1 **MECHANICAL DEMO PLAN - LEVEL 2**
SCALE: 3/16" = 1'-0"

DEMOLITION LEGEND

SYMBOL	DESCRIPTION
———	EXISTING TO REMAIN
— — — — —	DEMOLITION
■	DEMO TO THIS POINT

DEMOLITION GENERAL NOTES

1. DEMOLITION WORK SHAL BE PERFORMED TO ACCOMPLISH REPLACEMENT WORK WITH A MINIMUM AMOUNT OF SYSTEM DOWNTIME.
2. SCHEDULE ALL SHUTDOWNS AND DEMOLITION WORK IN ADVANCE WITH OWNER.
3. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY THE CONDITION OF EXISTING EQUIPMENT, EXACT SIZES AND LOCATION OF EXISTING DUCT, PIPING, EQUIPMENT, ETC. BEFORE DEMOLITION WORK BEGINS. REPORT ANY DISCREPANCIES BETWEEN PRIOR TO THE START OF DEMOLITION WORK.
4. CONTRACTOR SHALL REMOVE EXISTING HVAC EQUIPMENT, ASSOCAITED MATERIALS, AND SUPPORTS AS INDICATED. ALL UNUSED EQUIPMENT AND MATERIALS SHALL BE REMOVED BACK TO THE SOURCE. PATCH EXISTING CONDITIONS TO REMAIN AS NECESSARY AS DIRECTED BY THE OWNER, CONTRACTOR SHALL TURN OVER TO OWNER OR REMOVE FROM SITE.
5. **BALANCING CONTRACTOR SHALL MEASURE AND RECORD EXISTING SYSTEMS AFFECTED BY THIS RENOVATION PRIOR TO THE DEMOLITION WORK. MEASUREMENTS SHALL INCLUDE SUPPLY AND RETURN AIR FLOWS AT EXISTING AIR HANDLING UNITS; SUPPLY, RETURN AND EXHAUST AIR FLOW AT ALL DUCT MAINS AND BRANCHES SERVING EXISTING AREAS TO REMAIN; AND THE FLOW AT PUMPS. BALANCING CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER OF ALL DEFICIENCIES FOUND IN ANY OF THE SYSTEMS.**
6. EXISTING AIR DISTRIBUTION SYSTEMS SHALL BE REBALANCED TO MEET THE EXISTING AIR FLOW AS WELL AS THE FLOW REQUIREMENTS INDICATED IN THE CONSTRUCTION DOCUMENTS.

KEYED NOTES

1 RELOCATE EXISTING SUPPLY AIR GRILLE. REFER TO SHEET M1.02 FOR NEW LOCATION.
2 RELOCATE EXISTING RETURN AIR GRILLE. REFER TO SHEET M1.02 FOR NEW LOCATION.
3 DEMOLISH EXISTING SUPPLY AIR GRILLE AND ALL ASSOCIATED DUCTWORK BACK TO MAIN. PATCH AND SEAL DUCTWORK AIR TIGHT.
4 DEMOLISH EXISTING EXHAUST AIR GRILLE AND ALL ASSOCIATED DUCTWORK BACK TO MAIN. PATCH AND SEAL DUCTWORK AIR TIGHT.
5 RELOCATE EXISTING EXHAUST AIR GRILLE. REFER TO SHEET M1.02 FOR NEW LOCATION.
6 EXISTING MECHANICAL EQUIPMENT TO REMAIN. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION AND CONDITION. CLEAN AND REPAIR AS REQUIRED.
7 EXISTING MAIN SUPPYL AIR DUCT TO REMAIN.
8 RELOCATE EXISTING THERMOSTAT. REFER TO SHEET M1.02 FOR NEW LOCATION.
9 EXISTING THERMOSTAT TO REMAIN AND BE REUSED. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION.

Page/

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MECHANICAL DEMO PLAN

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BASIC REQUIREMENTS

CODES AND STANDARDS:

A. ALL WORK SHALL COMPLY WITH THE MOST RECENTLY REVISED VERSIONS OF ALL APPLICABLE LAWS, RULES, REGULATIONS AND ORDINANCES OF ALL FEDERAL, STATE AND LOCAL AUTHORITIES AND APPLICABLE UTILITIES. NONE OF THE TERMS OR PROVISIONS OF THIS SPECIFICATION SHALL BE CONSTRUED AS WAIVING ANY PART OF THE RULES, REGULATIONS OR REQUIREMENTS OF THESE AUTHORITIES.

