard for the specific utility being marked.

1. Open Trench - Locating wire shall be #12 AWG Copper Clad Steel, High Strength with minimum 300 lb. break load, with minimum 30 mil HDPE insulation thickness.

2. Directional Drilling/Boring - Locating wire shall be #12 AWG Copper Clad Steel, Extra High Strength with minimum 1,150 lb. break load, with minimum 30 mil HDPE insulation thickness.

3. Pipe Bursting/Slip Lining - Locating wire shall be 7 x 7 Stranded Copper Clad Steel, Extreme Strength with 4,700 lb. break load, with minimum 50 ml HDPE insulation thickness.

4. Grounding wire – Grounding wire shall be #12 AWG Copper Clad Steel with red 30 mil HDPE insulation thickness.

B. Connectors

1. Direct bury wire connectors – shall include 3-way lockable connectors and mainline to lateral lug connectors specifically manufactured for use in underground locating wire installation. Connectors shall be dielectric silicon filled to seal out moisture and corrosion, and shall be installed in a manner so as to prevent any uninsulated wire exposure.

2. All mainline locating wires must be interconnected in intersections, at mainline tees and mainline crosses. At tees, the three wires shall be joined using a single 3-way lockable connector. At Crosses, the four wires shall be joined using a 4-way connector. Use of two 3-way connectors with a short jumper wire between them is an acceptable alternative

3. Non-locking friction fit, twist on, or taped connectors are only allowed for existing wire installations or areas where lockable connectors will not work.

2.11 PIPE ANCHORS

A. Concrete and Rebar: per Section 703 – Cast-in-Place Concrete and ISPWC Standard Drawing SD-510 – Pipe Anchors.

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2.12 LOCATION TAPE

A. Location tape shall be white or black printing on a purple color field as approved by IDEQ, having the words, "Caution: Recycled Water – Do Not Drink" or equivalent signage in both Spanish and English. The overall width of the tape shall be at least three (3) inches.

2.13 COLOR

A. All buried and above ground piping, risers, fittings, valves, etc., shall be painted purple color (Pantone 512, 522 or other equivalent product acceptable to IDEQ).

PART 3 WORKMANSHIP

3.1 EXAMINATIONS

A. Verify trench excavations are to required alignment and grade and pipe location meets Section 405 – Non-Potable Water Line Separation.

B. Verify that trench conditions and shoring, sheeting, and bracing protect workers and meet the requirements of OSHA and other State and Federal Requirements.

C. Verify that excavation will allow a minimum pipe cover of 48 inches, unless otherwise indicated in the Contract Documents.

D. Examine pipe and fittings for defects or damage.

E. Verify all pipe, fittings, aggregate, and all materials delivered to the site meet the requirements of these Contract Documents.

F. Verify utility locations, existing piping locations and structures where connections are to be made prior to beginning work. Notify the Engineer if field conditions are different from the Contract Documents. Allow 4 hours for the Engineer to modify the design, if necessary, unless otherwise specified.

G. Notify all affected businesses and residences of all water system shutdowns or interruptions 48 hours in advance.

3.2 PIPE INSTALLATION

A. Prepare trench bottom as required by Section 301 – Trench Excavation.

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B. If excavation enters an area of petroleum or other contamination, stop work and notify the Engineer for verification of piping and gasket material usage. In such areas, use pipe and joint materials not subject to permeation by organic compounds. Use non-permeable materials for all portions of the system affected by organic contamination endangering water mains, services, and hydrant leads.

C. Do not lay pipe unless groundwater is 1 foot below the pipe invert and a foundation has been provided in accordance with Section 304 – Trench Foundation Stabilization.

D. Provide pipe bedding and initial backfill as required by Section 305 – Pipe Bedding.

E. Install pipe in accordance with the manufacturer's recommendations.

F. Use standard lengths of pipe unless otherwise required for installation of tees, fittings, or valves.

G. Utilize proper tools for cutting and beveling pipe ends and joining pipe. Use manufacturer's recommended tools designed for this task.

H. Move pipe carefully and prevent damage to pipe and manufactured ends while lowering pipe into trench.

I. Prevent foreign material including debris, tools, clothing, and dirt from entering the pipe. Remove dirt and other foreign material from pipe.

