SPECIFICATIONS

1. GENERAL

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.

B. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.

C. PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH THE EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES IS REQUIRED.

D. SUPPORT ALL PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES, CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.

E. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

F. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES IN MAKING UP THE WORK PROPOSAL.

G. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH BUILDING OWNER. INSTALL ISOLATION VALVES AT POINT OF CONNECTION TO THE EXISTING PIPING.

H. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND APPROVED MANNER. RESTORE EXISTING WORK DISTURBED WHILE INSTALLING NEW WORK TO ACCEPTABLE CONDITION AS DETERMINED BY ARCHITECT.

I. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW SYSTEM.

J. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.

K. SEAL OPENINGS AROUND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL.

L. ALL PRESENT MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.

M. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

N. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.

O. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.

P. UNLESS OTHERWISE SPECIFICALLY SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.

Q. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

R. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION. THE ON-SITE INSPECTION SHALL VERIFY EXISTING PIPING (SIZES, CLEARANCES, ETC) AND CONDITIONS.

S. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

T. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.

U. DEFINITIONS:

1) "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.

2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.

3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

4) "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.

5) "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.

6) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.

7) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

2. SCOPE OF WORK

A. THE WORK UNDER CONTRACT INCLUDES ALL LABOR, MATERIALS AND APPLIANCES NECESSARY FOR THE FURNISHING, INSTALLING AND TESTING, COMPLETE AND READY FOR SAFE OPERATION OF THE SYSTEMS. WORK SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER.

B. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES, BY OWNER, INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

3. INSULATION – GENERAL REQUIREMENTS

A. ALL INSULATION MATERIALS, INCLUDING JACKETS, FACING, ADHESIVE, COATINGS, AND ACCESSORIES ARE TO BE FIRE HAZARD RATED AND LISTED BY UNDERWRITERS LABORATORIES, INC. USING STEINER TUNNEL TEST METHOD FOR FIRE HAZARD CLASSIFICATION OF BUILDING MATERIALS, STANDARD UL 723 (ASTM E-84), (ASA A2.5-1963). FLAMESPREAD: MAXIMUM 25. FUEL CONTRIBUTED AND SMOKE DEVELOPED: MAXIMUM 50. FLAMEPROOFING TREATMENTS SUBJECT TO DETERIORATION FROM MOISTURE OR HUMIDITY ARE NOT ACCEPTABLE.

B. DEFINITIONS:

1) EXPOSED: PIPING LOCATED IN MECHANICAL EQUIPMENT ROOMS AND IN AREAS WHICH WILL BE VISIBLE WITHOUT REMOVING CEILINGS OR OPENING ACCESS PANELS.

2) CONCEALED: INDOOR DUCTS, PIPING OR EQUIPMENT WHICH IS NOT EXPOSED.

4. PIPING INSULATION

A. INSULATE ALL PIPING IN ACCORDANCE WITH THE FOLLOWING...

1) SERVICE: LOW TEMP PIPING – 40°F TO 100°F
   a. SIZE: UP TO 4"
   b. THICKNESS: 1"
   c. MATERIAL: P-1
   d. FINISH: VAPORSEAL

2) SERVICE: LOW TEMP FITTINGS AND VALVES – 40°F TO 100°F
   a. SIZE: UP TO 4"
   b. THICKNESS: 1"
   c. MATERIAL: P-4
   d. FINISH: VAPORSEAL

3) SERVICE: HOT PIPING – 100°F TO 250°F
   a. SIZE: UP TO 2"
   b. THICKNESS: 1-1/2"
   c. MATERIAL: P-1
   d. FINISH: F-1

4) SERVICE: HOT FITTINGS AND VALVES – 100°F TO 250°F
   a. SIZE: UP TO 2"
   b. THICKNESS: 1-1/2"
   c. MATERIAL: P-4
   d. FINISH: F-1

B. PIPING, VALVES AND FITTINGS TO BE INSULATED:

1) LOW TEMPERATURE PIPING SYSTEMS – 40 TO 100 DEG F INCLUDING:

   a. COLD WATER SUPPLY.

   b. CONDENSATE DRAIN PIPING.

2) LOW TEMPERATURE HOT PIPING SYSTEMS – 100 TO 250 DEG F INCLUDING:

   a. DOMESTIC HOT WATER SUPPLY.

C. MATERIAL:

1) ALL INSULATION (INCLUDING JACKET, FACING, AND ADHESIVE) SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURES LISTED IN ASTM E-84, NFPA 255, AND UL 273; NOT EXCEEDING A FLAME SPREAD OF 25 AND A SMOKE DEVELOPED OF 50.

