

BID FORM – STIPULATED SUM (SINGLE PRIME CONTRACT)

PROJECT IDENTIFICATION: Phase 1 (T.O.R.) & Phase 2 (Dialysis)
Governor Juan F. Luis Hospital
ST. Croix, U.S. Virgin Islands

FROM BIDDER: _____

TO OWNER: Angeline Ravariere - Acting Director of Facilities
Governor Juan F. Luis Hospital
St. Croix, U.S. Virgin Islands

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract time indicated in this Bid and in accordance with the Contract Documents.
2. BIDDER accepts all the terms and conditions of the Request for Proposal, Contract, General Conditions and Addenda. The Bid will remain open for thirty (30) calendar days after the day of Bid opening. BIDDER will sign the Agreement and submit any documents required by the Contract Documents prior to the execution of the Contract.
3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:

- A. BIDDER has examined copies of all the Contract Documents, Request for Proposal and of the following Addenda:

Addendum No. _____	Date: _____
Addendum No. _____	Date: _____
Addendum No. _____	Date: _____
Addendum No. _____	Date: _____
Addendum No. _____	Date: _____
Addendum No. _____	Date: _____

- B. BIDDER has examined the site and locality where the Work is to be performed, federal, state and local laws, ordinances, rules and regulations, and the conditions affecting cost, progress or performance of the Work, and has made such independent investigations as BIDDER deems necessary.
- C. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation, and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; BIDDER has not directly or indirectly induced or solicited any other BIDDER to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or a corporation to refrain from Bidding; and BIDDER has not sought by collusion to obtain for himself any advantage over any other BIDDER or over OWNER.

D. It is understood that the right is reserved by the Owner to reject any or all Bids and to accept the Bid which, in its judgment, serves the best interests the Owner.

4. BIDDER, having examined Request for Proposal, Contract, General Conditions, Drawings, Specifications and Addenda, related documents, and site of proposed Work, and being familiar with all of conditions surrounding Work, including availability of materials and labor, hereby proposes to furnish all labor, materials, tools, services, equipment, transportation and supervision in accordance with the Drawings, Specifications and Addenda for the stipulated sum amount of:

_____ Dollars (\$_____).

Note: Amount shall be shown in both words and figures. In case of discrepancy, amount shown in words will govern.

5. BIDDER affirms that the stipulated sum represents entire cost in accordance with Request for Proposal, Contract, General Conditions, Drawings, Specifications, and Addenda and that no claim will be made on account of any increase in wage scales, material prices, taxes, insurance, cost indexes, or any other rates affecting construction industry or this project.
6. BIDDER agrees that the work will be substantially completed in the dates indicated below:
- A. Phase 1A: May 10, 2018.
- B. Phase 1 and Phase 2: No more than 60 consecutive calendar days after the Date of the Notice to Proceed or the Date of execution of the Agreement, whichever comes first.
7. BIDDER accepts that if he fails to achieve Substantial Completion of the Work within the Contract Time and as otherwise required by the Contract Documents, the OWNER will be entitled to retain or recover from the Contractor, as liquidated damages and not as a penalty the sum of \$500.00 per calendar day commencing upon the first day following expiration of the Contract Time and continuing until the Actual Date of Substantial Completion.
8. BIDDER affirms that to meet the substantial completion dates, the proposed work hours will be _____ hours per day, _____ am to _____ pm, _____ days per week, Monday through _____, the cost of which is reflected in our lump sum price.
9. BIDDER affirms that to meet the substantial completion dates, he will work at Phase 1A, Phase 1 and Phase 2 simultaneously, the cost of which is reflected in our lump sum price. BIDDER affirms that will supply enough properly skilled workers and proper materials to meet the substantial completion dates.
10. The following documents are attached to and made a condition of the Bid:
- A. Exhibit No. 1 - Bid Summary.

EXHIBIT NO. 1

BID SUMMARY

	Material	Labor	Total
A. PHASE 1A			
02 Demolition			
Architectural Partial Demolition			
03 Concrete			
Cast In Place Concrete			
Non Metallic Non Shrink Grouting			
05 Metals			
Metal Fabrications			
Steel Roof Decking			
Metal Wall Panels			
07 Thermal and Moisture Protection			
Board Insulation			
SBS Modified Bituminous Membrane Roofing & Flashings			
Joint Sealants & Sealers			
08 Openings			
Interior (Temporary) Hollow Metal Door and Frame, including Hardware			
09 Finishes			
Gypsum Board Assemblies			
Acoustical Panel Ceilings			
Rubber Wall Base & Vinyl Composition Tiles			
Painting			
22 Plumbing (incl. testing)			
TOR – Sanitary Sewer up to Holding Tank			
TOR - Cold Water			
TOR – Vacuum			
TOR – Oxygen			
TOR - Medical Air			
23 Mechanical			
Air Conditioning Unit (Cassette Unit)			
26 Electrical			
Lighting Fixtures			
Power – Temporary Rental Generators & Temporary Panels			

PHASE 1A – SUB TOTAL – (A)