DRAWINGS AND SPECIFICATIONS

A. DRAWINGS: THE DRAWINGS ARE SCHEMATIC IN NATURE AND INDICATE APPROXIMATE LOCATIONS OF THE HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS, FIRE PROTECTION SYSTEMS, PLUMBING EQUIPMENT, FIXTURES AND PIPING SYSTEMS, EXCEPT WHERE SPECIFIC LOCATIONS ARE NOTED AND DIMENSIONED ON THE DRAWINGS. ALL ITEMS ARE SHOWN APPROXIMATELY TO SCALE. THE INTENT IS TO SHOW HOW THESE ITEMS SHALL BE INTEGRATED INTO THE CONSTRUCTION. LOCATE ALL ITEMS BY ON THE JOB MEASUREMENTS AND IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. COORDINATE WITH OTHER TRADES.

COMPLETENESS OF WORK

A. THE CONTRACT DOCUMENTS DEPICT PLUMBING SYSTEMS WHICH ARE INTENDED TO BE COMPLETE AND FUNCTIONING SYSTEMS. ALL PRODUCTS, MATERIALS, AND LABOR NECESSARY TO RENDER A FULLY FUNCTIONAL SYSTEM TO FULFILL THE DESIGN INTENT SHOWN ON THE DOCUMENTS SHALL BE PROVIDED BY THE CONTRACTOR.
B. CATALOG NUMBERS REFERENCED THROUGHOUT THE DIVISION 15 DRAWINGS AND SPECIFICATIONS ARE INTENDED TO CONVEY A GENERAL UNDERSTANDING OF THE TYPE AND QUALITY OF THE PRODUCT REQUIRED. WHERE WRITTEN DESCRIPTIONS DIFFER FROM INFORMATION CONVEYED BY A CATALOG NUMBER, THE WRITTEN DESCRIPTION SHALL GOVERN. NO EXTRA SHALL BE ALLOWED BECAUSE A CATALOG NUMBER IS FOUND TO BE INCOMPLETE OR OBSOLETE.

COORDINATION

A. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF ALL ITEMS THAT WILL AFFECT THE INSTALLATION OF THE WORK OF THIS DIVISION. THE COORDINATION SHALL INCLUDE, BUT NOT BE LIMITED TO, VOLTAGE, AMPACITY, CAPACITY, ELECTRICAL/PIPING CONNECTIONS, STRUCTURAL SUPPORTS, SPACE REQUIREMENTS, LOCATING DEVICES IN ARCHITECTURAL FINISH ELEMENTS, STAGING THE CONSTRUCTION AND BUILDING REQUIREMENTS, AND SPECIAL CONDITIONS.
B. BY SUBMITTING SHOP DRAWINGS ON THE PROJECT, THIS CONTRACTOR IS INDICATING THAT ALL NECESSARY COORDINATION HAS BEEN COMPLETED AND THAT THE SYSTEMS, PRODUCTS AND EQUIPMENT SUBMITTED CAN BE INSTALLED IN THE BUILDING AND WILL OPERATE AS SPECIFIED AND INTENDED, IN FULL COORDINATION WITH ALL OTHER DISCIPLINES.

