MECHANICAL NOTES AND SPECIFICATIONS

GENERAL NOTES:

IF ANY DISCREPANCY EXISTS BETWEEN THESE DOCUMENTS, MECHANICAL CONTRACTOR MUST REQUEST IN WRITING, CLARIFICATION FROM URBAN OUTFITTERS, INC. ARCHITECT AND ENGINEER. CONTRACTOR SHALL OBTAIN COPY OF MECHANICAL SPECIFICATION BOOK FOR ADDITIONAL INFORMATION.

1. BY SUBMITTING A QUOTATION OR PROPOSAL, THE MECHANICAL CONTRACTOR EXPRESSLY STATES AND WARRANTS THAT: ALL DRAWINGS AND SPECIFICATIONS HAVE BEEN THOROUGHLY REVIEWED, CONTRACTOR HAS BECOME FAMILIARIZED WITH JOB SITE CONDITIONS AND IS TOTALLY QUALIFIED TO PERFORM ALL OF THE WORK REQUIRED.

2. BEFORE SUBMITTING A FINAL PROPOSAL, THE CONTRACTOR SHALL EXAMINE THE SITE OF THE PROPOSED WORK TO DETERMINE THE EXISTING CONDITIONS THAT MAY AFFECT THE PROPOSAL. IF DISCREPANCIES ARE NOTED BETWEEN THE DOCUMENTS AND THE EXISTING CONDITIONS THE ARCHITECT SHALL BE NOTIFIED AND THE CONTRACTOR SHALL RECEIVE CLARIFICATION BEFORE SUBMITTING A BID. THE SUBMISSION OF A PROPOSAL SHALL INDICATE THAT ALL CHARGES AND COSTS MADE NECESSARY BY EXISTING CONDITIONS ARE INCLUDED AND THAT THE COMPLETE SYSTEM AS DESCRIBED ABOVE WILL BE FURNISHED AT THE PROPOSED COST.

3. IF WORK IS NOT SPECIFIED BUT REQUIRED BY CODE, THE WORK SHALL BE PROVIDED BY THE CONTRACTOR WITHOUT ADDITIONAL EXPENSE TO THE OWNER.

4. IT IS THE INTENT OF THESE SPECIFICATIONS TO PROVIDE A COMPLETE, FINISHED, TESTED, ADJUSTED AND OPERATIONAL MECHANICAL SYSTEM. ANY APPARATUS, MATERIAL, WORK OR INCIDENTAL ITEMS REQUIRED TO MAKE THE SYSTEM COMPLETE AND READY FOR OPERATION SHALL BE INCLUDED IN THE MECHANICAL CONTRACTOR'S PROPOSAL WHETHER OR NOT IT IS SHOWN ON THE DRAWINGS OR IN THE SPECIFICATIONS.

5. THE LANDLORD'S "TENANT CRITERIA MANUAL" FORMS A PART OF THESE SPECIFICATIONS. ANY DISCREPANCY BETWEEN THESE SPECIFICATIONS AND THE "TENANT CRITERIA MANUAL" THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY. ANY EQUIPMENT REQUIRED OF THE MANUAL BUT NOT SHOWN ON THESE SPECIFICATIONS SHALL BE PROVIDED AT THIS CONTRACTOR'S EXPENSE. THE CONTRACTOR IS RESPONSIBLE FOR SECURING A COPY OF THE TENANT CRITERIA MANUAL FROM THE MALL AND BECOMING FAMILIAR WITH ITS CONTENTS.

6. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC. THEY ARE INTENDED TO CONVEY THE SCOPE OF WORK AND TO INDICATE THE GENERAL ARRANGEMENT OF THE EQUIPMENT, DUCTS, PIPING, ETC. THE MECHANICAL CONTRACTOR MUST OBTAIN APPROVED CONSTRUCTION DRAWINGS FROM THE GENERAL CONTRACTOR BEFORE BEGINNING ANY WORK.

7. THE ENTIRE INSTALLATION, INCLUDING ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP, SHALL CONFORM TO ALL APPLICABLE LAWS, CODES AND REGULATIONS OF MUNICIPAL, COUNTY, PROVINCIAL AND FEDERAL AUTHORITIES AND SHALL ALSO BE IN COMPLIANCE WITH THE LANDLORD'S CRITERIA AND THE LATEST EDITIONS OF ASHRAE STANDARDS, THE LIFE SAFETY CODE, THE STANDARD MANITOBA CODE, UNDERWRITERS LABORATORIES, THE CANADIAN ELECTRICAL CODE, NFPA 70, 90A, AND 96.

