ADDENDUM NO. 3

PROJECT TITLE:	Courthouse Annex Building Poinsett County Harrisburg, Arkansas
OWNER:	Poinsett County, Arkansas 401 Market St. Harrisburg, AR 72432
OWNER'S REPRESENTATIVE:	J.C. Carter, County Judge (870) 578-0601
ARCHITECT:	Brackett-Krennerich and Associates P.A. 100 East Huntington Avenue, Suite D Post Office Box 1655 Jonesboro, Arkansas 72403-1655 (870) 932-0571 *office* •(870) 932-0975 *fax*
COMMISSION NUMBER:	2237
DATE OF ISSUE:	August 23, 2024
BID DATE/LOCATION:	August 28, 2024 at 2:00 p.m. C.D.S.T Conference Room of the Poinsett County Annex 110 East St. Harrisburg, AR 72432

Contractor shall take note of the following listed revisions and/or additions to the drawings and specifications for the above referenced project and adjust the contract sum accordingly. These revisions are hereby made a part of said documents and subsequent construction as if therein included.

GENERAL

1. Pre-Bid Sign in Sheet – Refer to pages 4-5 of this addendum.

2. Specifications: Section 00 4100 – BID FORM
    a. Omit and replace with pages 6-7 of this addendum.

3. Specifications: Section 01 2300 – DEDUCTIVE ALTERNATES
    a. Add Section 01 2300 – DEDUCTIVE ALTERNATES. Refer to page 8 of this addendum.

4. Specifications: Section 01 2100 – ALLOWANCES; add the following:

1.04 ALLOWANCES SCHEDULE

B. Include the stipulated sum of **$25,000.00** for repair of the building pad if necessary. The county will be contracting with MTA Engineers to verify if the compaction of the building pad was completed properly. MTA will test the pad and if the pad needs to be re-compacted the county will re-compact the pad themselves (having MTA test it), or the contractor will re-compact using the allowance.

ARCHITECTURAL

5. Specifications: Section 04 2000 – UNIT MASONRY; add the following:

2.01 CONCRETE MASONRY UNITS

B. Polished Face Concrete Masonry Units:
   1. To be light weight concrete masonry polished face units with color additive equal to units manufactured by Nettleton Concrete Works, Jonesboro, Arkansas.
   2. Units manufactured with W.R. Grace "Dry Block" block additive.
   3. Smooth units to be used at wall caps and intermediate bands as shown on the drawings.
      a. 4" x 8" x 16" solid block.
   4. Color: To be selected; submit samples.

6. Specifications: Section 06 1733 – WOOD I-JOISTS
   a. Section 2.02 – Materials, Omit Item B – Minimum Properties, Items 1-8.

7. Specifications: Section 09 3000 – TILING; Omit Section 2.01 Tile, Item C – Wall Tile, and replace with the following:

2.01 TILE

C. Wall Tile: Porcelain (Unpolished)
   1. Size and Shape: 12" x 24" (T-01A)
   2. Finish: Unpolished.
   3. Water Absorption: < 0.20%, ASTM C373.
   4. Breaking Strength: > 425 lbf, ASTM C648.
   5. Coefficient of Friction: Wet – 0.42-0.52
   6. Frost Resistance: Resistant, ASTM C1026.
   7. Equal to Crossville, Inc.; "Owenstone" Porcelain Stone.
   8. Color/Finish: To be selected.
   9. Edge: Rectified.
   10. Trim:
      a. Size and Shape: 4" x 24" (TB-03) single bullnose trim

8. Specifications: Section 09 6513 – RESILIENT BASE AND STAIR COVERING
   a. Add Section 09 6513 – RESILIENT BASE AND STAIR COVERING. Refer to pages 9-10 of this addendum.

PLUMBING

9. Specifications: Section 22 1005 – PLUMBING PIPING
    a. Add Section 22 1005 – PLUMBING PIPING. Refer to pages 11-22 of this addendum.

