DRAWING NO. specified otherwise under other individual equipment Sections, motor starters SECTION 22 05 00 A. All aboveground plumbing systems piping and valves sized 3/4" and larger Pipe hangers selected for supporting horizontal insulated piping shall be sized D. All materials, equipment, etc. subject to weather, corrosion, dust. debris. CFD-XXX-P-0001-XXXXXX shall conform to the following minimum requirements: which are installed in accessible locations (including piping above removable to fit around the outside of the pipe insulation. Insulated piping shall be water etc. to be installed or utilized for the project shall be fully protected. COMMON WORK RESULTS FOR PLUMBING ceilings and behind access panels) shall be identified in strict conformance supported on galvanized shields. This is inclusive of piping and duct openings and internal fan ventilation 1. Starters for motors 1/3 horsepower or smaller shall be manual unless with the "Scheme for the Identification of Piping Systems" (ANSI A13.1-2015) intakes and discharges. This Division's scope includes protection and remote or automatic starting is required, in which case the starters 1.0 GENERAL 1. Shields shall be as follows: remediation of any and all Division materials, etc. including cleaning, shall be magnetic, full voltage, non-reversing, single-speed, unless B. Piping labels in exposed areas shall be oriented and located in coordination vacuuming, dusting, etc. required for a clean system and operation. Insulation otherwise indicated. All other starters shall be magnetic. 1.01 DESCRIPTION a. Pipes 2" and smaller: 18 gauge x 12" long with the Architect. and equipment with electrical connections subject to water shall be replaced in their entirety. Coordinate with all other trades and schedules. 2. Each starter for a three-phase motor shall be furnished with three (3) A. This Division 22 and the accompanying drawings cover the provision of all C. System names shall, at minimum, uniquely identify the system and b. Pipes 2 1/2" and larger: 16 gauge x 18" long overload relays sized for the full load running current of the motor labor, equipment, appliances, and materials and performing all operations in performance category — i.e. 140°F Hot Water Supply, High Pressure Cold 3.06 PAINTING connection with the construction of the plumbing systems as specified herein actually provided. Provide an external "HAND—OFF—AUTO" selector 2. Shields shall be 180 degrees around the lower half of the pipe at all switch with red "RUNNING" light. Provide a green pilot light to indicate pipe hangers, except that on trapeze hangers, pipe racks and floor A. All uncoated and uninsulated steel surfaces exposed to sight inside the motor "STOPPED". Each pilot light shall have a legend plate indicating D. Specialized piping (grease waste, acid waste, fuel piping, etc.) installed supported horizontal pipes, shields shall be 360 degrees around the building, such as piping, equipment hangers and supports, which are not B. All work specified in this Section is governed by the Common Work Results reason for signal. underground shall be labeled. The label shall be corrosion resistant or shall be entire pipe. provided with factory prime coat or galvanizing, shall be cleaned and painted for Plumbing 22 05 00. MAILING ADDRESS: permanently marked. with one coat of rust inhibiting primer. In addition, all surfaces in finished 3. Each overload relay shall have a normally open alarm contact which D. Pipe hangers touching copper piping shall be copper plated or the piping shall P.O. BOX 1007 spaces shall also be painted with two coats of finish paint in a color selected C. The General Provisions and Division 1, including the general, supplementary will close only when actuated by an overload (not to be confused with E. Each identification marker shall include the following: be dielectrically isolated from any steel hangers or clamps that are used. CHARLOTTE, NC 28201 by the Architect. and other conditions and other Divisions, as appropriate, apply to work Note the requirement for domestic water piping requires the hangers to be N.O. or N.C. auxiliary contacts). These contacts shall be properly wired specified in this Division. to their respective blue pilot light provided on the starter front cover 1. Proper color—coded background installed over the insulation. B. Steel items exposed outside the building, such as equipment supports, and having a "TRIPPED" legend plate. uninsulated piping and hangers which are not factory painted or aalvanized 1.02EXISTING CONDITIONS 2. Proper color of legend in relation to background color E. Steel rods, framing and clamps shall be plated or primed to prevent rust shall be cleaned and painted with one coat of rust inhibiting primer and two Safety Expectations: 4. Individually mounted motor starters shall be in a NEMA Type 1 general coats of asphaltic base aluminum paint. Insulated steel pipes outside the A. Attention is called to the fact that the work is to be performed within an 3. Proper legend letter size purpose enclosure in unfinished areas and shall be flush mounted in all building shall be cleaned and painted with one coat of rust inhibiting primer existing, operational facility. Prior to the submission of bids, each bidder shall 3.0 EXECUTION finished areas. All starters mounted in exterior areas shall have a before installing insulation. [ILLNESS] visit the project site, thoroughly investigate and be familiar with all existing Reduce Risk 4. Proper marker length NEMA 3R enclosure. Each starter shall have a laminated nameplate to conditions which will affect their work; especially the work to be performed 3.01 GENERAL indicate equipment unit number, function and circuit number. C. Factory painted equipment that has been scratched or marred shall be above the existing ceilings. 5. Direction of flow arrow shall be included on each marker Remove Exposures to Hazards repainted to match the original factory color. A. All piping, valves, and fittings shall be products of a domestic Manufacturer 5. All motor starters, push buttons and pilot lights shall be of the same B. Connect new work to existing work in a neat and workmanlike manner. Where and made in the USA. F. Locations for pipe markers shall be as follows: 3.07 PIPING LEAK TESTING manufacturer as the switchboard and shall be General Electric, Square Reinforce Safe Behavior an existing structure must be cut or existing utilities interfere, such D, Siemens I.T.E., or Westinghouse. obstructions shall be bypassed, removed, replaced or relocated, patched and 1. Adjacent to each valve and fitting Flexible piping connections shall be provided and installed at all suction and A. Sanitary, waste, storm, and vent piping shall be tested with water before repaired. Work disturbed or damaged shall be replaced or repaired to its prior discharge connections of packaged booster pumps and at any pump 2.0 HP installing fixtures. Water test shall be applied to the system either in its Motor starters for the following equipment shall be provided under this and above. Flexible piping connections shall be suitable for 300 psi working 2. At each branch and riser take off Division 22 by the Manufacturer of the equipment: entirety or to the individual sections. Each opening except the highest pressure or the system pressure at the installation location, whichever is opening of the section under test shall be plugged, and the section shall be C. Prior to the start of any demolition or construction, secure the services of a areater, and be suitable for the temperature of the system. Flexible 3. At each pipe passage through walls, floors and ceilings 6. Pumps without VFDs filled with water and tested with a head of water of at least ten (10) feet qualified, EPA Certified Asbestos Abatement Agency to check the existing connections shall be stainless steel braided hose type, with a length not less above the highest point in the system. The water shall be kept in the portion insulation, etc. for asbestos. Should asbestos be found, do not proceed with than their pipe diameter. Provide and install restraining rods if recommended 4. On all straight pipe runs every 25 feet except that piping underground 7. Other equipment hereinafter specified in other Sections to be provided under test, for at least thirty (30) minutes; no drop in the water level will demolition or construction; notify the Architect in any case in writing of the by the Manufacturer for the installation location and application. required to be labeled shall be labeled every 10 feet or more often as with integral starters be acceptable. Agency's findings. required by the AHJ Provide and install shut—off valves at any and all equipment including water D. Unless otherwise noted or specified in individual Sections, all 3-phase motors B. The water piping systems shall be tested at a minimum pressure of 125 psi, 1.03INTENT OF DRAWINGS AND SPECIFICATIONS G. Identification markers may be stenciled or shall be Setmark Pipe Markers, as heaters, domestic booster pumps, recirculation pumps, storage and pressure shall be standard NEMA continuous duty "B" type, with Class B insulation, or 1.5 times the system operating conditions, whichever is greater, and tanks, etc. and at any locations required by code, such as branch lines from manufactured by Seton Name Plate Corporation. open drip-proof frame for indoor service. TEFC for outdoor service and a proved tight at this pressure for not less than thirty (30) minutes or longer A. The implied and stated intent of the drawings and specifications is to risers serving more than one fixture. Shut—offs shall be in addition to those service factor of 1.15. All motors 5 HP and larger shall be U.S. Motors if required to permit inspection of all joints. No loss in pressure will be establish minimum acceptable standards for materials, equipment and H. All valves shall be identified with the appropriate service designation and valve specifically shown or noted in the Contract Documents. Hi-Efficiency Model or Reliance XE Hi-Efficiency Model. workmanship, and to provide operable plumbing systems complete in every permitted. number brass valve tags. Each valve tag shall be 19 gauge brass with 1/4" 3.02 SUBMITTALS E. All power wiring and final connections to equipment shall be provided under black—filled letters over 1/2" black—filled numbers. Tags shall be fastened to C. All compressed air piping shall be tested pneumatically and proved tight at a valves with brass "S" hooks or brass jack chain. Brass tags and fasteners Division 26. pressure of not less than 100 psi for a period of not less than two (2) B. The engineering drawings are diagrammatic, intended to show general A. Before preparing submittals, study all Contract Drawings and specifications in shall be as manufactured by Seton Name Plate Corporation. hours. No loss in pressure will be permitted. arrangement and sizes of system components, and shall not be scaled. detail, obtain manufacturer's recommended instructions, and have submittals F. Control components, all interlocks (control valves, leak sensors, etc.) and Rather, the architectural and structural drawings shall govern space prepared based on specific equipment and material proposed for installation. I. Provide charts of all valves. Valve charts shall include the following items: **&A** Barrett, Woodyard and Associates, Inc. control wiring (120 volt, single phase and less) shall be provided under this constraints, dimensions and finishes. All offsets and fittings which will be D. All leaks shall be repaired by tightening, remaking joints, or replacing pipe An officer of the contracting firm shall sign all shop drawings (certifying Division 22 as required to achieve the specified control sequences. necessary to accomplish the finished installation shall be provided at no and fittings. Caulking of joints shall not be permitted. License # C-2226 conformance with plans and specifications) before submitting to the Architect 1. Valve identification Number additional cost or increase in the Contract. 420 Minuet LN. or releasing to the field. G. All control wiring over 30 volts shall be installed by a Licensed Electrician E. See specification section 23 11 23 for testing requirements of natural gas Charlotte, North Carolina 28217 2. Location working under this Division 22. 