\$

Addendum No. 1 – Rev. B – March 28, 2018

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	Material	Labor	Total
B. PHASE 1 – TEMPORARY OPERATING ROOMS (TOR)			
02 Demolition			
Partial Site Demolition			
03 Concrete			
Cast In Place Concrete for Trailers Anchors			
05 Metals			
Trailers Anchors & Cables			
08 Openings			
Exterior (Final) Hollow Metal Door and Frame, including Hardware			
22 & 33 Plumbing and Utilities (incl. testing)			
Sanitary Sewer			
Underground Fire Protection			
26 Electrical			
Power			
Fire Alarm			
Data / Communications (rough in)			
31 & 32 Site Work			
Earthwork / Trenching / Erosion Control			
Asphalt Pavement & Concrete Repairs			
Jersey Barriers			
Sidewalk			
Temporary Fence – Crowd Control Barrier			
PHASE 1 – SUB TOTAL – (B)		\$	

	Material	Labor	Total
C. PHASE 2 - DIALYSIS			
03 Concrete			
Cast In Place Concrete for Trailers Anchors			
05 Metals			
Trailers Anchors & Cables			
22 & 33 Plumbing and Utilities (incl. testing)			
Cold Water			
Dialysis – Sanitary Sewer incl. Sanitary Pump and Force Line			
26 Electrical			
Power			
Fire Alarm			
Data / Communications (rough in)			
31 & 32 Site Work			
Earthwork / Trenching / Erosion Control			
Asphalt Pavement & Concrete Repairs			
Jersey Barriers			
Pavement Markings / Wheel Stops / Signs			
PHASE 2 – SUB TOTAL – (C)		\$	
D. General Conditions Including Overhead & Profit		(D)	
E. Liability Insurances (workers’ compensation, commercial general, builder’s risk, auto)		(F)	
F. Bid Bond / Performance Bond / Payment Bond		(G)	
BASE BID – STIPULATED SUM – (A+B+C+D+E+F)		\$	

ALTERNATE BIDS: We acknowledge that alternate price quotation shall include all labor, materials, equipment, overhead, insurance, applicable taxes, profit, adjustment of schedule, etc. necessary to add or deduct the total amount of each alternate proposal. All Contract Documents conditions and requirements apply to the Alternate Work. The OWNER reserves the right to accept or reject any or all alternate Bids.

ALTERNATE NO. 1: ELECTRICAL GENERATORS AT PHASE 2 (125 KW)

If required by the OWNER, provide two (2) 125 KW (permanent) standby diesel engine generators, MTS 400A, ATS and feeders associated with this generators. Refer to Drawings No. E0-02 and E1-01.

ADD to Base Bid _____
_____ Dollars (\$_____).

DOCUMENT 00 01 10

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DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS				
INTRODUCTION INFORMATION				
00 01 10	Table of Contents	ADD 01	B	03/28/18
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01 10 00	Summary of Work	IFB	A	03/21/18
01 20 00	Price and Payment Procedures	IFB	A	03/21/18
01 31 00	Administrative Requirements	IFB	A	03/21/18
01 33 00	Submittal Procedures	IFB	A	03/21/18
01 40 00	Quality Requirements	IFB	A	03/21/18
01 50 00	Temporary Facilities and Controls	IFB	A	03/21/18
01 60 00	Product Requirements	IFB	A	03/21/18
01 73 00	Execution and Closeout Requirements	IFB	A	03/21/18
DIVISION 02 – EXISTING CONDITIONS				
02 41 13	Selective Site Demolition	IFB	A	03/21/18
DIVISION 03 - CONCRETE				
03 11 13	Cast In Place Concrete Forming	IFB	A	03/21/18
03 21 11	Plain Steel Reinforcement Bars	IFB	A	03/21/18
03 31 13	Cast In Place Concrete	IFB	A	03/21/18
03 62 13	Non-Metallic Non-Shrink Grouting	IFB	A	03/21/18
DIVISION 05 – METALS				
05 12 00	Structural Steel Framing	IFB	A	03/21/18
05 31 23	Steel Roof Decking	IFB	A	03/21/18
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DIVISION 06 – WOOD, PLASTICS AND COMPOSITES				
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DIVISION 07 - THERMAL AND MOISTURE PROTECTION				
07 21 13	Board Insulation	IFB	A	03/21/18
07 52 16	SBS Modified Bituminous Membrane Roofing	IFB	A	03/21/18
07 62 00	Sheet Metal Flashing and Trim	IFB	A	03/21/18
07 92 13	Elastomeric Joint Sealants	IFB	A	03/21/18

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08 13 13	Hollow Metal Doors	IFB	A	03/21/18
08 71 00	Door Hardware	IFB	A	03/21/18

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09 21 16	Gypsum Board Assemblies	IFB	A	03/21/18
09 24 23	Portland Cement Plastering	IFB	A	03/21/18
09 51 13	Acoustical Panel Ceilings	IFB	A	03/21/18
09 65 13	Rubber Wall Base	IFB	A	03/21/18
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13 05 42	Seismic Control and Vibration Isolation	IFB	A	03/21/18

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22 05 19	Meters and Gages for Plumbing Piping	IFB	A	03/21/18
22 05 29	Pipe Hangers and Supports Pressure Systems	IFB	A	03/21/18
22 05 53	Identification for Plumbing Piping and Equipment	IFB	A	03/21/18
22 11 13	Facility Water Distribution Piping	ADD 01	B	03/28/18
22 13 13	Facility Sanitary Sewers	IFB	A	03/21/18
22 61 13	Compressed-Air Piping for Laboratory and Healthcare Facilities	IFB	A	03/21/18
22 62 13	Vacuum Piping for Laboratory and Healthcare Facilities	IFB	A	03/21/18
22 63 13	Piping for Laboratory and Healthcare Facilities	IFB	A	03/21/18