Sign-In Sheet

Pre-Bid Meeting

Date: Tuesday, August 13, 2024 @ 2:00 pm

Project: Courthouse Annex Building
Poinsett County
Harrisburg, Arkansas

MEETING SIGN-IN

Name	Organization	Phone	Email
Logan Holmes	Cline Construction Group	501-580-1591	lholmes@clineconstructiongroup.com
Chris Provence	Provence Const.	870-307-9262	provencectinc@gmail.com
Mike Johnson	Cushman's Climate Control	870-710-0218	m.johnson@navissllc.com
Teresa Rouse	County		
Kelsey Smith	County		
Barry Fowler	County		
JC Carter	Judge		
Randy Jones	JOP		
Tim Martin	JOP.		

Hunter Bailey	Bailey Contractors, Inc.	870 926 8785	hunter@baileygc.com
Casey Cagles	CNI	870-972-5632	ccagles@cc-n-i.com
RANDALL GARNER	THOMPSON CONST.	817-307-7408	RANDALL@THOMPSON-CS.COM
Joseph Tubbs	HWY 37 Partnership	870 217 2865	Tubbsauto2607@gmail.com
Jay Totty	Je-Systems	479-783-2756	jtotty@je-systems.com
Anthony Halcomb	Wilkins Electric	870-215-9171	anthony@wilkinselectrical
Koda Yates / Keith Owens	Tate General Contractors	870-935-4424	Kyates@tategc.com
Melissa Woods	Woods Masonry	870-926-5976	woodsmasonry@suddenlink.net
SK Patel	Olympus Con.	870-932-6670	sk@olympusgc.com
Daniel Frank	CLV Services	870 275 5176	craigheadlvs@gmail.com
Tim Simers	FPOA (Fire protection)	870-710-3226	timsimers@yahoo.com
Michael Wilkey	P'gould Daily Press		mwilkey@paragoulddailypress.com
Jacob Clifton	Kee Construction	870-219-7232	jclifton@keeconstruction.net
Dakota Ellis	Wagner General	501.203.0704	dakota@wagnergeneral.com
Jason Holt	Baldwin Shell	901 237 9885	jholt@baldwinshell.com
Chandler Rogers	Rogers Custom Millwork	870 930 4410	chandler@rogerscustommillwork.com
Corbet Clark	Clark General Contractors	870-886-6711	Clarkgeneral@sbcglobal.net

SECTION 00 4100
BID FORM

THE PROJECT AND THE PARTIES

1.01 TO:

A. Owner: Poinsett County

1.02 FOR:

A. Courthouse Annex Building, Poinsett County, Harrisburg, Arkansas

1.03 DATE: _____ (Bidder to enter date)

1.04 SUBMITTED BY: (Bidder to enter name and address)

A. Bidder's Full Name _____

1. Address _____
2. City, State, Zip_____

1.05 OFFER

A. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Brackett-Krennerich and Associates, P. A. Architects for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

B. _____

(dollar amount is to be shown numerically)

C. We have included the required security Bid Bond as required by the Instructions to Bidders.

D. All applicable federal taxes are included and State of Arkansas taxes are included in the bid sum.

E. We understand that the owner reserves the right to reject any and all bids and waive any informalities in the bidding.

1.07 ALLOWANCES

A. Allowances described in Section 01 2100 and Addendum No. 3 are included in the bid price.

1.08 ACCEPTANCE

A. This offer shall be open to acceptance for thirty days from the bid closing date.

B. If this bid is accepted by the Owner within the time period stated above, we will:
1. Execute the Agreement within Ten (10) days of receipt of Notice of Award.
2. Furnish the required bonds within Ten (10) days of receipt of Notice of Award.
3. Commence work within Ten days after written Notice to Proceed of this bid.

C. If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.

D. In the event our bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

1.09 CONTRACT TIME/ LIQUIDATED DAMAGES

A. If this Bid is accepted, we agree that the work will be complete in accordance with the contract documents and ready for Substantial Completion:

B. **Complete work by October 15, 2025.**

C. Liquidated Damages: **$200.00 (Two Hundred Dollars and 00/100)** for liquidated damages will be assessed to the contractor for liquidated damages for each calendar day that the contractor is in default after the time stipulated in the contract documents.