1.04 SPACE PRIORITY and liquid propane gas piping. System shall be part of Division 22 scope (p) 704-357-9333 (f) 704-357-9385 The submittal process shall not be utilized as an avenue to substitute unless otherwise arranged within the Contract. Coordinate with Division 23. products after the execution of the contract. Should an unspecified or © This drawing is copyrighted. It may not 3. Purpose/Material .08 SLEEVES, SEALS AND ESCUTCHEONS A. Ensure optimum use of available space for materials and equipment installed be reproduced nor used in any other unequal product be submitted, it will be rejected. If a second attempt at above ceilings. Allocate space in the order of priority as listed below except 3.08 RECORD (AS-BUILT) DRAWINGS form or on any other project. substitution is made during the resubmittal of the same product, then no 2.0 PRODUCTS A. Sleeves shall be provided through all pipe penetrations of concrete or as otherwise detailed. Items are listed in the order of priority, with items of BWA JOB # 2022-0632 more reviews of that product will be performed without direct compensation masonry walls, elevated floors and roofs, except those plumbing piping equal importance listed under a single priority number. A. At the completion of the project, provide a set of reproducible prints to the to the Engineer being paid for the additional services required for the third penetrations for fixtures, vents, etc. 2.01 BID BASIS AND SUBSTITUTION PROCEDURES Architect which reflects all changes, deviations and revisions made to the review and any further reviews. 1. Gravity flow piping systems original design documents. Locations of all underground piping and utilities A. Manufacturer names, series and model numbers, as noted or specified, are B. Sleeves shall be fabricated from Schedule 40 steel pipe through 10" and shall be clearly shown and dimensioned from permanent reference points such C. All submittals shall be submitted and returned electronically. for the purpose of describing type, capacity, and quality of equipment, 2. Vent piping systems Standard Wall steel pipe for sleeve sizes 12" and larger. All sleeves as building column lines. Record drawings shall be produced in electronic materials and products to be used. Unless "or equal" is specifically stated, penetrating exterior walls, underground walls, pit or vault walls shall be format compatible with AUTOCAD. Furnish electronic copies of all drawings in D. Submittals will not be accepted for review unless they: 3. Recessed lighting fixtures bids shall be based only on the specified "basis of design" Manufacturer. The provided with a 3" x 3/8" thick waterstop ring welded completely to the dwa. format, and two (2) bond copies of all drawing sheets. As—Builts for listing of a particular manufacturer as an "equal" or "acceptable substitute" electronic incorporation by the Design Team, as applicable, shall be redline midpoint of the sleeve. 1. Comply with the requirements of Division 1. 4. Concealed HVAC terminals and equipment manufacturer shall not be misconstrued as approving, nor allowing the mark—ups of the Construction Documents. substitution of, that Manufacturer's standard product in place of the basis of C. All sleeves penetrating exterior walls, underground walls, pit or vault walls and 2. Include complete information pertaining to all appurtenances and 3.09 OPERATING AND MAINTENANCE MANUALS AND INSTRUCTIONS elevated floors shall be packed and sealed watertight. design. No consideration will be given to a product which would require dimensional, spatial or aesthetic changes to the project. "Acceptable 6. Sprinkler piping systems D. Sleeves through roofs shall extend above the roof surface and be flashed A. Complete operating and maintenance manuals shall be provided to the Owner substitute" and "equal" manufacturers shall only bid those products which 3. Are submitted as complete packages which pertain to all related items Four copies shall be provided. Each copy shall be bound in a separate 3-ring, exactly match the size and other characteristics of the specified basis of in Division 22. Separate packages shall be submitted as follows: 7. Pressurized piping systems loose leaf notebook. Operating instructions shall be provided for each design. Any changes to other disciplines and trades of work required by an E. Sleeves through walls shall be cut and finished flush with each surface of the plumbing system, and shall each include a brief system description, a simple "or equal" or "substitute" product shall be duly considered and priced a. All plumbing equipment, piping, specialties, and components 8. Electrical conduit, wiring, control air tubing wall in which they are installed. schematic and a sequence of operation. Operating and maintenance accordingly prior to bidding or pricing. The decision as to whether or not a instructions shall be provided for each piece of equipment. A control system proposed substitute or "equal" product is actually equal to that specified shall b. All plumbing fixtures B. Order of space priority does not dictate installation sequence. Installation Sleeves through elevated floors shall extend at least ½" above the finished wiring diagram shall be included in each operating and maintenance manual. rest solely with the Architect. sequence shall be as required to install all affected trades. floor and be sealed waterproof between the sleeve and slab. 4. Are properly marked with equipment, service or function identification B. Prior to final acceptance or beneficial occupancy, provide the services of a as related to the project and are marked with pertinent specification B. Requests to provide "equal" products in lieu of those specified shall be C. The work of this Division 22 shall not obstruct access for installation, Competent Technician for not less than one (1) day to instruct the Owner in G. Sleeves shall be sized to provide a minimum of 1/2" clearance between the paragraph number. submitted to the Architect in writing at least ten (10) days prior to final operation and maintenance of the work of any other Division. inside surface of the sleeve and the outside finished surface of the pipe plus the operation of the plumbing systems. pricing and execution of the Contract. No consideration will be given to any insulation specified. Submit catalog information, factory assembly drawings, field installation substitute products after final pricing and execution of the Contract. D. All major items of equipment shall be arranged so as to provide a minimum 3.10 MINIMUM HANGER SPACING drawings and certifications as required for complete explanation and of 28" clear aisle space. Additional space shall be provided between and H. Fire—stops shall be provided as specified herein. All annular spaces between description of all items of equipment. The submittal data shall provide ample, C. Any "or equal" product or proposed product substitution which will cause a around equipment for maintenance and proper operation as shown in the A. Pipe hangers or supports shall be provided within 18" of each horizontal piping and sleeves which do not require fire-stops shall be packed with unquestionable compliance with the Contract Documents. change in the appearance, dimensions or design of any part of the building, **DUNN OPERATIONS** Equipment Manufacturer's literature. fitting, equipment connection, valve, etc. and within 18" of the centerline of mineral wool and caulked. structure, electrical system, or any other engineered systems shall be horizontal or vertical changes in direction summing to 90° or more. Specific Review of submittals shall not be construed as authorizing any deviations accompanied by a scaled drawing and written description of the required 1.05 COORDINATION Fire—stopping or packing at elevated floor penetrations shall be level with or CENTER attention is called to turns into vertical risers. from the plans and specifications unless such deviations are clearly identified change(s) for approval by the Architect. If deemed necessary by the above the elevation of the top of sleeve to prevent any water ponding on top and separately submitted in the form of a letter that is enclosed with the Architect, design changes shall be signed and sealed by a registered A. Coordinate all work under this Division 22 with work under all other Divisions. B. Piping supports shall be provided, at a minimum, in accordance with the of the sleeve. submittals. Professional Engineer, currently licensed in this State. This shall be performed providing adjustment as necessary. greater of the below or code minimum. Where the below or code does not under the Contractor selecting the substitution's scope. J. Provide round, chrome-plated escutcheons on all exposed piping penetrations address support for specific piping, supports shall be in accordance with Submittals are required on all manufactured equipment, especially energy B. Coordination of space requirements with respect to Division 26 shall be passing through walls, floors, partitions and ceilings. 1269 JONESBORO RD. consuming equipment. Submittals shall include, but are not limited to, the manufacturer's requirements. performed such that: D. Any and all changes due to a substitution of basis of design equipment following items of equipment: HARNETT COUNTY, NC 28334 including but not limited to electrical connection, physical size, access, piping K. All penetrations through rated slabs, walls, etc. shall be in accordance with Piping Material Max. Horz. Spacing Max. Vert. Spacing 1. No equipment, piping or ductwork, other than electrical, shall be connections, controls, etc. shall be solely the responsibility of Contractor UL listed systems. Provide rated box—out, fire caulking, etc. as needed to 1. Water Heaters selecting the substitution. installed within 42" of switchboards or panelboards. ensure fire rating is maintained in compliance with UL listed systems. Cast-iron pipe MOBILE SUB. 2. No piping or ductwork which ever operates at a temperature in excess 2. Pumps 1.09 FIRESTOPS 2.02 MINIMUM STANDARDS of 120°F shall be installed within 3" of any electrical conductor. Copper pipe **STORAGE** 3. Plumbing Fixtures A. Every piece of energy consuming equipment, all fire suppression products and C. All items mounted in or below the ceiling, and all items penetrating the A. Where piping, conduit, etc. pass through fire partitions, fire walls and floors, of Copper tubing ≤ 1-1/4" dia. 6' life safety equipment shall comply with the following standards as applicable; firestop shall be provided that will ensure an effective barrier against the ceiling, shall be coordinated with the architectural reflected ceiling plans. If 3.03 EXCAVATION, TRENCHING AND BACKFILLING especially in regard to prevailing codes: spread of fire, smoke and gases. Firestop material shall be packed tight and any items are not shown on these plans, or any items need to be relocated Copper tubing $\geq 1-1/2$ " dia. 10' completely fill gaps between the ductwork, piping, conduit, etc. and the for coordination purposes, prepare a reflected ceiling plan and submit it to A. Perform all excavation, trenching and backfilling for underground work under 1. Factory Mutual Laboratories (FM) the Architect for approval. perimeter of their rough openings. this Division 22. During excavation, the excavated material shall be piled back Riser clamps shall be provided at each floor penetration. For pressurized from the banks of the trench to avoid overloading, slides or cave—ins. Do not piping systems, provide vibration isolation at all riser clamps with two (2) 1.06 CODE COMPLIANCE B. All penetrations shall be in accordance with UL 1479 or ASTM E 814 listed 2. Industrial Risk Insurers (IRI) exceed the angle of repose unless written approval is obtained in advance pad—type mountings consisting of a minimum 3/8" thick ribbed or waffled systems, and products used shall be specifically applicable for the appropriate from the Architect for shoring, bracing or other alternate excavation methods. elastomeric pads bonded between minimum 16—gauge galvanized steel installation conditions. Assemblies shall provide a minimum rating equal to the All excavated material not used for backfilling shall be removed from the A. All workmanship and materials provided under this Division 22 shall comply 3. Underwriters Laboratories, Inc. (UL) separator plates. Pads shall be sized for a deflection of 0.12" to 0.16". Pads construction penetrated. Products shall be by HILTI, 3M, or ProSet. with all laws, ordinances, codes and regulations of all Federal, State and Local building and disposed of as indicated or directed by the Architect. Take shall be minimum 3"x3" sauare. Authorities Having Jurisdiction. 