

PLUMBING FIELD VERIFY:

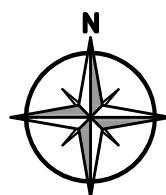
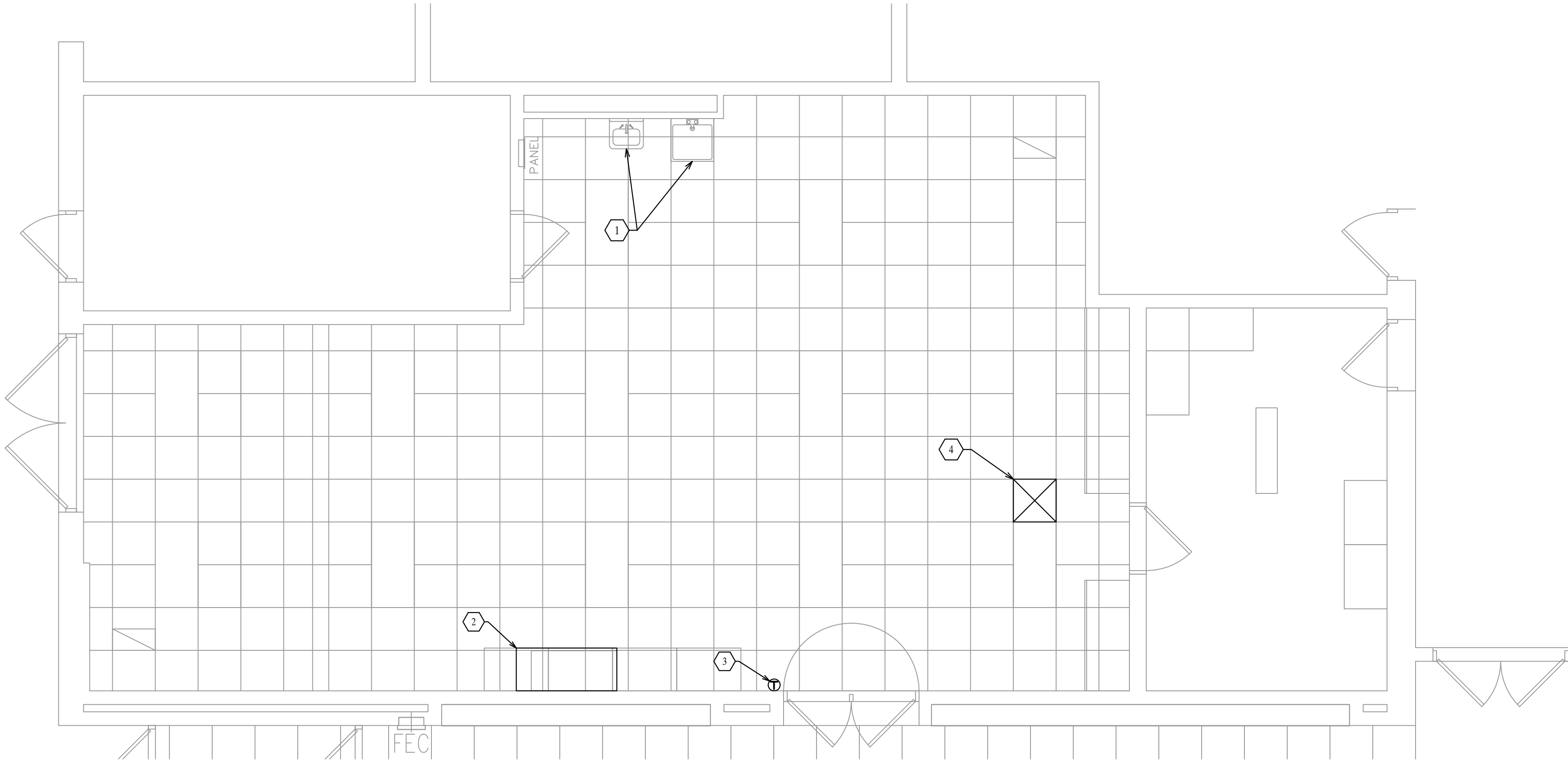
INFORMATION CONCERNING THE LOCATION(S) AND SIZES OF EXISTING EQUIPMENT AND PIPING WAS OBTAINED FROM EXISTING DRAWINGS AND CURSORY FIELD OBSERVATION, HOWEVER, ACTUAL "ASBUILT" DRAWINGS WERE NOT AVAILABLE. CERTAIN INFORMATION CONCERNING THE LOCATION OF THE EXISTING CONDITIONS HAS BEEN ASSUMED IN THIS DRAWING. THE EXACT LOCATION(S) AND DIRECTION OF FLOW OF ALL EXISTING EQUIPMENT, ETC., IS UNKNOWN. REASONABLE EFFORT HAS BEEN MADE TO ACCURATELY DEPICT THE EXISTING CONDITIONS, HOWEVER, ALL EXISTING WORK MUST BE VERIFIED IN THE FIELD TO DETERMINE THE EXACT LOCATIONS, DIRECTIONS OF PIPE RUNS, SIZE, ETC. PRIOR TO STARTING CONSTRUCTION. ANY CONFLICT BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER FOR VERIFICATION AND/OR CORRECTION.

MECHANICAL FIELD VERIFY:

INFORMATION CONCERNING THE LOCATION(S) AND SIZES OF EXISTING DUCTWORK AND DIFFUSERS WAS OBTAINED FROM EXISTING DRAWINGS AND CURSORY FIELD OBSERVATION, HOWEVER, ACTUAL "ASBUILT" DRAWINGS WERE NOT AVAILABLE. CERTAIN INFORMATION CONCERNING THE LOCATION OF THE EXISTING CONDITIONS HAS BEEN ASSUMED IN THIS DRAWING. THE EXACT LOCATION(S) AND DIRECTION OF FLOW OF ALL EXISTING EQUIPMENT, ETC., IS UNKNOWN. REASONABLE EFFORT HAS BEEN MADE TO ACCURATELY DEPICT THE EXISTING CONDITIONS, HOWEVER, ALL EXISTING WORK MUST BE VERIFIED IN THE FIELD TO DETERMINE THE EXACT LOCATIONS, DIRECTIONS OF DUCT RUNS, SIZE, ETC. PRIOR TO STARTING CONSTRUCTION. ANY CONFLICT BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER FOR VERIFICATION AND/OR CORRECTION.

PLAN NOTES:

1. REMOVE FIXTURE COMPLETE. PREPARE WASTE,VENT,CW&HW PIPING FOR NEW FIXTURE CONNECTIONS AS REQUIRED.
2. REMOVE EXISTING VRV VEILING MOUNTED UNIT. PREPARE REFRIGERANT PIPING FOR CONNECTION TO NEW UNIT AS REQUIRED.
3. EXISTING THERMOSTAT TO BE RELOCATED, SEE REVISED PLAN.
4. RELOCATE EXISTING DIFFUSER IN NEW CEILING.