J. Prepare pipe joint using specified gasket and manufacturer’s recommended lubricant.

K. Mark, or verify that pipe ends are marked, to indicate insertion stop position (home). Ensure that pipe is inserted into bell to this mark. Push spigot into bell using methods recommended by the manufacturer. Protect the end of the pipe during “homing” and do not use excessive force that may result in over-assembled joints, dislodged gaskets, or damaged ends. If full entry is not achieved, disassemble and clean the joint and reassemble.

L. Provide sufficient restraint for the pipe to ensure that joints are held in place while bedding and initial backfill are placed.

M. When pipe installation is not in progress, block and plug the open end of the pipe to prevent creep, uplift or floating and entrance of water or other material into the pipe.

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N. Ensure pipe is installed to lines and grades indicated in the Contract Documents.

O. Place locating wire directly above pipe. Ensure that locating wire is taped in place and remains directly above pipe during and after backfill has been placed.

P. Install anchors and supports as indicated in the Contract Documents

Q. Backfill trench as required by Section 306 – Trench Backfill.

3.3 POLYETHYLENE ENCASEMENT

A. Secure polyethylene encasement around pipe per ANSI/AWWA C 105 Method A.

B. Cut tube to a length 24 inches longer than the pipe section and wrap around pipe in accordion fashion.

C. After placement in trench and jointing, secure overlapping tubing. Provide 24 inches of overlap at each joint. Repair any cuts or tears with tape or patch secured in place.

3.4 THRUST BLOCKS

A. Place thrust blocks at each angled fitting, tee, cross, reducer, cap, plug and valve in accordance with Standard Drawing SD-403 – Thrust Block and Anchor Details.

B. Provide bearing area against undisturbed earth.

C. Place thrust blocks such that fitting or valve can be removed at a later date without damage to the pipeline, valve or fitting.

D. Place 6 mil polyethylene between thrust block and fitting.

E. Place concrete so no concrete touches the nuts and bolts of the fitting or valve, and the nuts and bolts can be removed and replaced without removing any concrete.

F. Thrust block bearing areas as listed on Standard Drawing SD-403 – Thrust Block and Anchor Details. For test pressures greater than 150 psi or soil bearing pressures less than 2,000 psi, increase thrust block bearing areas as directed by the Engineer.

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3.5 PIPE ANCHORS

A. Place pipe anchors on all pipe installed on slopes of 20% or greater measured along the centerline of pipe. Install per Standard Drawing SD-510 - Pipe Anchors.

B. Provide bearing area against undisturbed earth.

3.6 PRESSURE TESTING

A. Perform testing in the presence of the City Engineer or the City's authorized Resident Project Representative

B. Assure that trench is properly backfilled and thrust blocking has cured to a degree that will allow pressure testing without damage, or pipe/fitting movement.

C. Gradually fill pipe with water. For pipe working pressures less than or equal to 100 psi, sustain a test pressure of 150 psi. For pipe working pressures greater than 100 psi, sustain a test pressure at least 1.5 times the working pressure or as determined by the Engineer.

D. Expel all air.

E. Verify that, in a two-hour test, the pipe does not leak in excess of the allowable leakage as defined by the following formula in which *Q* is the allowable leakage in gallons/hour.

$$Q = \frac{LD\sqrt{P}}{148{,}000}$$

Where:

Q	=	*allowable leakage in gallons per hour*
L	=	*length of pipe section being tested, in feet*
D	=	*nominal diameter of the pipe, in inches*
P	=	*average test pressure during the hydrostatic test, in pounds per square inch (gauge)*

F. Pressure test HDPE pipe per ASTM F 2164-02 Field Leak Testing of Polyethylene (PE) Pressure Piping Systems using Hydrostatic Pressure.

3.7 LOCATING WIRE

A. Locating wire shall be installed on the top of the pipe and secured at 10' intervals using materials and methods approved by the City Inspector.

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B. Locating wire systems must be installed as a single continuous wire, except where using approved connectors.

C. Any damage occurring during installation of the locating wire must be immediately repaired by removing the damaged wire and installing a new section of wire with approved connectors. Taping and/or spray coating shall not be allowed.

D. All service lateral finder wire shall be connected to the main line finder wire using a main line to lateral lug connector, installed without cutting / splicing the main line finder wire.

E. Mainline locating wire shall not be connected to existing conductive pipes.

F. Connect to existing locating wire using approved splice connectors and properly ground at the splice location unless exceptions, as noted in section 2.10 B.