EQUIPMENT NOISE AND VIBRATION

A. IT IS THE INTENT TO SPECIFY AND FOR THE CONTRACTOR TO INSTALL SYSTEMS THAT ARE QUIET AND FREE OF VIBRATION. EQUIPMENT SHALL BE BALANCED AND VIBRATION ISOLATED TO MEET THE REQUIREMENTS SPECIFIED HEREIN FOR BOTH THE EQUIPMENT ITSELF AND CONDITIONS WITHIN OCCUPIED SPACES. THIS CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND INSTALLING EQUIPMENT THAT IS QUIET IN OPERATION AS COMPARED TO OTHER AVAILABLE EQUIPMENT OF ITS SIZE, CAPACITY, AND TYPE.
B. EQUIPMENT NOT MEETING THESE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR TO AN ACCEPTABLE LEVEL BUT WITHIN THE REQUIREMENTS OF THE SPECIFICATIONS AT NO COST TO THE OWNER, ARCHITECT OR ENGINEER.
C. AIR DISTRIBUTION EQUIPMENT SHALL BE SOUND TESTED AT THE DESIGN OPERATING CONDITIONS AND SHALL NOT EXCEED AN NC OF 35 AT RATED CFM.
D. NOISE LEVEL: UNLESS NOTED OTHERWISE HEREIN OR ON THE DRAWINGS, THE NOISE LEVEL IN ALL OCCUPIED SPACES SHALL NOT EXCEED THE "LOWEST VALUE IN THE RANGE" OF THE NOISE CRITERIA CURVES PUBLISHED IN THE CURRENT FUNDAMENTALS EDITION OF THE ASHRAE GUIDE AND DATA BOOK. THE NOISE CRITERIA CURVES SHALL BE BASED ON ANSI STANDARD S1.6-1967 OCTAVE BANDS AND A SOUND PRESSURE LEVEL IN DECIBELS REFERENCED TO 0.002 MICROBARS. SOUND LEVELS IN OCCUPIED SPACES MUST MEET THE DESIGN CRITERIA WITH ALL CONSTRUCTION IN PLACE.
E. VERIFICATION: SHOULD A QUESTION ARISE REGARDING THE ACCEPTABLE LEVEL OF NOISE OR VIBRATION IN A PARTICULAR SPACE OR PIECE OF EQUIPMENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE SERVICES OF AN APPROVED ACOUSTICAL CONSULTANT TO DETERMINE ACTUAL NOISE/VIBRATION CONDITIONS.

WARRANTIES AND GUARANTEES

A. GENERAL: CONTRACTOR SHALL GUARANTEE ALL MATERIAL AND EQUIPMENT INSTALLED BY HIM AGAINST DEFECTS IN WORKMANSHIP AND MATERIAL FOR A PERIOD OF TWELVE (12) MONTHS AFTER FINAL ACCEPTANCE OF THE WORK BY THE OWNER, AND HE SHALL REPAIR OR REPLACE ANY MATERIALS OR EQUIPMENT DEVELOPING SUCH DEFECTS WITHIN THAT TIME, PROMPTLY ON DUE NOTICE GIVEN HIM BY THE OWNER AND AT CONTRACTOR'S SOLE COST AND EXPENSE.
B. EQUIPMENT: ALL EQUIPMENT BEARING A MANUFACTURER'S GUARANTEE SHALL BE CONSTRUED TO HAVE AN EXTENDED GUARANTEE TO THE OWNER BY THE MANUFACTURER, ANY SUCH EQUIPMENT THAT PROVES DEFECTIVE IN MATERIALS OR WORKMANSHIP WITHIN THE GUARANTEE PERIOD IS TO BE REPLACED BY THE CONTRACTOR IN ACCORDANCE WITH THE MANUFACTURER'S GUARANTEE.

SUBMITTALS AND SHOP DRAWINGS

A. CONTRACTOR SHALL PROVIDE THE ENGINEER WITH PRODUCT DATA AND SHOP DRAWINGS FOR ALL MATERIALS & EQUIPMENT SPECIFIED BELOW. SUBMITTALS SHALL BE PROVIDED IN AN ELECTRONIC FORMAT. SUBMITTAL DATA SHALL INCLUDE:

1. COVER SHEET WITH NAMES AND ADDRESSES OF PROJECT, ARCHITECT MEP ENGINEER, GENERAL CONTRACTOR & SUB CONTRACTOR.
2. DRAWING REFERENCE NUMBER, PRODUCT NAME AND/OR DESCRIPTION.
3. INDEX OF ALL DATA IN SUBMITTAL.
4. DIMENSIONAL DATA AND SKETCHES SHOWING THAT SUBMITTED EQUIPMENT WILL FIT INTO SPACE AVAILABLE AND WILL HAVE REQUIRED CODE AND MAINTENANCE CLEARANCES.
5. IDENTIFICATION OF EACH ITEM MATCHING THAT INDICATED ON THE DRAWINGS.
6. SUFFICIENT PERFORMANCE DATA, CAPACITY, SOUND DATA, DIAGRAMMATIC DATA AND DESCRIPTIVE INFORMATION TO SHOW ITS COMPLIANCE'S WITH THE CONTRACT DOCUMENTS. OPTIONS OR SPECIAL REQUIREMENTS SHALL BE CLEARLY INDICATED. APPLICABLE INFORMATION SHALL BE CLEARLY INDICATED AND NON APPLICABLE DATA SHALL BE CROSSED OFF.
7. MATERIALS AND EQUIPMENT PURCHASED OR INSTALLED WITHOUT A "NO EXCEPTIONS TAKEN" SHOP DRAWING REVIEW SHALL BE AT THE RISK OF THE CONTRACTOR. THE COST OF REMOVAL AND AT THE RISK OF THE CONTRACTOR. THE COST OF REMOVAL AND REPLACEMENT OF SUCH MATERIALS WHICH IS JUDGED UN-SATISFACTORY BY THE ENGINEER FOR ANY REASON SHALL BE AT THE EXPENSE OF THE CONTRACTOR.
8. ANY ITEMS KNOWINGLY SUBMITTED THAT DO NOT COMPLY WITH SPECIFICATIONS SHALL BE LISTED WITH EXPLANATION AS TO WHY THEY ARE BEING SUBMITTED.

B. REQUIRED SUBMITTALS / SHOP DRAWINGS:
1. FIXTURES
2. EQUIPMENT
3. PIPING
4. HANGERS

DOMESTIC WATER PIPING

A. ALL BRANCH WATER PIPING INSIDE THE BUILDING SHALL BE TYPE "L" COPPER TUBING (ASTM B-88) WITH WROUGHT COPPER FITTINGS (ANSI B16.22). CLEAN AND DEBURR THE INSIDE OF ALL FITTINGS CAREFULLY BEFORE JOINING WITH LEAD-FREE TIN/COPPER/SILVER/NICKLE SOLDER CONFORMING TO ASTM B32. WOLVERINE SILVABRITE 100 LEAD-FREE SOLDER OR HARRIS NICK LEAD-FREE SOLDER ARE ACCEPTABLE LEAD-FREE SOLDERS. USE WATER SOLUBLE FLUX RECOMMENDED BY SOLDER MANUFACTURER AND CONFORMING TO ASTM B813 AND NSF 61. WOLVERINE SILVABRITE 100 WATER SOLUBLE FLUX OR BRIDGIT WATER SOLUBLE PASTE FLUX ARE ACCEPTABLE FLUX. NO ACIDS SHALL BE USED TO CLEAN EITHER PIPE OR FITTINGS OR AS A FLUX IN SWEATING JOINTS. THE USE OF DRILLED-T CONNECTIONS IS NOT PERMITTED.
B. ALL COPPER WATER PIPING SHALL BE COMPLETELY ISOLATED FROM METAL HANGERS, METAL STUDS OR ANY OTHER ELECTRICALLY CONDUCTIVE BUILDING COMPONENTS. PROVIDE DIELECTRIC UNION AT ALL CONNECTIONS BETWEEN COPPER AND GALVANIZED PIPE.
C. PROPRESS MAY BE USED FOR TUBING SIZES 1/2" THRU 4" AND SHALL CONFORM TO THE MATERIALS AND SIZING REQUIREMENTS OF ASME B16.18 OR ASME B 16.22 AND HAVE "NSF-61" STAMPED ONTO THE FITTINGS. NO MIXING OF FITTING MANUFACTURERS SHALL BE ALLOWED. SEALING ELEMENTS FOR COPPER PRESS FITTINGS SHALL BE EPDM. SEALING ELEMENTS SHALL BE FACTORY INSTALLED OR AN ALTERNATIVE SUPPLIED BY FITTING MANUFACTURER. PRESS ENDS SHALL HAVE A FEATURE DESIGN LEAKAGE PATH. COPPER PRESS FITTINGS SHALL HAVE A SPECIFIC DESIGN FEATURE TO ENSURE THAT UNPRESSED FITTINGS WILL BE IDENTIFIED AT ANY PRESSURE GREATER THAN 15 PSIG. COPPER PRESS FITTINGS SHALL BE RATED FOR 200 PSIG WORKING PRESSURES AND TEMPERATURES 250 DEGREES F. PRESS CONNECT FITTINGS SHALL HAVE THE SMART CONNECT FEATURE, GUARANTEED TO DETECT UNPRESSED FITTING DURING TESTING PROCESS. THE INSTALLER'S SHALL BE TRAINED BY VIEGA AND CARRY TRAINING CREDENTIALS
D. DOMESTIC WATER PIPING SHALL BE HYDROSTATICALLY TESTED AT 1.5 TIMES SYSTEM DESIGN PRESSURE.