PLUMBING & MECHANICAL DEMOLITION PLAN

SCALE: 1/4"= 1'-0"

DRAWING INDEX

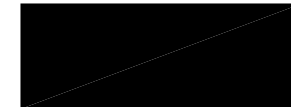
DRAWING No.	DRAWING TITLE
DMP101	PLUMBING & MECHANICAL DEMOLITION PLAN

NEW CLASSROOM RENOVATION
NORTHWEST CONSOLIDATED SCHOOL
DISTRICT OF SHELBY COUNTY
FAIRLAND, IN 46126

PROJECT: 23036
DATE: 04-20-2023
CONCEPTUAL DESIGN

PLUMBING &
MECHANICAL
DEMOLITION
PLAN

DMP101



PLUMBING FIXTURE SCHEDULE																								
MARK	FIXTURE	MANUFACTURER	MODEL No.	TYPE	MATERIAL	STYLE	COLOR	WATER USAGE		FAUCET / VALVE					SUPPLY STOPS	DRAIN		DOMESTIC CW	DOMESTIC HW	SANITARY WASTE	SANITARY VENT	REMARKS	NOTES	
								GPF	GPM	MANUFACTURER	MODEL	SPOUT	HANDLES	CENTERS		TYPE/MFR/MODEL	TRAP SIZE							
P-1	ADA WATER CLOSET	TOTO	CT705ULN	FLOOR MNTD FLUSH VALVE	VITREOUS CHINA	ELONGATED SIPHON JET	WHITE	1.28	---	TOTO	TETILN32 #CP	---	---	---	---	---	---	1"	--	3"	2"	FLUSH VALVE HANDLE ON LEFT	1,2,4	
P-2	ADA LAVATORY	TOTO	LT502.8	WALL MOUNTED	VITREOUS CHINA	---	WHITE	---	0.5	DELTA	35984LT-ECO	INTEGRAL SPOUT	AUTO	8"	BRASS CRAFT C5400AC	CAST GRID/ JB PRODUCTS 1042L	1-1/2"	1/2"	1/2"	2"	1-1/2"	PROVIDE WITH OFFSET CAST BRASS P-TRAP, GRID STRAINER, TRUE BRO WRAP KIT. INSTALL PER ADA AND ANSI 117.1.	1,2,4,5,6	
P-3	ROLL-IN ADA SHOWER	FREEDOM	APF4836 BF4P		ACRYLIC	---	WHITE			BY MANUFACTURER												WITH GRAB BARS, WEIGHTED SHOWER CURTAIN AND ROD, SLIDE BAR WITH HANDHELD SHOWER, PRESSURE BALANCE VALVE, CAULKLESS DRAIN	1,2,4	
P-4	S.S. 2-COMP SINK	DAYTON	GE23322	DROP-IN	STAINLESS STEEL		---	---	0.75	CHICAGO	2304-CP/ E2805LKCP	GOOSE NECK	SINGLE LEVER	---	BRASS CRAFT C5400AC	CAST GRID/ JB PRODUCTS 1042L	1-1/2"	1/2"	1/2"	2"	1-1/2"	WITH LOW FLOW AERATOR.	1,2,4	
P-5	WASHER BOX	OATEY	38642	UTILITY	FIBERGLASS	3-HOLE	---	---	---	MSUTEE	93.600	GOOSE NECK	HANDLE FAUCET	---	BRASS CRAFT C5400AC	CAST GRID/ JB PRODUCTS 1042L	1-1/2"	1/2"	1/2"	2"	1-1/2"	WITH LOW FLOW AERATOR.	1,2,3,4,6	
NOTE: 1. INSTALL ADA PLUMBING FIXTURES PER ANSI 117.1 GUIDELINES. 2. TRAPS, SUPPLIES, ETC TO BE CHROME. 3. PROVIDE ADA OFFSET GRID STRAINER AND PADDED SUPPLIES AND DRAIN. 4. SANITARY WASTE LINE SIZE AS INDICATED ON PLANS. 5. PROVIDE 0.5 AERATOR ON FAUCET. 6. SINK TO HAVE MX-1 VALVE.																								

PLUMBING EQUIPMENT SCHEDULE						
MARK	MANUFACTURER	MODEL	DESCRIPTION	ELECTRICAL		NOTES
				HP	V/PH	
MX-1	SYMMONS	ST-S-120-CKX	POINT OF USE MIXING VALVE	---	---	WITH SEPARATE STOPS SET 110°F DISCHARGE TEMP

PIPING INSULATION SCHEDULE (INDOOR)						
SYSTEM	REFRIGERANT (SEE SCHEDULE 4)	DOMESTIC HOT WATER & RETURN	DOMESTIC COLD WATER	HORIZONTAL STORM	CONDENSATE DRAIN	
FLUID TEMP. RANGE (°F)	40 & BELOW	100-300	40-75	40-75	40-55	
INSULATION TYPE	MF OR FE	MF OR FE	MF OR FE	3 & 5 MF OR FE	MF OR FE	
JACKET TYPE	FP	FP	FP	FP	FP	
VAPOR BARRIER REQ'D	-	-	-	-	-	
INSULATION THICKNESS (IN)	RUNOUTS (NOTE 1 & 2)	1.0	0.5	-	-	
	1" & LESS	1.0	0.5	0.5	-	0.5
	1.25" TO 2"	1.5	0.5	0.5	1.0	0.5
	2.5" TO 4"	1.5	1.0	-	1.0	0.5
	5" & ABOVE	-	-	-	-	-
<div>NOTES:</div> <div>1. RUNOUTS NOT EXCEEDING 12 FEET IN LENGTH AND 2" PIPE TO INDIVIDUAL HVAC TERMINAL UNITS.</div> <div>2. RUNOUTS THAT ARE NOT LARGER THAN 1" AND NON-CIRCULATING TO INDIVIDUAL PLUMBING UNITS.</div> <div>3. INCLUDES ROOF DRAIN BODY AND VERTICAL RUN UP TO THE ROOF DRAIN BODY.</div> <div>4. PROVIDE PVC JACKET ON EXTERIOR REFRIGERANT PIPING.</div> <div>5. INSTALL 3'X3'X1" ARMAFLEX GLUED TO BOTTOM OF RD AND OFD BODY'S. (EXISTING & NEW)</div> <div>6. UNDERGROUND HW PIPE TO BE INSULATED WITH 3/4" ARMAFLEX</div> <div>ABBREVIATIONS</div> <div>INSULATION TYPES</div> <div>FE FLEXIBLE ELASTOMERIC</div> <div>CG CELLULAR GLASS</div> <div>MF MINERAL FIBER (FIBERGLASS)</div> <div>PO POLYOLEFIN</div> <div>CS CALCIUM SILICATE</div> <div>CCF CLOSED-CELL FOAM</div> <div>FP FOIL & KRAFT PAPER</div> <div>PVC CELLULAR GLASS</div> <div>AL ALUMINUM</div> <div>SS STAINLESS STEEL</div>						