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26 05 19	Conductors: Wires and Cables Up To 600 Volts	IFB	A	03/21/18
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26 05 33.13	Raceways: Conduit System	IFB	A	03/21/18
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26 05 43	Underground Duct System	IFB	A	03/21/18
26 08 00	Acceptance Testing	IFB	A	03/21/18
26 22 00	Low Voltage Dry Type Transformers	IFB	A	03/21/18
26 24 16	Circuit Breaker Panelboard	IFB	A	03/21/18
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32 12 16	Asphalt Paving	IFB	A	03/21/18
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IFB = Issued for Bid

ADD = Addendum

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SECTION 22 11 13

FACILITY WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes water-distribution piping and related components outside the building for water service.
- B. Utility-furnished products include water meters that will be furnished to the site, ready for installation.

1.3 DEFINITIONS

- A. EPDM: Ethylene propylene diene terpolymer rubber.
- B. LLDPE: Linear, low-density polyethylene plastic.
- C. PA: Polyamide (nylon) plastic.
- D. PE: Polyethylene plastic.
- E. PP: Polypropylene plastic.
- F. PVC: Polyvinyl chloride plastic.
- G. RTRF: Reinforced thermosetting resin (fiberglass) fittings.
- H. RTRP: Reinforced thermosetting resin (fiberglass) pipe.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: For piping and specialties including relation to other services in same area, drawn to scale. Show piping and specialty sizes and valves, meter and specialty locations, and elevations.
- B. Field quality-control test reports.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For water valves and specialties to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
 - 2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
 - 3. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.
- B. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- D. Comply with ASTM F 645 for selection, design, and installation of thermoplastic water piping.
- E. Comply with FMG's "Approval Guide" or UL's "Fire Protection Equipment Directory" for fire-service-main products.
- F. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.
 - 1. Potable-water piping and components shall comply with NSF 14, NSF 61, and NSF 372.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:
 - 1. Ensure that valves are dry and internally protected against rust and corrosion.

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

1.9 PROJECT CONDITIONS

- A. Interruption of Existing Water-Distribution Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water-distribution service according to requirements indicated:
1. Notify Owner no fewer than two days in advance of proposed interruption of service.
 2. Do not proceed with interruption of water-distribution service without Construction Manager's and Owner's written permission.

1.10 COORDINATION

- A. Coordinate connection to water main with utility company.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Requirements – Mechanical Systems:
- B. Piping Systems including hangers shall have seismic restraints as per the International Building Code.
- C. Seismic Requirements: Elements of permanent nonstructural components (cooling tower, piping systems, pumps, any other mechanical equipment, etc.) and their attachments shall be designed to resist the total design seismic forces prescribed in Chapter 13 – Seismic Design Requirements for Nonstructural Components of ASCE 7-05. Attachments shall include anchorages and required bracings (lateral and longitudinal). The following seismic criteria shall be used to compute the design seismic forces:
 - D. Spectral Response Acceleration Factor (S_s): as per IBC code.
 - E. Importance Factor, $I_p = 1.5$.
 - F. Site Class D.
 - G. Piping Subcontractor shall retain a consultant to develop a seismic restraint system and perform seismic calculations in accordance with Chapter 13 of ASCE 7-05. Calculations, restraint selections details shall be done by a Professional Engineer experienced in seismic restraint design and licensed in the U.S. Virgin Islands. Shop drawings and calculations shall be signed and sealed by this Professional Engineer.
- H. Acceptable Consultants and Manufacturers of Seismic Restraint Systems:
 - 1. ISAT (International Seismic Application Technology)
6600 Artesia Boulevard
Buena Park, CA 90620
Phone: (877) 999-4828; (714) 994-6353
Fax: (714) 523-0845
 - 2. Mason Industries, Inc.
350 Nabro Drive
Hauppauge, NY 11788
Phone: (631) 348-0282
Fax: (631) 348-0279

2.2 PIPING MATERIALS

- A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.
- B. Potable-water piping and components shall comply with NSF 14, NSF 61, and NSF 372.

2.3 COPPER TUBE AND FITTINGS

- A. Soft Copper Tube: ASTM B 88, Type K, water tube, annealed temper.
 - 1. Copper, Solder-Joint Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings if indicated.
- B. Hard Copper Tube: ASTM B 88, Type K water tube, drawn temper.
 - 1. Copper, Solder-Joint Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings if indicated.
- C. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end. Furnish Class 300 flanges if required to match piping.
- D. Copper Unions:
 - 1. MSS SP-123.
 - 2. Cast-copper-alloy, hexagonal-stock body.
 - 3. Ball-and-socket, metal-to-metal seating surfaces.
 - 4. Solder-joint or threaded ends.
- E. Copper, Brass or Bronze, Pressure-Seal-Joint Fittings:
 - 1. Fittings: Cast-brass, cast-bronze, or wrought-copper with EPDM O-ring seal in each end. Sizes NPS 2-1/2 and larger with stainless steel grip ring and EPDM O-ring seal.
 - 2. Minimum 200-psig working-pressure rating at 250 deg F.
- F. **CPVC PIPING – ALTERNATIVE**
 - 1. **CPVC Pipe: ASTM F 441/F 441M, Schedule 80.**
 - 2. **CPVC Socket Fittings: ASTM F 439 for Schedule 80.**
 - 3. **CPVC Threaded Fittings: ASTM F 437, Schedule 80.**
 - 4. **CPVC Piping System: ASTM D 2846/D 2846M, SDR 11, pipe and socket fittings.**
 - 5. **CPVC Tubing System: ASTM D 2846/D 2846M, SDR 11, tube and socket fittings.**