SANITARY SOIL WASTE AND VENT PIPING - CAST IRON

A. ABOVE GRADE WASTE AND VENT SHALL BE NO-HUB STANDARD WEIGHT CAST IRON PIPE WITH NO-HUB DRAINAGE FITTINGS USING STAINLESS STEEL COUPLINGS THAT MEET ASTM C 1540.
B. CAST IRON PIPE SHALL BE AS MANUFACTURED BY CHARLOTTE, TYLER, OR NEWAGE CASTING.
C. SLOPE ALL WASTE AND VENT PIPING IN ACCORDANCE WITH LOCAL CODES.
D. PROVIDE AND INSTALL ALL CLEANOUTS INDICATED AND AS REQUIRED BY LOCAL CODES.
E. THE WASTE AND VENT SYSTEM SHALL BE TESTED AS REQUIRED BY THE PLUMBING CODES HAVING JURISDICTION.

DRAINS AND CLEANOUTS

A. FURNISH AND INSTALL CLEANOUTS AS SHOWN ON THE DRAWINGS AND AS REQUIRED BY LOCAL ORDINANCE. CLEANOUTS SHALL BE MANUFACTURED BY JAY R. SMITH, JOSAM, JONESPEC, WADE, OR ZURN UNLESS NOTED OTHERWISE.
B. CLEANOUTS SHALL BE THE SAME NOMINAL SIZE AS THE PIPE THEY SERVE UP TO FOUR INCHES.
C. CLEANOUTS SHALL HAVE A CAST IRON BODY WITH TAPERED CAST BRASS OR BRONZE PLUG PROVIDING GAS AND WATERTIGHT SEAL.
D. INTERIOR FLOOR CLEANOUTS SHALL HAVE STAINLESS STEEL OR NICKEL BRONZE SCORIATED TOP. PROVIDE CARPET MARKER WHEN INSTALLED IN AREAS TO BE COVERED BY CARPET.
E. EXTERIOR CLEANOUTS AT GRADE SHALL HAVE SCORIATED CAST IRON TOP.
F. WALL CLEANOUTS SHALL BE PROVIDED WITH STAINLESS STEEL ACCESS COVERS OF ADEQUATE SIZE TO ALLOW RODDING OF DRAINAGE SYSTEM. WALL CLEANOUTS INCORPORATING COVER SCREWS THAT EXTEND COMPLETELY THROUGH THE ACCESS PLUG ARE NOT ACCEPTABLE.
G. SET TOP OF FLOOR DRAINS AND FLOOR SINKS TO MEET THE LOW POINT ELEVATION OF FINISHED FLOOR.
H. FINAL MOUNTING OF THE INTERIOR CLEANOUT TOP OR ACCESS COVER SHALL BE SET FLUSH WITH THE FINISHED FLOOR OR WALL SURFACE. LUBRICATE THREADED CLEANOUT PLUGS WITH MIXTURE OF GRAPHITE AND LINSEED OIL.
I. ENCASE EXTERIOR CLEANOUTS WITHIN 14"X14"X6" THICK REINFORCED CONCRETE PAD. SET TOP FLUSH WITH FINISHED GRADE SURFACE.
J. LOCATE CLEANOUTS WITH REQUIRED CLEARANCE FOR RODDING OF DRAINAGE SYSTEM.
K. ROUND WALL CLEANOUT COVERS SHALL NOT BE LARGER THAN REQUIRED FOR 4 INCH DIA. PIPE. ACCESS PANELS SHALL BE PROVIDED AS APPROVED BY ARCHITECT/ENGINEER FOR LARGER PIPE SIZES.