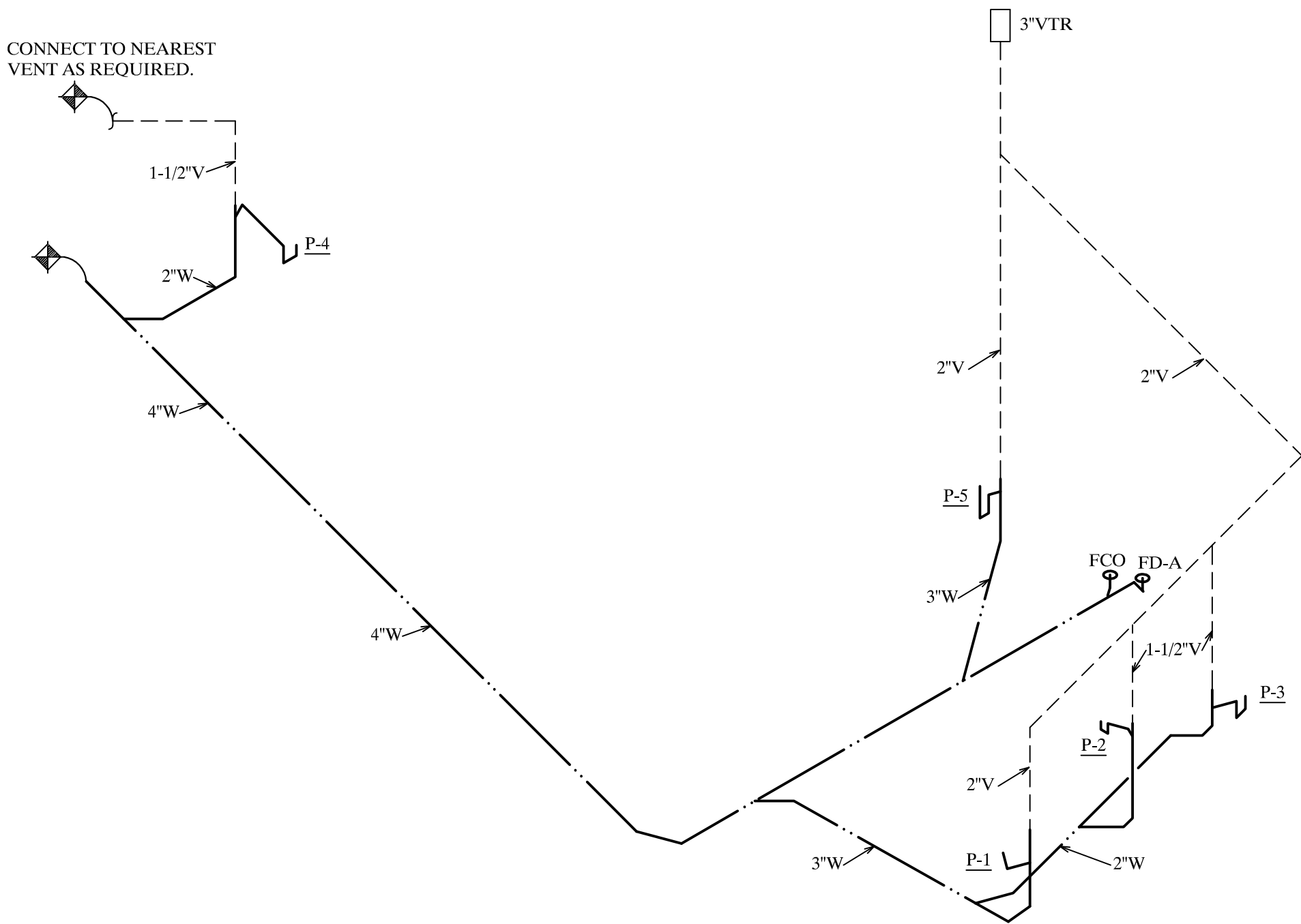
DRAWING INDEX	
DRAWING No.	DRAWING TITLE
P001	PLUMBING SCHEDULES
P002	PLUMBING DETAILS
P101	PLUMBING WASTE PLAN
P201	PLUMBING PIPING PLAN
P301	PLUMBING SPECIFICATIONS

PROJECT: 20036	
DATE: 04-20-2023	
CONCEPTUAL DESIGN	

PLUMBING SCHEDULES

P001

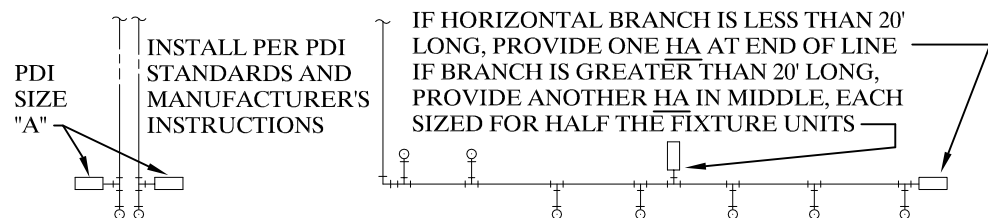
NEW CLASSROOM RENOVATION
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DISTRICT OF SHELBY COUNTY
FAIRLAND, IN 46126



WASTE ISOMETRIC
NO SCALE:

PIPING & SYMBOLS LEGEND

- WASTE PIPING (SCHD 40 PVC)
- STORM PIPING (SCHD 40 PVC)
- VENT PIPING (SCHD 40 PVC)
- DOMESTIC CW PIPING (PEX)
- DOMESTIC HW PIPING (PEX)
- DOMESTIC HWR PIPING (PEX)
- GAS PIPING (BLACK STEEL)
- FIRE (SPRINKLER) PIPING
- PIPE UP
- PIPE DOWN
- SHUT OFF VALVE
- BALL VALVE
- CHECK VALVE
- FLOOR DRAIN
- 3-WAY VALVE (MIXING VALVE)
- HOSE BIBB
- BACK FLOW PREVENTER
- UNION



SINGLE FIXTURE

MULTIPLE FIXTURES

PDI SIZE	PIPE SIZE	FIXTURE UNIT LOAD
A	1/2"	1-11
B	3/4"	12-32
C	1"	33-60
D	1-1/4"	61-113
E	1-1/2"	114-154
F	2"	154-330

FIXTURE UNIT TABULATION		
FIXTURE	COLD	HOT
VALVE WATER CLOSET	10	--
TANK WATER CLOSET	5	--
URINAL	5	--
LAVATORY/SINK	1.5	1.5
JANITOR'S SINK	3	3
SHOWER/BATHTUB	2	2

PC TO PROVIDE WATER HAMMER ARRESTERS BY SIOUX CHIEF, PRECISION PLUMBING PRODUCTS, WATTS OR APPROVED EQUIVALENT WITH PISTON AND O-RING CONSTRUCTION, HAVING PDI #WH-201, ASSE #1010 AND ANSI #A112.28.1M CERTIFICATION. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL IN LINE WITH WATER FLOW DIRECTION IF POSSIBLE. SIZE THE UNITS AS SHOWN ON THE DRAWINGS AND/OR PER THE TABLES SHOWN ABOVE. PROVIDE ACCESS PANEL FOR SERVICING OR REPLACEMENT, WHERE REQUIRED.