1.10 ADDENDA

A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum or price.
   1. Addendum # _____ Dated _____.
   2. Addendum # _____ Dated _____.
   3. Addendum # _____ Dated _____.
   4. Addendum # _____ Dated _____.

1.11 LISTING OF MECHANICAL, PLUMBING, ELECTRICAL AND ROOFING WORK

A. All mechanical, plumbing, electrical and roofing work shall be listed regardless of qualifications, licensures or work amount.

B. Bidders should consult the project manual on how to fill out this form. Failure to fill out this form correctly shall cause the bid to be declared non-responsive and the bid will not receive consideration.
   1. Indicate the Name(s), License Number(s) of each entity performing the listed work and the amount:

C. MECHANICAL (Indicative of HVACR): Name-_____
   1. License No._____
   2. Is the amount of work $50,000 or over: Yes___ No ___

D. PLUMBING: Name-_____
   1. License No._____
   2. Is the amount of work $50,000 or over: Yes___ No ___

E. ELECTRICAL: Name-_____
   1. License No._____
   2. Is the amount of work $50,000 or over: Yes___ No ___

F. ROOFING & SHEETMETAL: Name-_____
   1. License No._____
   2. Is the amount of work $50,000 or over: Yes___ No ___

1.12 BID FORM SIGNATURE(S)

A. Company Name: _____

B. Signature: _____

C. Printed Name:_____

D. Title: _____

E. Business Address: _____

F. Contractor's License No._____

G. Seal if bid is by a corporation.

END OF BID FROM

SECTION 01 2300

DEDUCTIVE ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Description of (1) one alternate bid required.

1.02 RELATED SECTIONS

A. Section 00 4100 - Bid Form

B. Section 27 4100 - Sound System

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 ALTERNATE BIDS

A. Deductive Alternate No. 1: Omit Section 27 4100 – Sound System from scope of work. Work that will be omitted is the sound system shown on Sheet T101 in Quorum Court 116.

3.02 BID INCLUSION

A. Included deductive pricing as shown on the bid form. Deduction pricing to include all applicable taxes, etc. and include items necessary to make the deduction and totally complete the requested change.

END OF SECTION

SECTION 09 6513
RESILIENT BASE AND STAIR COVERING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient base.

B. Installation accessories.

1.02 REFERENCES

A. ASTM E 648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2004.

B. ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2005.

C. ASTM F 1066 - Standard Specification for Vinyl Composition Floor Tile; 2004.

D. ASTM F 1861 - Standard Specification for Resilient Wall Base; 2002.

1.03 SUBMITTALS

A. See Section 01 3323 - Submittals, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Selection Samples: Submit manufacturer's complete set of color samples for Brackett Krennerich Architects' initial selection.

D. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 MATERIALS - BASE

A. Resilient Base: ASTM F1861, Type TP, rubber; top set Style B, Cove, and as follows:
   1. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648.
   2. Height: 4 inch.
   3. Thickness: 0.125 inch thick.
   4. Finish: Satin.
   5. Length: Roll.
   6. Color: To be selected.
   7. Accessories: Premolded external corners and end stops.
   8. Manufacturers:
      a. Armstrong Commercial Flooring, www.armstrong.com
      b. Johnsonite, Inc.: www.johnsonite.com.
      c. Roppe Corp.: www.roppe.com.

2.02 MATERIALS – STAIR COVERING

A. Stair Treads: Rubber; full width and depth of stair tread in one piece; tapered thickness; nosing not less than 1-5/8 inch deep.

   1. Minimum Requirements: Comply with FS RR-T-650 requirements corresponding to type specified.

2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
3. Nominal Thickness: 0.1875 inch.
4. Nosing: Square.
5. Style: #92 low profile raised circular design.
6. Color: Solid.
7. Manufactures:
   a. BurkeMercer Flooring Products: www.burkemercer.com.
   b. Johnsonite, Inc.: www.johnsonite.com.
   c. Roppe Corp: www.roppe.com.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

3.02 INSTALLATION - BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
C. Install base on solid backing. Bond tightly to wall and floor surfaces.
D. Scribe and fit to door frames and other interruptions.

