

PLUMBING FIXTURE SCHEDULE								
VERIFY PLUMBING FIXTURES WITH OWNER / ARCHITECT PRIOR TO ORDERING OR PURCHASING								
MARK	DESCRIPTION	MANUFACTURER (OR EQUAL)	MODEL # (OR EQUAL)	ACCESSORIES (OR EQUAL)	PLUMBING CONNECTIONS			
					CW	HW	SAN	VENT
EDF-1	TWO-STATION BARRIER FREE ACCESS, WALL MOUNTED ELECTRIC REFRIGERATED WATER COOLER, SELF-CLOSING CONTROLS ON FRONT AND BOTH SIDES.	ELKAY	EZSTL8SC	ELKAY CANE APRON #LKAPREZL	1/2"	---	2"	2"
RF-1	REFRIGERATOR WALL BOX - GALVANIZED WALL BOX, CW CONNECTION ONLY, BALL VALVE STOP	GUY GRAY	BIM875AB		1/2"	---	---	---
SK-1	SELF-RIMMING DOUBLE COMPARTMENT, CENTERED DRAIN LOCATION, 3 HOLES ON 4" CENTERS, OVERALL SIZE: 29" L x 18" W x 6" DEEP, TYPE 304 18 GAUGE STAINLESS STEEL, BACK LEDGE, SATIN FINISHED RIM AND BOWL, FULLY UNDERCOATED TO REDUCE CONDENSATION AND RESONANCE, CRUMB CUP STRAINER.	ELKAY "GOURMET"	LRAD2918-6-3	ELKAT FAUCET #LK100 (1.5 GPM AERATOR), ELKAY STRAINER #LK35, McGUIRE STOPS AND P-TRAP	1/2"	1/2"	2"	2"
SK-2	SELF-RIMMING SINK COMPARTMENT, 3 HOLES ON 4" CENTERS OVERALL SIZE 15" L x 17 1/2" W x 6" D, TYPE 304 18 GAUGE STAINLESS STEEL, BACKLEDGE, SATIN FINISH RIM AND BOWL, FULLY UNDERCOATED TO REDUCE CONDENSATION AND RESONANCE, CRUMB CUP STRAINER	ELKAY	LRAD1517	ELKAY FAUCET #LKD2423BHC (1.5 GPM), ELKAY AERATOR #LK735, ELKAY STRAINER #LK35, McGUIRE STOPS AND P-TRAP	1/2"	1/2"	2"	2"

PLUMBING ACCESSORY SCHEDULE				
MARK	LOCATION	DESCRIPTION	MANUFACTURER (OR EQUAL)	MODEL # (OR EQUAL)
CM-1	COFFEE 129	1/2" LEAD FREE IN-LINE DOUBLE CHECK VALVE MEETING ANSI/ASSE STANDARD 1024 FOR NON-HEALTH HAZARD APPLICATIONS, TEMPERATURE RANGE 33°F - 180°F CONTINUOUS @ 175 PSI	WATTS	LF7R
CM-2	BREAK 121	1/2" LEAD FREE IN-LINE DOUBLE CHECK VALVE MEETING ANSI/ASSE STANDARD 1024 FOR NON-HEALTH HAZARD APPLICATIONS, TEMPERATURE RANGE 33°F - 180°F CONTINUOUS @ 175 PSI	WATTS	LF7R

### PLUMBING SYMBOLS & ABBREVIATIONS

**ABBREVIATIONS**

CW DOMESTIC COLD WATER LINE  
 HW DOMESTIC HOT WATER LINE  
 HWR DOMESTIC HOT WATER RECIRC LINE  
 SAN SANITARY DRAIN LINE  
 V SANITARY VENT LINE  
 GW GREASE WASTE DRAIN LINE  
 GV GREASE VENT LINE  
 ST STORM DRAIN LINE  
 OD OVER FLOW DRAIN LINE  
 G NATURAL GAS LINE  
 A COMPRESSED AIR LINE  
 (N) NEW  
 (E) EXISTING  
 (D) DEMO'D

B.F.F. BELOW FINISHED FLOOR  
 A.F.F. ABOVE FINISHED FLOOR  
 WCO WALL CLEAN OUT  
 FCO FLOOR CLEAN OUT  
 COTG CLEAN OUT TO GRADE  
 N.I.C. NOT IN CONTRACT  
 B.O.P. BOTTOM OF PIPE  
 I.E. INVERT ELEVATION  
 HB HOSE BIB  
 VTR VENT THRU ROOF

**SYMBOLS**

⊖ PIPE DOWN  
 ○ PIPE UP  
 ⊙ FCO / COTG  
 | END OF LINE CLEANOUT  
 □ END CAP  
 ⊕ POINT OF CONNECTION  
 # KEYED NOTES  
 # RISER DESIGNATION

⊕ BALL VALVE  
 ≈ BUTTERFLY VALVE  
 ✕ GATE VALVE  
 ✕ GLOBE VALVE  
 ⤴ CHECK VALVE  
 ⊕ POINT OF DEMOLITION

UNLESS NOTED OTHERWISE, WATER AND VENT PIPING SHOWN ON PLANS ABOVE THE CEILING AND SANITARY DRAIN PIPING IS BELOW THE FLOOR

### PLUMBING CODES AND STANDARDS

All plumbing materials, installation, testing, cleaning, supports, and workmanship shall be in strict accordance with the below listed applicable codes include but are not limited to:

2018 International Building Code (w/ City of San Antonio Amendments)  
 2018 International Plumbing Code (w/ City of San Antonio Amendments)  
 2018 International Fuel Code (w/ City of San Antonio Amendments)  
 2018 International Fire Code (w/ City of San Antonio Amendments)  
 2018 International Energy Conservation Code (w/ City of San Antonio Amendments)

### PLUMBING GENERAL NOTES

- Drawings are diagrammatic; confirm dimensions and locations in the field. If conflicting dimensions are shown, use larger dimension.
- Contractor shall field verify size, location, and condition of existing piping before proceeding with bid and construction. Any reused piping found to be in poor condition or not per current code requirements shall be documented and the engineer shall be made aware of this condition immediately.
- All plumbing piping, equipment, and fixture installations shall be performed by a licensed plumbing contractor. All plumbing work shall be supervised by a licensed Master Plumber.
- Guarantee labor and materials for 1-year. Warranties begin upon Owner's acceptance of substantial completion of the installation.
- All exceptions or substitutions taken to specified materials, fixtures, equipment, or requirements of these documents shall be submitted to the owner, Architect, and Engineer for review prior to purchase and installation.
- Provide expansion loops in long runs of hot water and hot water return piping as required by code.
- Provide insulation kit for supplies, drain piping and p-traps for all handicap accessible lavatories and sinks. Insulation kits shall be equal to Truebro 103 (white). Where protective skirt under fixtures is provided, insulation of piping is required.
- Provide Zurn #Z-1445 or equal cleanout tee in drain lines for all counter mounted sinks and wall mounted lavatories.
- Refer to project contract documentation and architectural drawings for additional requirements and information.
- See Architectural plans and elevations for exact location of fixtures and wall mounted devices.
- Plenums are crowded and not all obstacles are indicated. Allow for additional pipe offsets, as required, and when not indicated on drawings.
- Properly seal all penetrations of floors, exterior walls, and rated walls.
- Secure all permits and provide any required temporary utilities.
- All plumbing vents thru roof shall have the minimum separation of ten (10) feet from HVAC outside air inlets, per the applicable code; coordinate with HVAC contractor.
- All work in or above occupied areas shall be at Owner's convenience and may be during evenings or weekends. Schedule all service interruptions in advance with Owner.
- Location of existing under-slab plumbing is estimated - allow for exploratory chipping to confirm actual locations.
- Before submitting a bid, it will be necessary for each contractor whose work is involved to visit the site and ascertain the conditions to be met in installing the work and make provisions for the conditions in his final price. Failure of the contractor to comply with this requirement shall not be considered justification for the omission or faulty installation of any work covered by the contract documents. The bid shall include all the work required or necessary to comply with the work shown on the drawings and identified in the specifications.
- Piping shall not be routed over electrical panels or transformers.
- Provide water hammer arrestors for all new quick-acting valves. Size in accordance with PDI standards; refer to detail and sizing chart. The use of air chambers shall not be acceptable and are not allowed.
- Branch takeoff: Runout from horizontal piping shall be taken off of the centerline of the main or branch piping and rise vertically or at an angle not less than 45 degrees from vertical.
- The listing of product manufacturers, materials and methods are the basis of design and are intended to establish a standard of quality. The engineer shall be the sole judge of quality and equivalence of equipment, materials and methods. Where substituted or alternative equipment is proposed on the project before bidding, it shall be the contractor's responsibility to verify that the equipment will fit the space available, including all required code and maintenance clearances, and to coordinate all equipment requirements with other contractors.