PIPING INSULATION

A. DOMESTIC WATER (HOT AND HOT WATER RETURN) PIPING, FITTINGS AND VALVES SHALL BE INSULATED WITH NOMINAL 1" WALL THICKNESS FIBERGLASS PIPE INSULATION, WITH A K FACTOR NOT TO EXCEED 0.23 BTU*IN/HR*SF*DEGREE F @ 75 DEGREES F. HAVING FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DENSITY OF 50 OR LESS WHEN TESTED BY ASTM E-84 METHOD. THE INSULATION SHALL INCLUDE AN ALL PURPOSE JACKET, CONSISTING OF HIGH DENSITY, WHITE KRAFT BONDED TO ALUMINUM FOIL AND REINFORCED WITH FIBERGLASS YARN. THE JACKET SHALL INCLUDE A LONGITUDINAL LAP WITH A PRESSURE SENSITIVE TAPE SEAL.
B. INSULATED PIPING SHALL NOT BE EXPOSED AT HANGER AND COME INTO DIRECT CONTACT WITH HANGER WITHOUT INSULATION AND SHIELD AS DESCRIBED BELOW.
C. PROVIDE PROTECTION SHIELDS AT ALL PIPE HANGERS. WHERE PROTECTION SHIELDS ARE USED, PROVIDE AN INSERT BETWEEN THE PIPING AND THE SHIELD 2" LONGER AND WIDER THAN THE SHIELD, HAVING THE SAME THICKNESS AND CONTOUR AS THE ADJOINING INSULATION. INSERTS SHALL BE MINIMUM 8.0# DENSITY, MINIMUM 100 PSI COMPRESSIVE STRENGTH.

D. ACCEPTABLE INSERT MATERIALS ARE:

1. PITTSBURGH-CORNING "FOAMGLAS" CELLULAR GLASS
2. SCHULLER THERMO-12 CALCIUM SILICATE
3. OWENS-CORNING KAYLO AF CALCIUM SILICATE

E. CLOTH TAPE IS NOT ACCEPTABLE FOR USE IN THIS APPLICATION.

DOMESTIC WATER VALVES (COLD AND HOT WATER)

A. LINE-SHUT OFF VALVES UP TO AND INCLUDING 2" SHALL BE TWO PIECE BRONZE BODY OF ASTM B584 ALLOY 844, ASTM B61 OR ASTM B62, FULL PORT BALL TYPE RATED AT 600 WOG WITH THREADED CONNECTIONS, BLOW-OUT PROOF STEM, PLASTIC COATED LOCKABLE LEVER HANDLE, TEFLON PACKING, 316 STAINLESS STEEL BALL AND STEM. ACCEPTABLE VALVES ARE NIBCO MODEL T-585-70-66-LL-LF OR APPROVED EQUAL MODEL BY CRANE, MILWAUKEE OR APOLLO.
B. LINE SHUT-OFF VALVES 2-1/2" AND LARGER INSTALLED WITHIN SYSTEMS HAVING DESIGN OPERATING PRESSURES BETWEEN 160 AND 250 P.S.I.G. SHALL BE THREADED LUG TYPE DUCTILE IRON BODY BUTTERFLY VALVE WITH EXTENDED NECK, LOCKABLE LEVER HANDLE, 316 STAINLESS STEEL STEM AND DISC, EPDM LINER AND SEAL, SUITABLE FOR BI-DIRECTIONAL FLOW AND DEAD END SERVICE WITH DOWNSTREAM FLANGE REMOVED. ACCEPTABLE VALVES ARE NIBCO MODEL LD-3022, OR APPROVED EQUIVALENT MODEL BY KEYSTONE, JAMESBURY, DEZURIK, MILWAUKEE, CRANE OR APOLLO.
C. PROVIDE STEM EXTENSIONS OF A NON-THERMAL CONDUCTING MATERIAL FOR VALVES IN INSULATED LINES TO ALLOW UNOBSTRUCTED OPERATION.
D. DOMESTIC HOT WATER RETURN CIRCUIT BALANCING VALVES 1/2" THROUGH 3" SHALL BE MACHINED BALL TYPE CALIBRATED BALANCING VALVE WITH LEAD FREE ASTM B283-C69300 BRASS BODY/304 STAINLESS STEEL BALL CONSTRUCTION, GLASS AND CARBON FILLED TFE SEAT RINGS, EPDM STEM "O" RING, THREADED NPT INLET/OUTLET CONNECTIONS, 400 PSIG MAXIMUM WORKING PRESSURE AT 250ºF. VALVE SHALL HAVE DIFFERENTIAL PRESSURE READ-OUT PORTS ACROSS VALVE SEAT AREA FITTED WITH INTERNAL EPT INSERTS/CHECK VALVES. VALVE BODY SHALL HAVE 1/4" NPT TAPPED DRAIN/PURGE PORT. VALVE SHALL HAVE CALIBRATED NAMEPLATE AND MEMORY STOP FEATURE TO ALLOW VALVE TO BE CLOSED FOR SERVICE AND THEN REOPENED TO SET POINT WITHOUT DISTURBING BALANCE POSITION. VALVE SHALL CONTAIN LESS THAN 0.25% LEAD CONTENT BY WEIGHT ON WETTED SURFACES AND BE DESIGNED FOR POSITIVE SHUT-OFF. VALVES SHALL BE SAME SIZE AS THE PIPE INSTALLED. PROVIDE VALVES AS SCHEDULED ON CONTRACT DRAWINGS MANUFACTURED BY BELL & GOSSETT CIRCUIT SETTER PLUS CB SERIES, OR OWNER APPROVED EQUAL.
E. SPRING LOADED CHECK VALVES, 2" AND SMALLER - SILENT CLOSING, BRONZE, CLASS 125, WITH THREADED CONNECTIONS, BUNA DISC, BRONZE OR STAINLESS STEEL SPRING. MANUFACTURED BY NIBCO MODEL T-480 OR APPROVED EQUIVALENT MODEL BY MILWAUKEE OR CRANE.