3.03 SCHEDULE

A. See Finish Schedule on the drawings.

END OF SECTION

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SECTION 22 1005
PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sanitary waste piping, buried beyond 5 feet of building.
B. Sanitary waste piping, buried within 5 feet of building.
C. Sanitary waste piping, above grade.
D. Domestic water piping, buried beyond 5 feet of building.
E. Domestic water piping, buried within 5 feet of building.
F. Domestic water piping, above grade.
G. Natural gas piping, buried beyond 5 feet of building.
H. Natural gas piping, buried within 5 feet of building.
I. Natural gas piping, above grade.
J. Condensate drain.
K. Gas.
L. Pipe flanges, unions, and couplings.
M. Pipe hangers and supports.
N. Ball valves.
O. Butterfly valves.
P. Balancing valves.
Q. Check.
R. Pressure reducing valves.
S. Pressure relief valves.
T. Strainers.

1.02 REFERENCE STANDARDS

A. ANSI Z21.22 - American National Standard for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems; 2015.
B. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2011.
C. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2012.
D. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2013.
E. ASME B31.1 - Power Piping; 2014.
F. ASME B31.9 - Building Services Piping; 2014.
G. ASME BPVC-IV - Boiler and Pressure Vessel Code, Section IV - Rules for Construction of Heating Boilers; 2017.
H. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Welding, Brazing, and Fusing Qualifications; 2015.
I. ASSE 1003 - Performance Requirements for Water Pressure Reducing Valves for Domestic Water Distribution Systems; 2009.
J. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
K. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings; 2017.

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L. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.

M. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2015.

N. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).

O. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes; 2015a.

P. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2014.

Q. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2013.

R. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2010.

S. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2016.

T. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings; 2014.

U. ASTM D2239 - Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter; 2012a.

V. ASTM D2513 - Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings; 2016a.

W. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2012.

X. ASTM D2609 - Standard Specification for Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe; 2015.

Y. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2014.

Z. ASTM D2683 - Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing; 2014.

AA. ASTM D2855 - Standard Practice for the Two-Step (Primer & Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets; 2015.

AB. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2016.

AC. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.

AD. ASTM F876 - Standard Specification for Crosslinked Polyethylene (PEX) Tubing; 2017.

AE. ASTM F877 - Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water Distribution Systems; 2011a.

AF. ASTM F1281 - Standard Specification for Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Pressure Pipe; 2017.

AG. ASTM F1960 - Standard Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-linked Polyethylene (PEX) Tubing; 2015.

AH. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; 2010.

AI. AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings; 2012.

AJ. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; 2017.

AK. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast; 2017.

AL. AWWA C550 - Protective Interior Coatings for Valves and Hydrants; 2017.

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AM. AWWA C651 - Disinfecting Water Mains; 2014.

AN. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications; 2009 (Revised 2012).

AO. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2011 (Revised 2012).

AP. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2009.

AQ. MSS SP-67 - Butterfly Valves; 2017.

AR. MSS SP-71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends; 2011, with Errata (2013).

AS. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves; 2013.

AT. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.

AU. NSF 61 - Drinking Water System Components - Health Effects; 2014 (Errata 2015).

AV. NSF 372 - Drinking Water System Components - Lead Content; 2011.

AW. PPI TR-4 - PPI Listing of Hydrostatic Design Basis (HDB), Hydrostatic Design Stress (HDS), Strength Design Basis (SDB), Pressure Design Basis (PDB), and Minimum Required Strength (MRS) Ratings For Thermoplastic Piping Materials or Pipe; 2017.

AX. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with applicable codes.

B. Valves: Manufacturer's name and pressure rating marked on valve body.

C. Welding Materials and Procedures: Comply with ASME BPVC-IX and applicable state labor regulations.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.06 FIELD CONDITIONS

A. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

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B. Plenum-Installed Acid Waste Piping: Flame-spread index equal or below 25 and smoke-spread index equal or below 50 according to ASTM E84 or UL 723 tests.

