DIVISION 22 - PLUMBING SPECIFICATION
22 05 00 COMMON WORK RESULTS FOR PLUMBING

ALL PLUMBING WORK AND TESTS SHALL BE DONE IN STRICT ACCORDANCE WITH THE LATEST STATE, COUNTY, AND LOCAL REGULATIONS, LAWS, AND ORDINANCES WHICH MAY BE APPLICABLE.

BEFORE SUBMITTING A BID, EXAMINE DOCUMENTS OF ALL OTHER TRADES, VISIT THE SITE AND GET ACQUAINTED WITH ALL CONDITIONS THAT MAY IN ANY WAY AFFECT THE EXECUTION OF THIS CONTRACT. TAKE MEASUREMENTS AND BE RESPONSIBLE FOR EXACT SIZE AND LOCATIONS OF ALL OPENINGS REQUIRED. VERIFY INSTALLATION MAY BE MADE IN COMPLETE ACCORDANCE WITH ALL PERTINENT CODES AND REGULATIONS. IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY THE PROFESSIONAL ENGINEER OF RECORD. DO NOT PROCEED WITH THE INSTALLATION IN AREAS OF DISCREPANCY UNTIL ALL SUCH DISCREPANCIES HAVE BEEN FULLY RESOLVED.

IT IS NOT THE INTENT OF THE DRAWINGS THAT EXISTING CONDITIONS BE ACCURATELY SHOWN. EXISTING PLUMBING WORK IS SHOWN TO LIMITED EXTENT ON DRAWINGS AND IS SHOWN FOR GENERAL REFERENCE ONLY. LOCATIONS AND INFORMATION WERE DERIVED FROM CURSORY SITE VISUAL OBSERVATIONS OR FROM DOCUMENTS THAT WERE PREPARED FOR PREVIOUSLY INSTALLED WORK WHEN AVAILABLE.

THE WORK COVERED BY THESE SPECIFICATIONS SHALL CONSIST OF PROVIDING ALL NEW MATERIAL, LABOR, EQUIPMENT, AND SERVICES NECESSARY FOR A COMPLETE PLUMBING INSTALLATION AS SPECIFIED HEREIN. WORK IN THIS SECTION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING ITEMS:

· PLUMBING FIXTURES

WHENEVER THE WORDS "CONTRACTOR" APPEAR ON PLUMBING DRAWINGS OR IN THESE SPECIFICATIONS, IT SHALL REFER TO THE PLUMBING SUB-CONTRACTOR. WHENEVER THE WORD "PROVIDE" APPEARS IN THESE DOCUMENTS, IT SHALL BE INTERPRETED TO MEAN "FURNISH AND INSTALL".

COORDINATE ALL WORK WITH THE OWNER TO MINIMIZE INTERRUPTION OF BUILDING OPERATION.

COORDINATE THE INSTALLATION OF PLUMBING ITEMS WITH THE SCHEDULES FOR WORK OF ALL OTHER TRADES TO PREVENT UNNECESSARY DELAYS IN THE TOTAL WORK.

THIS CONTRACTOR SHALL VERIFY AND SATISFY HIMSELF THAT ALL EQUIPMENT FURNISHED WILL PROPERLY FIT IN THE SPACE PROVIDED, THAT IT WILL FUNCTION PROPERLY, AND THAT ALL PARTS OF EQUIPMENT REQUIRING SERVICE ARE READILY ACCESSIBLE.

ALL PIPING SHALL BE RUN PARALLEL OR PERPENDICULAR TO BUILDING WALLS AND FRAMING SYSTEM. ALL VERTICAL RUNS SHALL BE HELD AGAINST WALLS, COLUMNS, ETC., AS POSSIBLE TO PERMIT MAKING OF PIPE JOINTS.

CONTRACTOR SHALL PROVIDE A GUARANTEE IN WRITTEN FORM STATING THAT ALL WORK SHALL BE FREE OF DEFECTS OR ERRORS, AND ALL EQUIPMENT, MATERIALS, OR PARTS FOR A PERIOD OF ONE YEAR FROM THE DATE OF OWNER'S FINAL ACCEPTANCE AND SHALL REPAIR, REVISE OR REPLACE AT NO COST TO THE OWNER ANY SUCH DEFECTS OCCURRING WITHIN THE GUARANTEE PERIOD.

CONTRACTOR SHALL ALSO STATE IN WRITTEN FORM THAT ANY ITEMS OR OCCURRENCES ARISING DURING THE GUARANTEE PERIOD WILL BE ATTENDED TO IN A TIMELY MANNER AND WILL IN NO CASE EXCEED THREE (3) WORKING DAYS FROM DATE OF NOTIFICATION BY OWNER.

PROVIDE A COMPLETE INSTALLATION IN CONFORMANCE WITH THE FOLLOWING STANDARDS:
AGA: AMERICAN GAS ASSOCIATION
ASPE: AMERICAN SOCIETY OF PLUMBING ENGINEERS
NFPA: NATIONAL FIRE PROTECTION ASSOCIATION
STATEWIDE BUILDING CODE
INTERNATIONAL PLUMBING CODE

CONTRACTOR SHALL DO ALL CUTTING AND PATCHING REQUIRED FOR INSTALLATION OF THIS WORK. ALL OPENINGS IN WALLS, FLOORS OR CEILINGS SHALL BE PROPERLY SEALED AND RESTORED IN KIND. FLASH AND COUNTERFLASH AT ROOF OPENINGS.