8. THE MECHANICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND LICENSES PERTAINING TO HIS WORK.

9. THE CONTRACTOR SHALL OBTAIN AND COMPLY WITH DETAILED REQUIREMENTS OF LEASE EXTRACTS FROM THE LANDLORD AND TENANT.

10. THE CONTRACTOR SHALL FURNISH AND INSTALL AN AIR-CONDITIONING AND HEATING SYSTEM IN ACCORDANCE WITH LANDLORD CRITERIA.

11. COORDINATE LOCATIONS OF ALL AIR OUTLETS WITH ALL WALLS, LIGHTS, SPRINKLER HEADS, CEILING TILES AND DECORATIVE CEILING FIXTURES PRIOR TO INSTALLATION.

12. EQUIPMENT AND MATERIALS IN TRANSIT SHALL UTILIZE FREIGHT ELEVATOR OR STAIRS. SAID EQUIPMENT OR MATERIALS SHALL BE DISASSEMBLED AS REQUIRED TO MEET THE RESTRICTIONS IMPOSED BY THE BUILDING OR ITS COMPONENT CONSTRAINTS AND THEN REASSEMBLED IN THE NEW WORK AREA.

13. ALL WORK SHALL BE DONE WITH A MINIMUM OF NOISE AND DISTURBANCE TO BUSINESS ROUTINE. ALL WORK SCHEDULES SHALL BE COORDINATED WITH AND APPROVED BY, THE ARCHITECT.

14. SINCE THESE ARE SECURE FLOORS, ALL DELIVERIES, WORKERS, WORK OPERATORS, ETC., REQUIRED BY THE CONTRACTOR FOR WORK PERFORMED IN ANY AREA OR SITE BUILDING SHALL BE IN STRICT CONFORMANCE TO THE RULES AND REGULATIONS OF THE OWNER AND ARCHITECT.

15. CONTRACTOR SHALL PROTECT HIS WORK AND EQUIPMENT FROM DAMAGE, VANDALS, ETC. ANY ITEM THAT IS DAMAGED, VANDALIZED OR STOLEN PRIOR TO ACCEPTANCE OF BUILDING BY OWNER AND ARCHITECT SHALL BE REPLACED BY RESPECTIVE CONTRACTOR AT NO CHARGE TO OWNER.

16. PROVIDE ACCESS DOORS FOR ALL CONCEALED TURNING VANES IN DUCTWORK, VALVES, VENTS, DAMPERS, FIRE DAMPERS, EXPANSION JOINTS, PULL BOXES, SHOCK ABSORBERS, DRAINS, MOTORS, FANS, PUMPS AND ANY OTHER ITEM REQUIRING SERVICE. DOORS IN PLASTER OR CONCRETE SURFACES SHALL HAVE A RECESSED DOOR WITH CONCRETE OR PLASTER FACING. DOORS IN CARPETED OR TILED AREAS SHALL BE RECESSED WITH TILE FACING. NO ACCESS DOORS ARE REQUIRED IN 2' X 2' AND 2' X 4' LAY-IN ACOUSTIC TILE CEILING. PROVIDE COLORED PINS TO DENOTE ACCESS TILES. FURNISH FACTORY MADE METAL ACCESS DOORS, COMPLETELY FLUSH, "ALLAN HEAD" SCREWDRIVER OPERATED, WITH FRAMES AND CAM-TYPE CATCH WITH STAINLESS STEEL STUD. DOORS SHALL BE NOT LESS THAN 12" X 12" FOR HAND ACCESS. DOORS IN WALLS AND CEILING SHALL BE PRIME COATED CARBON STEEL. FURNISH FIRE RATED DOORS FOR FIRE RATED CONSTRUCTION. RATING OF DOOR MUST BE SAME RATING AS CONSTRUCTION.