2) TYPE P-1: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS, MAXIMUM 0.23 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY-APPLIED FIRE-RETARDANT FOIL-SKRIM-KRAFT FACING. ALL SERVICE JACKET. SIMILAR TO OWENS-CORNING 650 ASJ.

3) TYPE P-4: MINIMUM 1 LB DENSITY FIBERGLASS FITTING INSERTS, MAXIMUM 0.28 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO MANVILLE HI LO TEMP INSULATION INSERTS.

D. FINISH:

1) TYPE F-1: FITTING COVER, MOLDED WHITE PVC JACKET, UL CLASS 1, MAXIMUM PERMEANCE 0.05 SIMILAR TO MANVILLE ZESTRON.

E. INSTALLATION:

1) BEFORE APPLYING INSULATION ALL PRESSURE AND LEAK TESTS SHALL BE COMPLETED AND APPROVED.

2) ALL INSULATION SHALL BE BUTTED FIRMLY TOGETHER. PROVIDE 2 IN. LAMP STRIPS AT ALL SEAMS SECURED WITH ADHESIVE. USE VAPOR BARRIER TAPE AND VAPORSEAL ADHESIVE WHERE REQUIRED. STAPLES NOT PERMITTED. REFRIGERANT PIPING INSULATION SHALL HAVE MITERED FITTINGS.

3) ALL INSULATION AND VAPOR BARRIERS SHALL BE CONTINUOUS PASSING THROUGH SLEEVES, HANGERS, ETC., OR OTHER OPENINGS. PROVIDE SADDLES OR SHIELDS FOR PROTECTION.

4) INSULATION FOR STRAINERS OR OTHER FITTINGS OR ACCESSORIES REQUIRING SERVICING OR INSPECTION SHALL HAVE INSULATION REMOVABLE AND REPLACEABLE WITHOUT DAMAGE.

5. PIPING – GENERAL REQUIREMENTS

A. COMPLETE WITH: PIPE, FITTINGS, VALVES, STRAINERS, MOTORIZED VALVE OPERATORS, STRAINERS, HANGERS, SUPPORTS, GUIDE, SLEEVES, AND ACCESSORIES.

B. ALL ITEMS SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE FOLLOWING CODES AND STANDARDS:

1) AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).

2) AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).

3) AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).

4) MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTING INDUSTRY (MSS).

C. ALL PRESSURIZED PIPING TO BE TESTED HYDROSTATICALLY TO 150 PSI OR 150% OF OPERATING PRESSURE, WHICHEVER IS GREATER, BUT NEVER EXCEED TEST PRESSURE ANSI B16.1 BASIS. TEST DURATION TO BE 2 HOURS (PROPANE SHALL BE 4 HOURS) WITH NO PRESSURE CHANGE CORRECTED FOR TEMPERATURE CHANGE.

D. DRAINAGE AND VENT PIPING SHALL BE TESTED AS FOLLOWS:

1) CAP ALL OUTLETS AND FILL PIPING SYSTEM TO OVERFLOWING FROM A POINT AT LEASE 10 FT ABOVE THE FLOOR. WATER LEVEL SHALL REMAIN CONSTANT THROUGHOUT A 2 HOUR TEST DURATION.

E. REPAIR OR REPLACE LEAKS OR DEFECTS WITHOUT ADDITIONAL COST.

F. PROVIDE DIELECTRIC NIPPLES WHERE DISSIMILAR METALS ARE TO BE JOINED.

G. PIPE SUPPORTS:

1) PROVIDE ADEQUATE SUPPORT FOR PIPE AND CONTENTS TO PREVENT SAGGING, VIBRATION, OR SWAYING AND ALLOW FOR EXPANSION AND CONTRACTION. PROVIDE SUPPLEMENTAL STEEL AS REQUIRED WHERE STRUCTURE CANNOT SUPPORT POINT LOADS.

2) FURNISH AND INSTALL EXPANSION COMPENSATORS FOR ALL LONG, STRAIGHT RUNS OF PIPING BETWEEN ANCHORED POINTS. SUBMIT TYPE AND PERFORMANCE TO ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.

3) HORIZONTAL PIPING TO BE SUPPORTED BY FORGED STEEL ADJUSTABLE CLEVIS TYPE HANGER. MAXIMUM SPACING AS FOLLOWS:

   a. COPPER 3 IN. AND SMALLER: 7 FT.

   b. ADDITIONAL SUPPORTS AT CHANGES IN DIRECTION, RUNOUTS, AND CONCENTRATED LOADS DUE TO VALVES, ETC.