4. ADC: Air Diffusion Council measures to prevent surface water from flowing into trenches and other C. Installation shall be by a Qualified Installer. Installer shall be certified, excavations and any water accumulating therein shall be removed by pumping. 11 WARRANTY licensed, or otherwise qualified by the Firestopping Manufacturer as having the B. All fire suppression, plumbing, heating, ventilating, and air conditioning 5. AGA: American Gas Association All excavation shall be made by open cut. Tunneling shall not be allowed. materials and workmanship shall comply with all local, state, and federal necessary training to install the Manufacturer's specific product. A codes and the following standards as minimum requirements: A. All work provided under this Division 22 shall be subject to a minimum one Manufacturer or Vendor's willingness to sell the firestopping product to the 6. AMCA: Air Moving and Conditioning Association, Inc. B. The bottom of all trenches shall be evenly graded to provide firm support year warranty. The warranty shall include prompt repair or replacement of Contractor or Installer does not in itself confer qualification. and an even bearing surface. Pipe shall be laid on firm soil, laid in straight 1. NFPA 70, National Electrical Code, 2017 Edition lines and on uniform grades. Provide bell holes so that the barrel of the pipe equipment or system failures and shall include all parts and labor. In addition, 7. ANSI: American National Standards Institute all compressors shall carry an additional four year parts—only warranty. D. Installer shall have at least one of the following qualifications: rests evenly on the bottom of the trench along the entire length of the pipe. 2. Life Safety Code (NFPA 101) - 2015 Edition Extended warranties shall be provided on all other equipment so specified in 8. API: American Petroleum Institute other Sections. 1. FM 4991 Approved Contractor Pipe shall be inspected and tested prior to backfilling. Trench shall be 3. All other NFPA Codes and Standards — Applicable Editions 9. AHRI: Air Conditioning, Heating, and Refrigeration Institute handfilled to a minimum of 12" above the top of pipe with suitable earth 150WNER TRAINING 2. UL Approved Contractor (free of rocks, trash, large clods and organic material) and compacted to a 4. North Carolina State Building Code - 2018 Edition 10.ASHRAE: American Society of Heating, Refrigerating and Air minimum 95% proctor. After the first layer is completed, subsequent layers A. Owner training shall be provided for all systems and equipment and shall 3. HILTI, 3M, or ProSet Accredited Fire Stop Specialty Contractor Conditioning Engineers shall be filled and compacted the same as the first layer. Settling the backfill 5. North Carolina State Energy Code — 2018 Edition include the following: with water shall not be permitted. 11. ASME: American Society of Mechanical Engineers E. Installing Firm shall have no less than 3 years of experience with firestop ____ 6. North Carolina State Fire Prevention Code - 2018 Edition 1. 8—hours of training for each type of equipment 3.04 INSTALLATION REQUIREMENTS 12.ASTM: American Society of Testing and Materials 2. 16—hours for overall system operational training 7. North Carolina State Mechanical Code - 2018 Edition F. A Manufacturer's direct Representative (not Distributor or Agent) shall be on A. All equipment shall be installed in strict conformance with the 13. AWWA: American Water Works Association site during initial installation of firestop systems to train appropriate recommendations of the Equipment Manufacturer, as indicated on the B. A training summary and schedule shall be submitted to the Architect for 8. North Carolina State Plumbing Code — 2018 Edition Contractor personnel in proper selection and installation procedures. Drawings, and as specified. approval within ninety (90) days of the date of substantial completion. 14.IBR: Institute of Boiler and Radiator Manufacturers 9. ASME A17.1 Safety Code for Elevators and Escalators — 2013 Edition G. The firestop Contractor or Installer shall supply As—Built documentation of B. Provide installation manuals for each piece of equipment. Submit in separately C. Training timing will vary and shall be assumed to include multiple sessions as 15.MSS: Manufacturers Standardization Society each individual penetration location on the project. Documentation shall bound volumes after review of submittals. 10.North Carolina Accessibility Code - 2018 Edition required by the Owner. include a sequential location number, detailed description of the penetration PROJECT NO: 16.NBBPVI: National Board of Boiler and Pressure Vessel Inspectors location, size, and type, tested system number, type of assembly penetrated, Provide supplementary steel framing and welded steel equipment support 11. American with Disabilities Act, January 26, 1992 .17BID REQUIREMENTS and rating to be achieved. As—Built documentation shall be included with the DRAWING NUMBER stands as required for proper hanging and support of the plumbing systems. 17.NEMA: National Electrical Manufacturer's Association close-out materials. Steel angles, channels and tubing utilized for such framing shall be selected 12. American National Standard Handicapped Code, A117.1 - 1986 Edition A. The Contractor shall include all systems, equipment and accessories shown on CFD-XXX-P-0001-XXXXXX for a maximum deflection of 1/360th of the span. 18.0SHA: Occupational Safety & Health Administration the plans and specifications. H. Identify through-penetration firestop systems with pressure-sensitive, Secure and pay all fees associated with all permits and licenses required for self-adhesive, preprinted vinyl labels. Attach label permanently on both sides All roof curbs shall be a minimum of 12" high and selected for the various B. The Contractor is responsible for providing all Contract Documents to all execution of the Contract. Arrange for all inspections required by City, of penetrated construction in a visible location. The label shall include the 19.PDI: Plumbing Drainage Institute ELECTRONIC FILE NAME: P0001.DWG roof pitches. Curbs installed on roofs having pitches of not more than 1/4" County, State and other Authorities Having Jurisdiction, and deliver certificates SubContractors. All systems, equipment and accessories shall be included in per foot may be standard curbs shimmed level with steel channels or Zs to of approval to the Architect. the bid, whether shown on the SubContractor applicable plans or other design 20. PPI: Plastic Pipe Institute DRAWN BY: TAYLOR SUBER provide suitable support and flashing surfaces. 1. The words "Warning — Through Penetration Firestop System—Do Not D. The code requirements are strictly a minimum and shall be met without 21.CISPI: Cast Iron Soil Piping Institute 3.05 CLEANING, LUBRICATION AND ADJUSTMENT DAVID CONDON incurring additions to the Contract. Where requirements of the drawings or C. Should any discrepancy occur in the Contract Documents, the Contractor shall specifications exceed the code requirements, the work shall be provided in provide a request for clarification prior to bid or note the discrepancy in the 2. Through Penetration firestop system designation and Manufacturer 2.03 PIPE HANGERS AND SUPPORTS A. The exterior surfaces of all plumbing equipment, piping, conduit, etc., shall be accordance with these drawings or specifications. In the event of conflict or bid and provide an appropriate cost allowance in the bid. DCONDON@barrettwoodvard.com cleaned and free of all dirt, grease, oil, paint splatter, and other construction ambiguity between the various codes, the most stringent requirement shall A. Pipe hangers, hanger rods, trapeze type hangers, upper attachments and 3. Date of Installation D. The Contractor shall acknowledge that the Contract Documents are other supports shall be selected based on pipe size (plus insulation of pipes diagrammatic and shall provide all systems, equipment and accessories 1.10 CORE DRILLING specified to be insulated) and the weight of the medium being transported or Bearings that require lubrication shall be lubricated in strict accordance with required for a complete facility. Any areas that appear to be void of systems 1.07ELECTRICAL REQUIREMENTS AND INTERFACE the medium used for testing, whichever is greater. Provide all hangers and the manufacturer's recommendations. or inappropriate systems shall be noted in the bid. No post bid change order A. Cutting of holes through concrete and masonry shall be by diamond core or rods, turnbuckles, angles, channels, and other structural supports to support A. All electrical equipment and wiring provided under this Division 22 shall shall be considered for areas or discrepancies not noted in the bid. concrete saw. Pneumatic hammer, impact electric and hand or manual the piping systems. Rods for pipe hangers shall be full size of the Hanger All control equipment, valves, equipment settings, pressure tanks, etc. shall comply with the electrical system characteristics indicated on the electrical hammer type drills will not be allowed, except as permitted by the Architect Manufacturer's catalog listed rod size for each type hanger specified. Hangers be adjusted to the settings required for the performance specified. **SPECIFICATIONS** drawings and specified in Division 26. E. All installation coordination and means and methods and labor and materials where required by limited working space. Locate holes such that they will not and supports shall be Michigan, ITT Grinnell or B-Line. required for proper system installation shall be included. affect structural sections such as ribs or beams. Holes shall be laid out well - PLUMBING B. Electric controls, contactors, starters, pilot lights, push buttons, etc., shall be in advance of the installation. These layout locations shall be approved by the 3. All material utilized for the hanging and support of the piping systems shall provided complete as part of the motor, heater or other equipment which it F. These requirements are in addition to bid procedures and requirements of the Architect prior to drilling. be manufactured products which are specifically intended for the purpose of RFP or general specifications. operates. All electrical components shall be in conformance with the hanging piping systems. The use of wire, steel straps, plastic ties, etc. is requirements of the National Electrical Code and Division 26. Starters shall be 11 IDENTIFICATION OF PIPING strictly prohibited. END OF SECTION wye-delta, closed transition type. Reference Division 26 and the electrical SHEET NO. engineering drawings for those motor starters provided under that Division 26. All starters not shown shall be provided under this Division 22. Unless P-0001