17. IT IS SPECIFICALLY THE INTENTION OF THIS SPECIFICATION TO HOLD THE CONTRACTOR RESPONSIBLE FOR ALL DAMAGE DONE TO ANY EXISTING FACILITIES, EQUIPMENT, PAINTING, OR ARCHITECTURAL AND STRUCTURAL FEATURES OF THE BUILDING, BY EITHER THEIR OWN WORKMEN OR BY ANY OF THEIR SUBCONTRACTORS. THE CONTRACTOR SHALL REPAIR ANY DAMAGE DONE BY HIS OWN WORKMEN OR SUBCONTRACTORS, AND THE OWNER AT HIS DISCRETION, MAY WITHHOLD PAYMENTS EQUAL TO THE REASONABLE COST OF THE REPAIRS.

18. THIS CONTRACTOR SHALL NOT INTERRUPT ANY OF THE SERVICES OF THE EXISTING BUILDING NOR INTERFERE WITH THE SERVICES IN ANY WAY WITHOUT THE EXPRESSED PERMISSION OF THE OWNER AND ARCHITECT.

19. THIS CONTRACTOR OR HIS WORKMEN SHALL NOT BE PERMITTED TO USE ANY PART OF THE EXISTING BUILDING AS A SHOP WITHOUT THE APPROVAL OF THE OWNER AND ARCHITECT.

20. WHERE THE WORK MAKES TEMPORARY SHUTDOWN OF SERVICES UNAVOIDABLE, THEY SHALL BE MADE AT NIGHT OR AT SUCH TIMES AS WILL CAUSE THE LEAST INTERFERENCE WITH THE ESTABLISHED OPERATING ROUTINE.

21. THIS CONTRACTOR SHALL ARRANGE THE WORK SO AS TO ASSURE THAT SERVICES WILL BE SHUT DOWN ONLY DURING THE TIME ACTUALLY REQUIRED TO MAKE THE NECESSARY CONNECTION TO THE EXISTING WORK. THIS CONTRACTOR SHALL GIVE AMPLE WRITTEN NOTICE IN ADVANCE TO THE OWNER OF ANY REQUIRED SHUT DOWN.

22. ALL MOTORS, FANS, CONTROLS, FIXTURES, HVAC UNIT, DUCTWORK AND OTHER EQUIPMENT FOR USE IN THIS CONTRACT SHALL BE PROTECTED BY TARPAULIN OR BY BOXING AS SOON AS DELIVERED TO THE SITE, AND SHALL BE KEPT CLEAN AND DRY. THE MOTORS, UNITS, FIXTURES, FANS, DUCTWORK AND MOVING PARTS SHALL BE KEPT COVERED SO AS TO ELIMINATE DIRT, DUST, AND OTHER MATERIALS ENTERING THE PARTS DURING ERECTION AND CONSTRUCTION WORK ON THE BUILDING. SHOULD IT BE FOUND THAT ANY PARTS ARE DAMAGED DUE TO CARELESSNESS ON THE PART OF THE CONTRACTOR IN NOT PROVIDING PROPER PROTECTION, SUCH PART OR PARTS SHALL BE REPLACED BY THE CONTRACTOR AT HIS OWN COST AND EXPENSE. ALL OPENINGS IN DUCTS, PIPING, CONDUITS, ETC., SHALL BE PROPERLY PROTECTED WITH TEMPORARY CAPS OR PLUGS AT ALL TIMES.

23. THE MECHANICAL CONTRACTOR SHALL VERIFY AND COORDINATE ALL METHODS OF HANGING, SUPPORTING, CUTTING AND PATCHING WITH THE OWNER OR LANDLORD.

24. DURING THE CONSTRUCTION PHASE OF THE PROJECT, ANY DUCTWORK INSTALLED IS TO BE COMPLETELY SEALED UP OF ANY OPENINGS, EITHER AT THE BEGINNING OR END OF A DUCT RUN OR AT A BRANCH, COLLAR DIFFUSER OR REGISTER TO AVOID DIRT OR OTHER CONTAMINANTS FROM ENTERING THE SYSTEM.

25. CONTROL WIRING AND CONTROLS: THE MECHANICAL CONTRACTOR IS TO FURNISH AND INSTALL ALL NECESSARY WIRING (IN CONDUIT IF REQUIRED) AND CONTROLS REQUIRED TO PROVIDE A COMPLETE AND OPERATING SYSTEM.