2.4 PIPING SPECIALTIES

- A. Transition Fittings: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
- B. Tubular-Sleeve Pipe Couplings:
 - 1. Description: Metal, bolted, sleeve-type, reducing or transition coupling, with center sleeve, gaskets, end rings, and bolt fasteners and with ends of same sizes as piping to be joined.
 - a. Standard: AWWA C219.
 - b. Center-Sleeve Material: Stainless steel
 - c. Gasket Material: Natural or synthetic rubber.
 - d. Pressure Rating: 150 psig minimum. (to be confirmed)
 - e. Metal Component Finish: Corrosion-resistant coating or material.
- C. Split-Sleeve Pipe Couplings:
 - 1. Description: Metal, bolted, split-sleeve-type, reducing or transition coupling with sealing pad and closure plates, O-ring gaskets, and bolt fasteners.
 - a. Standard: AWWA C219.
 - b. Sleeve Material: Stainless steel
 - c. Sleeve Dimensions: Of thickness and width required to provide pressure rating.
 - d. Gasket Material: O-rings made of EPDM rubber, unless otherwise indicated.
 - e. Pressure Rating: 150 psig minimum (to be confirmed).
 - f. Metal Component Finish: Corrosion-resistant coating or material.
- D. Flexible Connectors:
 - 1. Nonferrous-Metal Piping: Bronze hose covered with bronze wire braid; with copper-tube, pressure-type, solder-joint ends or bronze flanged ends brazed to hose.
 - 2. Ferrous-Metal Piping: Stainless-steel hose covered with stainless-steel wire braid; with ASME B1.20.1, threaded steel pipe nipples or ASME B16.5, steel pipe flanges welded to hose.

2.5 CORROSION-PROTECTION PIPING ENCASEMENT

- A. Encasement for Underground Metal Piping:
 - 1. Standards: ASTM A 674 or AWWA C105.
 - 2. Form: Sheet or tube.
 - 3. Material: LLDPE film of 0.008-inch minimum thickness, or high-density, crosslaminated PE film of 0.004-inch minimum thickness.
 - 4. Material: High-density, crosslaminated PE film of 0.004-inch minimum thickness.
 - 5. Color: Color coded by service

2.6 GATE VALVES

A. Bronze Gate Valves:

1. OS&Y, Rising-Stem Gate Valves:

- a. Description: Bronze body and bonnet and bronze stem.

- 1) Standards: UL 262 and FMG approved.
- 2) Minimum Pressure Rating: 175 psig.
- 3) End Connections: Threaded.

2. Nonrising-Stem Gate Valves:

- a. Description: Class 125, Type 1, bronze with solid wedge, threaded ends, and malleable-iron handwheel.

- 1) Standard: MSS SP-80.

2.7 GATE VALVE ACCESSORIES AND SPECIALTIES

A. Tapping-Sleeve Assemblies:

1. Description: Sleeve and valve compatible with drilling machine.

- a. Standard: MSS SP-60.
- b. Tapping Sleeve: stainless-steel, two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve.
- c. Valve: AWWA, bronze, nonrising-stem, resilient-seated gate valve with one raised face flange mating tapping-sleeve flange.

B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches in diameter.

- 1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

2.8 BALL VALVES

- I. Heavy pattern forged design, Full-port flow, RPTFE seats and packing, Adjustable stem packing, Blow-out proof stem, Corrosion resistant materials, 100% Factory tested, Lead free dezincification Resistant brass.

- a) NSF/ANSI 61-G

- b) NSF/ANSI 372 Lead Free

- c) Rating: 600 CWP (1/4" - 2")
- d) Rating: 400 CWP (2-1/2" - 4")
- e) Steam rating: 150 psi SWP
- f) Vacuum service to 29 in. Hg.
- g) Provide stem extension in insulated pipes.

2.9 CHECK VALVES

A. AWWA Check Valves:

- 1. Description: Swing-check type with resilient seat. Include interior coating according to AWWA C550 and ends to match piping.
 - a. Standard: AWWA C508.
 - b. Pressure Rating: 175 psig.

B. UL/FMG, Check Valves:

- 1. Description: Swing-check type with pressure rating; rubber-face checks, unless otherwise indicated; and ends matching piping.
 - a. Standards: UL 312 and FMG approved.
 - b. Pressure Rating: 175 psig

2.10 CORPORATIONS VALVES AND CURB VALVES

A. Service-Saddle Assemblies: Comply with AWWA C800. Include saddle and valve compatible with tapping machine.

- 1. Service Saddle: Copper alloy with seal and AWWA C800, threaded outlet for corporation valve.
- 2. Corporation Valve: Bronze body and ground-key plug, with AWWA C800, threaded inlet and outlet matching service piping material.
- 3. Manifold: Copper fitting with two to four inlets as required, with ends matching corporation valves and outlet matching service piping material.

B. Curb Valves: Comply with AWWA C800. Include bronze body, ground-key plug or ball, and wide tee head, with inlet and outlet matching service piping material.