4) VERTICAL PIPING:

   a. BASE ELBOW SUPPORT WITH BEARING PLATE ON STRUCTURAL SUPPORT.

   b. GUIDES AT EVERY SECOND FLOOR (SPACING NOT TO EXCEED 25 FT).

   c. TOP SUPPORT HANGER OR SADDLE IN HORIZONTAL CONNECTION WITH PROVISIONS FOR EXPANSION.

   d. INTERMEDIATE STEEL RISER CLAMP SUPPORT BOLTED AND WELDED TO PIPE BEARING ON STRUCTURAL STEEL OR BEARING PLATE AT FLOOR.

5) ALL EXPOSED PIPING PASSING THROUGH WALLS, FLOORS, CEILINGS, AND PARTITIONS SHALL BE PROVIDED WITH CHROME PLATED CAST BRASS ESCUTCHEONS HELD IN PLACE WITH SET SCREWS.

6. SANITARY DRAINAGE AND VENT

A. HUBLESS CAST IRON SOIL PIPE AND FITTINGS WITH ANCON FOUNDRY HUSKIE SERIES 4000 EXTRA WIDE HEAVY DUTY GASKETED HUBLESS COUPLINGS.

1) APPLICATION: ABOVE SLAB.

   a. PITCH: 1/4"/FT.

7. LOW TEMPERATURE WATER SYSTEMS, BELOW 100 PSIG, -20 TO 200 DEG F OPERATING TEMPERATURES.

A. COPPER, TYPE L, HARD DRAWN IN ACCORDANCE WITH ASTM B88, AND LEAD-FREE SOLDER JOINTS.

B. FITTINGS:

1) 2 IN. AND SMALLER: 125 LB WSP CAST IRON THREADED FITTINGS SHALL BE IN ACCORDANCE WITH ANSI B16.4., CAST IRON FLANGED FITTINGS SHALL BE IN ACCORDANCE WITH ANSI B16.1.

2) COPPER: WROUGHT COPPER, SOLDERED, 95/5TA, ANSI B16.22.

C. VALVES:

1) BALL VALVES:

   a. TWO-PIECE, BRONZE, END ENTRY, 600 PSI WWP; SIMILAR TO NIBCO T-585-70 (THREADED), S585-70 (SWEAT).

2) GATE VALVES:

   a. 2 IN. AND SMALLER: BRONZE THREADED ENDS, SOLID WEDGE, INSIDE SCREW, TRAVELING STEM UNION BONNET. 150 LB WSP: JENKINS FIG. 47U.

D. PROVIDE MANUAL AIR VENTS LINE SIZE AIR CHAMBER WITH 1/2 IN. GLOBE VALVE AT ALL HIGH POINTS AND WHERE FLOW DIRECTION CHANGES FROM HORIZONTAL TO DOWNWARD.

E. PITCH WATER PIPING EXCEPT AS NOTED:

1) UP TO 1 IN.: 1 IN. IN 40 FT.

2) 1-1/2 IN. AND LARGER: 1 IN. IN 100 FT.

8. PLUMBING FIXTURES

A. FIXTURES TO BE COMMERCIAL GRADE LOW CONSUMPTION, AND ADA COMPLIANT WHERE INDICATED ON THE PLANS AND WHERE REQUIRED BY CODE.

B. REFER TO SCHEDULES FOR BASIS OF DESIGN.

C. REFER TO ARCHITECTURAL DOCUMENTS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL PLUMBING FIXTURES.

D. PROVIDE ALL FIXTURES WITH STOP VALVES AND SUPPLIES AND FIXTURE TRAPS AS REQUIRED.

9. PLUMBING SPECIALTIES

A. CLEANOUTS SHALL BE COMMERCIAL GRADE BRASS. APPROVED MANUFACTURERS INCLUDE ZURN, WADE, J.R. SMITH, JOSAM, OR APPROVED EQUAL.

B. SHOCK ABSORBERS AND AIR CHAMBERS: PROVIDE WATER HAMMER ARRESTORS ON WATER SUPPLIES TO QUICK CLOSING SOLENOID VALVES. WHERE NOT PROVIDED, CONNECT TO FIXTURES USING AIR CHAMBERS.

C. PROVIDE ACCESS AND ACCESS PANELS TO PROVIDE ACCESSIBLE EQUIPMENT AND SPECIALTIES. WHERE NECESSARY, PROVIDE METAL UNITS WITH LOCKS. CONFIGURATION AND TRIM AS REQUIRED BY FINISH WALL SURFACE. APPROVED MANUFACTURERS INCLUDE KARP, MILCOR, NYSTROM, OR APPROVED EQUAL.