26. POWER WIRING:
A. THE ELECTRICAL CONTRACTOR IS TO FURNISH AND INSTALL ALL EQUIPMENT AND MATERIAL REQUIRED TO PROVIDE POWER TO THE MECHANICAL EQUIPMENT FROM THE TENANT'S POWER SUPPLY.
B. THE ELECTRICAL CONTRACTOR IS TO FURNISH AND INSTALL A DISCONNECT SWITCH ON THE MECHANICAL EQUIPMENT AS NECESSARY FOR A COMPLETE INSTALLATION.
C. THE ELECTRICAL CONTRACTOR IS TO PROVIDE POWER WIRING TO THE TOILET EXHAUST FAN THROUGH THE TOILET ROOM LIGHT SWITCH WITH DELAY OFF BUILT IN.

27. THIS CONTRACTOR IS TO HIRE LANDLORD'S SPECIFIED CONTRACTOR FOR ALL ROOF AND WALL PENETRATIONS.

28. IF STRUCTURAL DRAWINGS FOR HVAC EQUIPMENT SUPPORT(S) ARE NOT ALREADY INCORPORATED INTO THIS SET OF PLANS AND SPECIFICATIONS, THE MECHANICAL CONTRACTOR, AT THEIR OWN COST AND EXPENSE, AND AS PART OF THE BID TO THE G.C., IS TO HIRE A STRUCTURAL ENGINEER TO DESIGN THE SUPPORTS FOR THE NEW HVAC UNITS AND A STRUCTURAL SUBCONTRACTOR TO FURNISH AND INSTALL SUCH HANGERS / SUPPORTS, BRACING, ETC. TO HANG FROM THE STRUCTURE FOR ALL NEW HVAC EQUIPMENT. G.C. TO SUBMIT AS REQUIRED ALL STRUCTURAL SHOP DRAWINGS TO THE LANDLORD'S ARCHITECT, AS REQUIRED, FOR APPROVAL, PRIOR TO STARTING WORK.

29. MECHANICAL CONTRACTOR SHALL PROVIDE A COMPLETE AIR & WATER BALANCE OF ALL SYSTEMS AS REQUIRED PER PROJECT.

30. ALL PIPING AND DUCTWORK MUST HAVE MARKERS AND DIRECTION ARROWS EVERY 15 FEET PER INDUSTRY STANDARD, EXCEPT THROUGHOUT CUSTOMER/RETAIL AREAS WHERE DUCT/PIPING IS EXPOSED.

II. DRAWINGS

1. SUBMIT TWO (2) SETS OF AS BUILT DRAWINGS IDENTIFIED WITH PROJECT NAME AND LOCATION, TO THE ARCHITECT OF RECORD, OF THE FOLLOWING:
1. DUCTWORK LAYOUT
2. CONTROL DIAGRAMS
3. SEQUENCE OF OPERATION
4. TOILET EXHAUST FAN & HVAC UNIT
5. AIR OUTLETS
6. INSULATION
7. PIPING

2. AS-BUILT DRAWINGS ARE NOT A SUBSTITUTE FOR SHOP DRAWINGS AND SHOULD NOT BE CONSIDERED THE SAME.

III. GUARANTEE, WARRANTY

1. THE MECHANICAL CONTRACTOR SHALL INCLUDE IN THE PROPOSAL A ONE YEAR GUARANTEE, WARRANTY ON ALL EQUIPMENT AND MATERIAL HE INSTALLS OR REFURBISHES UNLESS A LONGER WARRANTY IS INDICATED FOR EQUIPMENT (IE: COMPRESSOR TO HAVE A MINIMUM FIVE (5) YEAR WARRANTY)..

IV. DUCTWORK

1. THE MECHANICAL CONTRACTOR SHALL PROVIDE COMPLETE AIR BALANCING OF ALL NEW SYSTEMS. TESTING AND BALANCING SHALL BE PERFORMED BY AN INDEPENDENT CONTRACTOR AT HIS MECHANICAL CONTRACTOR'S EXPENSE. ALL NEW SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH THE LATEST STANDARD OF THE "ASSOCIATED AIR BALANCE COUNCIL" (AABC) OR "THE NATIONAL ENVIRONMENTAL BALANCING BUREAU" (NEBB), NO SUBSTITUTIONS WILL BE ACCEPTABLE. A COMPLETE CERTIFIED REPORT INDICATING AIR FLOW RATES, PRESSURE DROPS, STATIC PRESSURES, BRAKE HORSEPOWER, AMP DRAW, EXHAUST CFM, ETC., SHALL BE DELIVERED TO THE ARCHITECT, THE TENANT AND THE MALL MANAGEMENT OFFICE. ACTUAL AIR BALANCING SHALL BE PERFORMED WITH A DWG ACCURATE AIR VELOCITY METER. FOR VAV SYSTEMS THE REPORT MUST INCLUDE VAV BOX AIRFLOW SENSOR DIFFERENTIAL PRESSURE READING AT MAXIMUM AND MINIMUM COOLING AND HEATING.