G. At all accessible terminations, uncoiled length of finder wire and grounding wire shall extend at least 2 feet above finished grade.

H. All new trace wire installations shall be located using typical low frequency (512Hz) line tracing equipment, witnessed by the City Inspector, City Engineer/Project Manager, or facility owner, as applicable, prior to acceptance of ownership. This verification shall be performed after final grading and prior to paving. Location signal shall be applied to the tracer wire using the conductive method, attaching directly to tracer wire then applying electrical current through the tracer wire to remote ground and back to the grounded transmitter, Continuity testing in lieu of actual line tracing shall not be accepted.

3.8 PIPE MARKERS

A. Furnish and install service line markers at stub-outs per City of Meridian Standard Drawing SW3.

B. Provide Engineer with 2 working days' notice to allow measurement of the vertical and horizontal location of pipe ends before the pipeline is covered.

1. Extend marker 4 feet above the ground surface. The exposed length of marker shall be painted florescent purple.

2. Where a concrete sidewalk is constructed across the service line from main to meter can, sidewalk shall be marked with a stamped 4 inch high "RW" at the location of the meter lid.

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3.9 CONNECTIONS TO EXISTING MAINS

A. Expose existing main and verify line size and type of pipe.

B. Furnish and install necessary fittings to make connection.

C. Maximum allowable pipe gap at couplings is 1/2 inch.

3.10 ABANDONMENT OF EXISTING MAINS

A. Expose main to be abandoned and verify line size and type of pipe.

B. Cut out existing fitting that connects abandoned main to pipe that is to remain in service.

C. Replace fitting with section of new pipe and required couplings.

3.11 LOCATION TAPE

A. Identification tape shall be installed eighteen (18) inches above the transmission pipe longitudinally, shall be centered over the pipe, and shall run continuously along the length of the pipe.

PART 4 MEASUREMENT AND PAYMENT

4.1 Use either the first or both of the following unit prices as designated on the Bid Schedule. If required and not listed in the Bid Schedule, the following Bid Items are to be considered incidental to other Bid Items.

A. Recycled Water Main Pipe – Size _____ - Type _____ : By the linear foot for the type and size of pipe measured along the horizontal centerline of the pipe through all fittings and valves. Includes pipe, (if not included as a separate Bid Item), fittings, connections, thrust blocks, restraint, cleaning, testing, excavation, bedding, backfill, and all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1201.4.1.A.1.
2. Bid Schedule Description: Recycled Water Main Pipe – Size _____ - Type _____… linear foot (LF).

B. Recycled Water Main Fitting – Size _____- Type _____: Per each for the type, size and material of the fitting. Includes fittings, connections, thrust blocks, restraint, cleaning, testing, excavation, bedding, backfill, and all appurtenances not itemized in the Bid Schedule.

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1. Bid Schedule Payment Reference: 1201.4.1.B.1.
2. Bid Schedule Description: Recycled Water Main Fitting – Size _____ - Type _____… each (EA).

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SECTION 1202

HYDRAULIC VALVES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Recycled Water Valves.

B. Valve Boxes.

1.2 RELATED SECTIONS

A. Section 401 – Water Pipe and Fittings.

B. Section 403 – Hydrants.

C. Section 404 – Water Service Line and Meters.

D. Section 703 – Cast-in-Place Concrete.

1.3 REFERENCES

A. ANSI/AWWA C 509 – Resilient Seated Gate Valves for Water Supply Service.

B. ANSI/AWWA C 512 – Air Release, Air/Vacuum and Combination Air Valves for Waterworks Service.

C. ANSI/AWWA C 550 – Protective Epoxy Interior Coatings for Valves and Hydrants.

D. IDAPA 58.01.17 – Recycled Water Rules.

1.4 SUBMITTALS

A. Submit shop drawings for materials to be installed or furnished under this section.

B. Submit manufacturer’s certification that valves and appurtenances meet or exceed specified requirements.

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C. Submit manufacturers' installation instructions and maintain copy at the job site.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with manufacturer's recommendations.

1.6 OPERATION AND MAINTENANCE MANUALS

A. Provide operation and maintenance manuals with all valves.

1.7 PROJECT RECORD DOCUMENTS

A. Accurately record actual location of constructed valves and other encountered utilities in relation to existing permanent benchmarks.