C. Service Boxes for Curb Valves: Similar to AWWA M44 requirements for cast-iron valve boxes. Include cast-iron telescoping top section of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over curb valve and with a barrel approximately 3 inches in diameter.

1. Shutoff Rods: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and slotted end matching curb valve.

2.11 PRESSURE-REDUCING VALVES

A. Water Regulators:

1. Standard: ASSE 1003.
2. Pressure Rating: Initial pressure of 150 psig.
3. Size: see drawings
4. Design Flow Rate: to be determined
5. Design Inlet Pressure: to be determined
6. Design Outlet Pressure Setting: to be determined
7. Body: Bronze with chrome-plated finish for NPS 2 and smaller; cast iron with interior lining complying with AWWA C550 and FDA approved for NPS 2-1/2 and NPS 3.
8. Valves for Booster Heater Water Supply: Include integral bypass.
9. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and NPS 3.

2.12 BACKFLOW PREVENTERS

A. Reduced-Pressure-Principle Backflow Preventers:

1. Standard: AWWA C511
2. Operation: Continuous-pressure applications.
3. Pressure Loss: 5 psig maximum, design flow range.
4. Size: see drawings.
5. Design Flow Rate: to be determined.
6. Selected Unit Flow Range Limits: to be determined.
7. Pressure Loss at Design Flow Rate: <5psig for NPS 2 and smaller; <5 psig for NPS 2-1/2 and larger.
8. Body: Bronze for NPS 2 and smaller; stainless steel for NPS 2-1/2 and larger.
9. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and larger.
10. Configuration: Designed for horizontal, straight through flow.
11. Accessories:
 - a. Valves: Ball type with threaded ends on inlet and outlet of NPS 2 and smaller; OS&Y gate type with flanged ends on inlet and outlet of NPS 2-1/2 and larger.
 - b. Air-Gap Fitting: ASME A112.1.2, matching backflow preventer connection.

B. Backflow Preventer Test Kits:

1. Description: Factory calibrated, with gages, fittings, hoses, and carrying case with test-procedure instructions.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Refer to Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

3.2 PIPING SCHEDULE

- A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.
- B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used, unless otherwise indicated.
- C. Do not use flanges or unions for underground piping.
- D. Flanges, unions, grooved-end-pipe couplings, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.
- E. Underground water-service piping NPS 3/4 to NPS 3 shall be the following:
 - 1. Soft copper tube, ASTM B 88, Type K, solder-joint fittings or brazed joints.
- F. Aboveground Water-Service Piping NPS 3/4 to NPS 3 shall be the following:
 - 1. Hard copper tube, ASTM B 88, Type K solder-joint fittings or brazed joints.

3.3 VALVE APPLICATIONS

- A. General Application: Use mechanical-joint-end valves for NPS 3 and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FMG, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation.
- B. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
 - 1. Underground Valves, NPS 3 and Larger: AWWA, cast-iron, nonrising-stem, metal high-pressure, resilient-seated gate valves with valve box.
 - 2. Underground Valves, NPS 4 and Larger, for Indicator Posts: UL/FMG, cast-iron, nonrising-stem gate valves with indicator post.
 - 3. Use the following for valves in vaults and aboveground:
 - a. Gate Valves, NPS 2 and Smaller: Bronze, nonrising stem.
 - b. Gate Valves, NPS 3 and Larger: AWWA, cast iron, OS&Y rising stem, resilient seated
 - c. Check Valves: AWWA C508, swing type.

- d. Ball valves : NPS 4 and smaller : Bronze, adjustable stem.
- 4. Pressure-Reducing Valves: Use for water-service piping in vaults and aboveground to control water pressure.
- 5. Relief Valves: Use for water-service piping in vaults and aboveground.
 - a. Air-Release Valves: To release accumulated air.
 - b. Air/Vacuum Valves: To release or admit large volume of air during filling of piping.
 - c. Combination Air Valves: To release or admit air.
- 6. Detector Check Valves: Use for water-service piping in vaults and aboveground to detect unauthorized use of water.

3.4 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. See Section 330500 "Common Work Results for Utilities" for piping-system common requirements.

3.5 PIPING INSTALLATION

- A. Water-Main Connection: Arrange with utility company for tap of size and in location indicated in water main.
- B. Water-Main Connection: Tap water main according to requirements of water utility company and of size and in location indicated.
- C. Make connections larger than NPS 2 with tapping machine according to the following:
 - 1. Install tapping sleeve and tapping valve according to MSS SP-60.
 - 2. Install tapping sleeve on pipe to be tapped. Position flanged outlet for gate valve.
 - 3. Use tapping machine compatible with valve and tapping sleeve; cut hole in main. Remove tapping machine and connect water-service piping.
 - 4. Install gate valve onto tapping sleeve. Comply with MSS SP-60. Install valve with stem pointing up and with valve box.
- D. Make connections NPS 2 and smaller with drilling machine according to the following:
 - 1. Install service-saddle assemblies and corporation valves in size, quantity, and arrangement required by utility company standards.
 - 2. Install service-saddle assemblies on water-service pipe to be tapped. Position outlets for corporation valves.
 - 3. Use drilling machine compatible with service-saddle assemblies and corporation valves. Drill hole in main. Remove drilling machine and connect water-service piping.
 - 4. Install corporation valves into service-saddle assemblies.
 - 5. Install manifold for multiple taps in water main.
 - 6. Install curb valve in water-service piping with head pointing up and with service box.

