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**PLUMBING PLAN, LEGEND, ABBREV.,
 NOTES, & STACK DIAGRAM**

PROJECT NO.	18050002
DISCIPLINE	PLUMBING
SHEET NAME	P-3
SHEET	OF
51	55

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SECTION 21 05 00 - COMMON WORK RESULTS FOR FIRE SUPPRESSION

- PART 1 GENERAL**
- 1.1 SYSTEM DESCRIPTION**
- A. SYSTEM TO PROVIDE COVERAGE FOR ENTIRE BUILDING WITH A WET AND DRY PIPE SPRINKLER SYSTEM.
 - B. DESIGN REQUIREMENTS - SPRINKLER SYSTEM: LIGHT HAZARD OCCUPANCY REQUIREMENTS
 - C. DETERMINE VOLUME AND PRESSURE OF INCOMING WATER SUPPLY BY PERFORMING A FLOW TEST PRIOR TO BIDDING.
- 1.2 SUBMITTALS**
- A. SUBMIT SHOP DRAWINGS, PRODUCT DATA, AND HYDRAULIC CALCULATIONS TO AUTHORITY HAVING JURISDICTION FOR APPROVAL. SUBMIT PROOF OF APPROVAL TO ARCHITECT.
 - B. SHOP DRAWINGS: REQUIRED. INDICATE HYDRAULIC CALCULATIONS, DETAILED PIPE LAYOUT, HANGERS AND SUPPORTS, SPRINKLERS, COMPONENTS AND ACCESSORIES. INDICATE SYSTEM CONTROLS.
 - C. PRODUCT DATA: REQUIRED. PROVIDE DATA ON SPRINKLERS, VALVES, AND SPECIALTIES, INCLUDING MANUFACTURER'S CATALOG INFORMATION. SUBMIT PERFORMANCE RATINGS, ROUGH-IN DETAILS, WEIGHTS, SUPPORT REQUIREMENTS, AND PIPING CONNECTIONS.
 - D. PROJECT RECORD DOCUMENTS: REQUIRED.
- 1.3 QUALITY ASSURANCE**
- A. REGULATORY REQUIREMENTS
 1. SPRINKLER SYSTEMS: CONFORM TO NFPA 13.
 2. EQUIPMENT AND COMPONENTS: UL LABELED.

- PART 2 PRODUCTS**
- 2.1 PIPE AND TUBE**
- A. STEEL: SCHEDULE 40 BLACK WITH STEEL, CAST IRON, OR MALLEABLE IRON FITTINGS, OR MECHANICAL GROOVED COUPLINGS
 - B. COPPER: TYPE M OR L HARD DRAWN, WITH SOLDER OR BRAZED JOINTS.
 - C. CAST IRON: AWWA C151.
 - D. FLEXIBLE SPRINKLER DROPS THAT ARE LISTED ARE ACCEPTABLE FOR PIPING FROM BRANCH TO SPRINKLER HEAD.
- 2.2 SPRINKLERS**
- A. SUSPENDED CEILING TYPE: CONCEALED PENDANT TYPE WITH ENAMELLED FINISH, AND MATCHING ESCUTCHEON.
 - B. EXPOSED AREA TYPE: STANDARD UPRIGHT TYPE WITH CHROME PLATED FINISH.
 - C. SIDEWALL TYPE: SEMI-RECESSED ENAMELLED FINISH WITH MATCHING ESCUTCHEON.

- PART 3 EXECUTION**
- 3.1 INSTALLATION**
- A. PROVIDE GATE VALVES FOR SHUT-OFF OR ISOLATING SERVICE. WHERE APPROVED, USE BUTTERFLY VALVES INSTEAD OF GATE VALVES.
 - B. PROVIDE DRAIN VALVES AT MAIN SHUT-OFF VALVES, LOW POINTS OF PIPING AND APPARATUS.
 - C. CONNECT SYSTEM TO WATER SOURCE AHEAD OF DOMESTIC WATER CONNECTION WITH DOUBLE DETECTOR CHECK VALVE ASSEMBLY.
 - D. HYDROSTATICALLY TEST ENTIRE SYSTEM. TEST WITNESSED BY FIRE MARSHAL AND OR AUTHORITY HAVING JURISDICTION.