ALL EQUIPMENT SHALL BE LISTED AND LABELED, UNLESS OTHERWISE APPROVED.

ALL WIRING SHALL MEET THE REQUIREMENTS LISTED IN THE ELECTRICAL SPECIFICATIONS. ALL CONTROL AND INTERLOCK WIRING AND CONDUIT (120V OR 24V) SHALL BE BY THE PLUMBING CONTRACTOR.

EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE CONDITIONS OF LISTING AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND THIS CODE.

CLEANING: THIS CONTRACTOR SHALL REMOVE FROM THE PREMISES ALL ACCUMULATION OF DIRT, DEBRIS, WASTE MATERIALS AND RUBBISH CAUSED BY HIS EMPLOYEES OR WORK, AT LEAST ONCE A WEEK, EXCEPT THAT COMBUSTIBLE MATERIALS SHALL BE REMOVED DAILY.

DURING PROGRESS OF THE WORK, MAINTAIN ON DRAWINGS AT THE SITE, AN ACCURATE RECORD OF THE INSTALLATION OF THE MECHANICAL SYSTEM, INDICATING ALL ITEMS WHICH HAVE BEEN CHANGED OR ADDED.

APPLY FOR AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED BY LOCAL AUTHORITY, FOR THE APPROVAL OF WORK.

A CERTIFICATE OF FINAL INSPECTION AND APPROVAL SHALL BE SUBMITTED WITH THE CONTRACTOR'S REQUEST FOR FINAL PAYMENT. NO FINAL PAYMENT WILL BE APPROVED WITHOUT THIS CERTIFICATE.

GUARANTEE ALL WORKMANSHIP, MATERIAL, AND EQUIPMENT AND REPLACE ANY FOUND DEFECTIVE WORK WITHOUT COST TO THE OWNER, FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE.

EXISTING CONDITIONS

DO NOT REUSE REMOVED PLUMBING MATERIALS UNLESS SPECIFICALLY INDICATED ON DRAWINGS. EXISTING SYSTEMS MAY BE UTILIZED ONLY TO THE EXTENT INDICATED ON DRAWINGS.

IF REQUIRED TO ACCOMMODATE CONSTRUCTION RELATED ACTIVITIES TEMPORARILY REMOVE, STORE IN PROTECTED LOCATION ON SITE, AND REINSTALL CONFLICTING PLUMBING EQUIPMENT, OR DEVICES THAT ARE TO REMAIN OR TO BE RELOCATED.

WHERE THE TERM "DEMOLITION" IS USED HEREIN, INTERPRET IT TO MEAN "DEMOLITION" OR "SELECTIVE DEMOLITION" WHERE APPLICABLE.

PROVIDE PLUMBING DEMOLITION WORK AS REQUIRED TO ACCOMMODATE PROJECT DEMOLITION AND AS REQUIRED TO ACCOMMODATE NEW CONSTRUCTION. DISCONNECT AND REMOVE WORK TO BE ABANDONED, AND AS REQUIRED TO ACCOMMODATE WORK OF OTHER TRADES, IN AREAS AFFECTED BY THIS PROJECT.

LEGALLY DISPOSE OF MATERIALS TO SALVAGED OR RETAINED.
22 05 03 SUBMITTALS FOR PLUMBING

DESIGN BASIS MANUFACTURERS OF MATERIAL AND EQUIPMENT ARE SPECIFIED AND PLANS ARE DETAILED ACCORDING TO THIS MATERIAL. CONTRACTOR SHALL BASE HIS BID ON FURNISHING AND INSTALLING THIS MAKE OF MATERIAL AND EQUIPMENT.

SHOP DRAWINGS SHALL INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING: MAKE, MODEL NUMBER, DIMENSIONS, ELECTRICAL CHARACTERISTICS (RATING). SHOP DRAWINGS SHALL BEAR NAME OF PROJECT AND LOCATION.

THE MAKE, TYPE, AND FINISH OF ALL MATERIALS, EQUIPMENT AND APPARATUS SHALL BE APPROVED BY THE ENGINEER/ ARCHITECT IN WRITING BEFORE THE CONTRACTOR INSTALLS IT. ANY SUBSTITUTION FOR ANY SPECIFIED EQUIPMENT OR MATERIAL SHALL FIRST BY APPROVED BY THE ENGINEER/ARCHITECT IN WRITING.

SUBMIT SHOP DRAWINGS ON THE FOLLOWING ITEMS FOR REVIEW BEFORE FABRICATION OR SHIPMENT:

PLUMBING FIXTURES

MAINTENANCE MANUALS: FURNISH THREE FINAL COPIES, INCLUDING WIRING DIAGRAMS, MAINTENANCE AND OPERATING INSTRUCTIONS, PARTS LISTINGS, AND COPIES OF OTHER SUBMITTALS INDICATED FOR INCLUSION.

ANY CHANGES TO ITEMS SPECIFIED MUST BE SUBMITTED AS A SUBSTITUTION, WITH COMPLETE DOCUMENTATION OF PRICE DIFFERENTIAL AND EQUIPMENT DETAILS.