- E. Comply with NFPA 24 for fire-service-main piping materials and installation.
 - 1. Install PE corrosion-protection encasement according to ASTM A 674 or AWWA C105.
 - 2. Install copper tube and fittings according to CDA's "Copper Tube Handbook."
- F. Install ductile-iron, water-service piping according to AWWA C600 and AWWA M41.
 - 1. Install PE corrosion-protection encasement according to ASTM A 674 or AWWA C105.
- G. Install PE pipe according to ASTM D 2774 and ASTM F 645.
- H. Install PVC, **CPVC** AWWA pipe according to ASTM F 645 and AWWA M23.
- I. Bury piping with depth of cover over top at least 30 inches with top at least 12 inches below level of maximum frost penetration, and according to the following:
 - 1. Under Driveways: With at least 36 inches cover over top.
 - 2. In Loose Gravelly Soil and Rock: With at least 12 inches additional cover.
- J. Install piping by tunneling or jacking, or combination of both, under streets and other obstructions that cannot be disturbed.
- K. Extend water-service piping and connect to water-supply source and building-water-piping systems at outside face of building wall in locations and pipe sizes indicated.
 - 1. Terminate water-service piping at building wall until building-water-piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building-water-piping systems when those systems are installed.
- L. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.
- M. See Section 211200 "Fire-Suppression Standpipes," Section 211313 "Wet-Pipe Sprinkler Systems," and Section 211316 "Dry-Pipe Sprinkler Systems" for fire-suppression-water piping inside the building.
- N. See Section 221116 "Domestic Water Piping" for potable-water piping inside the building.

3.6 PIPE SLEEVES

- A. Provide all pipe openings through walls, partitions and slabs with sleeves having an internal diameter at least 1" larger than the outside diameter of the pipe for uninsulated lines or of the insulation for insulated services. Holes for sleeves in existing buildings are to be neatly cut.

- B. Install sleeves through interior walls and partitions flush with finished surfaces; sleeves through outside walls are to project ½" on outside of the finished wall. Floor sleeves are to project 2" above finished floors.
- C. Set sleeves in place before pouring concrete or securely fasten and grout in with cement.
- D. Sleeve Construction:
 - 1. Interior Partitions: No. 22 gauge galvanized sheet steel with soldered joint.
 - 2. Interior Masonry Walls and Floors: Schedule 40 galvanized steel pipe, or stainless steel where shown on drawings.
 - 3. Exterior Walls: Schedule 40 galvanized steel pipe.
- E. Interior Walls: Fill the space between outside of pipe or insulation and the inside of the sleeve or framed opening with fiber glass. Exterior Walls: Pack with oakum, seal with lead and watertight mastic or asphalt.
- F. Roofs: Refer to drawings for details. Coordinate work with roofing contractor.
- G. Provide escutcheons on both sides of the penetration through the structure for all pipes exposed to view passing through walls, floors, ceilings, and partitions, whether or not insulated. For pipes passing through floors, escutcheons shall fit over the sleeves.

3.7 JOINT CONSTRUCTION

- A. See Section 330500 "Common Work Results for Utilities" for basic piping joint construction.
- B. Make pipe joints according to the following:
 - 1. Copper-Tubing, Pressure-Sealed Joints: Join copper tube and pressure-seal fittings with tools and procedures recommended by pressure-seal-fitting manufacturer. Leave insertion marks on pipe after assembly.
 - 2. Ductile-Iron Piping, Gasketed Joints for Water-Service Piping: AWWA C600 and AWWA M41.
 - 3. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194.
 - 4. Ductile-Iron Piping, Grooved Joints: Cut-groove pipe. Assemble joints with grooved-end, ductile-iron-piping couplings, gaskets, lubricant, and bolts according to coupling manufacturer's written instructions.
 - 5. PE Piping Insert-Fitting Joints: Use plastic insert fittings and fasteners according to fitting manufacturer's written instructions.
 - 6. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.
 - 7. Fiberglass Piping Bonded Joints: Use adhesive and procedure recommended by piping manufacturer.
 - 8. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
 - a. Dielectric Fittings for NPS 2 and Smaller: Use dielectric unions.

b. Dielectric Fittings for NPS 2-1/2 to NPS 4 Use dielectric flanges.

C. Solvent Cements for Joining CPVC Piping and Tubing: ASTM F 493.

- 1. CPVC solvent cement shall have a VOC content of 490 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).**
- 2. Adhesive primer shall have a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).**
- 3. Solvent cement and adhesive primer shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."**

3.8 TRANSITION FITTINGS

A. General Requirements:

- 1. Same size as pipes to be joined.**
- 2. Pressure rating at least equal to pipes to be joined.**
- 3. End connections compatible with pipes to be joined.**

B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

C. Plastic-to-Metal Transition Fittings:

- 1. Manufacturers: Subject to compliance with requirements.**
- 2. Basis-of-Design Product: Subject to compliance with requirements, or comparable product by one of the following:**
 - a. Charlotte Pipe and Foundry Company.**
 - b. Harvel Plastics, Inc.**
 - c. Spears Manufacturing Company.**
- 3. Description:**
 - a. CPVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions.**
 - b. One end with threaded brass insert and one solvent-cement-socket end.**