PIPE HANGERS AND SUPPORTS

A. ALL PIPE SHALL BE INDEPENDENTLY SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER AND WHEREVER POSSIBLE, PARALLEL RUNS OF HORIZONTAL PIPING SHALL BE GROUPED TOGETHER ON TRAPEZE TYPE HANGERS. VERTICAL RISERS SHALL BE SUPPORTED AT EACH FLOOR LINE WITH STEEL PIPE CLAMPS. SPACING OF PIPE SUPPORTS SHALL BE IN ACCORDANCE WITH NFPA 13.
B. ALL PIPING SHALL BE PITCHED TO DRAIN IN ACCORDANCE WITH NFPA 13. PROVIDE VALVES WITH HOSE CONNECTIONS AT ALL SYSTEM DRAIN POINTS.
C. IF IT COMPLIES WITH THESE SPECIFICATIONS, HANGERS AND SUPPORTS MANUFACTURED BY ONE OF THE FOLLOWING MANUFACTURERS WILL BE ACCEPTABLE: FEE AND MASON, GRINNELL, ELCEN OR APPROVED EQUAL.

PLUMBING PIPING HANGER SPACING

A. MAXIMUM SPACING BETWEEN PIPING HANGERS SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE:

SIZE OF PIPING	DISTANCE BETWEEN SUPPORTS:
COPPER	
1/2"	5'
3/4"	6'
1"	7'
1-1/4"	8'
1-1/2"	9'
2"	10'

B. PROVIDE ADDITIONAL SUPPORTS TO PREVENT SAGGING OF PIPE

C. SUPPORTS SHALL BE ARRANGED SO AS TO BE NEAR THE WEAKEST POINT OF THE SPAN SUCH AS JOINTS, TURNS AND AT THE BASE OF ALL VERTICAL TO HORIZONTAL OFFSETS AND AT ALL WASTE TRAPS.

D. ALL PIPING SHALL BE RIGIDLY INSTALLED IN ALL CHASES OR WALLS. TEST FOR RIGIDITY SHALL BE THAT THE PIPING IS VIRTUALLY IMMOVABLE BY HAND, SHORT OF DEFORMING THE PIPING.