2.02 SANITARY WASTE PIPING, BURIED BEYOND 5 FEET OF BUILDING

A. PVC Pipe: ASTM D2665 or ASTM D3034.
   1. Fittings: PVC.
   2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.03 SANITARY WASTE PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. Cast Iron Pipe: ASTM A74 extra heavy weight.
   1. Fittings: Cast iron.
   2. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets or lead and oakum.

B. Cast Iron Pipe: CISPI 301, hubless.
   1. Fittings: Cast iron.
   2. Joints: CISPI 310, neoprene gasket and stainless steel clamp and shield assemblies.

C. PVC Pipe: ASTM D2665 or ASTM D3034.
   1. Fittings: PVC.
   2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.04 SANITARY WASTE PIPING, ABOVE GRADE

A. Cast Iron Pipe: CISPI 301, hubless, service weight.
   1. Fittings: Cast iron.
   2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.

B. PVC Pipe: ASTM D2665.
   1. Fittings: PVC.
   2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.05 CONDENSATE DRAIN PIPING, ABOVE GRADE

A. Copper Pipe: ASTM B 42.
   1. Fittings: ASME B16.23, cast bronze, or ASME B16.29, wrought copper.
   2. Joints: ASTM B 32, alloy Sn50 solder.

B. PVC Pipe: ASTM D 2729.
   1. Fittings: PVC.
   2. Joints: Solvent welded, with ASTM D 2564 solvent cement.

2.06 DOMESTIC WATER PIPING, BURIED BEYOND 5 FEET OF BUILDING

A. Ductile Iron Pipe: AWWA C151/A21.51.
   1. Fittings: AWWA C110/A21.10, ductile or gray iron, standard thickness.
   2. Joints: AWWA C111/A21.11, styrene-butadiene rubber (SBR) or vulcanized SBR gasket with 3/4 inch diameter rods.

B. Copper Pipe: ASTM B42, hard drawn.
   1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22 wrought copper and bronze.
   2. Joints: ASTM B 32, alloy Sn95 solder.

C. PE Pipe: ASTM D2239.
   1. Fittings: ASTM D2609, PE.
   2. Joints: Mechanical with stainless steel clamp.

2.07 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. Copper Pipe: ASTM B42, hard drawn.
   1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22 wrought copper and bronze.
   2. Joints: ASTM B 32, alloy Sn95 solder.

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B. Ductile Iron Pipe: AWWA C151/A21.51.
   1. Fittings: Ductile or gray iron, standard thickness.
   2. Joints: AWWA C111/A21.11, styrene butadiene rubber (SBR) or vulcanized SBR gasket with 3/4 inch diameter rods.

2.08 DOMESTIC WATER PIPING, ABOVE GRADE

A. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), Drawn (H).
   1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
   2. Joints: ASTM B32, alloy Sn95 solder.

B. PEX Cross-Linked Polyethylene Pipe: ASTM F876 or ASTM F877.
   1. PPI TR-4 Pressure Design Basis:
      a. 100 psig at maximum 180 degrees F.
   2. Fittings: Brass and engineered polymer (EP) ASTM F1960.
   3. Joints: ASTM F1960 cold-expansion fittings.

2.09 NATURAL GAS PIPING, BURIED BEYOND 5 FEET OF BUILDING

A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
   1. Fittings: ASTM A234/A234M, wrought steel welding type, with AWWA C105/A21.5 polyethylene jacket or double layer, half-lapped 10 mil polyethylene tape.
   2. Joints: ASME B31.1, welded.

B. Polyethylene Pipe: ASTM D2513, SDR 11.
   1. Fittings: ASTM D2683 or ASTM D2513 socket type.
   2. Joints: Fusion welded.

2.10 NATURAL GAS PIPING, ABOVE GRADE

A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
   1. Fittings: ASME B16.3, malleable iron, or ASTM A234/A234M, wrought steel welding type.
   2. Joints: Threaded or welded to ASME B31.1.