### PLUMBING FIRE PROTECTION NOTES

Area is currently provided with fire sprinklers; add new heads and revise head locations; as required, to accommodate wall and ceiling revisions. All new sprinkler heads shall be similar in form and function as existing heads. New project area shall be fully sprinklered. For areas requiring new devices, provide pendant mounted chrome plated heads in ceilings or sidewalls. For sprinklers located in ceilings, insure new heads are of the concealed type.

All head locations shall be field-reviewed by the Architect and shall typically be centered (+/-2") in ceiling tiles or ceiling elements.

Work shall be by a licensed fire sprinkler contractor in accordance with current NFPA 13, Texas Department of Insurance Fire Sprinkler Rules and Factory Mutual (FM).

Piping: Up to 4" diameter - Schedule 40 black steel, ASTM A135 with class 125 cast iron threaded, or grooved, fittings. 4" diameter & larger - Schedule 10 iron pipe may be used. All piping shall be concealed above finished ceilings; seal penetrations of floors and rated walls. Coordinate pipe routing with other trades.

Fire Sprinkler Contractor shall be responsible for system design and a layout that provides proper coverage. Submit the following to Engineer for review: hydraulic calculations and pipe/head shop drawings, approved in writing by a licensed Professional Engineer or Contractor's "Responsible Managing Employee." Contractor shall be responsible for all required submittals to City/County, Fire Marshall and FM (or insurance agency designated by Owner). Test system in presence of local authorities. Work shall proceed prior to receiving State Board and FM approvals, however after receipt of agency reviews, Contractor shall return to site and make all required modifications or additions at no additional cost.

### PLUMBING MATERIAL SCHEDULE

SERVICE PIPE	MATERIALS
DOMESTIC WATER PIPING	ASTM B88 TYPE "L" COPPER
DOMESTIC WATER PIPING (BELOW SLAB)	ASTM B88 TYPE "K" COPPER - JOINT FREE
SANITARY WASTE PIPING	ASTM A888 CAST IRON NO-HUB PIPE W/ ASTM C1540 HEAVY DUTY CLAMPS
SANITARY WASTE PIPING (BELOW SLAB)	ASTM D1785 SCHEDULE 40 PVC W/ DWV FITTINGS CONFORMING WITH D1785 AND D2665
SANITARY VENT PIPING	ASTM A888 CAST IRON NO-HUB PIPE W/ ASTM C1540 HEAVY DUTY CLAMPS
SANITARY VENT PIPING (BELOW SLAB)	ASTM D1785 SCHEDULE 40 PVC W/ DWV FITTINGS CONFORMING WITH D1785 AND D2665

### PLUMBING SHEET LIST

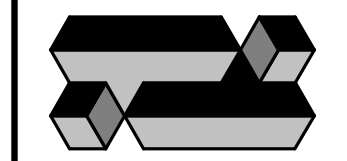
SHEET NUMBER	SHEET NAME
P1	PLUMBING SCHEDULES, LEGENDS AND NOTES
P2	PLUMBING SPECIFICATIONS
P3	PLUMBING DEMO PLAN
P4	PLUMBING RENOVATION PLAN
P5	PLUMBING RISER DIAGRAM & DETAILS

ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION  
 MANAGERS

**KCI**

TECHNOLOGIES  
 13750 SAN PEDRO AVE, STE 640  
 SAN ANTONIO, TX 77002  
 Texas Registered Engineering Firm F-10573 Ph: 713-237-9800

1632  
 BOULEVARD  
 SAN ANTONIO  
 TEXAS  
 78215



**I N S I T E**  
 Architects  
 I n c.

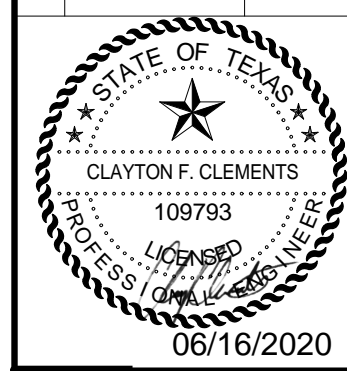
**AACOG - WX & ART**  
 TITAN PLAZA  
 SAN ANTONIO, TEXAS

DRAWN BY:  
 JPC

DATE:  
 06/16/20

REVISED:

ISSUE FOR PERMIT 06-16-2020



SHEET TITLE:  
 PLUMBING SCHEDULES,  
 LEGENDS AND NOTES

SHEET:

**P1**

PLUMBING SPECIFICATIONS

SECTION 22 00 00 PLUMBING COMMON WORK REQUIREMENTS

SUBMITTALS

A. General

- 1. Submit product data submittals for equipment and materials specified in this section.
2. The Contractor shall not perform work before review of the submittals by the Engineer.
3. The Plumbing Contractor shall provide materials and/or equipment for each and every item covered within the Plumbing Specifications, Division 22. Refer to sub-paragraphs below for all related requirements.

B. Product Data Submittals:

- 1. Provide digital copy of product data for equipment and materials specified in the "Submittals" and "Quality Assurance" articles in remaining Division 22 Sections.
2. Each product data submittal shall include data for a maximum of one Specification Section.
3. Clearly delineate between information that applies to this project and information that does not apply.

C. Shop Drawing Submittals:

- 1. Provide digital copy of shop drawings for equipment and materials specified in "Submittals" and "Quality Assurance" articles in remaining Division 22 sections, in compliance with Architectural Section-Submittals.
2. Shop drawings shall bear only minor field variations from contract documents. Each Trade Contractor shall identify any changes and provide a written explanation for the request.
3. Equipment Rooms, Fan Rooms and General Floor Plan Shop drawings shall be drawn at a scale of not less than 1/4 inch = 1'-0", unless otherwise approved in writing by the Engineer.

D. Sample Submittals:

- 1. In addition to the other submittal documents, the Engineer may direct the Trade Contractor to submit samples of equipment and material items.
2. Samples shall be submitted at a location selected by the Engineer.

E. Certifications:

- 1. Certification at contract closeout that specified performance criteria has been met by all plumbing and fire protection systems specified in Division 22 sections. In addition, provide certifications required by remaining Division 22 sections

F. Operating and Maintenance Manuals:

- 1. Furnish not less than five (5) operating and maintenance manuals for each item of equipment or system being furnished.
2. Maintenance Manual Content shall include the following typewritten or printed information for each item: installation instructions, wiring and control diagrams, maintenance instructions, procedures and schedules, parts list for each piece of equipment with identifying drawing, nearest two (2) servicing agencies, Material safety data sheets, testing and balancing reports.

G. Warranty:

- 1. Warranties in excess of basic building warranty is specified in the "Warranty" article in remaining Division 22 sections.

H. Substitution Request Submittals:

- 1. For Product Substitutions, in addition to any requirements of Architectural General Sections, the following shall apply: Cost information shall include typewritten vendor quotations for equipment and services. Provide written statement of availability of replacement parts.

QUALITY ASSURANCE

- A. Reference Standards: Applicable requirements of standards and specifications referenced in Division 22 sections apply to the Work.
B. Work shall comply with recognized standards and codes, applicable Federal, State and Municipal codes and requirements, and shall be subject to inspection and approval of authorities having jurisdiction.
C. It is not the intent to specify materials, equipment or methods of installation that may be in conflict with national, federal, state, local or utility company codes, standards or policies. Where these codes, standards or policies require a different material or method than specified, the Contractor shall notify the Engineer in writing, and shall provide the proper material and perform the work, without additional compensation, to comply with these codes, after review by the Engineer.

DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to project site in unopened containers bearing manufacturer's name and content identification.
B. Store materials as recommended by the manufacturer.

PROJECT CONDITIONS

- A. Coordination: Coordinate this work with the work of other sections to avoid any delay or interference with other work.

MATERIALS AND EQUIPMENT

- A. Materials and equipment shall be new, conform to grade, quality and standards specified herein. Type, capacity and application shall be suitable and capable of satisfactory operation for the purpose intended. No material shall be installed for a purpose or in a manner not recommended by the manufacturer of the product.

EXAMINATION

- A. Examine areas in which work is to be performed. Report to the Contractor all prevailing conditions that will adversely affect satisfactory execution of work. Do not proceed with work until unsatisfactory conditions have been corrected.
B. Starting work constitutes acceptance of the existing conditions and this Contractor shall then at his expense, be responsible for correcting all unsatisfactory and defective work encountered.
C. Carefully investigate structure and finish conditions affecting the work and arrange work sequence accordingly; providing such items as may be required to meet such conditions.
D. If Division 22 work is installed before coordinating with Other Trades, necessary changes in the work required to correct the condition shall be at the responsible Division 22 Contractor's expense.