HAMMER ARRESTERS

NOT TO SCALE

NEW CLASSROOM RENOVATION
NORTHWEST CONSOLIDATED SCHOOL
DISTRICT OF SHELBY COUNTY
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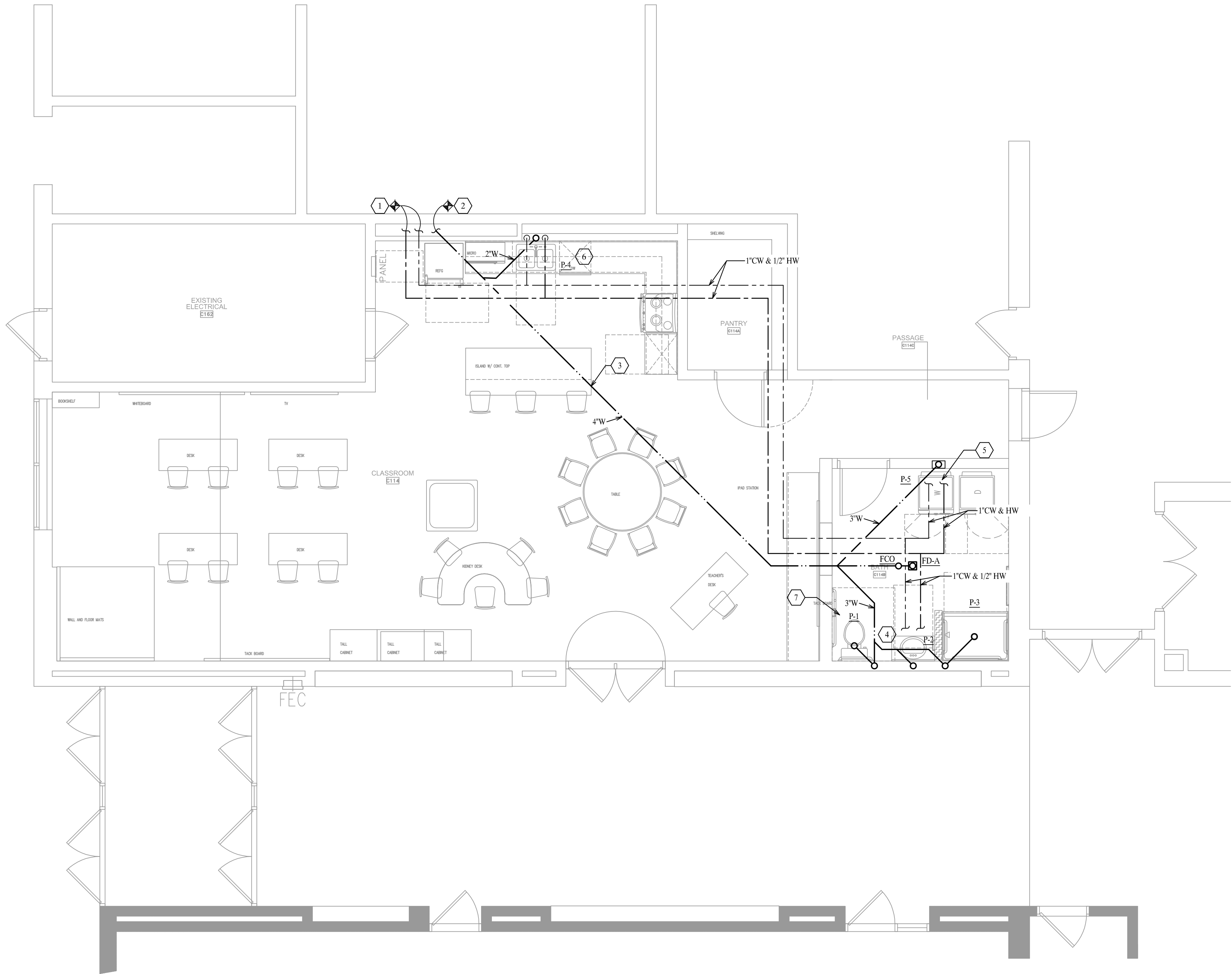
PROJECT: 20036
DATE: 04-20-2023
CONCEPTUAL DESIGN

PLUMBING
DETAILS

P002

DAE

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Fairfield, IN 46126
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Mechanical, Electrical, and Energy Engineering



- # PLAN NOTES:
1. CONNECT TO EXISTING CW&HW NEAR THIS LOCATION AS REQUIRED.
 2. CONNECT TO NEAREST 4\"W AS REQUIRED.
 3. SAW CUT AND TRENCH FOR WASTE PIPE, PATCH FLOOR TO MATCH EXISTING.
 4. CONNECT 1\"CW TO P-1 AND 1/2\" CW&HW TO P-2 AND P-3 AS REQUIRED.
 5. CONNECT 1/2\" CW&HW TO P-5.
 6. CONNECT DISHWASHER TO SINK TAILPIECE AS REQUIRED.
 7. THE THREE PLUMBING FIXTURES IN THIS ROOM ARE AN ALTERNATE BID. FIXTURE ROUGH-INS ARE BASE BID.

 FLOOR PLAN - PLUMBING
SCALE: 1/4"= 1'-0"

NEW CLASSROOM RENOVATION
NORTHWEST CONSOLIDATED SCHOOL
DISTRICT OF SHELBY COUNTY
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PROJECT: 23036
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PLUMBING
PLAN

P101

SPECIFICATIONS

1.00 – GENERAL

SECTION 15400 – PLUMBING

1.01 DESCRIPTION OF WORK

Furnish all labor, materials, equipment and services required for and/or reasonably incidental to the completion of the following work.

A. Sanitary waste and vent piping system including connections to building sewer as shown.

B. Domestic hot and cold water systems including water heater, and related accessories and controls. Connection to building water as shown.

C. Plumbing fixtures, trim and accessories including installation and support.

D. Flashing and sealing of roof and exterior wall penetrations for water tightness.

E. Caulking and sealing of floor and wall penetrations and formed shaft penetrations.

F. Backing for securing fixtures, trim and piping.

G. Access doors where shown or required by code.

H. Hangers, supports, and guides.

I. Record drawings and operating manuals.

J. License, permits and associated fees.

K. Cutting, drilling and patching for all surfaces in relation to plumbing work.

L. Condensate drains from HVAC equipment, and gas piping

1.02 RELATED WORK INCLUDED UNDER OTHER SECTIONS

A. HVAC and Electrical Work. 15500 and 16000

B. Fire Protection Work 15300 (if applicable)

1.03 EXAMINATION OF SITE

A. Visit site before submitting bid and check location of all existing conditions which will affect this work, verify dimensions and locations shown on drawings and cover all costs. Contractor shall assume reasonable variations or minor omissions and shall complete proposed work without additional cost. Failure to visit site will not lessen responsibility or entitle additional compensation for work not included in proposal.

B. Visit site of the work, compare it with the drawings and specifications as to the conditions under which work is to be performed, ascertain and check all conditions and elevations and take all measurements which may affect the work. No allowance shall subsequently be made for any extra expense or claims due to failure or neglect under this requirement to make such examination, including examination of restricted working conditions or such other difficulties visually observed during site visit. Contractor is responsible for becoming completely familiar with the architectural and structural conditions and limitations which will exist in the building and to provide all labor, tools and materials required to produce a completely concealed installation as indicated on the plans, specifications, and required by the code.

1.04 DRAWINGS

The accompanying drawings shall be considered part of these specifications. Work and materials shown on the drawings and not mentioned in the specifications and vice versa shall be executed as if specifically mentioned or shown in both. The drawings shall be considered as schematic in nature and minor modifications of the work to comply with the structure as found shall be made.

1.05 RULES AND REGULATIONS

A. All work and material shall be in full accordance with the latest rules and regulations of the State Fire Marshal and other applicable State and local rules and regulations. Nothing in these drawings or specifications shall be construed to permit work not conforming to these codes.