B. Provide copy of record documents to Owner prior to issuance of substantial completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Handle and store valves per manufacturer's recommendation and in a manner, which prevents shock, damage or excessive exposure to sunlight and weather.

B. Protect valve gasket and seal materials from damage, sunlight and contamination.

PART 2 MATERIALS

2.1 VALVE, SIZE, TYPE, AND STRENGTH

A. Comply with valve size, type, fitting type, and strength classification indicated in the Contract Documents.

B. If type and strength classifications are not indicated in the Contract Documents, notify the Engineer.

C. Notify the Engineer if installation conditions do not match those contemplated by the Contract Documents.

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2.2 RESILIENT SEATED GATE VALVES

A. Resilient Seated Gate Valves for Recycled Water Supply Service: ANSI/AWWA C 509.

1. Body Type: Flanged or mechanical joint.

2. Stem: Non-rising.

3. Actuator: 2-inch square wrench nut opening counterclockwise.

4. Stem Seal: O-ring.

5. Nuts and bolts shall be stainless steel.

6. Interior and Exterior Coating: Required. Exterior coating shall be purple in color, Pantone 512, 522 or equivalent.

7. Type of Installation: Buried.

2.3 AIR RELEASE, AIR VACUUM, AND COMBINATION AIR VALVES

A. Air Release/Air Vacuum and Combination Air Valves for Waterworks Service: ANSI/AWWA C 512.

1. Valve Size, Type, Working Pressure, Inlet and Outlet Configuration: As indicated in the Contract Documents and consistent with pipe system.

2. Body and Cover: Ductile iron.

3. Interior and Exterior Coating: Required.

4. Standard Detail: Refer to ISPWC Standard Drawing SD-408-Air Release/ Vacuum Valve.

5. Color: Valve to be purple in color, Pantone 512, 522 or equivalent.

2.4 BLOW-OFF ASSEMBLY

A. Refer to City of Meridian Standard Drawings W-12 and W-13 – 2” Blow-off Assembly Detail.

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2.5 PROTECTIVE EPOXY COATINGS FOR VALVES

A. Protective Epoxy Interior Coatings for Valves and Hydrants: ANSI/AWWA C 550.

1. Color: Valve to be purple in color, Pantone 512, 522 or equivalent.

2.6 VALVE BOXES

A. Size: Minimum 5-1/4 inch inside diameter.

B. Material: Cast iron.

C. Adjustment: Adjustable with sufficient length for bury.

D. Cover: Stamped "Recycled Water Valve," non-pop composite lid style, purple in color.

1. Color: Valve to be purple in color, Pantone 512, 522 or equivalent.

E. Detail: City of Meridian Standard Drawing RW-1– Valve Box and Lid Detail.

2.7 THRUST BLOCKS

A. Concrete: Per Section 703 – Cast-in-Place Concrete.

B. Placement: Per ISPWC Standard Drawing SD-403 – Thrust Block and Anchor Details.

PART 3 WORKMANSHIP

3.1 EXAMINATION

A. Verify that excavations are to required grade.

B. Verify that trench conditions and shoring, sheeting, and bracing protect workers and meet the requirements of OSHA and other State and Federal requirements.

C. Examine valves and appurtenances for defects or damage.

D. Verify valves and appurtenances delivered to the site meet the requirements of the Contract Documents.

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E. Verify utility locations, existing piping locations and structures where connections are to be made prior to beginning work. Notify the Engineer if field conditions are different from the Contract Documents. Allow 4 hours for the Engineer to modify the design, if necessary, unless otherwise specified.

3.2 INSTALLATION

A. Install valves and appurtenances in accordance with manufacturer's recommendations and the City of Meridian Standard Drawings.

B. Install valves plumb and vertical. Set valve box centered and plumb over wrench nut and flush with ground or street surface. Install box per City of Meridian Standard Drawing RW-1 – Valve Box and Lid Detail.

C. Install all valves so a watertight seal is provided at joints.

D. Install valve appurtenances as required in the Contract Documents.

E. Install all valves so weight and torque forces are supported by the valve and thrust block and not adjacent piping.

F. Install thrust blocks under buried valves per Section 401 – Water Pipe.

3.3 DEMONSTRATION

A. Demonstrate valve operation, adjustments and maintenance.

B. Demonstrate valve functions within specified requirements

PART 4 MEASUREMENT AND PAYMENT

4.1 Use the following unit price as designated on the Bid Schedule. If required and not listed in the Bid Schedule, the following Bid Items are to be considered incidental to other Bid Items.