PROTECTION OF SYSTEMS DURING DEMOLITION AND CONSTRUCTION

- A. Locate, identify, and protect plumbing services passing through demolition areas and serving other areas outside demolition limits. When services are interrupted, install temporary services for affected areas. Repair, and place in service any utilities, facilities and services which are damaged, broken or otherwise rendered inoperative during the construction work.
B. Protect new and existing materials and equipment that may be subject to damage during the construction period.
C. Securely cover building openings and protect to keep dirt, dust, moisture and noise from being transmitted to adjacent areas.

PROTECTION OF SYSTEMS DURING DEMOLITION AND CONSTRUCTION

- A. Locate, identify, and protect plumbing services passing through demolition areas and serving other areas outside demolition limits. When services are interrupted, install temporary services for affected areas. Repair, and place in service any utilities, facilities and services which are damaged, broken or otherwise rendered inoperative during the construction work.
B. Protect new and existing materials and equipment that may be subject to damage during the construction period.
C. Securely cover building openings and protect to keep dirt, dust, moisture and noise from being transmitted to adjacent areas.

INSTALLATION-GENERAL

- A. Locate equipment, equipment controls and other devices, which must be serviced, operated or maintained in fully accessible locations. If required for better accessibility, provide Engineer reviewed access panels for this purpose. Locate equipment requiring periodic maintenance to permit removal without damage to other work. Minor deviations from the Contract Documents may be made to allow for better accessibility, but, changes which may involve extra cost shall not be made without prior review.
B. Product Installation: Products shall be installed in strict accordance with manufacturer's recommendations, details and instructions.
C. Where mounting heights are not indicated, install systems, materials and equipment to provide maximum possible headroom. Maintain maximum headroom and space conditions. Where headroom or space conditions appear inadequate to achieve ceiling heights noted on Architectural plans, the Engineer shall be notified before proceeding with the work.
D. Coordinate work with other trades to eliminate any possible interference before any piping, conduit, equipment, devices, controls, supports, ductwork and fixtures are installed.
E. Where multiple items of equipment, devices, piping, conduits, supporting metal work, hangers, pull boxes, outlets, ductwork or controls are shown on any of the Contract Documents of the various trades in the same location, coordinate and adjust items to fit within the designated location(s). Provide and install all necessary offsets, bends, turns, modifications in piping and devices required to install the work without interference with that of other trades or structure, without additional cost to the Owner.

REMOVAL AND RELOCATION OF EXISTING EQUIPMENT

- A. Trade Contractors shall be responsible for removal, storage, protection, relocation and installation of existing equipment specifically noted or scheduled to be relocated. Trade Contractors shall be responsible for capping services feeding existing equipment which is to be removed.
B. Equipment requiring mechanical connections shall be the responsibility of the installing Trade Contractors. A composite relocation crew shall be used including mechanics skilled in their various trades.

BUILDING AND SITE SERVICES

- A. Contact utility companies and local authorities to arrange for required sewer, water and gas services.

CONTINUITY OF SERVICES

- A. Notify building personnel in writing four (4) days before an Owner approved work interruption date.
B. No "extra" compensation shall be permitted due to "overtime" hours implicit in the above requirements.

PASSAGE OF EQUIPMENT

- A. Establish passage clearances required to deliver, install and erect plumbing equipment. Wherever necessary, provide equipment in sections or knocked down in order to allow passage of equipment through openings.
B. Where there is not sufficient clearance for passage of plumbing equipment; deliver, install and protect such equipment before confining walls, floors, slabs and steel work are erected. Schedule and coordinate work with other Divisions.
C. If structures, equipment and systems must be altered to provide passage of equipment, the responsible Trade Contractor shall restore structures, equipment and systems to their original condition without additional compensation.

CUTTING AND PATCHING

- A. The Division 22 Trade Contractors shall provide cutting and patching required for the installation of the work of this section.
B. Retain the original installer or fabricator, or an equally recognized, experienced and specialized firm to cut and patch exposed work. This requirement may be waived at the sole discretion of the Engineer, if cutting and patching is minor in scope and if Contractor can demonstrate to the satisfaction of the Engineer that work is being performed by craftsmen skilled in the required work.

PAINTING AND FINISHING

- A. Following Engineer's review of required cutting and patching, provide painting and finishing required for installation of the work of this section. Painting and finishing shall be done by the same firm that performed the cutting and patching work, or another firm acceptable to the Engineer.
B. Provide required paints, primers, stains, sealers, fillers, trim, carpet, tile, wood, epoxy, vinyl or rubber bases, paneling and additional required wall, floor and ceiling finish materials to match adjoining spaces and finishes.
C. Provide the best quality professional/commercial grade of each type of coating or finish. Finishes shall be installed in compliance with manufacturer's written instructions, including recommended temperature and humidity conditions.
D. Match original finish colors by using the same manufacturer and color formation for the finish to be applied. When finish material, color or manufacturer is no longer commercially available, the Contractor shall submit samples of proposed substitute finishes to the Engineer for review.

CLEANING

- A. Coordinate and cooperate with Other Trades for cleaning and removal of trash and debris from the project on a periodic basis or as directed by the Engineer. Remove trash and debris in areas open to the public on a daily basis.

SYSTEM START-UP

- A. After completion of testing in accordance with remaining Division 22 sections, start each system and make final adjustments for proper flow, temperature and quietness of operation.

OPERATING INSTRUCTIONS

- A. Request a date from the Owner in writing with a copy to the Engineer, when the instruction period shall begin. Testing, Balancing and Adjusting shall be complete and acceptable to the Engineer prior to instruction of the Owner's representative. The Owner may request interim instruction prior to the final instruction period in order to operate the systems prior to completion of the project. The interim instruction period shall be in addition to final instructions and not reduce the length of instruction during the final instruction period.

PROJECT CLOSEOUT

- A. Submit notification of substantial completion to the Engineer following completion of the following tasks
B. Installation of all required material, equipment and systems as documented in the Contract Documents
C. Completion of all required system testing and balancing
D. Completion of cutting, patching and finishing of surfaces requiring such treatments
E. Completion of cleaning of site
F. Completion of system start-up
G. Provision of operating and maintenance instructions
H. Submission of all required certifications
I. Submission of project record drawings
J. Submission of warranty documents for completion of initial starting date by Engineer
K. Following completion of the above tasks, the Trade Contractor shall perform closeout work and submit closeout documents required to establish Substantial Completion, as defined in this section and as defined by General Architectural Sections.

SECURING EXTERIOR EQUIPMENT

- A. Exterior equipment shall be securely fastened in place. Supports shall be designed and constructed to sustain vertical and horizontal loads within the stress limitations and wind speeds specified in the applicable building code

22 05 23 GENERAL DUTY VALVES FOR PLUMBING PIPING

GENERAL REQUIREMENTS FOR VALVES

- A. Plumbing valve applications specified in this Section are limited to NPS 24 (DN 600). Many valves specified are available in larger sizes.
B. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
C. In compliance with ASME B1.20.1 for threads for threaded end valves, B16.1 for flanges on iron valves, B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria, B16.18 for solder joint, B31.9 for building services piping valves.
D. NSF Compliance: NSF 61 Annex G and NSF 372 for valve materials for potable-water service.
E. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.
F. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
G. Valve Sizes: Same as upstream piping unless otherwise indicated.
H. Valve Bypass and Drain Connections: MSS SP-45.
I. Valves in insulated piping provide 2-inch stem extensions, protective sleeves that allow operation of valves without breaking vapor seals or disturbing insulation, and fully adjustable memory stops.

BALL VALVES

- A. Bronze Ball Valves, two-piece with full port, bronze body with stainless steel trim and ball, threaded or soldered, 600 psig CWP rating, PTFE seats. Shall comply with MSS SP-110. Valves with integral press-connect ends shall be Viega only.
Manufacturers: Apollo, Nibco, Milwaukee, Watts, or equal

SWING CHECK VALVES

- A. Bronze swing check valve, with Nonmetallic Disc, Class 125, horizontal flow, threaded or soldered, 200 psig CWP rating, PTFE disc. Shall comply with MSS SP-80 type 4.
Manufacturers: Apollo, Nibco, Milwaukee, Watts, or equal

VALVE INSTALLATION

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
B. Locate valves for easy access and provide separate support where necessary.
C. Install valves in horizontal piping with stem at or above center of pipe.
D. Install valves in position to allow full stem movement.
E. Install swing check valves for proper direction of flow in horizontal position with hinge pin level.
F. Install chainwheels on operators for gate valves NPS 4 and larger, and more than 96 inches above the floor. Extend chains to 60 inches above finished floor.

GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

- A. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.
B. Use gate valves for shutoff service only.
C. End Connections:
1. For Piping/Tubing, NPS 2 and Smaller: Threaded or soldered.
2. For Piping/Tubing, NPS 2-1/2 and Larger: Flanged.