DRAWING NO. 11. Service and Laundry Faucets — American Standard, Delta, Elkay, Fiat, SECTION 22 07 00 All water heaters shall meet or exceed the energy efficiency requirements of 3. All check valves shall be installed in an orientation allowed by the B. Union joints, couplings or flanges shall be provided in each pipe line Kohler, T&S Brass, Speakman, and Stern-Williams CFD-XXX-P-0002-XXXXXX the latest version of ASHRAE 90.1 connected to each piece of equipment, fixture and elsewhere as indicated and manufacturer's recommendations. PLUMBING INSULATION specified. Unions shall match the piping system in which they are installed. .0 PRODUCTS . All water heaters and pumps shall be UL approved and labeled, and be AGA 4. All check valves installed in insulated piping systems shall have the check 1.0 GENERAL certified where applicable. Unions or flanges shall be provided between all copper to steel connections. valve location explicitly labeled on the outside of the insulation. These unions shall be dielectric, insulating type. 2.01 WATER CLOSETS 1.01 DESCRIPTION . All water heaters and pumps shall be NEMA rated appropriate for the installation location in which they are installed. P. Backflow preventers at carbonated beverage machines shall meet ASSE 1022 D. All changes in direction and branches shall be made with manufactured A. Fixtures P-1 shall be American Standard "Madera" #3451.001 vitreous china, UON and all other appliances shall meet ASSE 1024. Backflow preventers shall A. All work specified in this Section is governed by the Common Work Results syphon jet, 15" high, 1.28 GPF, bottom outlet, 1 ½" top spud, floor-mounted Water heater controls shall include an operating thermostat and manual reset for Plumbing Section 22 05 00. be approved by the AHJ. ASSE 1022 ports shall be piped with copper tubing with flat bolt covers. Flush valve shall be a battery powered sensor type flush high limit control for each heating element or burner. The safety high limit to an indirect drain location. Backflow preventers at dishwashers shall meet E. The use of offset—type reducers is strictly prohibited in any piping system. valve; Sloan "G2 Optima Plus;" Model 8111—1.28. Provide with batteries. control shall prevent over heating in the event of a thermostat failure. B. This Section 22 07 00 and the accompanying drawings cover the provision of ASSE 1020 unless otherwise noted. Other equipment and appliances shall be Fixtures P-1H shall be similar, except that they shall be mounted in all labor, equipment, appliances, and materials and performing all operations protected from backflow as required by Code and/or manufacturer's F. In all water piping systems, changes in horizontal pipe line sizes shall be accordance with the handicap code. All controls shall be factory—wired and require no external power source. in connection with the insulation of the plumbing systems as specified herein made with eccentric reducers installed flat on top for proper air venting. and as shown. These systems include, but are not limited to, the following: Reducing tees, reducing elbows and concentric reducers shall only be allowed 2.02 LAVATORIES MAILING ADDRESS: Water heaters and tanks shall have drain with external access and hose end in water piping systems for changing pipe sizes in vertical risers and for Q. Water connections to appliances shall be made with flexible copper tubing or P.O. BOX 1007 1. Sanitary waste and vent systems making connections to equipment and accessories from vertical risers. commercial grade double—reinforced stainless steel braided hose, no less than A. Fixtures P-2 shall be American Standard "Lucerne" #0356.015, vitreous china, CHARLOTTE, NC 28201 $3/8^{\prime\prime}$ in size, or the connections size of the appliance, whichever is greater. wall hung lavatories with concealed carrier and anchoring screws; 8" centers 2. Domestic water systems K. All water heater condensate lines shall be protected from freezing or shall be G. All pipe joints shall be cut square and all burrs shall be removed. heat traced in accordance with specification 23 05 93. faucet punching and 1 1/4" drain. Faucet shall be Sloan Optima Faucet, R. Point of use mixing valves shall be Leonard 170-LF or an approved equal EAF-225, hardwired, plug adapter, mixing valve, or approved equal with 1.02 INTENT H. Open ends of pipe lines not currently being handled shall be plugged during with lead—free construction, vandal resistant adjustment cap, and integral 2.0 PRODUCTS chrome-plated die cast metal, strainers, P-trap, loose key supply stops and installation to keep dirt, water and foreign material out of the system. Safety Expectations: inlet check valves. Mixing valve shall be ASSE 1070 rated. Mixing valve shall A. It is the intent of this Section of the specifications to provide complete and all other trim. Provide with Sloan ESD-2000 hard wired soap dispenser. 2.02 WATER HEATER COMMERCIAL ELECTRIC be sized by the Manufacturer for the fixture(s) served. Mixing valve shall have operable plumbing systems complete with insulation, which are free of Coordinate with electrical. Coordinate finish with architect. Sanitary waste and storm drainage piping shall slope down in the direction of unreasonable noise, vibration and sweating, and fabricated so as to fit the no more than 0.25 gpm minimum flowrate required. flow as shown on the drawings or as prescribed by Code, but not less than 1 ILLNESS Reduce Risk 2.04 LAUNDRY SINKS A. The water heater shall be as scheduled. Acceptable substitute manufacturers are AO Smith, Lochinvar, State, Rheem, and Bradford White, subject to S. All water hammer arresters (WHA) shall be PDI Certified, Size A, B, C, D, E Remove Exposures to Hazards substitution requirements. Water heaters shall be commercial—grade. A. Fixtures P-3 shall be Just Manufacturing, JPH-ADA-2230-CT, 22" x 30", 18 B. The word "piping" is defined to mean all piping, fittings, joints, hangers, or F, as indicated for the fixture units served; Josam, JR Smith, Watts, or All vents through roof (VTRs) shall be offset just below the roof such that gauge stainless steel with sound-deadening, rectangular sink complete with coatings, valves, cocks, insulation and accessories necessary for the plumbing Zurn. WHAs that are not PDI Certified are disallowed. WHAs in potable water their termination points are at least 15 ft from any outside air intake of any 3. The immersion heating elements shall be low watt density with a plated emergency eyewash station. Provide with strainers, P-trap, supply stops, systems described, shown and specified. Reinforce Safe Behavior HVAC unit; special attention is called to packaged rooftop and dedicated applications shall be lead-free. anchoring clips and all other trim. Wall supply stops, drains and tailpieces incoloy sheath material for long life. The heating elements shall mount in individual screw—in tank flanges. shall be offset wheelchair type. 1.03 ACCEPTABLE MANUFACTURERS T. The hose bibbs (HB) shall be complete with vacuum breaker and **vandal K. Trap primers shall be provided at all floor drains, floor sinks, trench drains, resistant handle; Watts, Apollo Valves, JR Smith, or Zurn. .05 DRINK FOUNTAINS AND WATER COOLERS . All field electrical wiring connections to the water heater shall be made to a A. Insulation products shall be as manufactured by Owens Corning, Knauf, and hub drains except trap primers may be omitted where drain routes to main terminal block. All internal wiring shall be made to solderless terminal Manville, Certainteed, Dow, Armacell, or Armstrong. the storm system. Route water piping from nearest cold water line and as lug wiring connections. Wiring to be color coded for ease of servicing. The A. Fixtures P-4 shall be barrier free split level surface mounted electric water BB. Soldered joints shall be made with tin-antimony/silver solder. Solder 2.0 PRODUCTS water heater shall be factory assembled, wired and tested. cooler with a bottle filling station; each complete with P—trap and supply containing lead shall not be permitted. service stops. Electric water cooler shall deliver 8.0 GPH of 50°F water at All piping, valves, and fittings shall be provided by a domestic Manufacturer 2.04 HOT WATER CIRCULATOR 90°F ambient and 80°F inlet water. Cooler shall have horizontal stainless steel 2.01 PLUMBING INSULATION and manufactured in the USA. CC. Saddle valves and "T" fittings that rely on puncturing the piping main are top. Bubbler shall have flexible guard and operate between 20 and 120 psi. A. Hot water circulator shall be as scheduled. Acceptable substitute Separate valve and diaphragm—type automatic stream regulator shall be A. All pipe insulation products shall have a permanent composite insulation, 2.0 PRODUCTS manufacturers are B&G, Goulds, and Grundfos, subject to substitution mounted with cabinet. Refrigeration system shall employ high efficiency, jacket and adhesive fire and smoke hazard rating as tested by procedure DD. Thermometers and pressure gauges shall be products of Trerice, Weksler, or positive start compressor, non-pressurized counter-flow cooling coil with requirements. ASTM-84, NFPA 255 and UL 723 not exceeding Flame Spread 25 or Smoke 2.01 SANITARY WASTE AND VENT SYSTEMS Weiss. Select all devices to operate within 20% of the midpoint of their scales totally encapsulated insulation and shall be controlled by an integral, under normal operating conditions. Gauges provided on pumps shall be B. Hot water circulators used in potable water system shall be lead-free. adjustable thermostat. Coolers shall have front pushbar water controls with A. All underground sanitary waste and vent piping shall be PVC, DWV Solid Wall raised lettering for the visually impaired. Coolers shall comply with ANSI 117.1 B. Preformed insulation for all domestic hot water piping shall be minimum Schedule 40 with socket-type, solvent welded joints in sizes up to 12"; 14" 3.0 EXECUTION for both visual and motion disabilities and ADA. Cabinet shall have removable 1-1/2" thick for piping less than or equal to 1-1/2" diameter, 2" thick for and larger piping shall be PVC, DWV Solid Wall Schedule 80 with socket—type, front panels and be finished in a neutral—gray baked enamel. Coolers shall be piping above 1-1/2" in diameter, preformed fiberglass pipe insulation with EE. Pressure and temperature (P&T) test plugs shall be constructed of brass with solvent welded joints. All PVC piping shall be installed in accordance to ASTM 3.01 INSTALLATION certified by ARI to meet Standard 1010. Coolers shall be Elkay EZSTL8LC. white all—service jacket. All longitudinal joints shall be lapped, self—sticking two (2) self-closing Nordel cores and be complete with cap and gasket. type with all butt joints, tears, etc. sealed with a matching white vapor Plugs shall be as manufactured by Peterson or Lancaster. Provide a complete A. The water heaters and accessories shall be installed in strict accordance with 3.0 EXECUTION **&A** Barrett, Woodyard and Associates, Inc. barrier tape. Elbows shall be mitered or may be Zeston covers filled with test kit to the Owner at the time of final inspection. Test kit shall be B. All underground sanitary, waste, and vent piping shall be service weight hub the manufacturer's recommendations and the Contract Documents. equivalent fiberglass insulation. The maximum conductivity (k-value) of the License # C-2226 complete with pressure gauge, thermometer, probes and carrying case. and spigot cast iron soil pipe with lead and oakum or neoprene double—seal 3.01 INSTALLATION insulation shall be 0.23 BTU per inch/h ft² °F at 75°F. compression gaskets in sizes up to 12"; All 15" and larger piping shall be 420 Minuet LN. B. All temperature and pressure relief valves shall be piped full size to an Charlotte, North Carolina 28217 cast iron soil pipe with lead and oakum or neoprene double—seal compression A. Units shall be installed as indicated and in conformance with the indirect waste such as the nearest floor drain, service sink, sink tailpiece, etc. (p) 704-357-9333 (f) 704-357-9385 C. Preformed insulation for all domestic cold water piping, except trap primer gaskets. All cast iron soil pipe and fittings shall bear the collective trademark Piping shall be in accordance with specification 22 10 00 for DWV services. manufacturer's recommendations. Coordinate the actual units to be provided piping underground, shall be minimum 1" thick, preformed fiberglass pipe of the Cast Iron Soil Pipe Institute and listed by NSF International or receive 3.01 ARRANGEMENT © This drawing is copyrighted. It may not Size shall be in accordance with manufacturer's requirements. with all trades. insulation with white all-service jacket. All longitudinal joints shall be lapped, prior approval by the Architect/Engineer. be reproduced nor used in any other self-sticking type with all butt joints, tears, etc. sealed with a matching form or on any other project. All water heaters shall have internal heat traps or shall have heat traps B. All plumbing fixtures shall be free of leaks, provided completely finished, A. Follow the general piping layout, arrangement, schematics and details. Provide white vapor barrier tape. Elbows shall be mitered or may be Zeston covers 1. Piping shall be gray cast iron and conform to ASTM A 74. BWA JOB # 2022-0632 trimmed, adjusted, cleaned and ready for use. They shall be properly secured installed in the cold water and hot water piping. Instantaneous water heaters all offsets, vents, drains and connections necessary to accomplish the filled with equivalent fiberglass insulation. The maximum conductivity (k-value) shall be provided with heat traps unless manufacturer documentation to the structure by the use of thru—bolting, backplates, carriers, expansion installation. Fabricate piping accurately to measurements established at the 2. Compression gaskets shall be manufactured