B. Furnish without any extra charge any additional material and labor when required to comply with these laws, ordinances and codes regardless of whether shown or mentioned in these specifications of drawings.

C. All work and material shall be in accordance with the Landlord's Mech/Elect. Design Criteria. All contractors shall obtain a copy from the Landlord's Tenant Coordinator or Mail Operations manager and become familiar with the requirements contained within prior to bidding the job. Where Landlord's requirements conflict with Codes or Ordinances the strictest interpretation shall apply.

1.06 SUBMITTALS

A. Submit for review to the Owner a complete and all-inclusive list of equipment and materials proposed for use (6 copies), accompanied by manufacturer's data sheets. Data shall be forwarded in a single package written 15 days after award of contract. Submit six blackline prints and one reproducible shop drawing showing proposed plumbing installation. Include sizes, locations and other required information to coordinate installation with other trades.

B. Within 5 days after award of contract, submit 6 copies of a letter stating any materials that contractor wishes to substitute, to the Owner for approval. Include such information as manufacturer's name, type of material, certified ratings, overall appearance, and necessary information to explain function and operation of material. All proposed substitutions shall be equal in quality, design, utility and appearance to material, equipment or method specified.

1.07 AS-BUILT DRAWINGS

A set of plumbing plans will be furnished to the Contractor on which he shall indicate the installation "as-built" as the work progresses. Upon completion of the work, a set of reproducible drawings shall be obtained from the Owner at cost, and all changes as noted on the record set of prints shall be incorporated thereon. This set of reproducible, along with one set of blueprints, shall be delivered to the Owner upon completion and before final acceptance of the project.

1.08 GUARANTEE

The Contractor shall leave the entire installation in complete working order free from any defective material, workmanship or finish. He shall guarantee to repair or replace, without charge, defects due to faulty workmanship or material for a period of one year from the date of filing of the Notice of Completion.

1.09 OPERATION MANUALS AND OWNER INSTRUCTIONS

A. Provide complete operation and maintenance manuals covering all Plumbing systems and equipment that have been installed. Three (3) copies of the manual shall be bound in hardcover binders.

B. Provide instructions to owner as to operation of all equipment. Instruction period to commence for minimum of (2) hours and shall be scheduled at owner's convenience.

1.10 CUTTING AND PATCHING

A. The contractor shall do all cutting, drilling and patching which may be required for the installation of the work under this Section of the Specifications.

B. Patching shall be of the same workmanship, material, and finish and shall match accurately all surrounding construction in a manner satisfactory to the Owner. No cutting of the structure shall be permitted without written approval of the Owner.

2.00 – MATERIALS

2.01 PIPING

Building drain and vent piping materials shall comply with the local authority having jurisdiction.

All sanitary system materials shall be listed by an approved listing agency.

A. Interior Underground Sanitary and Waste Piping: SCHEDULE 40,DWV,PVC

B. Interior Suspended Sanitary and Vent Piping: SCHEDULE 40,DWV,PVC

C. Interior Domestic Water Piping:

3" and Smaller – Type L hard tempered copper with solder end fittings. 95–5 tin and antimony solder jointing (lead-free). Use Type K for underground piping. Hot water piping shall be insulated with 1/2" thick Armstrong Armaflex or approved equal, and sections butted firmly together, PEX and S–40 cpxc acceptable.

D. Outdoor Above Ground Domestic Water Piping:

3" and Smaller – Type L hard tempered copper with solder and fittings. 95–5 tin and antimony solder jointing (lead-free). Piping shall be insulated with 1–1/2" thick Armstrong Armaflex or approved equal, and sections butted firmly together.

E. Condensate Drain Piping:

Copper water tube ASTM B88, Type "M", solder with 95–5 solder, lead-free type. Condensate drain piping shall be insulated with 1/2" thick Armstrong Armaflex, and sections butted firmly together.

F. Gas Piping: Galvanized steel, Sch 40 and fittings for outdoor. Black steel, Sch 40 and fittings for indoor above ground. Use approved Polyethylene yellow piping (PE) for all outdoor underground piping with 14 gage tracer wire.

2.02 PIPE FLASHINGS

4 lbs. lead with counterflashing ring by Genco, Stoneman Engineering or approved equal.

2.03 VALVES

A. Gate Valves: Red & White 204 or equal, 3" and smaller.

B. Check Valves: Red & White 238 or equal, 3" and smaller.

2.04 PLUMBING FIXTURES AND TRIM

Plumbing fixtures to be furnished and installed under this contract. See plumbing fixture schedule.

2.05 PIPE HANGERS AND SUPPORTS

A. Superstrut, Grinnell, or approved equal.

B. Installation per manufacturer's recommendations.

C. Pipe hangers shall have non-metallic felt or elastomeric liner or wrap applied to the pipe for electrolytic protection where hangers and supports are used to support copper tubing or pipe. The liner or wrap shall be designed to allow expansion or contraction of the piping.

2.06 PIPE SLEEVES

Shall be provided to protect all piping through concrete and masonry walls. Annular spaces between sleeves and pipes shall be filled or caulked in an approved manner. Annular spaces between sleeves and pipes in fire-resistance-rated assemblies shall be filled or tightly caulked in accordance with the building code.

2.07 TEMPERATURE AND PRESSURE RELIEF VALVE

Temperature & pressure relief valve shall discharge full line size to an approved waste receptor through an air gap as indicated on plans or 6" maximum.

2.08 SCALD GUARD PROTECTION

Provide and install lavatory scald protection for waste piping and hot water piping.

2.09 DOMESTIC PIPING INSULATION

A. Provide and install "insulation protection shield" for piping with foam or fiberglass insulation.

B. Insulate all hot water piping and indoor above ground storm drain with 1" thick fiberglass insulation.

C. Insulate all horizontal waste piping (Hung) with 1–1/2" thick fiberglass insulation.

D. Insulate all domestic water piping outside the building or on roof.

2.10 CLEANOUT

A. Accessible cleanout shall be provided at the base of each waste stack and rainwater leaders. Additional cleanout shall be provided in a drainage line for each horizontal change of direction exceeding 135 degrees. Cleanout must be provided on a horizontal drain line exceeding 5ft or more in length serving sinks or urinals. An approved type of 2-way cleanout fitting shall be installed outside of a building at the lower end of a building drain and extended to grade.

2.11 WATER HEATER

A. Provide anchors and straps to resist horizontal displacement due to earthquake motion.

B. Strapping shall be located upper 1/3 and lower 1/3 of its vertical dimensions. Straps shall be a minimum 2"x16 gage properly secured to wall studs. Elevate water heater at least 4" minimum above the finished floor with an approved base. Provide a 22 gage water tight drain pan, corrosion resistant, at the bottom of the water heater. Drain pan shall have a 3/4" drain line to be discharged into an approved receptor by means of an air gap. A properly sized thermal expansion tank shall be provided at the water heater. Hot water supply for the lavatories and hand sinks shall not exceed 110°F temperature.

2.12 TRENCHING

A. All trenches deeper than the footing of any building or structure and paralleling the same shall be at least 45 degrees therefrom.

3.00 – INSTALLATION AND EXECUTION

3.01 GENERAL

A. Support C.I. soil piping at 5 feet on center maximum and each joint and/or fitting. Support 1/2" and 3/4" piping at 6 feet on center maximum. Support 1" to 1–1/2" piping at 8 feet on centers. Support 2" and larger piping at 10 feet on center maximum. Show piping 4" and larger may be supported at 12 feet on center maximum except for viticulus fitted piping which shall be supported at 10 feet on center maximum.