22 05 29 HANGERS AND SUPPORTS

Performance Requirements

- A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
1. Design supports for multiple pipes capable of supporting combined weight of supported systems, system contents, and test water.
2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

Metal Pipe Hangers and Supports

- A. Pipe Hangers and Supports:
1. Carbon Steel and Stainless-Steel Pipe Hangers and Supports shall comply with MSS SP-58, Types 1 through 58, factory-fabricated components. Copper Hangers shall comply with MSS SP-58, Types 1 through 50, copper-coated-steel, factory-fabricated components.
2. Galvanized Metallic Coatings shall be pre-galvanized or hot dipped.
3. Non-Metallic Coatings shall be plastic coating, jacket or liner.
4. Padded Hangers shall have fiberglass or other pipe insulation pad or cushion
5. Hanger Rods shall be continuous-thread rod, nuts, and washer made of carbon steel
B. Trapeze Pipe Hangers
1. MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

Fastener Systems

- A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
B. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

Hanger and Support Installation

- A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly supporting piping from the building structure.
B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.
C. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
D. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
E. Install lateral bracing with pipe hangers and supports to prevent swaying.
F. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.
G. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.
H. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
I. Use carbon-steel pipe hangers and supports and metal trapeze pipe hangers and attachments for general service applications.
J. Use stainless-steel pipe hangers and stainless-steel attachments for hostile environment applications.
K. Use copper-plated pipe hangers and copper attachments for copper piping and tubing.
L. Use padded hangers for piping that is subject to scratching.
M. Use thermal-hanger shield inserts for insulated piping and tubing.
N. Isolate all water piping from direct contact with structural members (studs, joists, beams, etc.) to prevent the transmission of sound.
O. Isolate all water piping from direct contact with structural members (studs, joists, beams, etc.) to prevent the transmission of sound.
P. No wood sills allowed.
Q. Roof supports compatible with existing roof system shall be portable pipe hangers or approved equal.

22 07 19 PIPING INSULATION

All insulation must have flame spread less than 25 and smoke developed less than 50 as per ASTM E84, NFPA 255, and UL 273. Provide galvanized sheet metal shields at all pipe hangers for pipes 1 1/2" or larger. For pipe 4" and larger, provide high-density insulation (calcium silicate) inserts at hangers.

Domestic cold water in exterior walls, attics above building insulation, or other areas subject to freezing - 1" fiberglass.

Domestic hot water - For pipe sizes 1 1/4" or less, provide 1" fiberglass insulation with all-service jacket. 1 1/2" and larger, provide 1 1/2" fiberglass insulation with all-service jacket (RE: IECC 2015 - Table C403.2.10 Minimum Pipe Insulation Thickness)

Insulate all exposed drain and water supply piping beneath handicap accessible sinks with closed cell insulating kit as manufactured by 'Truebro' or equal by 'McGuire'.

Floor drains receiving condensate from HVAC units or ice machines shall be insulated with 1" fiberglass a minimum of 5-feet downstream of drain.

22 10 00 PLUMBING PIPING

Domestic hot & cold water piping- Shall meet the requirements of NSF/ANSI 61 for health effects in potable water and NSF/ANSI 372 for lead free requirements in the "Reduction of Lead in Drinking Water Act".

Hard Copper Tube: ASTM B88 Type "L" copper tubing with ASME B16.22 wrought copper and ASME B16.18 cast copper alloy (bronze) solder joint fittings with lead free solder or Viega ProPress press-connect fittings 1/2" to 4". Where Viega ProPress fittings are used, installers shall be credentialed by Viega (a free service), the connections shall be marked for full insertion depth, the Viega two-step pressure testing shall be conducted to ensure detection of unpressed fittings and there shall be no mixing of manufacturers. Press manufacturers all use various technology at some point and have different instructions. The approved manufacturer's installation instructions shall be strictly adhered to. If valves with press-connect ends are used, the valves shall be Viega in order to ensure uniform press technology throughout the system.

Testing: upon completion of construction, all domestic water piping shall be thoroughly flushed and sterilized. Submit Certificates of Testing for Engineer review.

Waste and vent piping -

Below slab: Drainage piping below slab shall be Schedule 40 PVC with DWV fittings and clamps. Transitions between under slab PVC and above slab cast iron shall be as detailed on plans.

Above slab: ASTM A888 No-hub cast iron pipe and fittings, with ASTM C1277 standard duty clamps and ASTM C1277 gaskets. No-Hub Cast Iron manufactured by Charlotte, Tyler Pipe, or equal No-Hub clamps shall be manufactured by Tyler Pipe, Clamp-All, Husky, Mission or equal.

Make connections between dissimilar piping materials with adaptors manufactured for the applicable type of transition.

Provide dielectric isolation device (dielectric union or coupling) where copper lines connect to ferrous lines or equipment.

22 40 00 PLUMBING FIXTURES

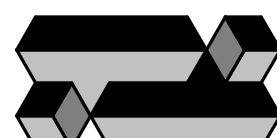
Refer to plumbing construction drawings for 'Plumbing Fixture Schedule.'

- Fixtures shall be certified to meet the water saving performance standards of Texas Civil Statutes Section 372.002 and shall be listed with the State as complying with such. All fixtures shall comply with the more restrictive of ANSI or the following (when tested per ANSI testing procedures):
• maximum flow from sink or lavatory faucet or faucet aerator shall be 2.20 gallons per minute (gpm) at a pressure of 60 psi;
• maximum flow from a shower head shall be 2.75 gpm at a pressure of 80 psi;
• maximum volume of water per flush from a urinal and associated flush valve shall not exceed 0.5 gallon;
• maximum volume of water per flush from a toilet shall not exceed 1.28 gallons.

Fixtures shall comply with requirements of the Americans with Disabilities Act, Public Law 101-336 and with State of Texas Civil Statutes Articles 7, 601B.

- Flush controls shall be no more than 44" above floor and on the wide side of stalls.
• Urinal rims shall not exceed 17" above finished floor; flush controls shall be no more than 44" above floor.
• Exposed hot water and drain pipes shall be configured to protect against contact and shall be insulated with prefabricated covers by Truebro or equal.
• Lavatories shall be minimum 17" front to back and shall allow minimum 27" high knee clearance.
• Drinking fountain spouts shall be no higher than 36"; flow shall be parallel to unit front and arc at least 4" high.

1632
BLOCK
SAN ANTONIO
TEXAS
78215



ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION
MANAGERS
TECHNOLOGIES
13750 SAN PEDRO AVE, STE 640
SAN ANTONIO, TX 78002
Texas Registered Engineering Firm F-10573

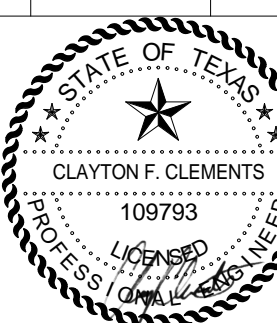
AACOG - WX & ART
TITAN PLAZA
SAN ANTONIO, TEXAS

DRAWN BY: JPC

DATE: 06/16/20

REVISED:

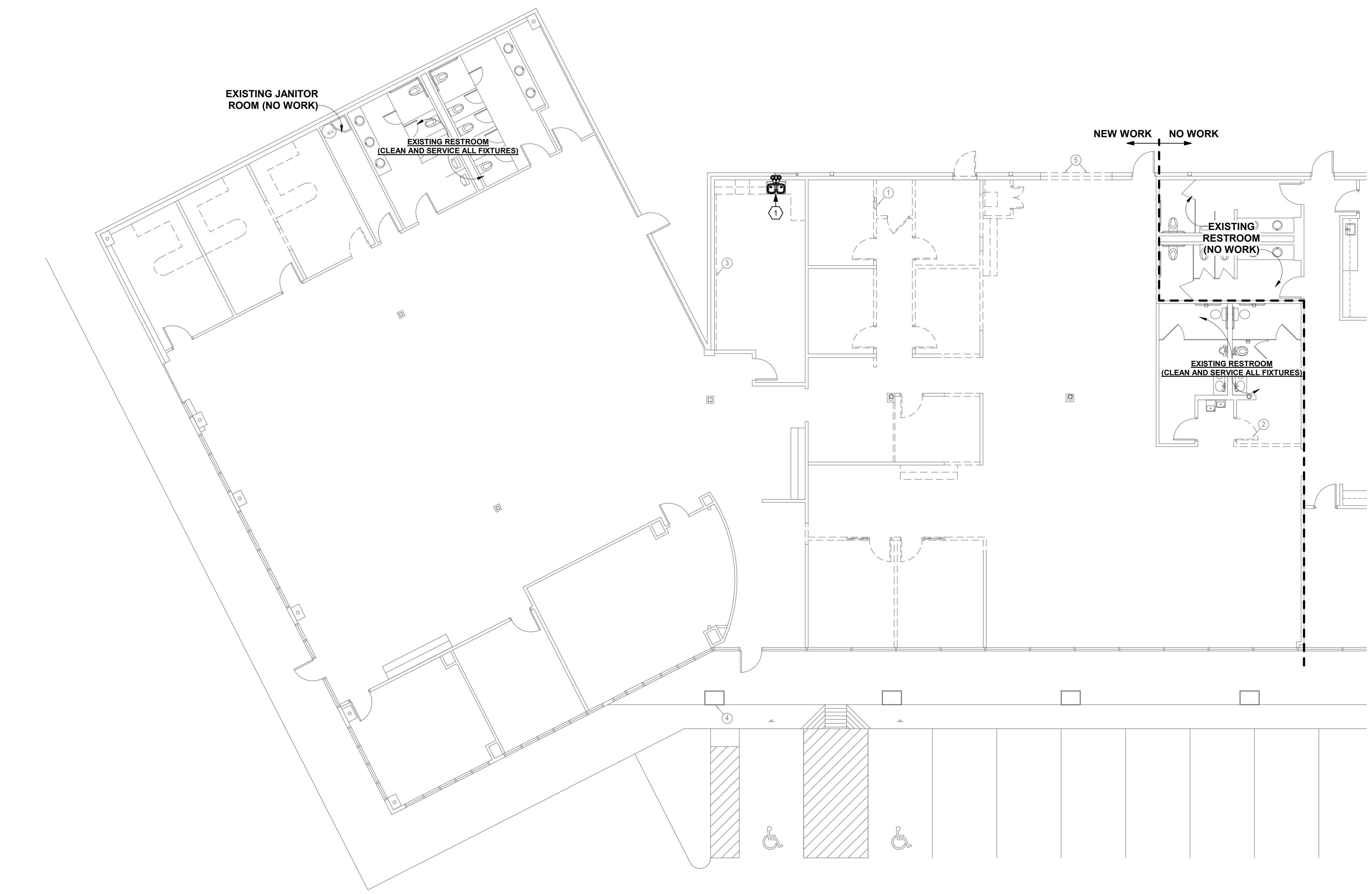
ISSUE FOR PERMIT 06-16-2020



SHEET TITLE: PLUMBING SPECIFICATIONS

SHEET: P2



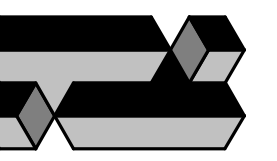


**KEYED NOTES**

1 EXISTING PLUMBING FIXTURE TO BE DEMOLISHED. EXISTING PIPING SERVING THE FIXTURE SHALL REMAIN AND BE MODIFIED AS REQUIRED FOR INSTALLATION OF NEW PLUMBING FIXTURE AT THIS LOCATION.

**1 PLUMBING DEMO PLAN**  
1/8" = 1'-0"

16332  
REG. ARCHT.  
SAN ANTONIO,  
TEXAS  
78215



**I N S I T E**  
Architects  
Inc.  
210 226 4195

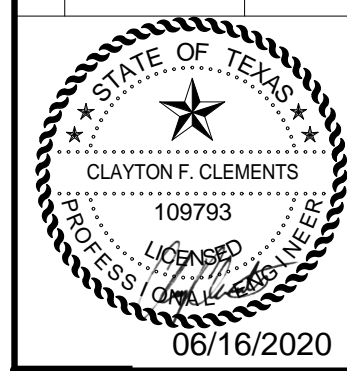
**AACOG - WX & ART**  
TITAN PLAZA  
SAN ANTONIO, TEXAS

DRAWN BY:  
JPC

DATE:  
06/16/20

REVISED:

ISSUE FOR PERMIT	06-16-2020



SHEET TITLE:  
PLUMBING DEMO PLAN

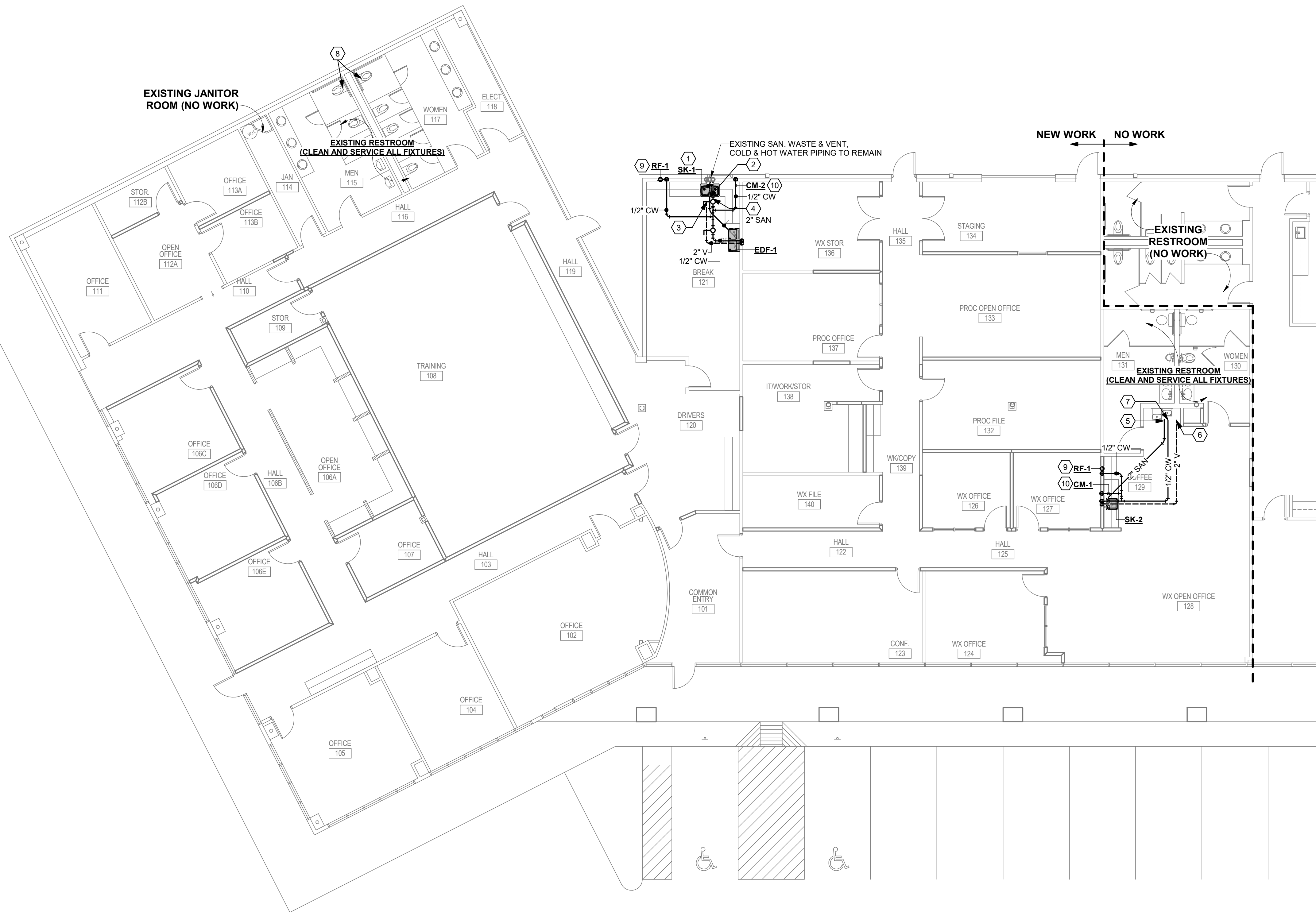
SHEET:

**P3**

**KCI** MANAGERS  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION  
13750 SAN PEDRO AVE, STE 640  
SAN ANTONIO, TX 78002  
Texas Registered Engineering Firm F-10573 Ph: 713-237-9800

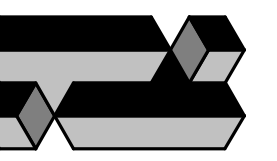
C:\DWG\Revit\Projects\19200322.00 AACOG - WX & Art - Titan Plaza MEP R19\_Corley2774.rvt