from an elastomer meeting of the insulation shall be 0.23 BTU per inch/h ft² °F at 75°F. specifically allows exclusion. shields (for floor mounting only) or toggle bolts. project site to avoid interference with ductwork, other piping, equipment, the requirements of ASTM C 564. openings, electrical conduits and light fixtures. Make suitable provision for D. Insulation shall be continuous over all valve bodies, fittings, and wall and floor Water heaters shall be completely encased in high density insulation of C. Wall hung fixtures supported on chair carriers shall be bolted to the floor expansion and contraction with expansion loops and offsets. E. Joints on hubless cast iron soil pipe shall be made with neoprene couplings penetrations. Do not insulate unions on hot water piping; nor instruments, sufficient value to meet the energy efficiency standards of latest version of slab. Carefully coordinate space requirements and fixture mounting height and stainless steel clamps. Gaskets shall conform to ASTM C 564. Couplings gauges, valve handwheels, etc. on any piping. ASHRAE 90.1, or shall be factory insulated with non-CFC polyurethane requirements with supports being furnished. B. Water hammer arresters shall be installed at the top of each riser and on and gaskets shall be produced by the same manufacturer and shall be closed—cell foam insulation. Provide removable insulation panels to maintain each fixture branch in accordance with Plumbing and Drainage Institute E. Closed—cell insulation shall be provided over all piping called to have installed in accordance with the manufacturer's recommendations, including access to all required components. D. Fixtures supported with wall hangers on masonry chase walls shall be Standard WH201. WHAs shall also be installed at all water service to band tightening sequence and torque. All couplings shall be manufactured to insulation that is installed below ground. Closed—cell piping insulation shall fastened to the wall with not less than 3/8" bolts which shall pass through appliances with quick-closing valves, such as clothes washers, kitchen the CISPI 310 standard, ASTM C 1277, ASTM C 150, FM Standard 1680 Class I match the thicknesses for above ground piping, 25/50 Armaflex or Rubatex. . All water heaters or boilers subject to condensing under normal steady—state the wall and through a $1/4" \times 4"$ wide steel backplate on the unfinished and certified by NSF International. Coupling shall be as follows: warewashers, icemakers, etc. All glues and coatings shall be products of the same manufacturer as the operating conditions shall be provided and installed with accessory condensate chase wall side. insulation. The insulation shall be installed by the slip—on method; slitting of 1. 1 $\frac{1}{2}$ " to 3" - Two (2) stainless steel bands C. Cleanouts shall be provided at the base of all sanitary and storm risers and the insulation is prohibited and shall be cause for rejection. . Where fixtures are hung on single masonry walls without a pipe chase behind, as required by code. 3.02 WARRANTY they shall be mounted with 3/8" toggle bolts. 3.0 EXECUTION 2. 4" to 8" — Four (4) stainless steel bands A. Provide 5-year limited warranty on all tanks and heat exchangers, and D. Fittings, unions, joints, couplings (including no-hub couplings), etc. shall not F. Fixtures on steel stud walls shall have a 1/4" x 4" wide steel backplate wired 3.01 ARRANGEMENT 3. 10" to 15" — Heavy duty coupling with six (6) stainless steel bands. 1—year limited warranty on parts unless otherwise noted. be within slabs. with 1/16" steel wire to the studs. Bolts not less than 3/8" shall secure the Heavy duty couplings shall conform to ASTM C 1540. fixtures through the fixture hanger and the backplate. A. Follow the general piping layout, arrangement, schematics and details. Provide END OF SECTION E. All potable domestic water connections to equipment shall be provided with all offsets, vents, drains and connections necessary to accomplish the F. All offsets on 8" pipe and larger shall have metal restraining straps by backflow prevention as required by the specification section and code. G. All mounting holes provided in fixtures shall be used for support. In addition installation. Fabricate piping accurately to measurements established at the Holdrite or approved equal. to the main hangers, 1/4" toggle bolts shall secure the bottom of all wall project site to avoid interference with ductwork, other piping, equipment, SECTION 22 40 00 hung fixtures at each drilling provided for this purpose. openings, electrical conduits and light fixtures. Make suitable provision for F. Pressure gauges and thermometers called to be permanently installed shall be G. Cleanouts shall be provided at the locations indicated and, as a minimum, expansion and contraction with expansion loops and offsets. easily visible from a standing position on the ground. PLUMBING FIXTURES where required by Code. Floor cleanouts shall be a minimum of 4" and shall H. Mount wall—hung fixtures at the heights indicated on the Architectural be complete with a flush plug and removable, scoriated bronze floor plate. 3.02 INSULATION INSTALLATION Drawings or as prescribed by local code. Special attention is called to the 3.02 UNDERGROUND WATER PIPING 1.0 GENERAL Provide carpet buttons in carpeted areas. Wall cleanouts shall be threaded installation requirements of the ANSI Handicap Code. cleanout tees and plugs with polished stainless steel coverplate with centerset **DUNN OPERATIONS** A. Provide blanket insulation over all horizontal roof drain piping which is within .01 DESCRIPTION A. All domestic water piping shall have a minimum cover of 3'-0'', or below the 3.02 CLEANING AND ADJUSTMENT the building and including the vertical risers to the roof drains and the frost line, whichever is deeper, except piping at least 20' from any exterior CENTER underbody of the roof drains. H. Floor drains in toilets and finished areas shall be JR Smith 2000 Series with A. All work specified in this section is governed by the Common Work Results wall may be installed 3" or more below the bottom of the slab. A. The units shall be cleaned, tested and field—adjusted to provide optimum flow for Plumbing Section 22 05 00. 6" Type B square adjustable strainers finished in satin nickel bronze; or equal and drainage. Specific attention is called to adjustment of automatic flush 1. Blanket insulation shall be wrapped around the piping and underbodies of products by Josam or Zurn. Provide vandalproof secured tops. valves and faucets for empirical conditions. B. For water piping 2" and above, provide concrete thrust blocks at all changes roof drains. Ends of insulation shall overlap at least 2" and bottom of of direction and secure all mechanical joints with restraining rods. Floor drains in mechanical rooms and unfinished concrete floors shall be JR 1269 JONESBORO RD. B. All flush valves, diaphragms, strainers, aerators, etc. shall be fully cleaned B. This Section 22 40 00 and the accompanying drawings cover the provisions Smith 2131 Series with round 11 3/4" cast iron grate, sediment bucket and after all piping and fixture flushing. HARNETT COUNTY, NC 28334 insulation shall overlap pipe insulation at pipe connection to roof drain at C. All copper water lines, or other material subject to corrosion, shall be of all labor, fixtures, equipment, appliances and materials, and performing all deep—seal P—trap; or equal products by Josam or Zurn. Provide vandalproof protected from corrosion with a continuous plastic sheathing or coating and operations in connection with the construction and installation of the END OF SECTION least 3". Adhere insulation to roof drain underbodies with 100% coverage plumbing fixtures and trim as specified herein and as shown. wrapping. This sheathing or coating and wrapping shall be extended 6" to 12" above finished floor. The protection shall be installed on the outside of any J. Hub drains (HD) shall be made with a reducer fitting with opening at least MOBILE SUB. All finishes shall be as selected by the Architect. Where the Architect does insulation required. of fire retardant adhesive and tape all joints with 3" wide foil reinforced one nominal size larger than the connected piping as scheduled. HDs shall be not have a preference, finishes shall be in accordance with this specification. STORAGE sized to receive all discharges without splashing. 3.04 PIPING INSTALLATION ABOVE CEILINGS kraft tape. D. All exposed piping, valves, stops, P-traps, etc. shall be chrome-plated. Also, 2.03 DOMESTIC WATER SYSTEM all exposed piping penetrations through walls, floors or ceilings shall be B. Provide insulation over all above ground hot and cold water piping, except A. All domestic hot and cold water piping installed above the insulated ceilings provided with chrome-plated cast brass escutcheons. K. All underground copper branch lines (1/2" and 3/4" only) shall be continuous that no insulation is required on cold water lines installed inside interior shall be installed just above (within 2") of the top of the finished ceiling with plumbing chases (those chases with no exterior wall). In addition, no lengths of soft Type K copper tubing with <u>no</u> joints allowed underground. the building insulation over the piping to avoid freeze-up. E. All P-traps shall be minimum 17-gauge brass. insulation is required for cold water piping outside the building vapor barrier Aboveground domestic water system piping 3" in size and smaller shall be and designed to be drained down for freeze-protection, such as parking deck 3.05 DISINFECTION . All exposed P—traps subject to contact, such as those below wall—mounted hose bibbs for washdown. Type L hard drawn copper tubing with wrought copper fittings and soldered lavatories, shall be provided with insulated covers as required. A. All domestic water piping installed under this Division shall be disinfected with 1. All joints and tears shall be sealed with matching white vapor barrier G. Flush valves shall have non-hold open feature, vacuum breakers and cover chlorine before it is placed into operation. The chlorinating material shall be J. All valves in potable water systems shall be "lead-free" type. cap on angle—type stop. liquid chlorine conforming to Federal Specification BB-C-120 and shall be introduced to the system by experienced operators only. The chlorine solution K. All valves 3/4" and smaller shall be "full-port" type, and greater than 3/4" Provide all final connections to all equipment and fixtures furnished by Owner. applied to the piping sections or system shall contain at least fifty parts per C. See specification 23 07 19 for HVAC piping insulation requirements. may be "reduced-port" type. million of available chlorine and shall remain in the sections or system for a Unless otherwise specified in an individual fixture description, all enameled END OF SECTION period of not less than sixteen (16) hours. During the disinfection period, all cast—iron and porcelain fixtures shall be white. L. Ball valves: valves shall be opened and closed at least four times. After the disinfection period, the chlorinated water shall be flushed from the system with clear All lavatories and other hand-washing fixtures shall be provided and installed SECTION 22 10 00 water until the residual chlorine content is not greater than two-tenths parts 9. Valves 2 inch and smaller shall be two piece bronze body, full port with with ASSE 1070 point-of-use mixing valve on the hot water connection. per million (0.2 PPM). Submit certification to the Architect that the system solid, smooth bore chrome plated brass ball, meeting MSS—SP110 and Mixing valve shall be set to provide no more than 110°F hot water. PLUMBING PIPING was disinfected. rated for no less than 300 psi. Seats shall be reinforced TFE with Teflon packing ring and threaded adjustable packing nut. Valves on insulated .02INTENT 1.0 GENERAL lines will be provided with stem extensions to provide clearance for two END OF SECTION inches of pipe insulation. Valves to be Apollo Valves 77C, A. It is the intent of this Section of the specifications to provide complete, 1.01 DESCRIPTION Hammond/Milwaukee UP8301, or Watts B-6080. operable, adjusted, clean plumbing fixtures as shown and specified, which are SECTION 22 30 00 free of leaks, noise, air, vibration and waterflow fluctuations. A. All work specified in this Section is governed by the Common Work Results 10. Valves larger than 2 inch and up to 4 inch shall be two piece bronze PLUMBING EQUIPMENT for Plumbing Section 22 05 00. 