1. CERTAIN MAKES OF MATERIALS AND EQUIPMENT ARE SPECIFIED AND DRAWINGS ARE DETAILED ACCORDING TO THIS MATERIAL. CONTRACTOR SHALL BASE HIS BID ON FURNISHINGS AND INSTALLING THE SPECIFIED MAKE AND MODEL OR THE "EQUIVALENT" MODEL OF ANOTHER OF THE SPECIFIED MANUFACTURERS WHICH MEETS ALL THE QUALIFICATIONS OF THE SPECIFIED ITEMS.

2. WHERE MORE THAN ONE MAKE OF MATERIAL OR EQUIPMENT IS SPECIFIED, THE CONTRACTOR SHALL STATE IN HIS BID WHICH MAKE HE PROPOSES TO FURNISH. SHOP DRAWING APPROVAL SHALL BE OBTAINED PRIOR TO SHIPMENT OF EQUIPMENT.

3. "EQUIVALENT" MATERIALS AND EQUIPMENT ARE THOSE OF MANUFACTURER WHICH MEET THE SAME STANDARDS OF PERFORMANCE, HAVE EQUAL OR BETTER MATERIALS OF CONSTRUCTION, AND EQUAL OR BETTER MAINTENANCE CHARACTERISTICS. ALL EQUIVALENTS MUST FIT THE SPACE PROVIDED IN THE BUILDING STRUCTURE. WHERE THE USE OF EQUIVALENTS RESULTS IN CHANGES, THIS CONTRACTOR SHALL BE RESPONSIBLE FOR SUCH CHANGES AND ANY COSTS RESULTING FROM THEM.

4. IF THE CONTRACTOR INTENDS TO USE EQUIPMENT OR MATERIALS NOT SPECIFIED, HE MUST RECEIVE APPROVAL FROM THE ENGINEER/ARCHITECT PRIOR TO THE AWARD OF THE CONTRACT. THIS PRIOR APPROVAL ONLY PERMITS SUBMITTAL OF A PARTICULAR MANUFACTURER'S EQUIPMENT IN GENERAL. THE SPECIFIED ITEM TO BE USED MUST AGAIN BE SUBMITTED FOR FINAL REVIEW AS SPECIFIED UNDER "SHOP DRAWINGS".
22 05 23 GENERAL DUTY VALVES
GENERAL
PROVIDE STOPS OR ISOLATION VALVES ON DOMESTIC WATER SUPPLIES TO ISOLATE HOT AND COLD WATER TO EACH FIXTURE, INCLUDING ALL EQUIPMENT AND EQUIPMENT PROVIDED BY OTHERS.
FIXTURES, ITEM OR UNITS FURNISHED BY THE MANUFACTURER WITH INTEGRAL STOPS OR STOPS SPECIFIED WITH THE FIXTURE ARE CONSIDERED TO BE PROPERLY VALVED AT THE FIXTURES.
ACCESS SHALL BE PROVIDED TO ALL VALVES.
VALVES ON DOMESTIC WATER PIPING SHALL BE BALL VALVES.
[BALL VALVES - 1 INCH AND SMALLER: 2-PIECE BODY, 600 PSI CWP, 150 PSI SWP, CAST BRONZE BODY, FULL PORT, TEFLON SEATS, BLOWOUT-PROOF STEM, ADJUSTABLE PACKING GLAND, CHROME PLATED BRONZE BALL, WITH SCREWED ENDS, AND VINYL-COVERED STEEL HANDLE. PROVIDE SOLDER ENDS. PROVIDE EXTENDED VALVE STEMS FOR VALVES USED ON INSULATED LINES. PROVIDE NIBCO SERIES 585-70-NS.]
[BALL VALVES: 1-1/4 INCH TO 3 INCH: 3-PIECE BODY, 600 PSI CWP, 150 PSI SWP, CAST BRONZE BODY, CONVENTIONAL PORT, TEFLON SEATS, BLOWOUT-PROOF STEM, ADJUSTABLE PACKING GLAND, CHROME PLATED BRONZE BALL, SCREWED ENDS, AND VINYL-COVERED STEEL HANDLE. PROVIDE SOLDER ENDS. PROVIDE EXTENDED VALVE STEMS FOR VALVES USED ON INSULATED LINES. PROVIDE TO NIBCO SERIES 590-Y.]
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, AND ARE LIMITED TO, THE FOLLOWING:
AMERICAN VALVE, INC.
CONBRACO INDUSTRIES, INC.; APOLLO VALVES.
CRANE CO.; CRANE VALVE GROUP; CRANE VALVES.
HAMMOND VALVE.
MILWAUKEE VALVE COMPANY.
NIBCO INC.
RED-WHITE VALVE CORPORATION.
WATTS REGULATOR CO.; A DIVISION OF WATTS WATER TECHNOLOGIES, INC
CHECK VALVES
SWING CHECK VALVES - CLASS 125, CAST BRONZE BODY AND CAP, HORIZONTAL SWING, Y-PATTERN, WITH A BRONZE DISC, AND HAVING THREADED OR SOLDER ENDS. PROVIDE SOLDER ENDS FOR DOMESTIC HOT AND COLD WATER SERVICE. PROVIDE NIBCO S-413.
22 05 29 HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT
GENERAL
SUPPORT ALL PIPING AND EQUIPMENT BY HANGERS OR BRACKETS. PROVIDE STRUCTURAL STEEL MEMBERS WHERE REQUIRED TO SUPPORT PIPING AND EQUIPMENT. NO PORTION OF PIPING OR VALVES SHALL BE SUPPORTED BY EQUIPMENT.