B. Corrugated Stainless Steel Tubing: ASTM A240 type 300.
   1. Fittings: Brass double flare type.
   2. Jacketing: UV resistant polyethylene: comply with ASTM E84 for flame spread and smoke density requirements.

2.11 PIPE FLANGES, UNIONS, AND COUPLINGS

A. Unions for Pipe Sizes 3 Inches and Under:
   1. Ferrous Pipe: Class 150 malleable iron threaded unions.
   2. Copper Tube and Pipe: Class 150 bronze unions with soldered joints.

B. Flanges for Pipe Sizes Over 1 inch:
   1. Ferrous Pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
   2. Copper Tube and Pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.

C. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.12 PIPE HANGERS AND SUPPORTS

A. Provide hangers and supports that comply with MSS SP-58.
   1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
   2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
   3. Trapeze Hangers: Welded steel channel frames attached to structure.
   4. Vertical Pipe Support: Steel riser clamp.

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5. Rooftop Supports for Low-Slope Roofs: Steel pedestals with bases that rest on top of roofing membrane, not requiring any attachment to the roof structure and not penetrating the roofing assembly, with support fixtures as specified; and as follows:
   a. Bases: High-density polypropylene.
   b. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
   c. Steel Components: Stainless steel or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
   d. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports; corrosion-resistant material.
   e. Height: Provide minimum clearance of 6 inches under pipe to top of roofing.

B. Plumbing Piping - Drain, Waste, Vent and Condensate:
   1. Conform to ASME B31.9.
   2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.
   3. Hangers for Pipe Sizes 2 inch and Over: Carbon steel, adjustable, clevis.
   4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
   5. Wall Support for Pipe Sizes to 3 inch: Cast iron hook.
   6. Wall Support for Pipe Sizes 4 inch and Over: Welded steel bracket and wrought steel clamp.
   7. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

C. Plumbing Piping - Water:
   1. Conform to ASME B31.9.
   2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.
   3. Hangers for Cold Pipe Sizes 2 inch and Over: Carbon steel, adjustable, clevis.
   4. Hangers for Hot Pipe Sizes 2 to 4 inch: Carbon steel, adjustable, clevis.
   5. Multiple or Trapeze Hangers: Steel channels with welded supports or spacers and hanger rods.

2.13 BALL VALVES

A. Manufacturers:
   1. Tyco Flow Control: www.tycoflowcontrol.com.
   2. Nibco, Inc: www.nibco.com.
   3. Milwaukee Valve Company: www.milwaukeevalve.com.
   4. Watts Water Technologies Company: www.watts.com
   5. Substitutions: See Section 22 0200 - Plumbing General Requirements.

B. Construction, 4 inch and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, threaded or grooved ends with union.
   1. Substitutions: See Section 22 0200 - Plumbing General Requirements.

C. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze, two piece body, chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, solder ends with union.

2.14 BUTTERFLY VALVES

A. Manufacturers:
   1. Tyco Flow Control: www.tycoflowcontrol.com.
   2. Milwaukee Valve Company: www.milwaukeevalve.com.
   3. Watts Water Technologies Company: www.watts.com
   4. Substitutions: See Section 22 0200 - Plumbing General Requirements.

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B. Construction 1-1/2 inch and Larger: MSS SP-67, 200 psi CWP, cast or ductile iron body, nickel-plated ductile iron disc, resilient replaceable EPDM seat, wafer ends, extended neck, 10 position lever handle.

C. Provide gear operators for valves 8 inches and larger, and chain-wheel operators for valves mounted over 8 feet above floor.

2.15 FLOW CONTROLS

A. Manufacturers:
   1. Tyco Flow Control: www.tycoflowcontrol.com.
   2. ITT Bell & Gossett: www.bellgossett.com.
   3. Taco, Inc: www.taco-hvac.com.
   4. Substitutions: See Section 22 0200 - Plumbing General Requirements.