1.03BASIS OF DESIGN body, standard port with solid, smooth bore chrome plated brass ball, meeting MSS-SP110, and rated for no less than 300 psi. Seats shall be 1.0 GENERAL B. This Section 22 10 00 and the accompanying drawings cover the provision of A. The basis of design is as outlined for each fixture in the 2.0 PRODUCTS reinforced TFE (or TFM for 4") with Teflon packing ring and threaded all labor, equipment, appliances, and materials and performing all operations subsection. Any proposed substitutions shall be proven equal in all respects adjustable packing nut. Valves on insulated lines will be provided with 1.01 DESCRIPTION in connection with the construction of the plumbing systems as specified to the equipment specified as the basis of design. stem extensions to provide clearance for two inches of pipe insulation. herein and as shown. These systems include, but are not limited to, the Valves to be Apollo Valves 70-100, Hammond/Milwaukee UP8501, or A. All work specified in this Section is governed by the Common Work Results .04 ACCEPTABLE MANUFACTURERS Watts B-6000. for Plumbing Section 22 05 00. PROJECT NO: 1. Sanitary, waste, and vent systems A. Acceptable fixture manufacturers for each type of fixture is as follows: B. This Section 22 30 00 and the accompanying drawings cover the provisions N. Balancing valves: DRAWING NUMBER of all labor, equipment, appliances, and materials and performing all 2. Domestic water systems 1. Water Closets - American Standard, Kohler, Sloan, and Zurn operations in connection with the construction of the water heating systems CFD-XXX-P-0002-XXXXXX 1. Valves shall be NSF/ANSI 61/372 certified and suitable for potable water as specified herein and as shown. These systems include, but are not limited C. Provide all final plumbing connections to all equipment furnished by Owner. applications. Valve shall be suitable for the greater of 125 psig pressure 2. Urinals — American Standard, Kohler, Sloan, and Zurn to, the following: and 40°F to 250°F temperature or the system's operating conditions. D. Provide isolation valve and reduced pressure backflow preventer or vacuum ELECTRONIC FILE NAME: P0001.DWG Valve shall provide positive shut—off and be rated for 300 psig. Each 3. Manual Flushvalves — American Standard, Kohler, Sloan, and Zurn Water Heaters breaker at the service entrance and at those connections (especially to balancing valve shall be equipped with two gauge taps with check valves kitchen equipment) required by local plumbing code. 4. Automatic Flushvalves — American Standard, Kohler, Sloan, TOTO, and DRAWN BY: TAYLOR SUBER and drip caps. Provide preformed insulation to encase valve assembly in 2. Hot Water Circulator insulated piping. I.02INTENT .02 GENERAL REQUIREMENTS DAVID CONDON 5. Lavatories — American Standard, Bradley, Crane, Kohler, Sloan, and Zurn. Valves up to 3" shall have lead—free brass body, full—port ball A. It is the intent of this Section of the specifications to provide complete and A. All plumbing equipment installed in locations with a water hardness of 25 constructed of 304 stainless steel, and shall have calibrated nameplate DCONDON@barrettwoodvard.com operable plumbing systems as shown and specified which are free of leaks, 6. Lavatory Faucets — American Standard, Bradley, Chicago, Delany, Grohe, grains per gallon or more, shall be resistant to corrosion. Where copper with memory stop. Balancing valves shall be Bell and Gossett properly vented, free of unreasonable noise, vibration and sweating, and Kohler, Sloan, TOTO, and Zurn materials are in the water stream, it shall be Cupro-Nickel of not more than Circuit—Setter Plus or equal by Nexus, FlowDesign, or Watts. After the fabricated so as to fit the space allotted and to exhibit a minimum 90% copper. test and balance is complete, provide to the Owner a differential pressure resistance to fluid flow. 7. Breakroom/Kitchen/Pantry/Etc. Sinks — American Standard, Elkay, Grohe, aguage to match the balancing valves. Autoflow valves are acceptable as a Just, and Kohler B. All water heaters shall be NSF/ANSI 61 certified "lead free" for potable water substitution provided the flow cartridge is replaceable and the flowrate is B. The word "piping" is defined to mean all piping, fittings, joints, hangers, clearly and permanently labeled. coatings, valves, cocks, insulation and accessories necessary for the plumbing 8. Breakroom/Kitchen/Pantry/Etc. Faucets — American Standard, Chicago, systems described, shown and specified. Delta, Elkav. Just. Kohler, and Zurn **SPECIFICATIONS** C. All water heaters shall have ASME rated temperature and pressure relief O. Check valves: valve(s). Valve(s) shall be provided by the Manufacturer and sized for the .03GENERAL REQUIREMENTS 9. Water Coolers and Water Fountains — Acorn, Elkay, Halsey Taylor, and - PLUMBING discharge location noted in the plans. 1. Valves in water systems shall be NSF/ANSI 61/372 certified and suitable A. Provide all reducing fittings, flanges, couplings and unions of the size and for potable water applications. Valve shall be swing-type, brass body, D. All water heaters and tanks shall be glass—lined, 1600°F fired, with a working type of material to match the piping connections at each fixture, piece of bronze seat, Apollo Valves 161S—LF up to 200 psi CWP, or equal by 10. Service and Laundry Sinks — Fiat, Kohler, Mustee, ProFlo, and pressure of 150 psi, a test pressure of 300 psi, or the system pressure at equipment, valve and accessory. Milwaukee UP968 or Hammond. Stern-Williams the installation location, whichever is greater, and shall have magnesium SHEET NO. anodes for electrolytic protection. Separate storage tanks may also be 2. All check valves on pump discharges shall be non—slam type. cement-lined. Tanks shall be ASTM stamped. P-0002

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These unions shall be dielectric, insulating type. 2.01 WATER CLOSETS 1.01 DESCRIPTION . All water heaters and pumps shall be NEMA rated appropriate for the installation location in which they are installed. P. Backflow preventers at carbonated beverage machines shall meet ASSE 1022 D. All changes in direction and branches shall be made with manufactured A. Fixtures P-1 shall be American Standard "Madera" #3451.001 vitreous china, UON and all other appliances shall meet ASSE 1024. Backflow preventers shall A. All work specified in this Section is governed by the Common Work Results syphon jet, 15" high, 1.28 GPF, bottom outlet, 1 ½" top spud, floor-mounted Water heater controls shall include an operating thermostat and manual reset for Plumbing Section 22 05 00. be approved by the AHJ. ASSE 1022 ports shall be piped with copper tubing with flat bolt covers. Flush valve shall be a battery powered sensor type flush high limit control for each heating element or burner. The safety high limit to an indirect drain location. Backflow preventers at dishwashers shall meet E. The use of offset—type reducers is strictly prohibited in any piping system. valve; Sloan "G2 Optima Plus;" Model 8111—1.28. Provide with batteries. control shall prevent over heating in the event of a thermostat failure. B. This Section 22 07 00 and the accompanying drawings cover the provision of ASSE 1020 unless otherwise noted. Other equipment and appliances shall be Fixtures P-1H shall be similar, except that they shall be mounted in all labor, equipment, appliances, and materials and performing all operations protected from backflow as required by Code and/or manufacturer's F. In all water piping systems, changes in horizontal pipe line sizes shall be accordance with the handicap code. All controls shall be factory—wired and require no external power source. in connection with the insulation of the plumbing systems as specified herein made with eccentric reducers installed flat on top for proper air venting. and as shown. These systems include, but are not limited to, the following: Reducing tees, reducing elbows and concentric reducers shall only be allowed 2.02 LAVATORIES MAILING ADDRESS: Water heaters and tanks shall have drain with external access and hose end in water piping systems for changing pipe sizes in vertical risers and for Q. Water connections to appliances shall be made with flexible copper tubing or P.O. BOX 1007 1. Sanitary waste and vent systems making connections to equipment and accessories from vertical risers. commercial grade double—reinforced stainless steel braided hose, no less than A. Fixtures P-2 shall be American Standard "Lucerne" #0356.015, vitreous china, CHARLOTTE, NC 28201 $3/8^{\prime\prime}$ in size, or the connections size of the appliance, whichever is greater. wall hung lavatories with concealed carrier and anchoring screws; 8" centers 2. Domestic water systems K. All water heater condensate lines shall be protected from freezing or shall be G. All pipe joints shall be cut square and all burrs shall be removed. heat traced in accordance with specification 23 05 93. faucet punching and 1 1/4" drain. Faucet shall be Sloan Optima Faucet, R. Point of use mixing valves shall be Leonard 170-LF or an approved equal EAF-225, hardwired, plug adapter, mixing valve, or approved equal with 1.02 INTENT H. Open ends of pipe lines not currently being handled shall be plugged during with lead—free construction, vandal resistant adjustment cap, and integral 2.0 PRODUCTS chrome-plated die cast metal, strainers, P-trap, loose key supply stops and installation to keep dirt, water and foreign material out of the system. Safety Expectations: inlet check valves. Mixing valve shall be ASSE 1070 rated. Mixing valve shall A. It is the intent of this Section of the specifications to provide complete and all other trim. Provide with Sloan ESD-2000 hard wired soap dispenser. 2.02 WATER HEATER COMMERCIAL ELECTRIC be sized by the Manufacturer for the fixture(s) served. Mixing valve shall have operable plumbing systems complete with insulation, which are free of Coordinate with electrical. Coordinate finish with architect. Sanitary waste and storm drainage piping shall slope down in the direction of unreasonable noise, vibration and sweating, and fabricated so as to fit the no more than 0.25 gpm minimum flowrate required. flow as shown on the drawings or as prescribed by Code, but not less than 1 ILLNESS Reduce Risk 2.04 LAUNDRY SINKS A. The water heater shall be as scheduled. Acceptable substitute manufacturers are AO Smith, Lochinvar, State, Rheem, and Bradford White, subject to S. All water hammer arresters (WHA) shall be PDI Certified, Size A, B, C, D, E Remove Exposures to Hazards substitution requirements. Water heaters shall be commercial—grade. A. Fixtures P-3 shall be Just Manufacturing, JPH-ADA-2230-CT, 22" x 30", 18 B. The word "piping" is defined to mean all piping, fittings, joints, hangers, or F, as indicated for the fixture units served; Josam, JR Smith, Watts, or All vents through roof (VTRs) shall be offset just below the roof such that gauge stainless steel with sound-deadening, rectangular sink complete with coatings, valves, cocks, insulation and accessories necessary for the plumbing Zurn. WHAs that are not PDI Certified are disallowed. WHAs in potable water their termination points are at least 15 ft from any outside air intake of any 3. The immersion heating elements shall be low watt density with a plated emergency eyewash station. Provide with strainers, P-trap, supply stops, systems described, shown and specified. Reinforce Safe Behavior HVAC unit; special attention is called to packaged rooftop and dedicated applications shall be lead-free. anchoring clips and all other trim. Wall supply stops, drains and tailpieces incoloy sheath material for long life. The heating elements shall mount in individual screw—in tank flanges. shall be offset wheelchair type. 1.03 ACCEPTABLE MANUFACTURERS T. The hose bibbs (HB) shall be complete with vacuum breaker and **vandal K. Trap primers shall be provided at all floor drains, floor sinks, trench drains, resistant handle; Watts, Apollo Valves, JR Smith, or Zurn. .05 DRINK FOUNTAINS AND WATER COOLERS . All field electrical wiring connections to the water heater shall be made to a A. Insulation products shall be as manufactured by Owens Corning, Knauf, and hub drains except trap primers may