DELEGATED DESIGN
FOR EQUIPMENT SUPPORTS, THIS CONTRACTOR SHALL RETAIN A QUALIFIED PROFESSIONAL ENGINEER TO PROVIDE SUPPORT CALCULATIONS OF STATIC AND DYNAMIC LOADING DUE TO OPERATING EQUIPMENT WEIGHT, SEISMIC AND WIND FORCES. THE SIGNED AND SEALED CALCULATIONS AND DETAILS SHALL BE SUBMITTED BY THE RETAINED PROFESSIONAL ENGINEER.
PIPING
PROVIDE HANGERS, SUPPORTS, CLAMPS AND ATTACHMENTS TO SUPPORT PIPING PROPERLY FROM BUILDING STRUCTURE. ARRANGE FOR GROUPING OF PARALLEL RUNS OF HORIZONTAL PIPING SUPPORTED TOGETHER ON FIELD-FABRICATED, HEAVY-DUTY TRAPEZE HANGERS WHERE POSSIBLE. WHERE PIPING OF VARIOUS SIZES IS SUPPORTED TOGETHER BY TRAPEZE HANGERS, SPACE HANGERS FOR SMALLEST PIPE SIZE OR PROVIDE INTERMEDIATE SUPPORTS FOR SMALLER DIAMETER PIPE AS SPECIFIED ABOVE FOR INDIVIDUAL PIPE HANGERS.
INDIVIDUAL PIPE HANGERS TO BE ANVIL INTERNATIONAL CLEVIS HANGER FIG. 260, ELCEN.
ROD SIZES TO CONFORM TO THE FOLLOWING: 3/8" RODS FOR 3/4" TO 2" PIPE; 1/2" RODS FOR 2-1/2" TO 3" PIPE; 5/8" RODS FOR 4" TO 5" PIPE; 3/4" RODS FOR 6" PIPE.
HANGERS SHALL BE SIZED TO ALLOW INSULATION TO PASS THROUGH UNOBSTRUCTED, PROVIDE SADDLE SUPPORT FOR INSULATION AT ALL HANGERS.
HANGER SPACING FOR STEEL PIPING UNLESS OTHERWISE NOTED IS TO BE AS FOLLOWS: 1-1/4" OR SMALLER TO BE 8' ON CENTER; 1-1/2" TO 2" TO BE 10' ON CENTER; 2-1/2" AND LARGER TO BE 12' ON CENTER AND AT EACH CHANGE OF DIRECTION. HANGER SPACING FOR COPPER PIPE TO BE AS FOLLOWS: 1" OR SMALLER 6' ON CENTER; 1-1/4" OR LARGER 8' ON CENTER.
HANGER SPACE FOR CPVC AND PVC PIPE TO BE AS FOLLOWS: 1" AND SMALLER TO BE 3' ON CENTER; 1-1/4" OR LARGER TO BE 4' ON CENTER.
PIPING SHALL ALSO BE SUPPORTED AT EACH CHANGE IN DIRECTION, VALVES AND EQUIPMENT.
22 05 53 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT
PIPING
PROVIDE SELF-ADHESIVE PIPE LABELS WITH WHITE BACKGROUND AND BLACK LETTERING, CONTACT TYPE WITH PERMANENT ADHESIVE BACKING. INCLUDE IDENTIFICATION OF PIPING SERVICE USING SAME DESIGNATIONS OR ABBREVIATIONS AS USED ON THE DRAWINGS AND AN ARROW INDICATING FLOW DIRECTION.
EQUIPMENT
PROVIDE SELF-ADHESIVE PLASTIC EQUIPMENT LABELS WITH WHITE BACKGROUND AND BLACK LETTERING, CONTACT TYPE WITH PERMANENT ADHESIVE BACKING, 160 DEGREE F TEMPERATURE. INCLUDE EQUIPMENT'S DRAWING DESIGNATION AND SPECIFICATION SECTION NUMBER WHERE EQUIPMENT IS SPECIFIED.
22 07 19 PLUMBING SYSTEM INSULATION
GENERAL
INSULATION SHALL BE LISTED AND LABELED PER ASTM E 84 FOR PLENUM INSTALLATIONS EMPLOYING SLIP ON TECHNIQUES.
PROVIDE INSULATION MATERIALS, ACCESSORIES, AND FINISHES WITH SMOOTH, STRAIGHT, AND EVEN SURFACES; FREE OF VOIDS THROUGHOUT THE LENGTH OF PIPING INCLUDING FITTINGS, VALVES, AND SPECIALTIES.
SURFACE PREPARATION: CLEAN AND DRY SURFACES TO RECEIVE INSULATION. REMOVE MATERIALS THAT WILL ADVERSELY AFFECT INSULATION APPLICATION.
PIPING SYSTEMS REQUIRING INSULATION
INSULATE DOMESTIC COLD WATER PIPING, ASSOCIATED FITTINGS AND VALVES WITH FLEXIBLE ELASTOMERIC 1/2" WALL THICKNESS INSULATION.
INSULATE DOMESTIC HOT WATER PIPING, ASSOCIATED FITTINGS AND VALVES WITH 1" THICK FLEXIBLE ELASTOMERIC, 1" THICK MINERAL WOOL, 1-1/2" THICK FIBERGLASS INSULATION OR PER LOCAL ENERGY CODE, WHICHEVER GREATER.
INSULATE DOMESTIC HOT WATER RETURN PIPING, ASSOCIATED FITTINGS AND VALVES WITH 1" WALL THICKNESS INSULATION OR PER LOCAL ENERGY CODE, WHICHEVER GREATER.
INSULATE WASTE PIPING ABOVE CEILINGS THAT RECEIVE CONDENSATE WITH 1/2" WALL THICKNESS INSULATION.
INSULATE EXPOSED SANITARY DRAINS, DOMESTIC WATER, DOMESTIC HOT WATER, AND STOPS FOR PLUMBING FIXTURES FOR PEOPLE WITH DISABILITIES.
FLEXIBLE ELASTOMERIC INSULATION
CLOSED-CELL, SPONGE- OR EXPANDED-RUBBER MATERIALS. CO