3.02 SPECIAL REQUIREMENTS, RESPONSIBILITIES AND TESTING

A. Install piping generally level, free of traps and unnecessary bends, to conform with building requirements. Pipe to be free of defects, and installed without damage or by isolating dissimilar metals.

B. Test and record available domestic water pressure in static and dynamic conditions For dynamic testing record pressure and flow rate in gallons per minute. Transmit this information to the engineer before proceeding with the work.

C. Provide all tests specified hereinafter and as otherwise required. Provide all test equipment, including test pumps, gauges, instruments and other equipment required. Pressure gauges used shall be graduated in increments not greater than 5 pounds per square inch. No plumbing or drainage system or part thereof shall be covered, concealed, or put into use unless it has been specified. Conduct all tests in the presence of the Owner's representative, and obtain the necessary jurisdictional authority inspections.

D. Apply a water test to the waste, and vent systems whether in its entirety or in sections; if applied to the entire system, tightly close all openings in the piping except the highest opening, and fill the system with water to the point of overflow. If the system is tested in sections, tightly plug each opening except for the highest opening of the section under test, and fill each section with water, but test with no less than a 10' head of water. In testing successive sections, test at least the upper 10' of the next preceding section so that no joint or pipe in the building (except the uppermost 10' of the system) shall have been submitted to a test of less than a 10' head of water. Keep water in the system or in the portion under test for at least 24 hours before inspection starts, with the system tight at all points.

E. Domestic water system shall be tested and proved tight under a pressure of not less than 120 PSI. Piping must stand the test for a period of 24 hours without leaking.

F. Chlorination of the domestic cold and hot water piping systems in accordance with standard testing procedures and local health department requirements. Testing by a firm such as Bennett-Marine or equal. Submit certificate of satisfactory test results.

G. Upon completion of testing, certify to the Architect, in writing that the specified tests have been performed and that the installation complies with the specified requirements.

H. Gas piping system shall be tested with 10 PSIG air for eight hours.

3.03 PIPING INSTALLATION

A. Make changes in size of pipe with reducing fittings; bushings will not be permitted except for bell shaped copper bushings.

B. Install electric insulating unions in water piping between copper piping and ferrous piping or equipment – Epoxy or equal.

C. Install exposed polished chrome connections from fixtures or equipment with special care. Show no tool marks or threads at fittings.

D. Cap openings in piping during construction.

E. Provide 85X red brass pipe IPS, in connection to faucets, flush valves, hose bibbs or similar items requiring rigid piping. Extend brass pipe from fixture to point where piping can be securely fastened to building construction. All exposed piping and stop valves in connection to fixtures shall be chrome plated brass.

F. Install unions adjacent to valves and where necessary to facilitate disassembly of piping.

G. Escutcheons: Fit exposed pipes passing through floors, walls or ceilings with escutcheons. Manufacture special sizes of escutcheons from steel and prime coat same. Cut in round, rectangular or square space to provide a clean appearance acceptable to the Architect.

H. Support piping independently of equipment to which it is connected.

I. Make copper solder joints with 95/5 solder, or alloys; clean surfaces to be joined free of oil, grease, rust or oxides and apply Flux to each joint before heating assembly.

J. Rough-in and make final connections to all other equipment furnished under other Divisions, requiring plumbing connections.

3.04 SUBSTITUTIONS

A. One or more makes of materials and methods may have been specified to establish the standard of quality, workmanship, finish and design required, but other materials or methods equal or better in quality, workmanship, finish, design, and guaranteed performance, may be submitted for review and approval as substitution. All substitutions are subject to review and approval by Architect, Engineer, and Owner.

B. Substitutions shall be requested in a written form and shall be accompanied with a signed statement that proposed substitution is equal, or better than specified. Additional documentation to substantiated proposed substitution may be required by Owner, Architect, and Engineer. Contractor shall submit as directed.

C. Contractor shall accompany request for substitution letter with a completed CSI Substitution Form include the comparison for following:

1. Performance Data

2. Dimensions

3. Costs and Delivery Schedule

4. Listed and Approved

D. A written signed statement from the General Contractor shall accompany substitution request form assuring that:

1. Dimensions has been verified with project conditions and has coordinated with other trades. Substitution does not affect dimensions shown on drawings.

2. He shall pay and burden the costs for changes to the project including redesign, reengineering and review of substitution. Only one engineering review time is allowed for each product substitution. Contractor shall be responsible for additional review time and shall pay Architect and Engineer's time at their professional rate schedule.

3. He has confirmed that the proposed substitution will have no adverse effect on other trades, the construction schedule, or specified warranty requirements.

4. He has confirmed that maintenance and service parts will be locally available for the proposed substitution.

E. Cost savings resulting from substitution shall be returned to the contract or the Owner if the substitution is permitted.

F. No work involving materials submitted for substitution shall proceed until written acceptance is received from the Owner. The Owner is the final judge of acceptability of preferred substitutions.

3.05 COORDINATION

A. Coordinate work with other trades to avoid conflict and to provide correct rough-in and connection for equipment furnished under other trades that require plumbing connections. Inform Contractors of other trades of the required access to and clearances around equipment to maintain service ability and code compliance.

B. Verify equipment dimensions and requirements with provisions specified under this Section. Check actual job conditions before fabricating work. Report necessary changes in time to prevent needless work. Changes or additions, subject to additional compensation, which are made without written authorization and on agreed price, shall be at the Contractor's risk and expense.

3.05 MARKING AND IDENTIFICATION

A. All domestic cold water, hot water, sanitary sewer, sanitary vent, condensate drain, and natural gas piping shall have visible permanent labels at every 20 feet, the direction of normal flow shall be clearly shown, at least once per room, and shall be visible from the floor level. The minimum size of the letters shown on table 6–1 below. Valves shall be labeled with stenciled or stamped metal tags bearing the name of the system they carry.