be omitted where drain routes to main terminal block. All internal wiring shall be made to solderless terminal Manville, Certainteed, Dow, Armacell, or Armstrong. the storm system. Route water piping from nearest cold water line and as lug wiring connections. Wiring to be color coded for ease of servicing. The A. Fixtures P-4 shall be barrier free split level surface mounted electric water BB. Soldered joints shall be made with tin-antimony/silver solder. Solder 2.0 PRODUCTS water heater shall be factory assembled, wired and tested. cooler with a bottle filling station; each complete with P—trap and supply containing lead shall not be permitted. service stops. Electric water cooler shall deliver 8.0 GPH of 50°F water at All piping, valves, and fittings shall be provided by a domestic Manufacturer 2.04 HOT WATER CIRCULATOR 90°F ambient and 80°F inlet water. Cooler shall have horizontal stainless steel 2.01 PLUMBING INSULATION and manufactured in the USA. CC. Saddle valves and "T" fittings that rely on puncturing the piping main are top. Bubbler shall have flexible guard and operate between 20 and 120 psi. A. Hot water circulator shall be as scheduled. Acceptable substitute Separate valve and diaphragm—type automatic stream regulator shall be A. All pipe insulation products shall have a permanent composite insulation, 2.0 PRODUCTS manufacturers are B&G, Goulds, and Grundfos, subject to substitution mounted with cabinet. Refrigeration system shall employ high efficiency, jacket and adhesive fire and smoke hazard rating as tested by procedure DD. Thermometers and pressure gauges shall be products of Trerice, Weksler, or positive start compressor, non-pressurized counter-flow cooling coil with requirements. ASTM-84, NFPA 255 and UL 723 not exceeding Flame Spread 25 or Smoke 2.01 SANITARY WASTE AND VENT SYSTEMS Weiss. Select all devices to operate within 20% of the midpoint of their scales totally encapsulated insulation and shall be controlled by an integral, under normal operating conditions. Gauges provided on pumps shall be B. Hot water circulators used in potable water system shall be lead-free. adjustable thermostat. Coolers shall have front pushbar water controls with A. All underground sanitary waste and vent piping shall be PVC, DWV Solid Wall raised lettering for the visually impaired. Coolers shall comply with ANSI 117.1 B. Preformed insulation for all domestic hot water piping shall be minimum Schedule 40 with socket-type, solvent welded joints in sizes up to 12"; 14" 3.0 EXECUTION for both visual and motion disabilities and ADA. Cabinet shall have removable 1-1/2" thick for piping less than or equal to 1-1/2" diameter, 2" thick for and larger piping shall be PVC, DWV Solid Wall Schedule 80 with socket—type, front panels and be finished in a neutral—gray baked enamel. Coolers shall be piping above 1-1/2" in diameter, preformed fiberglass pipe insulation with EE. Pressure and temperature (P&T) test plugs shall be constructed of brass with solvent welded joints. All PVC piping shall be installed in accordance to ASTM 3.01 INSTALLATION certified by ARI to meet Standard 1010. Coolers shall be Elkay EZSTL8LC. white all—service jacket. All longitudinal joints shall be lapped, self—sticking two (2) self-closing Nordel cores and be complete with cap and gasket. type with all butt joints, tears, etc. sealed with a matching white vapor Plugs shall be as manufactured by Peterson or Lancaster. Provide a complete A. The water heaters and accessories shall be installed in strict accordance with 3.0 EXECUTION **&A** Barrett, Woodyard and Associates, Inc. barrier tape. Elbows shall be mitered or may be Zeston covers filled with test kit to the Owner at the time of final inspection. Test kit shall be B. All underground sanitary, waste, and vent piping shall be service weight hub the manufacturer's recommendations and the Contract Documents. equivalent fiberglass insulation. The maximum conductivity (k-value) of the License # C-2226 complete with pressure gauge, thermometer, probes and carrying case. and spigot cast iron soil pipe with lead and oakum or neoprene double—seal 3.01 INSTALLATION insulation shall be 0.23 BTU per inch/h ft² °F at 75°F. compression gaskets in sizes up to 12"; All 15" and larger piping shall be 420 Minuet LN. B. All temperature and pressure relief valves shall be piped full size to an Charlotte, North Carolina 28217 cast iron soil pipe with lead and oakum or neoprene double—seal compression A. Units shall be installed as indicated and in conformance with the indirect waste such as the nearest floor drain, service sink, sink tailpiece, etc. (p) 704-357-9333 (f) 704-357-9385 C. Preformed insulation for all domestic cold water piping, except trap primer gaskets. All cast iron soil pipe and fittings shall bear the collective trademark Piping shall be in accordance with specification 22 10 00 for DWV services. manufacturer's recommendations. Coordinate the actual units to be provided piping underground, shall be minimum 1" thick, preformed fiberglass pipe of the Cast Iron Soil Pipe Institute and listed by NSF International or receive 3.01 ARRANGEMENT © This drawing is copyrighted. It may not Size shall be in accordance with manufacturer's requirements. with all trades. insulation with white all-service jacket. All longitudinal joints shall be lapped, prior approval by the Architect/Engineer. be reproduced nor used in any other self-sticking type with all butt joints, tears, etc. sealed with a matching form or on any other project. All water heaters shall have internal heat traps or shall have heat traps B. All plumbing fixtures shall be free of leaks, provided completely finished, A. Follow the general piping layout, arrangement, schematics and details. Provide white vapor barrier tape. Elbows shall be mitered or may be Zeston covers 1. Piping shall be gray cast iron and conform to ASTM A 74. BWA JOB # 2022-0632 trimmed, adjusted, cleaned and ready for use. They shall be properly secured installed in the cold water and hot water piping. Instantaneous water heaters all offsets, vents, drains and connections necessary to accomplish the filled with equivalent fiberglass insulation. The maximum conductivity (k-value) shall be provided with heat traps unless manufacturer documentation to the structure by the use of thru—bolting, backplates, carriers, expansion installation. Fabricate piping accurately to measurements established at the 2. Compression gaskets shall be manufactured from an elastomer meeting of the insulation shall be 0.23 BTU per inch/h ft² °F at 75°F. specifically allows exclusion. shields (for floor mounting only) or toggle bolts. project site to avoid interference with ductwork, other piping, equipment, the requirements of ASTM C 564. openings, electrical conduits and light fixtures. Make suitable provision for D. Insulation shall be continuous over all valve bodies, fittings, and wall and floor Water heaters shall be completely encased in high density insulation of C. Wall hung fixtures supported on chair carriers shall be bolted to the floor expansion and contraction with expansion loops and offsets. E. Joints on hubless cast iron soil pipe shall be made with neoprene couplings penetrations. Do not insulate unions on hot water piping; nor instruments, sufficient value to meet the energy efficiency standards of latest version of slab. Carefully coordinate space requirements and fixture mounting height and stainless steel clamps. Gaskets shall conform to ASTM C 564. Couplings gauges, valve handwheels, etc. on any piping. ASHRAE 90.1, or shall be factory insulated with non-CFC polyurethane requirements with supports being furnished. B. Water hammer arresters shall be installed at the top of each riser and on and gaskets shall be produced by the same manufacturer and shall be closed—cell foam insulation. Provide removable insulation panels to maintain each fixture branch in accordance with Plumbing and Drainage Institute E. Closed—cell insulation shall be provided over all piping called to have installed in accordance with the manufacturer's recommendations, including access to all required components. D. Fixtures supported with wall hangers on masonry chase walls shall be Standard WH201. WHAs shall also be installed at all water service to band tightening sequence and torque. All couplings shall be manufactured to insulation that is installed below ground. Closed—cell piping insulation shall fastened to the wall with not less than 3/8" bolts which shall pass through appliances with quick-closing valves, such as clothes washers, kitchen the CISPI 310 standard, ASTM C 1277, ASTM C 150, FM Standard 1680 Class I match the thicknesses for above ground piping, 25/50 Armaflex or Rubatex. . All water heaters or boilers subject to condensing under normal steady—state the wall and through a $1/4" \times 4"$ wide steel backplate on the unfinished and certified by NSF International. Coupling shall be as follows: warewashers, icemakers, etc. All glues and coatings shall be products of the same manufacturer as the operating conditions shall be provided and installed with accessory condensate chase wall side. insulation. The insulation shall be installed by the slip—on method; slitting of 1. 1 $\frac{1}{2}$ " to 3" - Two (2) stainless steel bands C. Cleanouts shall be provided at the base of all sanitary and storm risers and the insulation is prohibited and shall be cause for rejection. . Where fixtures are hung on single masonry walls without a pipe chase behind, as required by code. 3.02 WARRANTY they shall be mounted with 3/8" toggle bolts. 3.0 EXECUTION 2. 4" to 8" — Four (4) stainless steel bands A. Provide 5-year limited warranty on all tanks and heat exchangers, and D. Fittings, unions, joints, couplings (including no-hub couplings), etc. shall not F. Fixtures on steel stud walls shall have a 1/4" x 4" wide steel backplate wired 3.01 ARRANGEMENT 3. 10" to 15" — Heavy duty coupling with six (6) stainless steel bands. 1—year limited warranty on parts unless otherwise noted. be within slabs. with 1/16" steel wire to the studs. Bolts not less than 3/8" shall secure the Heavy duty couplings shall conform to ASTM C 1540. fixtures through the fixture hanger and the backplate. A. Follow the general piping layout, arrangement, schematics and details. Provide END OF SECTION E. All potable domestic water connections to equipment shall be provided with all offsets, vents, drains and connections necessary to accomplish the F. All offsets on 8" pipe and larger shall have metal restraining straps by backflow prevention as required by the specification section and code. G. All mounting holes provided in fixtures shall be used for support. In addition installation. Fabricate piping accurately to measurements established at the Holdrite or approved equal. to the main hangers, 1/4" toggle bolts shall secure the bottom of all wall project site to avoid interference with ductwork, other piping, equipment, SECTION 22 40 00 hung fixtures at each drilling provided for this purpose. openings, electrical conduits and light fixtures. Make suitable provision for F. Pressure gauges and thermometers called to be permanently installed shall be G. Cleanouts shall be provided at the locations indicated and, as a minimum, expansion and contraction with expansion loops and offsets. easily visible from a standing position on the ground. PLUMBING FIXTURES where required by Code. Floor cleanouts shall be a minimum of 4" and shall H. Mount wall—hung fixtures at the heights indicated on the Architectural be complete with a flush plug and removable, scoriated bronze floor plate. 3.02 INSULATION INSTALLATION Drawings or as prescribed by local code. Special attention is called to the 3.02 UNDERGROUND WATER PIPING 1.0 GENERAL Provide carpet buttons in carpeted areas. Wall cleanouts shall be threaded installation requirements of the ANSI Handicap Code. cleanout tees and plugs with polished stainless steel coverplate with centerset **DUNN OPERATIONS** A. Provide blanket insulation over all horizontal roof drain piping which is within .01 DESCRIPTION A. All domestic water piping shall have a minimum cover of 3'-0", or below the 3.02 CLEANING AND ADJUSTMENT the building and including the vertical risers to the roof drains and the frost line, whichever is deeper, except piping at least 20' from any exterior CENTER underbody of the roof drains. H. Floor drains in toilets and finished areas shall be JR Smith 2000 Series with A. All work specified in this section is governed by the Common Work Results wall may be installed 3" or more below the bottom of the slab. A. The units shall be cleaned, tested and field—adjusted to provide optimum flow for Plumbing Section 22 05 00. 