ADHESIVES, SEALERS, AND PROTECTIVE FINISHES: AS RECOMMENDED BY INSULATION MANUFACTURER FOR APPLICATIONS INDICATED.
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, AND ARE LIMITED TO, THE FOLLOWING:
AEROFLEX USA, INC.; AEROCEL.
ARMACELL LLC; AP ARMAFLEX.
K-FLEX USA; INSUL-LOCK, INSUL-TUBE, AND K-FLEX LS.
FIBERGLASS INSULATION
FIBERGLASS PIPING INSULATION: ASTM C 547, CLASS 1
ENCASE PIPE FITTINGS INSULATION WITH ONE-PIECE PRE-MOLDED PVC FITTING COVERS.
VAPOR BARRIER MATERIAL: PAPER-BACKED ALUMINUM FOIL, EXCEPT AS OTHERWISE INDICATED, STRENGTH AND PERMEABILITY RATING EQUIVALENT TO ADJOINING PIPE INSULATION JACKETING.
STAPLES, BANDS, WIRES, AND CEMENT: AS RECOMMENDED BY INSULATION MANUFACTURER FOR APPLICATIONS INDICATED.
ADHESIVES, SEALERS, AND PROTECTIVE FINISHES: AS RECOMMENDED BY INSULATION MANUFACTURER FOR APPLICATIONS INDICATED.
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, AND ARE LIMITED TO, THE FOLLOWING:
ARMSTRONG WORLD INDUSTRIES, INC.
OWENS-CORNING FIBERGLASS CORP.
KEENE CORP.
CERTAINTEED.
JOHNS MANVILLE.
ADHESIVES
MATERIALS SHALL BE COMPATIBLE WITH INSULATION MATERIALS, JACKETS, AND SUBSTRATES AND FOR BONDING INSULATION TO ITSELF AND TO SURFACES TO BE INSULATED, UNLESS OTHERWISE INDICATED.
INSULATION FOR HANDICAP ACCESSIBLE FIXTURES
ALL HANDICAP LAVATORY P-TRAP AND ANGLE STOP ASSEMBLIES SHALL BE INSULATED WITH TRAP WRAP PROTECTIVE KIT MANUFACTURED BY PROFLO MODEL PF202WH. ABRASION RESISTANT, ANTI-MICROBIAL VINYL EXTERIOR COVER SHALL BE SMOOTH. FOR TRAPS, THE INSULATION SHALL HAVE A CLEANOUT NUT CAP TO ALLOW SERVICE TO THE TRAP WITHOUT DISASSEMBLY. FOR STOPS, THE INSULATION SHALL HAVE A LOCK LID THAT PREVENTS TAMPERING BUT ALLOWS ACCESS WITHOUT REMOVAL OF THE INSULATION. FASTENERS SHALL REMAIN SUBSTANTIALLY OUT OF SIGHT.
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS:
PROFLO
TRUEBRO
PLUMBEREX
22 11 16 DOMESTIC WATER PIPING
GENERAL
INSTALL PIPING CONCEALED FROM VIEW UNLESS NOTED OTHERWISE, FREE OF SAGS AND BENDS. DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT HAS BEEN INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION. CLEAN AND DISINFECT POTABLE DOMESTIC WATER PIPING USING APPROVED PROCEDURES BY AUTHORITIES HAVING JURISDICTION.
INSTALL AT RIGHT ANGLES; DIAGONAL RUNS ARE PROHIBITED UNLESS OTHERWISE SHOWN. INSTALL PIPING ABOVE ACCESSIBLE CEILINGS TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL. COORDINATE ALL PIPING WITH ALL OTHER TRADES.
PROVIDE WATER PRESSURE REGULATORS WHERE NECESSARY TO LIMIT THE INCOMING WATER PRESSURE TO 80 PSI INSIDE THE BUILDING.
DOMESTIC WATER PIPING ABOVE GROUND:
HARD COPPER TUBE, ASTM B 88, TYPE L; WROUGHT-COPPER, SOLDER-JOINT FITTINGS; AND SOLDERED JOINTS.
SOLDER FILLER METALS: ASTM B 32, LEAD-FREE ALLOYS.
FLUX: ASTM B 813, WATER FLUSHABLE.
TYPE "L"; COPPER PRESSURE-SEAL JOINT; AND PRESSURE-SEAL JOINT SYSTEMS.
CATHODIC PROTECTION
PROVIDE DIELECTRIC INSULATION AT POINTS WHERE COPPER OR BRASS PIPE COMES IN CONTACT WITH FERROUS PIPING, REINFORCING STEEL OR OTHER DISSIMILAR METAL IN STRUCTURE.
22 11 19 DOMESTIC WATER PIPING SPECIALTIES
DUAL CHECK VALVE BACKFLOW PREVENTER