TABLE 6–1

PIPE SIZE (INCHES)	SIZE OF LETTER (INCHES)
1/2 – 1 1/4	1/2
1 1/2 – 2	3/4
2 1/4 – 6	1 1/4
8 – 10	2 1/2

GENERAL NOTES

- PLUMBING CONTRACT DRAWINGS ARE IN PART DIAGRAMMATIC, COVERING THE SCOPE OF WORK AND GENERAL ARRANGEMENT OF THE EQUIPMENT, PIPING, ETC., AND THE APPROXIMATE SIZE OF EQUIPMENT AND MATERIALS. THE CONTRACTOR SHALL FOLLOW THESE DRAWINGS IN LAYING OUT THE PLUMBING WORK. PLUMBING CONTRACTOR SHALL CONSULT GENERAL, SPRINKLER, HEATING/VENTILATING/AIR CONDITIONING CONTRACT AND ELECTRICAL DRAWINGS TO FAMILIARIZE HIMSELF WITH THAT WORK AND TO VERIFY THE SPACES IN WHICH THE PLUMBING WORK WILL BE INSTALLED.
- BECAUSE OF THE NATURE AND SCALE OF THE DRAWINGS, CERTAIN BASIC PLUMBING ITEMS SUCH AS UNIONS, FITTINGS, ELBOWS, ETC., MAY NOT BE SHOWN. WHERE SUCH ITEMS ARE REQUIRED BY OTHER SECTIONS OF THE SPECIFICATIONS, OR WHERE THEY ARE REQUIRED BY THE NATURE OF THE WORK OR BY CODES AND REGULATIONS, THEY SHALL BE FURNISHED AND INSTALLED AT NO ADDITIONAL COST TO THE OWNER. THE DRAWINGS INDICATE GENERAL LOCATIONS OF PIPING, EQUIPMENT, DUCTWORK AND SIMILAR. THE EXACT LOCATION TO BE DETERMINED BY THE CONTRACTOR TO BEST FIT THE LAYOUT OF THE JOB.
- ALL EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT, WATER, AND CHEMICAL OR MECHANICAL INJURY OR THEFT. PLUMBING FIXTURES SHALL BE COVERED WITH HEAVY PAPER COVERINGS AFTER INSTALLATION AND SHALL BE THOROUGHLY CLEANED AFTER COMPLETION OF THE PROJECT.
- ALL MATERIALS SUCH AS VALVES, FITTINGS, PIPING, EQUIPMENT, PUMPS, COILS, ETC., SHALL BE PROPERLY PROTECTED, AND ALL PIPING OPENINGS SHALL BE TEMPORARILY COVERED BY THE CONTRACTOR FOR THE WORK UNDER HIS CHARGE, ON A DAILY BASIS, AT THE END OF EACH WORKING DAY, SO AS TO PREVENT OBSTRUCTION AND DAMAGE. THE ABOVE REQUIREMENTS ARE MANDATORY.
- THE CONTRACTOR SHALL SEE THAT ALL MATERIALS, INSTALLATION AND WORKMANSHIP IS PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF ALL APPLICABLE CODES, LAWS, OR ORDINANCES OF THE STATE OF [PROJECT STATE], AND COUNTY AND LOCAL CODES, CITY OF [PROJECT CITY] LAWS OR ORDINANCES, INCLUDING [PROJECT STATE] OR LOCAL BOARD OF HEALTH, FEDERAL AND STATE ENVIRONMENTAL PROTECTION REGULATIONS, STATE ENERGY CODES AND UTILITY REGULATORY AGENCIES.
- ALL WORK SHALL BE FURTHER PERFORMED IN ACCORDANCE WITH THE NATIONAL BOARD OF FIRE UNDERWRITERS, THE PLUMBING AND BUILDING CODES, NATIONAL ELECTRICAL CODE, THE OCCUPATIONAL SAFETY AND HEALTH ACT, THE AMERICAN GAS ASSOCIATION, AND ALL SUCH OTHER SPECIFIC CODES AS MAY BE REFERRED TO IN THE INDIVIDUAL SECTIONS OF THE SPECIFICATIONS.
- PIPE SIZES SHOWN ON THE DRAWINGS ARE THE MINIMUM SIZES ALLOWED REGARDLESS OF THE CODE MINIMUM, EXCEPT WHEN THE CODE MINIMUM SIZE IS LARGER THAN THAT SHOWN.
- THE CONTRACTOR SHALL MAINTAIN A CURRENT SET OF CONTRACT PRINTS ON THE CONSTRUCTION SITE AT ALL TIMES, ON WHICH HE SHALL ACCURATELY RECORD THE ACTUAL INSTALLATION OF ALL PLUMBING WORK, AS WORK PROGRESSES. MARK CHANGES MADE WHETHER RESULTING FROM JOB CONDITIONS, ADDENDA, FORMAL CHANGE ORDERS OR OTHER INSTRUCTIONS ISSUED BY THE ENGINEER.
- THE PLUMBING CONTRACTOR SHALL INDICATE PROGRESS BY COLORING IN VARIOUS PIPES, FIXTURES, AND ASSOCIATED APPURTENANCES EXACTLY AS THEY ARE ERCTED AND INSTALLED.
- MARK ALL PIPE SIZES AND LOCATIONS DURING CONSTRUCTION. ALSO, MARK LOCATIONS OF ALL VALVES AND VARIOUS EQUIPMENT, APPARATUS, AND ASSOCIATED APPURTENANCES AS ERCTED WEEKLY DURING CONSTRUCTION.
- AT THE COMPLETION OF THE JOB THESE PRINTS, INCORPORATING CHANGES, ADDENDA AND ADDED DATA NOTED ON MARKED-UP PRINTS, INCLUDING DIMENSIONED LOCATIONS OF UNDERGROUND PIPING, SHALL BE SUBMITTED TO THE ENGINEER FOR FINAL REVIEW AND COMMENT. THE PRINTS WILL BE RETURNED WITH APPROPRIATE COMMENTS AND RECOMMENDATIONS. THESE CORRECTED PRINTS TOGETHER WITH CORRELATED PRINTS INDICATING ALL THE REVISIONS, ADDITIONS AND DELETIONS OF WORK, SHALL FORM THE BASIS FOR PREPARING A SET OF RECORD DRAWINGS.
- WHERE PIPING, AND OTHER PLUMBING APPURTENANCES PASS THROUGH FIRE PARTITIONS, FIRE WALLS, OR FLOORS, INSTALL A FIRE–STOP THAT PROVIDES AN EFFECTIVE BARRIER AGAINST THE SPREAD OF FIRE, SMOKE AND GASES. FIRE–STOP MATERIAL SHALL BE UL APPROVED, PACKED TIGHT AND COMPLETELY FILL CLEARANCES BETWEEN RACEWAYS AND OPENINGS. FLOOR, EXTERIOR WALL, AND ROOF SEALS SHALL ALSO BE MADE WATER-TIGHT AS APPROVED BY THE ADMINISTRATIVE AUTHORITY.
- ARRANGE AND INSTALL PIPING APPROXIMATELY AS INDICATED, STRAIGHT; PLUMB AND AS DIRECT AS POSSIBLE. FORM RIGHT ANGLES OR PARALLEL LINES WITH BUILDING WALLS. KEEP PIPES CLOSE TO WALLS, PARTITIONS AND CEILINGS, OFFSETTING ONLY WHERE NECESSARY TO FOLLOW WALLS AND AVOID INTERFERENCE WITH OTHER MECHANICAL ITEMS. LOCATE GROUPS OF PIPES PARALLEL TO EACH OTHER; SPACE THEM AT A DISTANCE TO PERMIT ACCESS FOR SERVICING VALVES.
- PIPING SHALL BE PITCHED TO POINTS OF DRAINAGE WITH CONSTANT UNIFORM SLOPE.