6" Type B square adjustable strainers finished in satin nickel bronze; or equal and drainage. Specific attention is called to adjustment of automatic flush 1. Blanket insulation shall be wrapped around the piping and underbodies of products by Josam or Zurn. Provide vandalproof secured tops. valves and faucets for empirical conditions. B. For water piping 2" and above, provide concrete thrust blocks at all changes roof drains. Ends of insulation shall overlap at least 2" and bottom of of direction and secure all mechanical joints with restraining rods. Floor drains in mechanical rooms and unfinished concrete floors shall be JR 1269 JONESBORO RD. B. All flush valves, diaphragms, strainers, aerators, etc. shall be fully cleaned B. This Section 22 40 00 and the accompanying drawings cover the provisions Smith 2131 Series with round 11 3/4" cast iron grate, sediment bucket and after all piping and fixture flushing. HARNETT COUNTY, NC 28334 insulation shall overlap pipe insulation at pipe connection to roof drain at C. All copper water lines, or other material subject to corrosion, shall be of all labor, fixtures, equipment, appliances and materials, and performing all deep—seal P—trap; or equal products by Josam or Zurn. Provide vandalproof protected from corrosion with a continuous plastic sheathing or coating and operations in connection with the construction and installation of the END OF SECTION least 3". Adhere insulation to roof drain underbodies with 100% coverage plumbing fixtures and trim as specified herein and as shown. wrapping. This sheathing or coating and wrapping shall be extended 6" to 12" above finished floor. The protection shall be installed on the outside of any J. Hub drains (HD) shall be made with a reducer fitting with opening at least MOBILE SUB. All finishes shall be as selected by the Architect. Where the Architect does insulation required. of fire retardant adhesive and tape all joints with 3" wide foil reinforced one nominal size larger than the connected piping as scheduled. HDs shall be not have a preference, finishes shall be in accordance with this specification. STORAGE sized to receive all discharges without splashing. 3.04 PIPING INSTALLATION ABOVE CEILINGS kraft tape. D. All exposed piping, valves, stops, P-traps, etc. shall be chrome-plated. Also, 2.03 DOMESTIC WATER SYSTEM all exposed piping penetrations through walls, floors or ceilings shall be B. Provide insulation over all above ground hot and cold water piping, except A. All domestic hot and cold water piping installed above the insulated ceilings provided with chrome-plated cast brass escutcheons. K. All underground copper branch lines (1/2" and 3/4" only) shall be continuous that no insulation is required on cold water lines installed inside interior shall be installed just above (within 2") of the top of the finished ceiling with plumbing chases (those chases with no exterior wall). In addition, no lengths of soft Type K copper tubing with <u>no</u> joints allowed underground. the building insulation over the piping to avoid freeze-up. E. All P-traps shall be minimum 17-gauge brass. insulation is required for cold water piping outside the building vapor barrier Aboveground domestic water system piping 3" in size and smaller shall be and designed to be drained down for freeze-protection, such as parking deck 3.05 DISINFECTION . All exposed P—traps subject to contact, such as those below wall—mounted hose bibbs for washdown. Type L hard drawn copper tubing with wrought copper fittings and soldered lavatories, shall be provided with insulated covers as required. A. All domestic water piping installed under this Division shall be disinfected with 1. All joints and tears shall be sealed with matching white vapor barrier G. Flush valves shall have non-hold open feature, vacuum breakers and cover chlorine before it is placed into operation. The chlorinating material shall be J. All valves in potable water systems shall be "lead-free" type. cap on angle—type stop. liquid chlorine conforming to Federal Specification BB-C-120 and shall be introduced to the system by experienced operators only. The chlorine solution K. All valves 3/4" and smaller shall be "full-port" type, and greater than 3/4" Provide all final connections to all equipment and fixtures furnished by Owner. applied to the piping sections or system shall contain at least fifty parts per C. See specification 23 07 19 for HVAC piping insulation requirements. may be "reduced-port" type. million of available chlorine and shall remain in the sections or system for a Unless otherwise specified in an individual fixture description, all enameled END OF SECTION period of not less than sixteen (16) hours. During the disinfection period, all cast—iron and porcelain fixtures shall be white. L. Ball valves: valves shall be opened and closed at least four times. After the disinfection period, the chlorinated water shall be flushed from the system with clear All lavatories and other hand-washing fixtures shall be provided and installed SECTION 22 10 00 water until the residual chlorine content is not greater than two-tenths parts 9. Valves 2 inch and smaller shall be two piece bronze body, full port with with ASSE 1070 point-of-use mixing valve on the hot water connection. per million (0.2 PPM). Submit certification to the Architect that the system solid, smooth bore chrome plated brass ball, meeting MSS—SP110 and Mixing valve shall be set to provide no more than 110°F hot water. PLUMBING PIPING was disinfected. rated for no less than 300 psi. Seats shall be reinforced TFE with Teflon packing ring and threaded adjustable packing nut. Valves on insulated .02INTENT 1.0 GENERAL lines will be provided with stem extensions to provide clearance for two END OF SECTION inches of pipe insulation. Valves to be Apollo Valves 77C, A. It is the intent of this Section of the specifications to provide complete, 1.01 DESCRIPTION Hammond/Milwaukee UP8301, or Watts B-6080. operable, adjusted, clean plumbing fixtures as shown and specified, which are SECTION 22 30 00 free of leaks, noise, air, vibration and waterflow fluctuations. A. All work specified in this Section is governed by the Common Work Results 10. Valves larger than 2 inch and up to 4 inch shall be two piece bronze PLUMBING EQUIPMENT for Plumbing Section 22 05 00. 1.03BASIS OF DESIGN body, standard port with solid, smooth bore chrome plated brass ball, meeting MSS-SP110, and rated for no less than 300 psi. Seats shall be 1.0 GENERAL B. This Section 22 10 00 and the accompanying drawings cover the provision of A. The basis of design is as outlined for each fixture in the 2.0 PRODUCTS reinforced TFE (or TFM for 4") with Teflon packing ring and threaded all labor, equipment, appliances, and materials and performing all operations subsection. Any proposed substitutions shall be proven equal in all respects adjustable packing nut. Valves on insulated lines will be provided with 1.01 DESCRIPTION in connection with the construction of the plumbing systems as specified to the equipment specified as the basis of design. stem extensions to provide clearance for two inches of pipe insulation. herein and as shown. These systems include, but are not limited to, the Valves to be Apollo Valves 70-100, Hammond/Milwaukee UP8501, or A. All work specified in this Section is governed by the Common Work Results .04 ACCEPTABLE MANUFACTURERS Watts B-6000. for Plumbing Section 22 05 00. PROJECT NO: 1. Sanitary, waste, and vent systems A. Acceptable fixture manufacturers for each type of fixture is as follows: B. This Section 22 30 00 and the accompanying drawings cover the provisions N. Balancing valves: DRAWING NUMBER of all labor, equipment, appliances, and materials and performing all 2. Domestic water systems 1. Water Closets - American Standard, Kohler, Sloan, and Zurn operations in connection with the construction of the water heating systems CFD-XXX-P-0002-XXXXXX 1. Valves shall be NSF/ANSI 61/372 certified and suitable for potable water as specified herein and as shown. These systems include, but are not limited C. Provide all final plumbing connections to all equipment furnished by Owner. applications. Valve shall be suitable for the greater of 125 psig pressure 2. Urinals — American Standard, Kohler, Sloan, and Zurn to, the following: and 40°F to 250°F temperature or the system's operating conditions. D. Provide isolation valve and reduced pressure backflow preventer or vacuum ELECTRONIC FILE NAME: P0001.DWG Valve shall provide positive shut—off and be rated for 300 psig. Each 3. Manual Flushvalves — American Standard, Kohler, Sloan, and Zurn Water Heaters breaker at the service entrance and at those connections (especially to balancing valve shall be equipped with two gauge taps with check valves kitchen equipment) required by local plumbing code. 4. Automatic Flushvalves — American Standard, Kohler, Sloan, TOTO, and DRAWN BY: TAYLOR SUBER and drip caps. Provide preformed insulation to encase valve assembly in 2. Hot Water Circulator insulated piping. I.02INTENT .02 GENERAL REQUIREMENTS DAVID CONDON 5. Lavatories — American Standard, Bradley, Crane, Kohler, Sloan, and Zurn. Valves up to 3" shall have lead—free brass body, full—port ball A. It is the intent of this Section of the specifications to provide complete and A. All plumbing equipment installed in locations with a water hardness of 25 constructed of 304 stainless steel, and shall have calibrated nameplate DCONDON@barrettwoodvard.com operable plumbing systems as shown and specified which are free of leaks, 6. Lavatory Faucets — American Standard, Bradley, Chicago, Delany, Grohe, grains per gallon or more, shall be resistant to corrosion. Where copper with memory stop. Balancing valves shall be Bell and Gossett properly vented, free of unreasonable noise, vibration and sweating, and Kohler, Sloan, TOTO, and Zurn materials are in the water stream, it shall be Cupro-Nickel of not more than Circuit—Setter Plus or equal by Nexus, FlowDesign, or Watts. After the fabricated so as to fit the space allotted and to exhibit a minimum 90% copper. test and balance is complete, provide to the Owner a differential pressure resistance to fluid flow. 7. Breakroom/Kitchen/Pantry/Etc. Sinks — American Standard, Elkay, Grohe, aguage to match the balancing valves. Autoflow valves are acceptable as a Just, and Kohler B. All water heaters shall be NSF/ANSI 61 certified "lead free" for potable water substitution provided the flow cartridge is replaceable and the flowrate is B. The word "piping" is defined to mean all piping, fittings, joints, hangers, clearly and permanently labeled. coatings, valves, cocks, insulation and accessories necessary for the plumbing 8. Breakroom/Kitchen/Pantry/Etc. Faucets — American Standard, Chicago, systems described, shown and specified. Delta, Elkav. Just. Kohler, and Zurn **SPECIFICATIONS** C. All water heaters shall have ASME rated temperature and pressure relief O. Check valves: valve(s). Valve(s) shall be provided by the Manufacturer and sized for the .03GENERAL REQUIREMENTS 9. Water Coolers and Water Fountains — Acorn, Elkay, Halsey Taylor, and - PLUMBING discharge location noted in the plans. 1. Valves in water systems shall be NSF/ANSI 61/372 certified and suitable A. Provide all reducing fittings, flanges, couplings and unions of the size and for potable water applications. Valve shall be swing-type, brass body, D. All water heaters and tanks shall be glass—lined, 1600°F fired, with a working type of material to match the piping connections at each fixture, piece of bronze seat, Apollo Valves 161S—LF up to 200 psi CWP, or equal by 10. Service and Laundry Sinks — Fiat, Kohler, Mustee, ProFlo, and pressure of 150 psi, a test pressure of 300 psi, or the system pressure at equipment, valve and accessory. Milwaukee UP968 or Hammond. Stern-Williams the installation location, whichever is greater, and shall have magnesium SHEET NO. anodes for electrolytic protection. Separate storage tanks may also be 2. All check valves on pump discharges shall be non—slam type. cement-lined. Tanks shall be ASTM stamped. P-0002