B. Construction: Class 125, Brass or bronze body with union on inlet and outlet, temperature and pressure test plug on inlet and outlet, blowdown/backflush drain.

C. Calibration: Control flow within five percent of selected rating, over operating pressure range of ten times minimum pressure required for control, maximum minimum pressure 3.5 psi.

2.16 SWING CHECK VALVES

A. Manufacturers:
   1. Tyco Flow Control: www.tycoflowcontrol.com.
   2. Nibco, Inc: www.nibco.com.
   3. Milwaukee Valve Company: www.milwaukeevalve.com.
   4. Watts Water Technologies Company: www.watts.com
   5. Substitutions: See Section 22 0200 - Plumbing General Requirements.

B. Up to 2 Inches:
   1. 1, Class 125, bronze body and cap, bronze swing disc with rubber seat, solder ends.

C. Over 2 Inches:
   1. 1, Class 125, iron body, bronze swing disc, renewable disc seal and seat, flanged or grooved ends.

2.17 SPRING LOADED CHECK VALVES

A. Manufacturers:
   1. Tyco Flow Control: www.tycoflowcontrol.com.
   2. Watts Water Technologies Company: www.watts.com
   3. Milwaukee Valve Company: www.milwaukeevalve.com.
   4. Substitutions: See Section 22 0200 - Plumbing General Requirements.

B. Class 125, iron body, bronze trim, stainless steel springs, bronze disc, Buna N seals, wafer style ends.

2.18 PRESSURE REDUCING VALVES

A. Manufacturers:
   1. Amtrol Inc: www.amtrol.com.
   2. Cla-Val Company: www.cla-val.com.
   3. Watts Regulator Company: www.wattsregulator.com.
   4. Substitutions: See Section 22 0200 - Plumbing General Requirements.

B. 2 inch and Smaller:
   1. ASSE 1003, bronze body, stainless steel, and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded single union ends.
   2. Pressure Reducing Pilot-Operator:
      a. Operating Range: 5 to 50 psi.
      b. Connected into brass or bronze pilot piping and fittings.
      c. Fixed flow restrictor, pressure gauges, and isolation valves.

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C. 2 inch and Larger:
   1. ASSE 1003, cast iron body with interior lining complying with AWWA C550, bronze fitted, elastomeric diaphragm and seat disc, flanged.
   2. Pressure Reducing Pilot-Operator:
      a. Operating Range: 5 to 50 psi.
      b. Connected into brass or bronze pilot piping and fittings.
      c. Fixed flow restrictor, strainer, pressure gauges, and isolation valves.

2.19 RELIEF VALVES

A. Pressure Relief:
   1. Manufacturers:
      a. Tyco Flow Control: www.tycoflowcontrol.com.
      b. Cla-Val Company: www.cla-val.com.
      c. Watts Regulator Company: www.wattsregulator.com.
      d. Substitutions: See Section 22 0200 - Plumbing General Requirements.
   2. 1 certified, bronze body, teflon seat, steel stem and springs, automatic, direct pressure actuated.

B. Temperature and Pressure Relief:
   1. Manufacturers:
      a. Cla-Val Company: www.cla-val.com.
      b. Watts Regulator Company: www.wattsregulator.com.
      c. Substitutions: See Section 22 0200 - Plumbing General Requirements.
   2. 2 certified, bronze body, teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, temperature relief maximum 210 degrees F, capacity 1 certified and labelled.

2.20 STRAINERS

A. Size 1-1/2 inch to 4 inch:
   1. Class 125, flanged iron body, Y pattern with 1/16 inch stainless steel perforated screen.

2.21 GAS SOLENOID VALVE

A. Manufacturers:
   1. Jefferson Solenoid Valves USA, Inc.: www.jeffersonvalves.com
   2. ASCO Valve, Inc.: www.ascovalve.com
   3. Substitutions: See Section 22 0200 - Plumbing General Requirements.