**1 PLUMBING PLAN**  
1/8" = 1'-0"



- KEYED NOTES**
- 1 NEW SINK. CONNECT TO EXISTING SANITARY WASTE, VENT AND COLD WATER PIPING IN CHASE. PROVIDE OFFSETS AS REQUIRED.
  - 2 CONNECT NEW 2" SANITARY WASTE BELOW SLAB TO EXISTING IN THE AREA OF THE SINK. EXISTING SLAB SHALL BE SAW-CUT AS REQUIRED TO ROUTE PIPING. CONTRACTOR SHALL REPAIR EXISTING SLAB TO MATCH EXISTING ELEVATION AND FINISH PER ARCHITECTURAL PLANS.
  - 3 CONNECT NEW 2" SANITARY VENT LINE IN CEILING TO EXISTING IN THE AREA OF THE SINK. EXISTING PIPING SHALL BE MODIFIED AS REQUIRED.
  - 4 NEW 3/4" HOT WATER LINE IN CEILING. CONNECT TO EXISTING IN AREA.
  - 5 CONNECT NEW 2" SANITARY WASTE BELOW SLAB TO EXISTING IN THE AREA OF THE PLUMBING CHASE. EXISTING SLAB SHALL BE SAW-CUT AS REQUIRED TO ROUTE PIPING. CONTRACTOR SHALL REPAIR EXISTING SLAB TO MATCH EXISTING ELEVATION AND FINISH PER ARCHITECTURAL PLANS.
  - 6 CONNECT NEW 2" SANITARY VENT LINE IN CEILING TO EXISTING IN THE AREA OF THE PLUMBING CHASE. EXISTING PIPING SHALL BE MODIFIED AS REQUIRED.
  - 7 CONNECT NEW 1/2" COLD WATER TO EXISTING IN THE AREA OF THE PLUMBING CHASE. EXISTING PIPING SHALL BE MODIFIED AS REQUIRED.
  - 8 RELOCATE EXISTING FLUSH VALVE HANDLE TO OPEN SIDE OF WATER CLOSET TO COMPLY WITH ADA STANDARDS.
  - 9 REFRIGERATOR WALL BOX, PROVIDE 1/2" COLD WATER.
  - 10 COFFEE MAKER, PROVIDE 1/2" COLD WATER LINE WITH QUARTER TURN SHUT-OFF VALVE AND DOUBLE CHECK VALVE AND IN-LINE WATER FILTER (AQUA PURE AP#117). INSTALL DOUBLE CHECK VALVE IN LOCATION PER MANUFACTURER RECOMMENDATIONS FOR MAINTENANCE AND TESTING. VERIFY LOCATION WITH ARCHITECTURAL PLANS.

1632  
SAN ANTONIO  
TEXAS  
78215



**I N S I T E**  
A r c h i t e c t s  
I n c.

210 226 4195

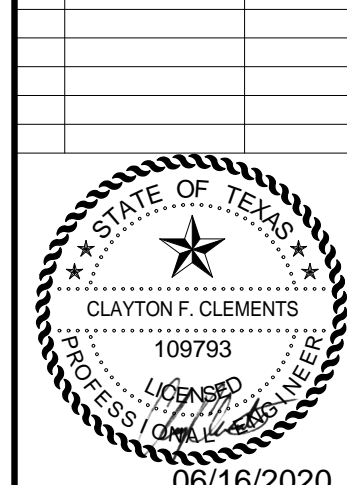
**AACOG - WX & ART**  
TITAN PLAZA  
SAN ANTONIO, TEXAS

DRAWN BY:  
JPC

DATE:  
06/16/20

REVISED:

ISSUE FOR PERMIT	06-16-2020
------------------	------------



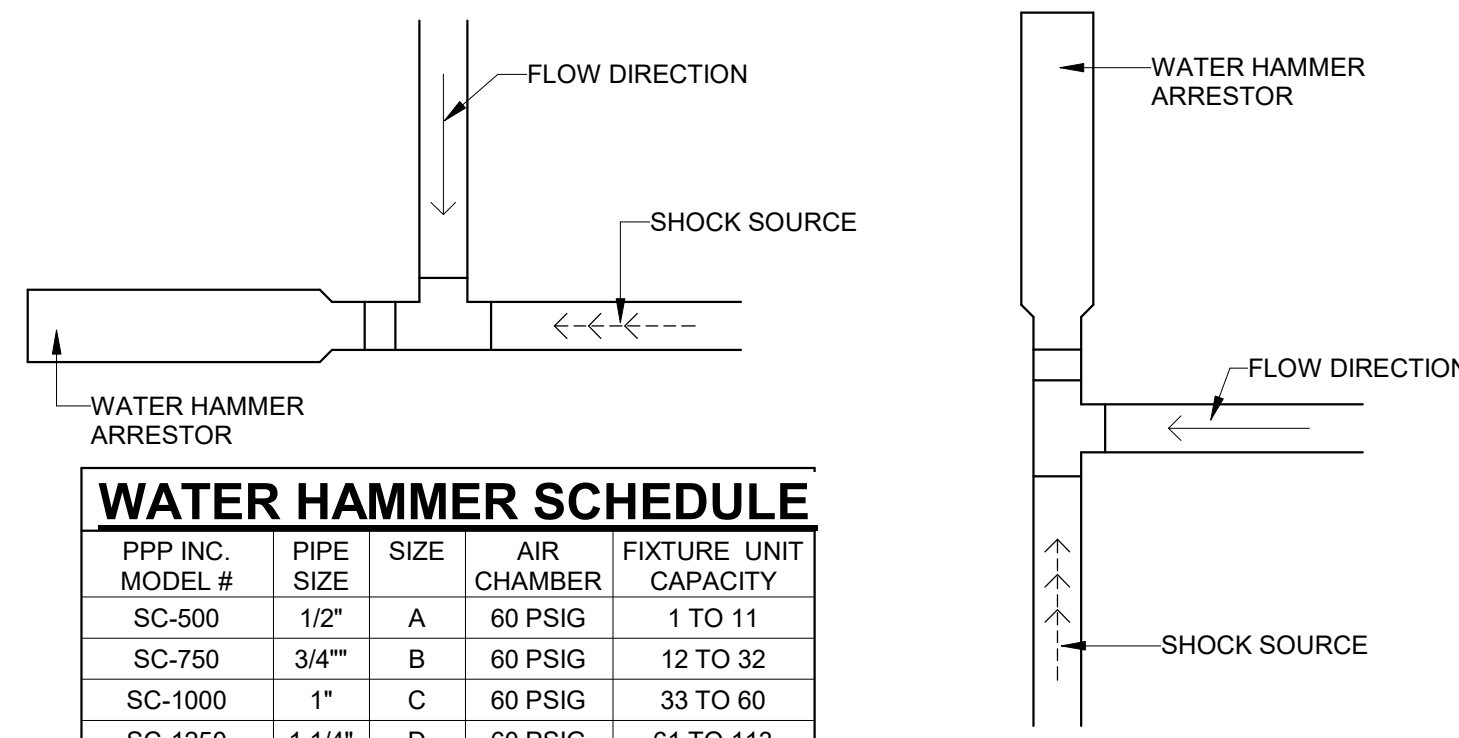
SHEET TITLE:  
PLUMBING RENOVATION  
PLAN

SHEET:

**KCI MANAGERS**  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION  
TECHNOLOGIES  
13750 SAN PEDRO AVE, STE 640  
SAN ANTONIO, TX 78002  
Texas Registered Engineering Firm F-10573  
Ph: 713-237-9800

**P4**

C:\DWG\Revit\_Projects\19200322.00 AACOG - WX & Art - Titan Plaza MEP R19\_Corley2774.rvt