PROVIDE A DUAL CHECK VALVE BACKFLOW PREVENTER THAT COMPLIES WITH ASSE 1022 AT CONNECTION OF DOMESTIC WATER SUPPLY TO ANY PERMANENTLY CONNECTED CARBONATED BEVERAGE DISPENSER OR WHERE INDICATED IN THE CONTRACT DOCUMENTS.
PROVIDE A DUAL CHECK VALVE BACKFLOW PREVENTER THAT COMPLIES WITH ASSE 1024 AT CONNECTION OF DOMESTIC WATER SUPPLY TO ANY POTABLE WATER DISPENSING EQUIPMENT SUCH AS ICE MAKERS, COFFEE MACHINES, TEA MACHINES, ESPRESSO MACHINES OR WHERE INDICATED IN THE CONTRACT DOCUMENTS.
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, AND ARE LIMITED TO, THE FOLLOWING:
AMES FIRE & WATERWORKS; A DIVISION OF WATTS WATER TECHNOLOGIES, INC.
CONBRACO INDUSTRIES, INC.
FEBCO; A DIVISION OF WATTS WATER TECHNOLOGIES, INC.
FLOMATIC CORPORATION.
WATTS; A DIVISION OF WATTS WATER TECHNOLOGIES, INC.; WATTS REGULATOR COMPANY.
ZURN INDUSTRIES, LLC; PLUMBING PRODUCTS GROUP; WILKINS WATER CONTROL PRODUCTS.
BALANCING VALVES
PROVIDE BALANCING VALVES WHERE REQUIRED FOR PROPER BALANCING OF WATER SYSTEMS AS SHOWN ON THE CONTRACT DOCUMENTS.
BALANCING VALVES SHALL BE RED-WHITE VALVE CORPORATION MODEL 9517AB (NPT) OR MODEL 9519 (SOLDER).
VALVE SHALL HAVE BRASS BODY, GLOBE VALVE REGULATION AND ISOLATION PROPERTIES, FIXED ORIFICE DESIGN FOR PRECISE MEASUREMENT, INTEGRAL MEMORY STOP TO ENSURE REPEATABLE SETTING, FULL SHUTOFF WITHOUT AFFECTING MEMORY SETTINGS, HIGH AND LOW PRESSURE METERING POINTS, PRECISION INDICATOR WINDOWS, RUGGED TOP SET HAND-WHEEL ASSEMBLY, PRESSURE RATING OF 300 PSI, AND TEMPERATURE RATING OF 15 DEG. F TO 260 DEG. F.
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, AND ARE LIMITED TO, THE FOLLOWING:
CRANE CO.; CRANE VALVE GROUP; CRANE VALVES.
HAMMOND VALVE.
MILWAUKEE VALVE COMPANY.
NIBCO INC.
WATTS
RED-WHITE VALVE CORP.
WATER HAMMER ARRESTERS
PROVIDE WATER-HAMMER ARRESTERS IN WATER PIPING ACCORDING TO PDI-WH 201.
STANDARD: ASSE 1010 OR PDI-WH 201.
TYPE: METAL BELLOWS OR COPPER TUBE WITH PISTON.
SIZE: ASSE 1010, SIZES AA AND A THROUGH F, OR PDI-WH 201, SIZES A THROUGH F.
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, AND ARE LIMITED TO, THE FOLLOWING:
AMTROL, INC.
JOSAM COMPANY.
PRECISION PLUMBING PRODUCTS, INC.
SIOUX CHIEF MANUFACTURING COMPANY, INC.
SMITH, JAY R. MFG. CO.; DIVISION OF SMITH INDUSTRIES, INC.
WATTS DRAINAGE
22 16 13 NATURAL GAS PIPING SYSTEMS
GENERAL
PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING GAS PIPING RUN-OUTS TO ALL GAS-FIRED EQUIPMENT, INCLUDING EQUIPMENT SUPPLIED BY THE HVAC AND ELECTRIC CONTRACTORS. PIPING SHALL BE INSTALLED FULL-SIZE (AS INDICATED ON THE DRAWINGS) TO EACH UNITS' GAS INLET CONNECTION, BURNER, REGULATOR, ETC. PLUMBING SUBCONTRACTOR SHALL PROVIDE GAS COCK AND MAKE FINAL CONNECTIONS. CONNECTIONS TO EACH GAS-FIRED EQUIPMENT ITEM SHALL INCLUDE A DRIP LEG AND SHUTOFF GAS COCK. COMPLY WITH EQUIPMENT MANUFACTURER'S INSTRUCTION. FOR CONNECTIONS TO GAS-FIRED ROOFTOP EQUIPMENT, PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR THE ROOF PENETRATION AND SHALL INSTALL THE GAS PIPING THROUGH THE ROOF IN A LOCATION THAT HAS BEEN COORDINATED WITH THE HVAC CONTRACTOR.
BUILDING DISTRIBUTION PIPING:
ALL PIPING FROM METER/REGULATOR TO GAS FIRED EQUIPMENT CONNECTIONS SHALL BE BLACK STEEL.
STEEL PIPE: ASTM A 53/A 53M, BLACK STEEL, SCHEDULE 40, TYPE E OR S, GRADE B.