D. Plastic-to-Metal Transition Unions:

1. Description:

- a. CPVC four-part union.**
- b. Brass or stainless-steel threaded end.**
- c. Solvent-cement-joint plastic end.**
- d. Rubber O-ring.**
- e. Union nut.**

3.83.9 ANCHORAGE INSTALLATION

- A. Anchorage, General:** Install water-distribution piping with restrained joints. Anchorages and restrained-joint types that may be used include the following:
 - 1. Concrete thrust blocks.
 - 2. Locking mechanical joints.
 - 3. Set-screw mechanical retainer glands.
 - 4. Bolted flanged joints.
 - 5. Heat-fused joints.
 - 6. Pipe clamps and tie rods.
- B. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches.** Include anchorages for the following piping systems:
 - 1. Gasketed-Joint, Ductile-Iron, Water-Service Piping: According to AWWA C600.
 - 2. Gasketed-Joint, PVC Water-Service Piping: According to AWWA M23.
 - 3. Bonded-Joint Fiberglass, Water-Service Piping: According to AWWA M45.
 - 4. Fire-Service-Main Piping: According to NFPA 24.
- C. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.**

3.93.10 VALVE INSTALLATION

- A. AWWA Gate Valves:** Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.
- B. AWWA Valves Other Than Gate Valves:** Comply with AWWA C600 and AWWA M44.
- C. UL/FMG, Gate Valves:** Comply with NFPA 24. Install each underground valve and valves in vaults with stem pointing up and with vertical cast-iron indicator post.
- D. UL/FMG, Valves Other Than Gate Valves:** Comply with NFPA 24.

- E. MSS Valves: Install as component of connected piping system.
- F. Corporation Valves and Curb Valves: Install each underground curb valve with head pointed up and with service box.
- G. Pressure-Reducing Valves: Install in vault or aboveground between shutoff valves. Install full-size valved bypass.
- H. Relief Valves: Comply with AWWA C512. Install aboveground with shutoff valve on inlet.

~~3.103.11~~ **3.103.11 BACKFLOW PREVENTER INSTALLATION**

- A. Install backflow preventers of type, size, and capacity indicated. Include valves and test cocks. Install according to requirements of plumbing and health department and authorities having jurisdiction.
- B. Do not install backflow preventers that have relief drain in vault or in other spaces subject to flooding.
- C. Do not install bypass piping around backflow preventers.
- D. Support NPS 2-1/2 and larger backflow preventers, valves, and piping near floor and on brick or concrete piers.

~~3.113.12~~ **3.113.12 PROTECTIVE ENCLOSURE INSTALLATION**

- A. Install concrete base level and with top approximately 2 inches above grade.
- B. Install protective enclosure over valves and equipment.
- C. Anchor protective enclosure to concrete base.

~~3.123.13~~ **3.123.13 CONNECTIONS**

- A. See Section 330500 "Common Work Results for Utilities" for piping connections to valves and equipment.
- B. Connect water-distribution piping to existing water main. Use tapping sleeve and tapping valve.
- C. Connect water-distribution piping to interior domestic water piping.
- D. Connect waste piping from concrete vault drains to sanitary sewerage system. See Section 221313 "Facility Sanitary Sewers" for connection to sanitary-sewer drainage system.

- E. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."
- F. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

~~3.13.14~~ FIELD QUALITY CONTROL

- A. Piping Tests: Conduct piping tests before joints are covered and after concrete thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
- B. Hydrostatic Tests: Test at not less than one-and-one-half times working pressure for two hours.
 - 1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig. Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.
- C. Prepare reports of testing activities.