C. Valve – Size _____ - Type _____ : Per each for the type and size of valve specified. Includes valve, fittings, valve boxes, connections, actuators, concrete collar and all appurtenances not itemized in the Bid Schedule.

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1. Bid Schedule Payment Reference: 1202.4.1.A.1.
2. Bid Schedule Description:
   Valve – Size_____ - Type _____ each (EA).

D. Blow-off – Type _____ : Per each for the type of blow-off specified. Includes corporation stop or valve (as required), fittings, valve boxes, connections, concrete collar and all appurtenances not itemized in the Bid Schedule.

1. Bid Schedule Payment Reference: 1202.4.1.B.1.

2. Bid Schedule Description:
   Blow-off –_____ - Type_____ each (EA).

●● END OF SECTION ●●

SECTION 1203

THIS SECTION – CURRENTLY NOT USED .....

●● END OF SECTION ●●

SECTION 1204

RECYCLED WATER SERVICE LINE AND METERS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Service Pipe.

B. Recycled Water Meters.

C. Appurtenances.

1.2 RELATED SECTIONS

A. Section 301 – Trench Excavation.

B. Section 304 – Trench Foundation Stabilization.

C. Section 306 – Trench Backfill.

D. Section 1201 – Water Pipe and Fittings.

E. Section 1202 – Hydraulic Valves.

F. Section 405 – Non-Potable Water Line Separation.

1.3 REFERENCES

A. ANSI/AWWA C 800: Underground Service Line Valves and Fittings.

B. ANSI/AWWA C900: Polyvinyl Chloride (PVC) Pressure Pipe, 4 inch through 12 inch for Recycled Water Service.

C. ANSI/AWWA C 901: Polyethylene (PE) Pressure Pipe and Tubing, ¾ inch to 2 inch for Recycled Water Service.

D. IDAPA 58.01.17 - Recycled Water Rules

1.4 SUBMITTALS

A. Submit shop drawings and product data for materials to be installed or furnished under this section.

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B. Submit manufacturer's certification that service pipe and meters meet or exceed specified requirements.

C. Submit manufacturers' installation instructions and maintain copy at the jobsite.

1.5 PROJECT RECORD DOCUMENTS

A. Accurately record actual location of water services and meters in relation to existing benchmarks.

B. Provide copy of record documents to owner prior to issuance of substantial completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Handle and store pipe and meters per manufacturer's recommendations and in a manner which prevents shock, damage or excessive exposure to sunlight and weather.

B. Protect gasket material from damage, sunlight and contamination.

1.7 METER WARRANTY AND OPERATION AND MAINTENANCE MANUAL

A. Main Case: Manufacturing workmanship defect guarantee for the life of the unit.

B. Registers and Metering Components: Free from manufacturing defects for a period of 10 years, non-prorated.

C. Provide an operation and maintenance manual for each type of meter supplied.

PART 2 MATERIALS

2.1 PIPE AND FITTINGS; SIZE, TYPE, AND STRENGTH

A. Comply with pipe and fitting size, type, and strength classification indicated in the Contract Documents.

B. If type and strength classifications are not indicated in the Contract Documents, use polyethylene pipe.

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C. Notify the Engineer if installation conditions such as trench width, depth, soils, and bedding conditions do not match those contemplated by the Contract Documents.

2.2 SERVICE PIPE

A. Polyethylene (PE) Pressure Pipe for Recycled Water Service: ANSI/AWWA C 901.

1. Pressure Class: 200 psi.

2. Outside Dimension Ratio: DR 7.

3. Dimension Basis: Iron Pipe Size (IPS).

4. Standard PE Code Designation: PE 3408 per ASTM D 3350.

5. Color: Pipe to be purple in color: Pantone 512, 522, or equivalent.

B. Polyvinyl Chloride (PVC) Pipe for Recycled Water Distribution: ANSI/AWWA C 900

1. Pressure Class: 200 psi.

2. Color: Pipe to be purple in color, Pantone 512, 522 or equivalent.

2.3 RECYCLED WATER METER

A. Cold Water Meters

1. Product: In accordance with the Contract Documents.
2. See City of Meridian Standard Drawings W1 through W5.
3. Exterior Coating: Required. Exterior coating shall be purple in color, Pantone 512, 522 or equivalent.