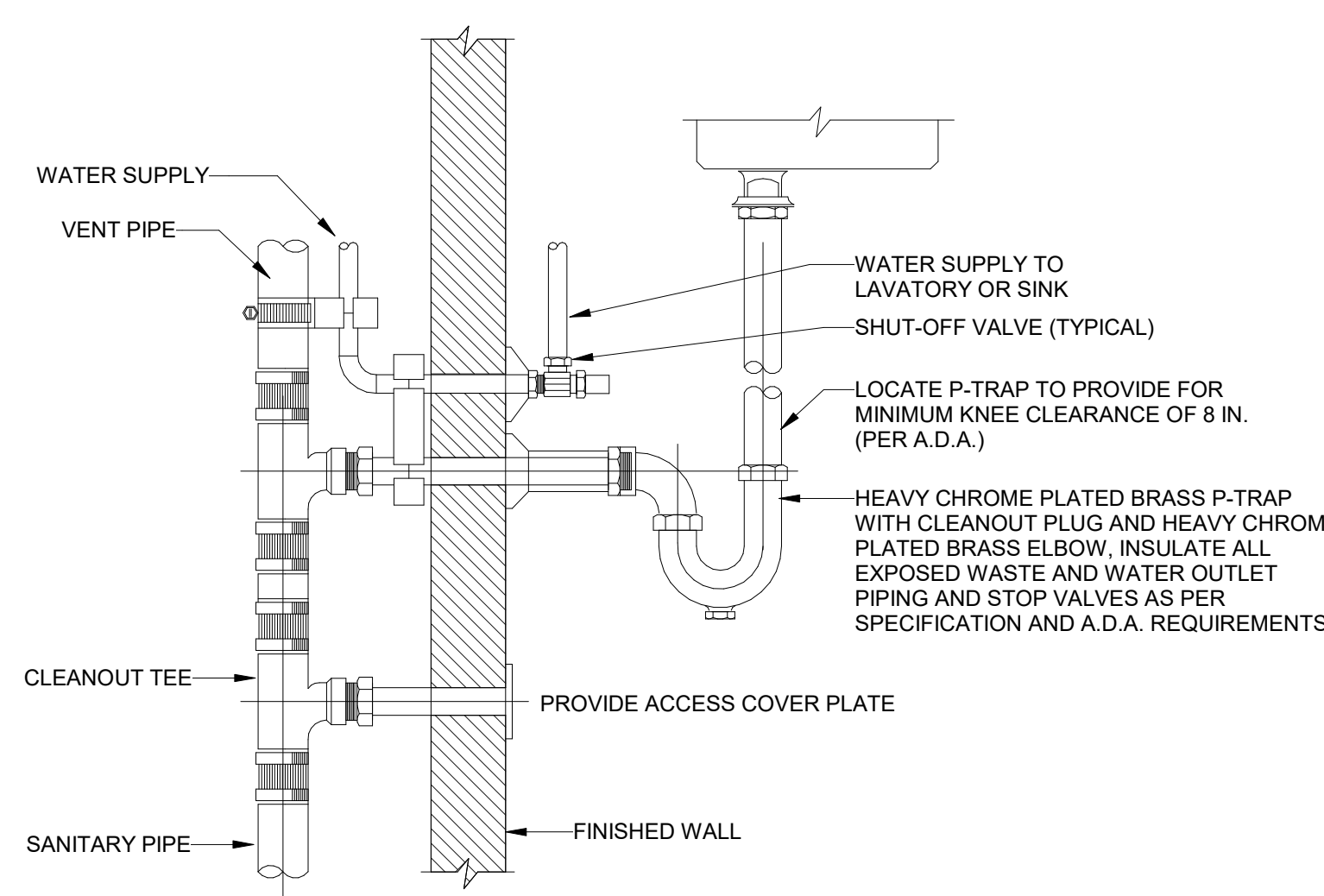


**WATER HAMMER SCHEDULE**

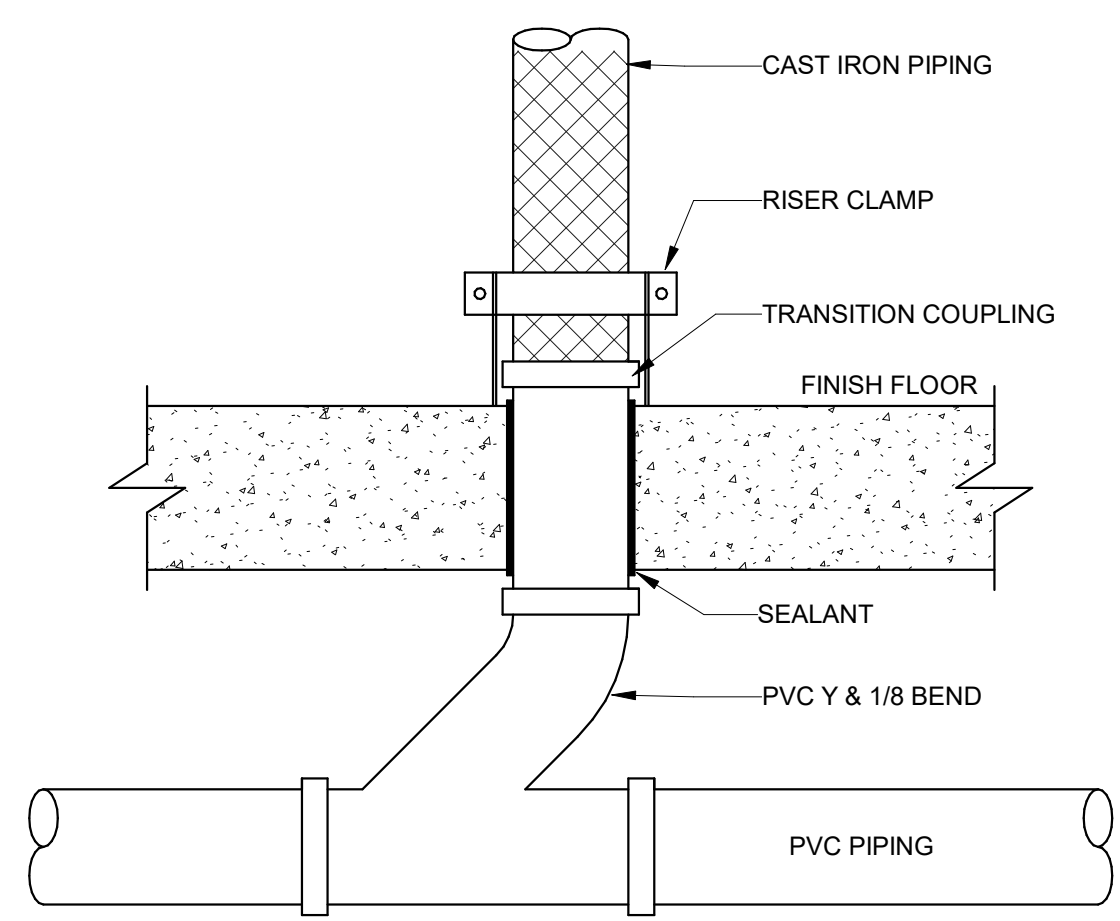
PPP INC. MODEL #	PIPE SIZE	SIZE	AIR CHAMBER	FIXTURE UNIT CAPACITY
SC-500	1/2"	A	60 PSIG	1 TO 11
SC-750	3/4"	B	60 PSIG	12 TO 32
SC-1000	1"	C	60 PSIG	33 TO 60
SC-1250	1 1/4"	D	60 PSIG	61 TO 113
SC-1500	1 1/2"	E	60 PSIG	114 TO 154
SC-2000	2"	F	60 PSIG	155 TO 330

WATER HAMMERS SHALL MEET A.S.S.E. 1010 AND BE SIZED PER PDI STANDARDS

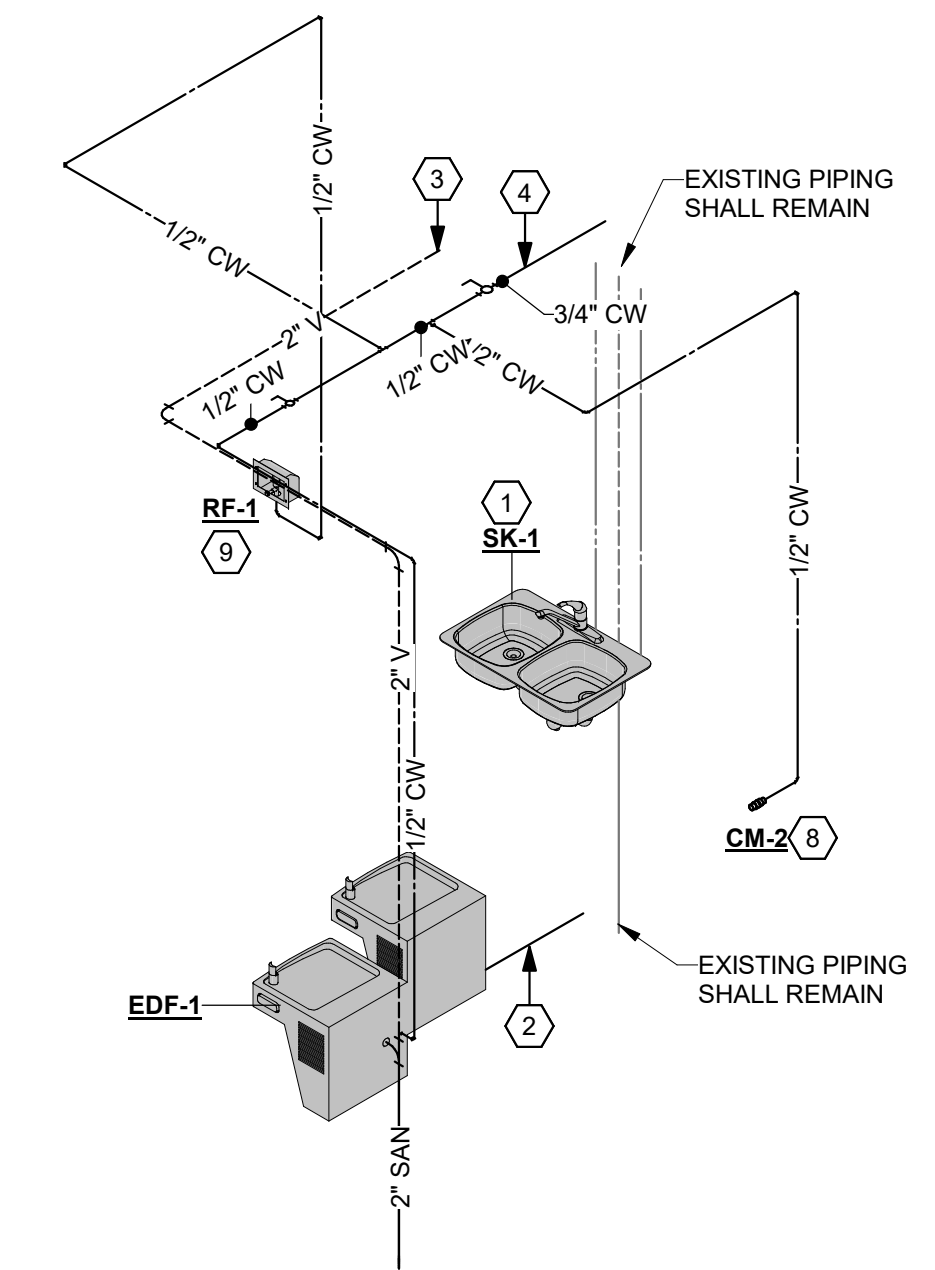
**5 WATER HAMMER ARRESTOR**  
NOT TO SCALE