PIPE SIZE 2" AND SMALLER: MALLEABLE-IRON THREADED FITTINGS
MALLEABLE-IRON THREADED FITTINGS: ASME B16.3, CLASS 150, STANDARD PATTERN.
PIPE SIZE 2-1/2" AND LARGER: WROUGHT-STEEL WELDING FITTINGS FOR BUTT WELDING AND SOCKET WELDING.
WROUGHT-STEEL WELDING FITTINGS: ASTM A 234/A 234M FOR BUTT WELDING AND SOCKET WELDING.
FIELD PREPARE AND PAINT EXTERIOR NATURAL GAS PIPING, FITTINGS, ETC... WITH ALKYD ANTICORROSIVE METAL PRIMER AND TOPCOAT WITH EXTERIOR ALKYD ENAMEL FLAT. COLOR TO MATCH BUILDING EXTERIOR AND APPROVED BY THE ARCHITECT
GENERAL DUTY VALVES:
METALLIC VALVES 2 INCHES AND SMALLER SHALL COMPLY WITH ASME B16.33, COLD WORKING PRESSURE OF 125 PSIG.
METALLIC VALVES LARGER THAN 2 INCHES SHALL COMPLY WITH ASME B16.38, COLD WORKING PRESSURE OF 125 PSIG.
PROVIDE ONE-PIECE BALL VALVES WITH BRONZE BODY, CHROME-PLATED BRASS BALL, BLOWOUT PROOF STEM AND SEAT, AND BRONZE TRIM COMPLYING WITH MSS SP-110.
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, AND LIMITED TO, THE FOLLOWING:
BRASSCRAFT MANUFACTURING COMPANY; A MASCO COMPANY.
CONBRACO INDUSTRIES, INC.; APOLLO DIV.
LYALL, R. W. & COMPANY, INC.
MCDONALD, A. Y. MFG. CO.
PERFECTION CORPORATION; A SUBSIDIARY OF AMERICAN METER COMPANY.
SOLENOID VALVES
PROVIDE BRASS OR ALUMINUM SOLENOID VALVE WITH NITRILE RUBBER SEATS AND DISCS, STAINLESS STEEL SPRINGS, 120 VOLT, 60 HZ, CLASS B, CONTINUOUS DUTY MOLDED REPLACEABLE COIL, VISUAL POSITION INDICATOR. PROVIDE NEMA ICS 6, TYPE 4 COIL ENCLOSURE. VALVE WILL BE NORMALLY OPEN, FAIL SAFE CLOSED.
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, AND LIMITED TO, THE FOLLOWING:
ASCO POWER TECHNOLOGIES, LP; DIVISION OF EMERSON.
DUNGS, KARL, INC.
ECLIPSE COMBUSTION, INC.
GOYEN VALVE CORP.; TYCO ENVIRONMENTAL SYSTEMS.
MAGNATROL VALVE CORPORATION.
WATTS REGULATOR CO.; DIVISION OF WATTS WATER TECHNOLOGIES, INC.
PRESSURE REGULATORS:
PROVIDE PRESSURE REGULATORS TO CONFORM WITH ANSI Z21.80, CAST IRON OR DIE-CAST ALUMINUM BODY, INTERCHANGEABLE ZINC-PLATED STEEL SPRINGS AND DIAPHRAGM PLATE, SINGLE PORT, SELF CONTAINED REGULATOR WITH ORIFICE NO LARGER THAN REQUIRED AT MAXIMUM PRESSURE INLET AND NO PRESSURE SENSING PIPING EXTERNAL TO THE REGULATOR.
PRESSURE REGULATOR SHALL MAINTAIN DISCHARGE PRESSURE SETTING DOWNSTREAM, AND NOT EXCEED 150 PERCENT OF DESIGN DISCHARGE PRESSURE AT SHUTOFF.
OVERPRESSURE PROTECTION DEVICE: FACTORY MOUNTED ON PRESSURE REGULATOR.
REGULATOR SHALL INCLUDE VENT LIMITING DEVICE, INSTEAD OF VENT CONNECTION AND PIPING, IF APPROVED BY AUTHORITIES HAVING JURISDICTION.
NATURAL GAS METERS
SERVICE METERS SHALL COMPLY WITH THE REQUIREMENTS OF THE UTILITY SUPPLYING GAS TO THE FACILITY.
22 13 16 SANITARY, WASTE AND VENT PIPING SYSTEM
GENERAL
PROVIDE A COMPLETE SOIL, WASTE AND VENT SYSTEM IN THE BUILDING AND ON THE SITE AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
ABOVE GROUND SOIL, WASTE AND VENT PIPING WITHIN BUILDINGS INCLUDING SOIL STACKS, VENT STACKS, HORIZONTAL BRANCHES, TRAPS, AND CONNECTIONS TO FIXTURES AND DRAINS.
UNDERGROUND BUILDING DRAIN PIPING INCLUDING MAINS, BRANCHES, TRAPS, CONNECTIONS TO FIXTURES AND DRAINS, AND CONNECTIONS TO STACKS, TERMINATING AT CONNECTION TO EXISTING SANITARY SEWER.
INTERIOR PIPING
LINE SHALL BE SCHEDULE 40 CELLULAR-CORE PVC PIPE. ASTM F891, WITH ALL COMPATIBLE PVC SOCKET FITTINGS. MAKE TO ASTM D3311, DRAIN, WASTE, AND VENT PATTERNS.