10. MEDICAL GAS AND VACUUM PIPING

A. PROVIDE ALL PIPING COMPLETE WITH FITTINGS, VALVES, HANGERS, SUPPORTS, GUIDES, SLEEVES AND ACCESSORIES.

B. INSTALL ALL MEDICAL GAS PIPING TO NFPA 99, LEVEL 1 REQUIREMENTS.

C. PROVIDE MEDICAL GAS OUTLETS TO MATCH EXISTING.

D. MEDICAL AIR AND OXYGEN PIPING SHALL BE TYPE "L" COPPER, CLEANED AND SEALED FOR OXYGEN SERVICE. MEDICAL VACUUM AND WAGD PIPING SHALL BE TYPE "L" COPPER.

E. ALL JOINTS SHALL BE BRAZED. BRAZING FILLER METALS SHALL BE AWS A5.8, BCUP SERIES ALLOYS. FLUX IS PROHIBITED UNLESS USED WITH BRONZE FITTINGS.

F. VALVES SHALL BE FACTORY CLEANED FOR OXYGEN SERVICE, EXCEPT FOR VALVES IN VACUUM PIPING.

G. ZONE VALVE BOXES SHALL BE FORMED STEEL FOR RECESSED MOUNTING. INCLUDE BOXES FOR MULITPLE-VALVE INSTALLATION WITH PRESSURE GAGE AND IN SIZES TO PERMIT MANUAL OPERATION OF VALVES.

H. ZONE VALVES SHALL BE 3-PIECE-BODY, FULL-PORT COPPER-ALLOY BALL VALVE RATED FOR 300 PSIG MINIMUM WORKING PRESSURE, WITH CHROME PLATED BRASS BALL, PTFE OR TFE SEATS, BLOWOUT PROOF STEM, USED WITH QUARTER TURN BETWEEN OPENED AND CLOSED POSITIONS.

1) PROVIDE WITH COPPER-TUPE TYPE K OR L EXTENSIONS WITH PRESSURE GAGE FOR PRESSURE SYSTEMS AND VACUUM GAGE FOR VACUUM SYSTEMS.

I. ALARM PANELS FACTORY WIRED WITH AUDIBLE AND COLOR-CODED VISIBLE SIGNALS TO INDICATE SPECIFIED FUNCTIONS.

1) SEPARATE TROUBLE ALARM SIGNALS: PRESSURE AND VACUUM GAGES: AND INDICATORS FOR OXYGEN AND VACUUM: FOR THE FOLLOWING CONDITIONS:

   A) OXYGEN: PRESSURE DROPS BELOW 40 PSIG OR RISES ABOVE 60 PSIG
   B) MEDICAL VACUUM: VACUUM DROPS BELOW 12IN.HG

10. INTERRUPTION OF EXISTING MEDICAL GAS SERVICE

A. CONTRACTOR SHALL NOT INTERRUPT MEDICAL GAS SERVICE TO OCCUPIED FACILITIES. UNDER NO CONDITIONS SHALL MEDICAL GAS SERVICE VALVES (EXISTING OR NEW) BE CLOSED BY THE CONTRACTOR.

B. OWNER SHALL BE RESPONSIBLE FOR ISOLATING PORTIONS OF EXISTING SYSTEMS AND CLOSING SERVICE VALVES AS REQUIRED: INCLUDING VERIFYING PROPER SERVICE VALVE OR ZONE VALVE LABELING AND EXACT AREAS OF ROOMS CONTROLLED.

1) MEDICAL GAS SYSTEM ISOLATION:

   A) TOTAL ISOLATION BETWEEN NEW SYSTEMS AND EXISTING SYSTEMS SHALL BE MAINTAINED UNTIL ALL NEW PIPING IS TESTED FOR LEAKS AND TESTED FOR CROSS CONNECTIONS PER NFPA 99 BY THE CONTRACTOR.

C. ALL NEW MEDICAL GAS AND VACUUM PIPING SHALL BE TESTED AND CERTIFIED AS REQUIRED IN NFPA 99. PRIOR TO CONNECTING TO THE EXISTING SYSTEM.

1) ONCE THE CONNECTION TO THE HOUSE SYSTEM IS MADE THE MEDICAL GAS AND VACUUM PIPING SHALL BE TESTED AND CERTIFIED AGAIN AS REQUIRED IN NFPA 99.

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NUCLEAR MEDICINE RENOVATIONS – PHASE 2
PORTLAND, MAINE

CURRENT ISSUE STATUS:
ISSUED FOR CONSTRUCTION
10-10-14

REV	DESCRIPTION	DATE
0	ISSUED FOR CONSTRUCTION	10-10-14

GRAPHIC SCALE: 0" 1"

SCALE:	NO SCALE
PROJECT MANAGER:	DJV
JC/DRAWN BY:	JPB
A/E OF RECORD:	KDD
CAD FILE:	P-002-14113
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SHEET TITLE:
SPECIFICATIONS

SHEET No.
P-002