2.4 APPURTENANCES

A. Service Saddles.

1. In accordance with City of Meridian Standard Drawing W1 & W4.

2. Color: Saddles to be purple in color, Pantone 512, 522 or equivalent.

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B. Corporation Stops.

1. Type and Product: Refer to City of Meridian Standard Drawing W-1 & W4.

2. Color: Corporation stops to be purple in color: Pantone 512, 522, or equivalent.

C. Couplings.

1. No splices are allowed on service lines. Service lines may be fused.

2. Color: Pipe to be purple in color: Pantone 512, 522, or equivalent.

D. Meter Setters.

1. See Standard Drawings W1 & W4.

2. Exterior Coating: Required. Exterior coating shall be purple in color: Pantone 512, 522, or equivalent.

E. Fittings.

1. All brass or copper with iron pipe threads.

2. Exterior Coating: Required. Exterior coating shall be purple in color: Pantone 512, 522, or equivalent.

F. Locating Wire.

1. Type: (No. 12 AWG) copper with purple insulation. According to Section 1201 and Standard Drawings W1-W4.

G. Meter Box.

1. For ¾ inch (single and dual) and 1-inch single services:

a. See Standard Drawing W1.

2. For 1-1/2 inch to 2-inch service:

b. See Standard Drawing W4

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H. Meter Box Cover.

1. See Standard Drawings W1 & W4

2. Exterior Coating: Required. Exterior coating shall be purple in color: Pantone 512, 522, or equivalent.

2.5 HEALTH REQUIREMENTS

A. Verify all regulatory guidelines related to the use of Class A recycled water including, but not limited to, signage.

PART 3 WORKMANSHIP

3.1 EXAMINATIONS

A. Verify that excavations are to required alignment and grade per Section 301 Trench Excavation and ISPWC Standard Drawings SD306 Utility Trench, and that installation meets Section 405 – Non-Potable Water Line Separation.

B. Verify that trench conditions, shoring, sheeting, and bracing protect workers and meet the requirements of OSHA and other State and Federal requirements.

C. Verify that trench depth will allow a minimum of 48 inches cover over service lines.

D. Examine service pipe, fittings, meters, and appurtenances for defects or damage.

E. Verify service pipe, fittings, meters, and materials delivered to the site meet the requirements of the Contract Documents.

F. Verify utility locations, existing piping locations, and structures where connections are to be made prior to beginning work. Notify the Engineer if field conditions are different from the Contract Documents. Allow 4 hours for the Engineer to modify the design, if necessary, unless otherwise specified.

3.2 INSTALLATION

A. Coordinate with property owners prior to connection, at least 48 hours in advance. Disruption of service shall not exceed 4 hours in duration.

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B. Install service lines and recycled water meters in the locations indicated on the Contract Documents.

C. Install pipe, fittings, meters, and meter boxes in accordance with the manufacturer's recommendations and City of Meridian Standard Drawing W1 & W4 and ISPWC Standard Drawing SD402 – Water Service Connection.

D. Install service lines under paved concrete surfaces by pulling or boring the new service line in place from the new recycled water main to the meter. If, according to the Engineer, pulling or boring is not attainable, install service lines by trenching.

E. Prepare trench bottom as required by Section 301 – Trench Excavation.

F. Do not lay pipe unless groundwater is 1 foot below the pipe invert and a foundation has been provided in accordance with Section 304 – Trench Foundation Stabilization.

G. Provide pipe bedding and initial backfill as required by Section 306 – Trench Backfill.

H. Utilize proper tools for cutting and beveling pipe ends and installing fittings.

I. Clean and prepare pipe and fittings.

J. Assure that no dirt or other foreign material is allowed in pipe.

K Assure that continuity is maintained in locating wire for both open cut and "pulled" service lines.

PART 4 MEASUREMENT AND PAYMENT

4.1 Use the following unit price as designated on the Bid Schedule. If required and not listed in the Bid Schedule, the following Bid Items are to be considered incidental to other Bid Items.

A. Recycled Water Service Connection, per each as specified.
Includes; excavation, bedding, backfill, service tap and saddle, corporation stop, service pipe, fittings, meter box, and all appurtenances not itemized in the Bid Schedule.
1. Bid Schedule Payment Reference: 1204.4.1.A.1.
2. Bid Schedule Description: Recycled Water Service Connection, _____size _____each (EA).

●● END OF SECTION ●●