- INSTALL HORIZONTAL PIPING AS HIGH AS POSSIBLE WITHOUT SAGS OR HUMPS.
- GRADE WATER PIPING AS SPECIFIED. GRADE DRAINAGE AT UNIFORM SLOPE OF NOT LESS THAN 1/4" PER FOOT TOWARD THE POINT OF DISPOSAL (WHEN APPROVED BY ADMINISTRATIVE AUTHORITY, PIPE SIZE 4" AND LARGER MAY HAVE A SLOPE OF NOT LESS THAN 1/8" PER FOOT.
- WHERE CHANGES IN PIPE SIZES OCCUR, USE ONLY REDUCING FITTINGS.
- FOR DRAINAGE PIPING CHANGES IN DIRECTION, USE LONG SWEEP WHERE POSSIBLE, OTHERWISE, SHORT SWEEP 1/4 BENDS, OR COMBINATION WYE AND 1/8 BENDS, USE SANITARY TEE BRANCHES ONLY FOR HORIZONTAL BRANCHES DISCHARGING TO STACKS.
- INSTALL SECTIONALIZING VALVES AND ON EACH BRANCH LINE TO MULTI-FIXTURE GROUPS. LOCATE VALVES IN A READILY ACCESSIBLE LOCATION, DO NOT CONCEAL, DO NOT LOCATE VALVE SYSTEMS BELOW HORIZONTAL UNLESS INDICATED ON PLANS.
- WATER SUPPLY TO ALL FIXTURES AND CONTAINERS SHALL BE SO INSTALLED AS TO PREVENT POSSIBLE BACK SIPHONAGE OF POLLUTED WATER. ALL SUPPLIES SHALL BE EITHER ABOVE THE FLOOD RIM OF THE FIXTURE OR SEPARATED FROM THE DRAINAGE END BY MEANS OF AN APPROVED VACUUM BREAKERS.
- PROVIDE PIPING AND FIXTURE TRAPS, CONNECT TO FIXTURES AND OTHER EQUIPMENT INDICATED OR SPECIFIED AS REQUIRING SOIL, WASTE, DRAIN AND VENT FACILITIES.
- LAY ALL PIPING TRUE TO LINE AND GRADE, FIT ENDS TOGETHER, MATCH SO THAT SEWER OR DRAIN WILL HAVE SMOOTH AND UNIFORM INSERT. FOLLOW LOCATIONS AND ELEVATIONS SHOWN. AS THE PIPES LAYING, ADDRESS, CLEAR PIPE INTERIOR OF GROUT, DIRT AND OTHER FOREIGN MATERIALS. DURING WORK STOPPAGE PERIODS, PROVIDE EFFECTIVE PLUGS OR COVERS FOR OPEN ENDS OF PIPE AND DRAINS.
- PROVIDE CLEANOUTS WHERE INDICATED AND AT INTERVALS OF 100' OR AS REQUIRED BY LOCAL PLUMBING CODE AND WHERE REQUIRED AT CHANGES OF DIRECTIONS OF SOIL AND WASTE STACKS. INSTALL CLEANOUTS SO AS TO BE ACCESSIBLE FOR EASY REMOVAL AND TO PROVIDE CLEARANCE FOR ROOING. CLEANOUTS SHALL BE THE SAME SIZE AS PIPE SERVED EXCEPT THAT NO CLEANOUT NEED BE LARGER THAN FOUR INCHES.
- EXTEND VENT PIPES 12 INCHES ABOVE ROOF AND 10FT MINIMUM AWAY FROM ANY FRESH AIR INTAKES.
- SANITARY VENT PIPING SHALL BE GRADED SO THAT THE AIRFLOW TO THE OUTSIDE WILL BE CONTINUOUSLY UPWARD AND SO THAT NO LOW POINTS WILL BE DRAINED.
- MAKE TIGHT CONNECTION BETWEEN WATER CLOSET FLANGES AND EARTHENWARE FIXTURE BY MEANS OF AN APPROVED MOLDED WAX RING OR SETTING COMPOUND AND BOLTING.
- VENTS: PROVIDE FLASHING FOR STACKS PASSING THROUGH ROOF. MAKE WATER–TIGHT AT ROOF WITH 4 LB. SHEET LEAD; EXTEND INTO ROOFING FELTS AT LEAST 24" FROM PIPES. EXTEND LEAD COLLAR UP AROUND OUTSIDE AND TURN DOWN INSIDE VENTS AT THE TOP. LOCATE VENT THROUGH ROOF 10FT MINIMUM AWAY FROM ANY FRESH AIR INTAKE.
- ALL PLUMBING FIXTURES AND PIPING IS TO BE LISTED BY AN APPROVED LISTING AND TESTING AGENCY AND PROPERLY LABELED.
- COORDINATE ALL LOCATIONS, SIZES, AND ELEVATIONS OF ALL SLEEVES THROUGH WALLS, BEAMS, SLABS AND FOOTING WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS. ALL PIPES SLEEVING THROUGH FOOTINGS SHALL HAVE A SLEEVE DIAMETER OF TWO PIPE SIZES OVER THE PIPE PASSING THROUGH THE FOOTING. NO PIPE TO BE PLACED THROUGH FOOTING UNLESS APPROVED BY THE STRUCTURAL ENGINEER.
- ALL PIPES SHALL BE PROTECTED AT THE POINT THEY CROSS BUILDING EXPANSION JOINT, EITHER WITH AN EXPANSION FITTINGS OR IN ANOTHER MANNER ACCEPTABLE TO THE ENGINEER.
- PLUMBING CONTRACTOR SHALL CONNECT ALL GAS PIPING TO ALL GAS RELATED UNITS PER PLAN WITH LISTED AND APPROVED GAS SHUT–OFF VALVE, SEDIMENT TRAP, AND UNION.
- FAUCET CONTROLS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE CONTROLS SHALL BE NO GREATER THAN 5 POUNDS.
- PENETRATION OF FLOOR/CEILING ASSEMBLIES AND ASSEMBLIES REQUIRED TO HAVE A FIRE–RESISTANCE RATING SHALL BE PROTECTED IN ACCORDANCE WITH THE BUILDING CODE.
- WHERE WATER PRESSURE WITHIN A BUILDING EXCEEDS 80 PSI, AN APPROVED WATER–PRESSURE REDUCING VALVE CONFORMING TO ASSE 1003 WITH STRAINER SHALL BE INSTALLED TO REDUCE THE PRESSURE IN THE BUILDING WATER DISTRIBUTION PIPING TO 80 PSI STATIC OR LESS.
- DISINFECTION OF POTABLE WATER SYSTEM SHALL COMPLY WITH THE LOCAL AND THE [XXX] PLUMBING CODE.
- PROPER ACCESS MUST BE PROVIDED FOR THE TESTING AND MAINTENANCE OF THE BACKFLOW PREVENTER. IF THE IF THE BACKFLOW PREVENTER IS INSTALLED MORE THAN 5'-0" ABOVE THE FLOOR, SPECIAL PROVISIONS MUST BE MADE.
- HUNG WASTE PIPING SHALL BE STRUCTURALLY SUPPORTED AS TIGHT AS POSSIBLE BELOW THE STRUCTURAL BEAMS TO GAIN MORE HEAD SPACE AS IT PITCH TOWARDS THE LOWEST POINT TO KEEP WASTE PIPING WITHIN THE CEILING SPACE.
- PLUMBING CONTRACTOR TO PROVIDE LABOR COST AND MATERIAL FOR PIPE EXTENSION TO THE CIVIL POINT–OF–CONNECTION WITHIN 20 FEET.
- PLASTIC PIPES ARE NOT PERMITTED TO BE INSTALLED WITHIN THE AIR PLENUM SPACE.
- PROVIDE AND INSTALL A SINGLE GAS ISOLATION VALVE FOR THE MULTIPLE GAS METER BANKS FOR THE ENTIRE BLDG.
- SANITARY SEWER PIPING SHALL BE SLOPED AT A MINIMUM OF 2%.