PIPING ALIGNMENT SHALL BE AS INDICATED ON THE DRAWINGS USING APPROVED WYE BRANCHES OR EIGHT BANDS FOR DIRECTION CHANGES AND SHALL BE SURELY SUPPORTED OR SECURED TO MAINTAIN SUCH ALIGNMENT.
PITCH OF SANITARY PIPING SHALL BE UNIFORM AT A MINIMUM OF 1/8" PER FOOT FOR BUILDING DRAINS, DRAINAGE PIPING GREATER THAN 2" AND AS INDICATED ON THE DRAWINGS. PITCH OF SANITARY PIPING SHALL BE UNIFORM AT A MINIMUM OF 1/4" PER FOOT FOR DRAINAGE PIPING 2" AND SMALLER AND AS INDICATED ON THE DRAWINGS.
PROTECTION SHALL BE GIVEN ALL FOOTINGS, OTHER STRUCTURAL ELEMENTS DURING UNDERGROUND WORK ADJACENT TO SUCH ITEMS. REFER TO ARCHITECTURAL AND/OR STRUCTURAL DRAWINGS FOR LOCATIONS.
VENT ALL FIXTURES, CONNECT BRANCH VENTS TO MAIN VENT RISERS AT LEAST SIX INCHES ABOVE FLOOD RIM OF FIXTURES. PITCH VENT LINES BACK TO SOIL OR WASTE PIPE, FREE OF DROPS AND SAGS.
CLEANOUTS SHALL BE FULL SIZE OF PIPE UP TO 4", AND 4" FOR LARGER SIZES. FOR UNDERGROUND AND CONCEALED LINES, PROVIDE CLEANOUTS IN ACCESSIBLE POSITIONS AT EACH RIGHT ANGLE TURN AND AT INTERVALS NOT TO EXCEED FIFTY FEET. IN FLOORS, INSTALL FLUSH WITH FINISH FLOOR WITH EXTENSION PIPE FROM CLEANOUT WYE.
22 13 19 SANITARY WASTE PIPING SPECIALTIES
CLEANOUTS
FLOOR CLEANOUT: AS SCHEDULED.
WALL CLEANOUT: AS SCHEDULED.
PROVIDE A SANITARY TEE AND THREADED CAP CLEANOUT PLUG IN SUSPENDED WASTE PIPING.
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, AND ARE LIMITED TO, THE FOLLOWING:
JOSAM
JAY R SMITH
WATTS REGULATOR CO.; A DIVISION OF WATTS WATER TECHNOLOGIES, INC
MIFAB
ZURN
SIOUX CHIEF
FLOOR DRAINS
JOSAM, SMITH, ZURN, WATTS, MIFAB, SIOUX CHIEF, OR OATEY
ALL FLOOR DRAINS LOCATED IN ROOMS WHICH HAVE TILE FLOORS SHALL HAVE SQUARE STRAINERS.
PROVIDE FLOOR DRAINS WITH TRAP-SEAL PRIMER FITTING.
REFER TO PLUMBING FIXTURE AND EQUIPMENT SCHEDULE FOR PROJECT SPECIFIC FLOOR DRAIN MANUFACTURERS AND MODELS.
22 30 01 POINT OF USE THERMOSTATIC MIXING VALVES
GENERAL
THERMOSTATIC MIXING VALVES SHALL BE PROVIDED FOR ALL PUBLIC HAND WASHING SINKS AND LAVATORIES AND SHALL BE ASSE 1070 LISTED, LEAD FREE, SWEAT CONNECTIONS, 125 PSI OPERATING PRESSURE. MOUNT UNDER SINK OR LAVATORY. SET OUTLET TEMPERATURE OF THERMOSTATIC MIXING VALVE TO 110 DEGREES F.
POINT-OF USE THERMOSTATIC MIXING VALVES SHALL BE POWERS HYDROGUARD LFe480. ROUTE TEMPERED WATER TO HOT WATER SIDE OF SINK AND LAVATORIES.
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, AND ARE LIMITED TO, THE FOLLOWING:
SYMMONS
LAWLER
LEONARD
POWERS
BRADLEY
22 40 00 PLUMBING FIXTURES
GENERAL
REFER TO PLUMBING FIXTURE SCHEDULE.
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, AND ARE LIMITED TO, THE FOLLOWING:
AMERICAN STANDARD AMERICA.
CRANE PLUMBING, LLC.
KOHLER CO.
TOTO USA, INC.
ZURN INDUSTRIES, LLC; COMMERCIAL BRASS AND FIXTURES.
STERLING; A KOHLER COMPANY.
ELKAY.
SLOAN.
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ISSUE INFORMATION

REVISIONS

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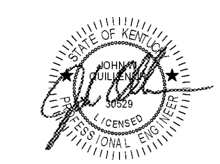

05/08/2020

PROJECT INFORMATION

BOWLING GREEN, KY

DISHMAN LANE
BOWLING GREEN, KY 42101

PROJECT #:
11352

SHEET INFORMATION

SPECIFICATIONS

DRAWN BY:
ED/ZF/BD
REVIEWED BY:
JJG/JWQ
SCALE:

AUTHORIZED FOR:
PERMIT

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