~~3.14.15~~ IDENTIFICATION

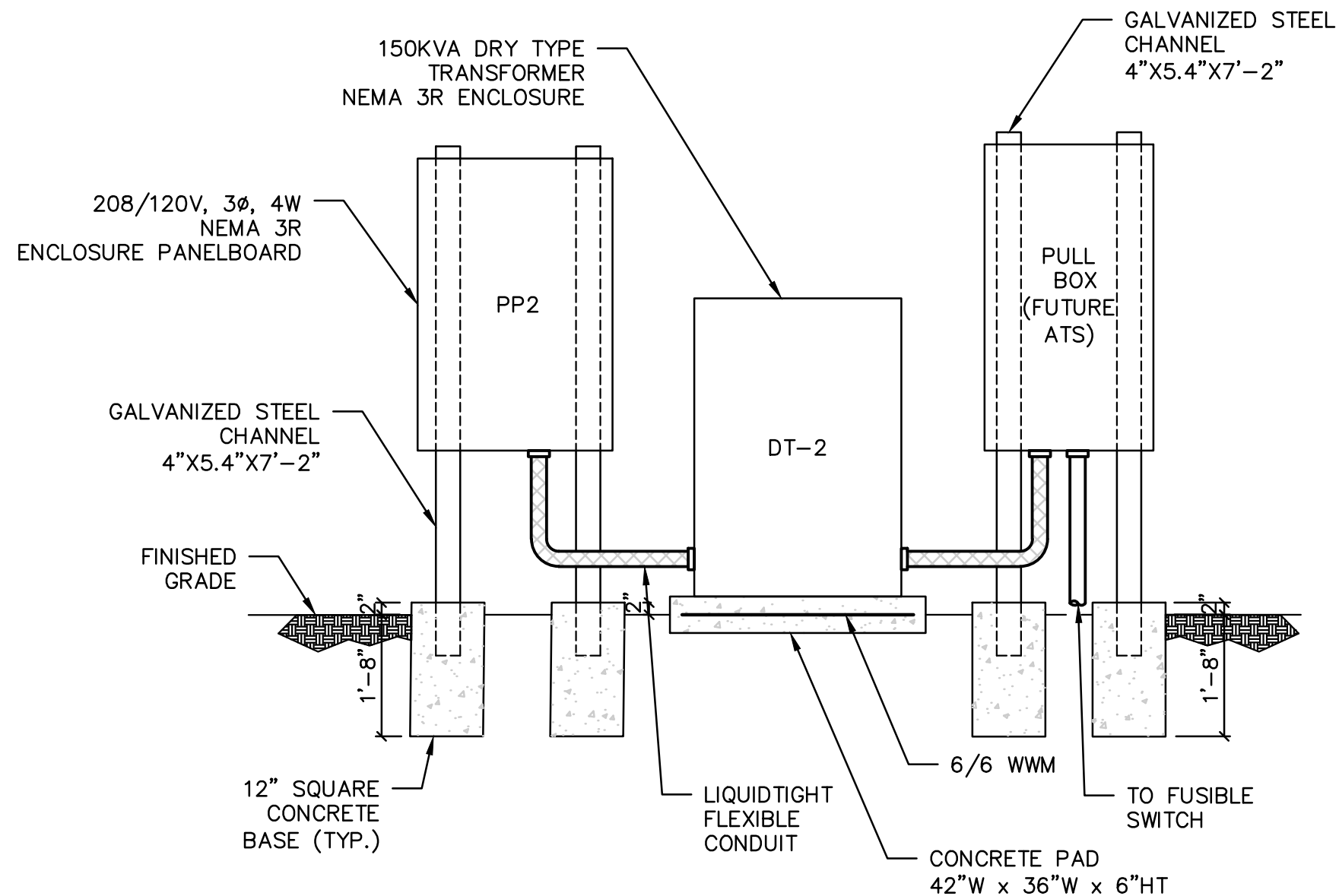
- A. Install continuous underground warning tape during backfilling of trench for underground water-distribution piping. Locate below finished grade, directly over piping. Underground warning tapes are specified in Section 312000 "Earth Moving."
- B. Permanently attach equipment nameplate or marker indicating plastic water-service piping, on main electrical meter panel. See Section 330500 "Common Work Results for Utilities" for identifying devices.

~~3.15.16~~ CLEANING

- A. Clean and disinfect water-distribution piping as follows:
 - 1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.
 - 2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in NFPA 24 for flushing of piping. Flush piping system with clean, potable water until dirty water does not appear at points of outlet.
 - 3. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or do as follows:

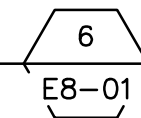
- a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
 - b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.
 - c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
 - d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.
- B. Prepare reports of purging and disinfecting activities.

END OF SECTION



DETAIL

SCALE: NTS



CLARIFICATION DRAWING
03/28/18

HDW SET FOR -PHASE 1A- DOOR		
1A	QTY.	DESCRIPTION
	3 PAIR	4-1/2" x 4-1/2" HINGES
	1	COORDINATOR
	4	KICK PLATE
	2	CLOSER
	1	MEETING STILE GASKETING
	1	TOP WEATHER STRIPING
	1	AUTOMATIC DOOR BOTTOM
	1	HEAD & JAMB WEATHERPROOF SEAL
	1	LOCKSET (CLASSROOM TYPE)
	1	EXIT DEVICE

HDW SET FOR -PHASE 1- DOOR		
1	QTY.	DESCRIPTION
	3 PAIR	4-1/2" x 4-1/2" HINGES
	1	COORDINATOR
	4	KICK PLATE
	2	CLOSER
	1	MEETING STILE GASKETING
	1	EXIT DEVICE
	2	PUSH/PULL PLATE
	1	PUSH BUTTOM (@NEW CORRIDOR ENTRY)
	1	AUTOMATIC DOOR BOTTOM
	1	HEAD & JAMB WEATHERPROOF SEAL
	1	EMERGENCY RELEASE (@NEW CORRIDOR ENTRY)
	1	CARD READER (@ EXISTING CORRIDOR)
	2	ELECTROMAGNETIC LOCK (OVERHEAD)

HARDWARE NOTES:

1. All hardware shall be heavy duty & ADA compliant.
2. Both Door & Hardware set shall be 2hr Fire Resistant as per IBC Table 706.4.

ELECTRICAL INSTALLATION NOTES FOR DOOR HARDWARE (ACCESS CONTROL) – PHASE 1:

1. For Phase 1 installation provide a single door Access Control panel. Install the control panel above the existing VICC corridor hung ceiling. The door security devices will be connected to the door Access Control panel.
2. The Access Control Panel shall be compatible with the existing VICC Access Control System. The Access Control Panel shall be provided with back-up battery and battery charger.
3. Connect the control panel to a dedicated 20 A, 120V circuit (2#12 Cu THWN 600V - #12 Cu THWN 600V Ground in ¾" conduit). Panelboards are located at lower level electrical room, approximately a 150-ft run.
4. Interconnect the control panel with the existing Main Access Control System at the existing Communications Room located at the lower level. Run ¾" conduit with the required communication wiring approximately a 150-ft run.