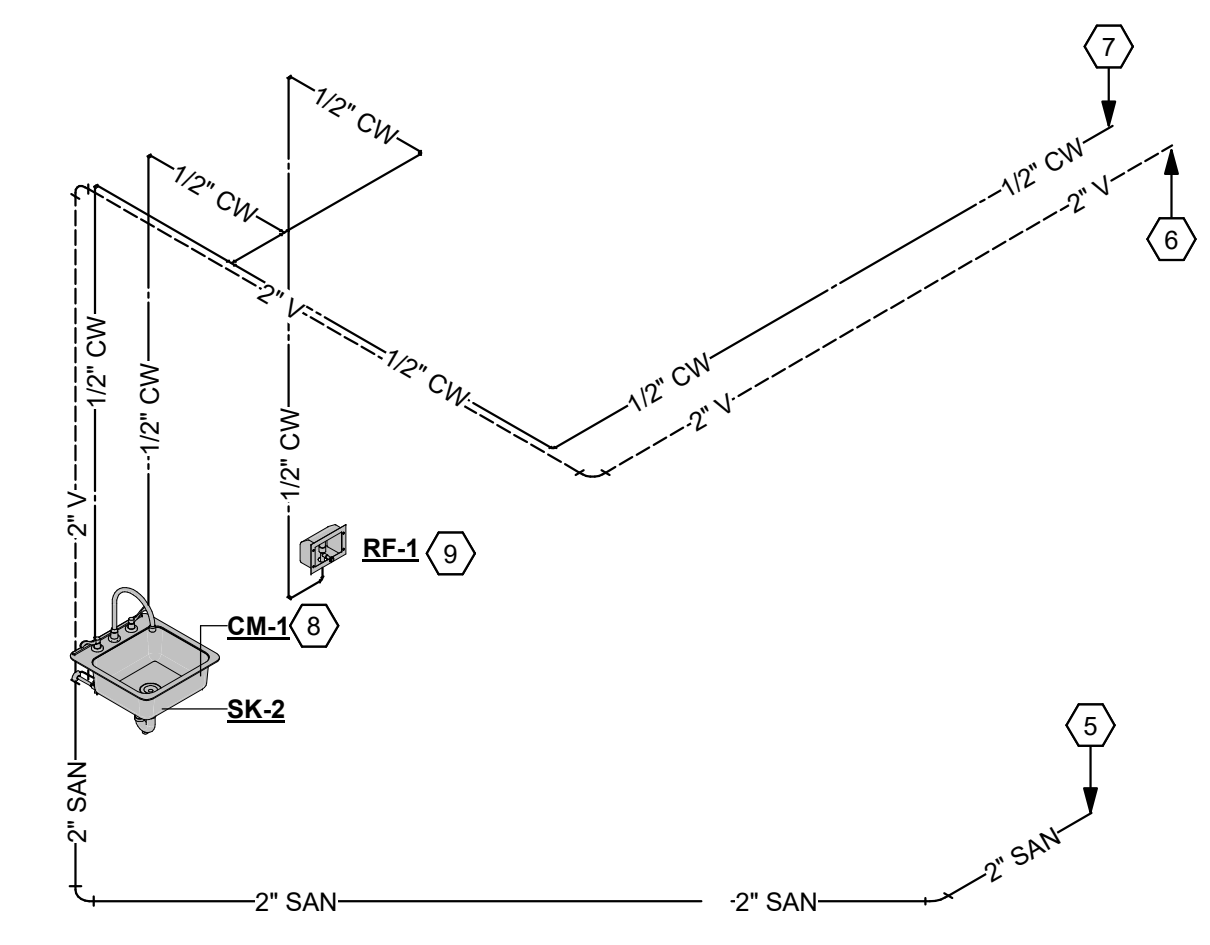
**4 TYPICAL LAVATORY & SINK INSTALLATION**  
NOT TO SCALE



**3 CAST IRON TO PVC TRANSITION**  
NOT TO SCALE



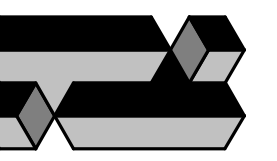
**1 RISER DIAGRAM - BREAK 121**  
NOT TO SCALE



**2 RISER DIAGRAM - COFFEE 129**  
NOT TO SCALE

- KEYED NOTES**
- NEW SINK. CONNECT TO EXISTING SANITARY WASTE, VENT AND COLD WATER PIPING IN CHASE. PROVIDE OFFSETS AS REQUIRED.
  - CONNECT NEW 2" SANITARY WASTE BELOW SLAB TO EXISTING IN THE AREA OF THE SINK. EXISTING SLAB SHALL BE SAW-CUT AS REQUIRED TO ROUTE PIPING. CONTRACTOR SHALL REPAIR EXISTING SLAB TO MATCH EXISTING ELEVATION AND FINISH PER ARCHITECTURAL PLANS.
  - CONNECT NEW 2" SANITARY VENT LINE IN CEILING TO EXISTING IN THE AREA OF THE SINK. EXISTING PIPING SHALL BE MODIFIED AS REQUIRED.
  - CONNECT NEW 3/4" COLD WATER LINE WITH ISOLATION VALVE IN CEILING. CONNECT TO EXISTING IN THE AREA.
  - CONNECT NEW 2" SANITARY WASTE BELOW SLAB TO EXISTING IN THE AREA OF THE PLUMBING CHASE. EXISTING SLAB SHALL BE SAW-CUT AS REQUIRED TO ROUTE PIPING. CONTRACTOR SHALL REPAIR EXISTING SLAB TO MATCH EXISTING ELEVATION AND FINISH PER ARCHITECTURAL PLANS.
  - CONNECT NEW 2" SANITARY VENT LINE IN CEILING TO EXISTING IN THE AREA OF THE PLUMBING CHASE. EXISTING PIPING SHALL BE MODIFIED AS REQUIRED.
  - CONNECT NEW 1/2" COLD WATER TO EXISTING IN THE AREA OF THE PLUMBING CHASE. EXISTING PIPING SHALL BE MODIFIED AS REQUIRED.
  - COFFEE MAKER, PROVIDE 1/2" COLD WATER LINE WITH QUARTER TURN SHUT-OFF VALVE AND DOUBLE CHECK VALVE AND IN-LINE WATER FILTER (AQUA PURE AP#117). INSTALL DOUBLE CHECK VALVE IN LOCATION PER MANUFACTURER RECOMMENDATIONS FOR MAINTENANCE AND TESTING. VERIFY LOCATION WITH ARCHITECTURAL PLANS.
  - REFRIGERATOR WALL BOX, PROVIDE 1/2" COLD WATER.

1632  
REC'D  
SAN ANTONIO  
TEXAS  
78215



**AACOG - WX & ART**  
TITAN PLAZA  
SAN ANTONIO, TEXAS

**AACOG - WX & ART**  
TITAN PLAZA  
SAN ANTONIO, TEXAS

DRAWN BY:  
JPC

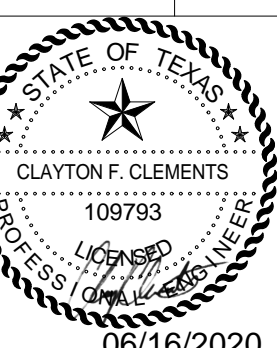
DATE:  
06/16/20

REVISED:

ISSUE FOR PERMIT 06-16-2020

06/16/2020

06/16/2020



SHEET TITLE:  
PLUMBING RISER DIAGRAM & DETAILS

SHEET:

**P5**

**KCI MANAGERS**  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION  
13750 SAN PEDRO AVE, STE 640  
SAN ANTONIO, TX 78202  
Texas Registered Engineering Firm F-10573