B. Size 3 inch and Under:
   1. CSA certified for automatic gas safety shutoff applications, aluminum body,normally closed - powered open, automatic, direct electrically actuated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

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C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

D. Install piping to maintain headroom, conserve space, and not interfere with use of space.

E. Group piping whenever practical at common elevations.

F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. See Section 22 0516.

G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.

H. Provide access where valves and fittings are not exposed.

I. Establish elevations of buried piping outside the building to ensure not less than 3 ft of cover.

J. Install vent piping penetrating roofed areas to maintain integrity of roof assembly.

K. Provide support for utility meters in accordance with requirements of utility companies.

L. Prepare exposed, unfinished pipe, fittings, supports, and accessories for finish painting.

M. Install valves with stems upright or horizontal, not inverted. See Section 22 0523.

N. Pipe vents from gas pressure reducing valves to outdoors and terminate in weather proof hood.

O. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.

P. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.

Q. Sleeve pipes passing through partitions, walls, and floors.

R. Pipe Hangers and Supports:
   1. Install in accordance with ASME B31.9.
   2. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
   3. Place hangers within 12 inches of each horizontal elbow.
   4. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
   5. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
   6. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
   7. Provide copper plated hangers and supports for copper piping.
   8. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

3.04 APPLICATION

A. Install unions downstream of valves and at equipment or apparatus connections.

B. Install gate valves for shut-off and to isolate equipment, part of systems, or vertical risers.

C. Install globe valves for throttling, bypass, or manual flow control services.

D. Provide lug end butterfly valves adjacent to equipment when provided to isolate equipment.

E. Provide spring-loaded check valves on discharge of water pumps.

F. Provide flow controls in water recirculating systems where indicated.

3.05 TOLERANCES

A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/8 inch per foot slope.

B. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.

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3.06 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Prior to starting work, verify system is complete, flushed, and clean.

B. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).

C. Inject disinfectant, free chlorine in liquid, powder, tablet, or gas form throughout system to obtain 50 to 80 mg/L residual.

D. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.

E. Maintain disinfectant in system for 24 hours.

F. If final disinfectant residual tests less than 25 mg/L, repeat treatment.

G. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

H. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

3.07 SERVICE CONNECTIONS

A. Provide connection to sanitary sewer services. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.

B. Provide connection to water service including reduced pressure backflow preventer and, and sand strainer.

C. Provide connection to water service.
   1. Provide sleeve in wall for service main and support at wall with reinforced concrete bridge. Caulk enlarged sleeve and make watertight with pliable material. Anchor service main inside to concrete wall.
   2. Provide 18 gage galvanized sheet metal sleeve around service main to 6 inch above floor and 36 inches minimum below grade. Size for minimum of 2 inches of loose batt insulation stuffing.

D. Provide connection to gas service. Gas service distribution piping to have initial minimum pressure of 2 psi. Provide regulators on each line serving end use appliances, sized in accordance with equipment.

3.08 SCHEDULES

A. Pipe Hanger Spacing:
   1. Metal Piping:
      a. Pipe Size: 1/2 inch to 1-1/4 inch:
         1) Maximum hanger spacing: 6 ft.
         2) Hanger Rod Diameter: 3/8 inches.
      b. Pipe Size: 1-1/2 inch to 2 inch:
         1) Maximum Hanger Spacing: 10 ft.
         2) Hanger Rod Diameter: 3/8 inch.
      c. Pipe Size: 2-1/2 inch to 3 inch:
         1) Maximum Hanger Spacing: 10 ft.
         2) Hanger Rod Diameter: 1/2 inch.
      d. Pipe Size: 4 inch to 6 inch:
         1) Maximum Hanger Spacing: 10 ft.
         2) Hanger Rod Diameter: 5/8 inch.
   2. Cross-linked Polyethylene (PEX) Piping:
      a. All Sizes:
         1) Maximum Hanger Spacing: 32 inches.
         2) Hanger Rod Diameter: 3/8 inches.

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3. Plastic Piping:
   a. All Sizes:
      1) Maximum hanger spacing: 4 ft.
      2) Hanger Rod Diameter: 3/8 inch.

END OF SECTION 22 1005

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