E. IN NO CASE SHALL ANY PIPING DEPEND ON BLOCKS, BRICKS, STONE, WOOD SLEEPERS OR TIE WIRES FOR ITS FINAL SUPPORT.

F. SUPPORT SYSTEM SHALL BE AS MANUFACTURED BY "HOLDRITE" OR AN APPROVED EQUAL.

ACCESS DOORS

A. ACCESS DOORS SHALL BE PROVIDED FOR ACCESS TO VALVES OR ANY OTHER ITEM WHICH MAY REQUIRE SERVICING OR ADJUSTING AND WHICH IS CONCEALED BEHIND AN INACCESSIBLE SURFACE SUCH AS SPLINED CEILINGS AND PLASTER WALLS OR CEILINGS. ACCESS DOORS SHALL BE AS MANUFACTURED BY MILCOR OR AN APPROVED EQUAL FOR SPECIFIC APPLICATION.

PLUMBING FIXTURES AND TRIM

A. THE FOLLOWING MANUFACTURERS WILL BE ACCEPTABLE:

1. FIXTURES: KOHLER, AMERICAN STANDARD, ELJER, CRANE.
2. CLOSET SEATS: CHURCH, OLSONITE, BENEKE.
3. FAUCETS: CHICAGO, T&S BRASS, ZURN.
4. TRIM (TRAPS, SUPPLIES, STOPS): MCGUIRE, CAMBRIDGE BRASS, BRASSCRAFT.
5. FLUSH VALVES: SLOAN, ZURN, DELANEY.
6. CARRIERS: JAY R. SMITH, MIFAB, WADE, ZURN, JOSAM.
7. STAINLESS STEEL SINKS; JUST, ELKAY.

SYSTEM CLEANING AND PRESSURE TESTING:

A. DOMESTIC WATER PIPING SYSTEM:

1. PROGRESSIVELY FLUSH SYSTEM BY OPENING VALVES BEGINNING AT THE POINT OF WATER ENTRY AND FINISHING AT THE LAST VALVE ON THE RUN(S). STERILIZE SYSTEM IN ACCORDANCE WITH LOCAL WATER DEPARTMENT OR AUTHORITY HAVING JURISDICTION (AHJ).

2. AT A MINIMUM PERFORM THE FOLLOWING:

1. INTRODUCE EPA DOMESTIC WATER SYSTEM APPROVED CHLORINE SOLUTION AT WATER SERVICE ENTRY.
2. FILL LINES SLOWLY UNTIL RESIDUAL TEST AT ENDS OF BRANCHES INDICATE A 50 PPM CONCENTRATION OF CHLORINE.
3. VALVE SYSTEM OFF AND LEAVE STANDING FOR 8 HOURS.
4. TEST RESIDUAL CHLORINE CONCENTRATION AT END OF LINES.
5. IF CONCENTRATION IS LESS THAT 5 PPM, REPEAT STERILIZING PROCESS.
6. DOCUMENT THE STERILIZATION PROCESS FOR REVIEW BY THE AHJ.
7. DO NOT USE THE DOMESTIC WATER SYSTEM PRIOR TO APPROVAL BY THE AHJ.

B. EQUIPMENT:
1. KEEP EQUIPMENT CLEAN AND DRY DURING THE CONSTRUCTION PROCESS.
2. PRIOR TO START UP, INSPECT AND CLEAN ALL INTERIOR EQUIPMENT SURFACES, CLEAN AND REPAIR TORN INSULATION, REMOVE ALL DIRT AND DEBRIS.
3. PROVIDE TEMPORARY FILTER MEDIA AS REQUIRED FOR UNIT OPERATION PRIOR TO FINAL COMMISSIONING.

C. PRESSURE TESTING:
1. DOMESTIC WATER PIPING:
a. LEAVE ALL JOINTS EXPOSED FOR THE TESTING PROCEDURE.
b. FLUSH SYSTEM WITH CLEAN WATER.
c. ALL COILS, VALVES, PUMPS, AND FITTINGS SHALL BE PRESSURE TESTED AT A PRESSURE OF 125 PSI PRESSURE OF THE SYSTEM.
d. KEEP SYSTEM UNDER TEST PRESSURE FOR A PERIOD OF 4 HOURS.
e. INSPECT SYSTEM FOR LEAKS. REPAIR LEAKS.
f. REPEAT PRESSURE TEST UNTIL THERE ARE NO LEAKS.

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