SECTION 22 05 00 - COMMON WORK RESULTS FOR PLUMBING

- PART 1 GENERAL**
- 1.1 SUBMITTALS**
- A. PRODUCT DATA: SUBMIT VALVES AND GAGES.
- 1.2 LEAD CONTENT OF DRINKING WATER PIPE AND FITTINGS:**
- A. PIPE, PIPE FITTINGS, JOINTS, VALVES FAUCETS AND FIXTURE FITTINGS UTILIZED TO SUPPLY WATER FOR DRINKING OR COOKING PURPOSES WILL COMPLY WITH THE REQUIREMENTS OF NSF 372 AND SHALL HAVE A WEIGHTED LEAD CONTENT OF 0.25 PERCENT LEAD OR LESS.
- PART 2 PRODUCTS**
- 2.1 PIPING**
- A. SANITARY SEWER AND VENT BURIED: SERVICE WEIGHT CAST IRON, TYPE DWV COPPER TUBE, ABS TYPE DWV, SOLID WALL PVC TYPE DWV.
 - B. SANITARY SEWER AND VENT ABOVE GRADE: SERVICE WEIGHT CAST IRON, TYPE DWV COPPER TUBE, ABS TYPE DWV, PVC TYPE DWV. DO NOT USE PVC OR ABS PIPING IN RETURN AIR PLENUMS.
 - C. DOMESTIC WATER BURIED WITHIN 8 FEET OF BUILDING: DUCTILE IRON PIPE: AWWA C151, FITTINGS: AWWA C110, DUCTILE OR GRAY IRON, STANDARD THICKNESS. JOINTS: AWWA C111, RUBBER GASKET WITH 3/4 INCH DIAMETER RODS.
 - D. DOMESTIC WATER ABOVE GRADE: TYPE L COPPER TUBE, HARD DRAWN, SOLDERED JOINTS WITH 95-5 SOLDER, OR COPPER PRESS FITTINGS CONFORMING TO ASME B16.18 CAST COPPER ALLOY OR ASME B16.22, WROUGHT COPPER AND BRONZE WITH EPDM O-RING SEALS. COMPRESSION TYPE JOINTS MADE WITH MANUFACTURER'S TOOL.
- 2.2 VALVES**
- A. BALL VALVES
 1. DOMESTIC WATER: 3 INCHES AND SMALLER, 180 SWP, 600 WOG, TWO PIECE BODY, THREADED ENDS, ALL BRONZE CONSTRUCTION, TEFLON SEATS, CHROME PLATED SOLID BRONZE BALL, CONVENTIONAL PORT, BLOWOUT PROOF STEM, LEVER HANDLE.
 - B. SPRING LOADED CHECK VALVES: IRON BODY, BRONZE TRIM, STAINLESS STEEL SPRING, RENEWABLE COMPOSITION DISC.
- 2.3 GAGES**
- A. PRESSURE GAGES: STEEL OR ALUMINUM CASE, 4-1/2 INCH DIAMETER, ONE PERCENT (1%) MID-SCALE ACCURACY.
 - B. STEM TYPE THERMOMETERS: RED APPEARING, SPIRIT FILLED, ADJUSTABLE ANGLE, LENS FRONT TUBE, CAST ALUMINUM CASE, 9 INCH SCALE.
- 2.4 PIPE HANGERS**
- A. ALL SERVICES: CLEVIS TYPE CONFORMING TO MSS TYPE 1.
 - B. UPPER ATTACHMENTS: COMPATIBLE WITH TYPE OF STRUCTURE BEING USED.
- 2.5 PLUMBING IDENTIFICATION**
- A. VALVE TAGS: BRASS WITH STAMPED LETTERS AND BRASS "S" HOOKS. PROVIDE TYPE WRITTEN SCHEDULE OF VALVE TAGS AND LOCATIONS TO OWNER AT COMPLETION OF PROJECT.
 - B. PIPING IDENTIFICATION: SNAP ON PLASTIC MARKERS WITH SYSTEM NAME AND FLOW DIRECTION.

- PART 3 EXECUTION**
- 3.1 INSTALLATION**
- A. PROVIDE DIELECTRIC CONNECTIONS WHEREVER JOINTING DISSIMILAR METALS.
 - B. INSTALL BALL VALVES FOR SHUT OFF APPLICATIONS (2 INCH AND SMALLER) IN DOMESTIC WATER SYSTEMS.
 - C. INSTALL BALL VALVES FOR THROTTLING OR BYPASS APPLICATIONS IN DOMESTIC WATER SYSTEMS.

- D. INSTALL PRESSURE GAGES WITH GAGE COCK.
- E. INSTALL THERMOMETERS IN PIPING SYSTEMS IN SOCKETS.
- F. PROVIDE 3/4 INCH BALL DRAIN VALVES AT MAIN SHUT-OFF VALVES, LOW POINTS OF PIPING, BASES OF VERTICAL RISERS, AND AT EQUIPMENT.
- G. CLEAN AND TEST DOMESTIC WATER PIPING SYSTEM IN ACCORDANCE WITH OHIO PLUMBING CODE.
- H. TEST SANITARY AND VENT PIPING IN ACCORDANCE WITH OHIO PLUMBING CODE.

SECTION 22 07 00 - PLUMBING INSULATION

- PART 1 GENERAL**
- 1.1 SUBMITTALS**
- A. PRODUCT DATA: NOT REQUIRED.
 - B. SAMPLES: NOT REQUIRED.
 - C. PRODUCTS
- 1.2 PIPE INSULATION**
- A. GLASS FIBER: RIGID MOLDED, NONCOMBUSTIBLE WITH VAPOR BARRIER JACKET.
 - B. CELLULAR FOAM: FLEXIBLE, CELLULAR ELASTOMERIC, MOLDED OR SHEET.
 - C. PIPE INSULATION RATED FOR 0-1000 DEGREES F, WITH A "K" FACTOR OF 0.24 AT A MEAN TEMPERATURE OF 100 DEGREES F. REFER TO SCHEDULE FOR INSULATION REQUIRED THICKNESS.
 - D. INSULATION SHALL NOT CONTAIN ANY PBEDE (POLYBROMINATED DIPHENYL ETHERS) FLAME RETARDANTS.
 - E. JACKETS
 1. PVC PLASTIC: ONE PIECE MOLDED TYPE FITTING COVERS AND SHEET MATERIAL, OFF-WHITE COLOR.

PART 2 EXECUTION

2.1 INSTALLATION

- A. PIPING INSULATION
 1. PROVIDE COLD PIPES WITH VAPOR BARRIER JACKETS. INSULATE COMPLETE SYSTEM.

2.2 SCHEDULES

	PIPE SIZE INCH	INSULATION THICKNESS INCH
A. PIPING INSULATION		
1. DOMESTIC HOT WATER SUPPLY	UP TO 1.0	1.0
2. DOMESTIC COLD WATER	ALL SIZES	0.5

SECTION 22 30 00 - PLUMBING EQUIPMENT

- PART 1 GENERAL**
- 1.1 SUBMITTALS**
- A. PRODUCT DATA: REQUIRED. SUBMIT EACH TYPE OF PLUMBING SPECIALTY.
- PART 2 PRODUCTS**
- 2.1 PLUMBING DRAINAGE SPECIALTIES**
- A. REFER TO PLUMBING DRAWINGS FOR DRAINAGE SPECIALTIES.
- 2.2 PLUMBING SUPPLY SPECIALTIES**
- A. REFER TO PLUMBING DRAWINGS FOR SUPPLY SPECITIES.
- 2.3 PLUMBING EQUIPMENT**
- A. REFER TO PLUMBING DRAWINGS FOR PLUMBING EQUIPMENT.
 - B. ELECTRIC WATER HEATER:
 1. RESIDENTIAL STORAGE TANK TYPE: LOW WATT DENSITY ELEMENT, FACTORY ASSEMBLED AND WIRED, STEEL TANK, GLASS LINED, BAKED ENAMEL FINISH WITH AUTOMATIC IMMERSION WATER THERMOSTAT, FLANGED OR SCREW IN IMMERSION TYPE ELEMENTS.
 2. TANK INSULATED TO CONFORM TO ASHRAE STANDARDS.
 3. FURNISH ASME TEMPERATURE AND PRESSURE RELIEF VALVE.
 4. TANK DRAIN.
 5. A.O. SMITH OR APPROVED EQUAL.

- PART 3 EXECUTION**
- 3.1 INSTALLATION**
- A. INSTALL UNIONS DOWNSTREAM OF VALVES AND AT EQUIPMENT OR APPARATUS CONNECTIONS.

SECTION 22 40 00 - PLUMBING FIXTURES

- PART 1 GENERAL**
- 1.1 SUBMITTALS**
- A. PRODUCT DATA: REQUIRED. SUBMIT EACH TYPE OF PLUMBING FIXTURE AND TRIM.
- PART 2 PRODUCTS**
- 2.1 PLUMBING FIXTURES**
- A. REFER TO PLUMBING DRAWING FOR PLUMBING FIXTURES.
- PART 3 EXECUTION**
- 3.1 INSTALLATION**
- A. INSTALL EACH FIXTURE WITH CHROME PLATED RIGID OR FLEXIBLE SUPPLIES WITH SCREWDRIVER STOPS, REDUCERS, AND ESCUTCHEONS.
 - B. SEAL SPACE BETWEEN PLUMBING FIXTURES AND WALL OR FLOOR WITH SILICONE SEALANT TO PROVIDE WATERTIGHT INSTALLATION.
 - C. INSTALL UNIONS DOWNSTREAM OF VALVES AND AT EQUIPMENT OR APPARATUS CONNECTIONS.