2. CHANGE IN DIRECTION ELBOWS SHALL HAVE AN INSIDE RADIUS OF NOT LESS THAN THE WIDTH OF THE DUCT.

3. ALL DUCTWORK SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH SMACNA LOW VELOCITY AND "HVAC DUCT CONSTRUCTION STANDARDS MANUAL", LATEST EDITION AND ASHRAE USING PRIME SHEETS OF GALVANIZED STEEL. ALL SQUARE ELBOWS SHALL BE EQUIPPED WITH DOUBLE WALLED VANES ON MAXIMUM 3" CENTERS. PROVIDE SEAL CLASS "C" ON ALL TRAVERSE JOINTS UNLESS SUPERSEDED BY MORE STRINGENT LOCAL CODES. ALL DUCT CONNECTIONS ARE TO BE RIGID AND LEAK FREE ASSEMBLIES AS MANUFACTURED BY DUCTMATE INDUSTRIES OR APPROVED EQUIVALENT.

4. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL FIRE DAMPERS AS REQUIRED BY LANDLORD AND/OR TENANT CRITERIA AND/OR CODES HAVING JURISDICTION. ALL FIRE DAMPERS SHALL COMPLY WITH THE REQUIREMENTS OF THE BOARD OF FIRE UNDERWRITERS, THE LOCAL FIRE MARSHAL, AND SHALL BE LABELED AND APPROVED BY UNDERWRITERS LABORATORIES.

5. ALL BRANCHES AND TAKEOFFS SHALL BE EQUIPPED WITH MANUAL VOLUME CONTROLLING DEVICES HAVING AN INDICATING AND LOCKING DEVICE.

6. SUPPORT HORIZONTAL DUCTS WITH HANGERS SECURED TO BAR JOISTS OR STRUCTURAL STEEL ABOVE, AT INTERVALS NOT TO EXCEED 5'-0". DUCTWORK SHALL NOT BE SUPPORTED FROM ROOF DECKING, AND/OR BRIDGING, BUT SHALL BE SUSPENDED FROM THE TOP CHORD OF BAR JOISTS. DUCTWORK SHALL CLEAR ALL SPRINKLERS AND OTHER OBSTACLES AND SHALL BE HUNG AS HIGH AS POSSIBLE IN WORK AND STORAGE AREAS.

7. ALL REGISTERS AND DIFFUSERS SHALL BE AS SCHEDULED ON DRAWINGS, FLUSH TO THE CEILING, WALLS, ETC., AND SHALL HAVE MANUFACTURERS BAKED ENAMEL FINISH (COLOR TO MATCH CEILING TILES OR CEILING). REGISTERS MOUNTED ON EXPOSED DUCTWORK SHALL HAVE ANODIZED ALUMINUM FINISH (FOR URBAN) MANUFACTURER'S BAKED ENAMEL OFF-WHITE FINISH (FOR ANTHROPOLOGIE). DIFFUSERS SHALL BE OF THE ADJUSTABLE PATTERN TYPE WITH VOLUME CONTROL DAMPERS AND FLOW EQUALIZING. ANY PART OF DIFFUSER HOUSING LOCATED IN CONCEALED CEILING MUST BE INSULATED, SEE DETAIL.

8. FIBERGLASS DUCTWORK WILL NOT BE ALLOWED.

9. MECHANICAL CONTRACTOR SHALL REFER TO DUCTWORK SCHEDULE ON DRAWINGS FOR DUCTWORK TYPE, HANGER SYSTEM, CONNECTIONS, ETC. NOTIFY ARCHITECT IMMEDIATELY IF ANY DISCREPANCY WITH THE DRAWINGS.

10. ALL DUCTWORK SHALL BE HUNG AS HIGH AS POSSIBLE TO MAINTAIN ARCHITECTURAL CEILING HEIGHT REQUIREMENTS.

11. PROVIDE SPLITTER OR VOLUME DAMPERS ON ALL NEW SUPPLY AIR DUCT SPLITS AND TAPS AND AIR EXTRACTORS ON ALL SUPPLY AIR REGISTERS.

12. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL CEILING DIFFUSERS AND REGISTERS.

13. WHEN NEW DUCTWORK CONFLICTS WITH EXISTING DUCTWORK, PIPING, ETC., NEW DUCTWORK SHALL BE TURNED UP OR DOWN AS REQUIRED WITH URBAN OUTFITTERS PROJECT MANAGER'S PERMISSION.

14. WHERE REQUIRED BY LOCAL CODES, LANDLORD, AND IF INDICATED ON DRAWINGS, PROVIDE UL555S SMOKE DAMPER WITH FIRE/HEAT/SMOKE SENSOR, REVERSIBLE MOTOR AND INTERLOCK WITH FIRE ALARM SYSTEM.

V. AUTOMATIC TEMPERATURE CONTROL

GENERAL

1. INSTRUCTION AND ADJUSTMENT UPON COMPLETION OF THE JOB, THE CONTRACTOR SHALL COMPLETELY ADJUST AND MAKE READY FOR USE ALL THERMOSTATS, CONTROL VALVES, DAMPER MOTORS, AND RELAYS PROVIDED UNDER THIS CONTRACT. THE CONTRACTOR SHALL PROVIDE A COMPLETE INSTRUCTION MANUAL COVERING THE FUNCTION AND OPERATION OF ALL CONTROL COMPONENTS ON THE JOB. THE MANUAL SHALL BE FURNISHED TO THE OWNER'S OPERATING PERSONNEL, AND A COMPETENT TECHNICIAN SHALL BE PROVIDED FOR INSTRUCTION PURPOSES. THE CONTRACTOR SHALL FURNISH A FRAMED SCHEMATIC CONTROL DIAGRAM SEQUENCE OF OPERATION AND WIRING DIAGRAM IN A LAMINATED COVER.

2. SERVICE AND GUARANTEE CONTROLS SHALL BE ADJUSTED, REPAIRED OR REPLACED FREE OF CHARGE FOR A PERIOD OF ONE (1) YEAR, UNDER NORMAL USE AND SERVICE.

3. THERMOSTATS
A. MOUNT SENSORS 4'-0" ABOVE FINISHED FLOORS OR AS NOTED ON PLANS. TURN OVER OPERATING INSTRUCTIONS TO TENANT REPRESENTATIVE.
B. MANUFACTURER: HONEYWELL VISION PRO 8000 W/REMOTE TEMP SENSOR OPTION (C7189).

4. ALL LOW VOLTAGE WIRING FOR THERMOSTATS/SENSORS SHOULD BE NO LESS THAN 18 GAUGE.

VI. SPECIFIC HVAC SPECIFICATIONS

SEE HVAC DRAWINGS SPECIFICATIONS FOR:

1. WORK FURNISHED AND/OR INSTALLED BY LANDLORD.

2. INSULATION AND/OR ACOUSTIC LINING
1) DUCTWORK

3. AUTOMATIC TEMPERATURE CONTROLS
1) DESCRIPTION OF OPERATIONS
2) OPERATING INSTRUCTIONS

4. EQUIPMENT
1) EXHAUST FANS & HVAC UNITS.
2) MISCELLANEOUS HVAC EQUIPMENT ACCESSORIES.

VII. INSULATION

1. PIPE INSULATION (WHERE APPLICABLE)
A. ALL INSULATION SHALL BE APPLIED BY CRAFTSMAN SKILLED IN SUCH TRADE.
B. ALL HVAC CHILLED WATER AND HOT WATER PIPING, VALVES, FITTINGS AND ACCESSORIES SHALL BE INSULATED WITH 1" THICK FIBERGLASS PIPING INSULATION WITH FACTORY APPLIED VAPOR BARRIER. INSULATION SHALL BE JOHNS MANVILLE "MICRO-LOK" OR APPROVED EQUIVALENT. COVER FITTINGS AND VALVES WITH FACTORY-MOLDED FIBROUS GLASS FITTING EQUAL TO COMPRESSED FIBROUS GLASS BLANKET AND ONE PIECE PVC FITTING COVER, JOHNS MANVILLE "ZESTON 300 SERIES" OR EQUIVALENT.
C. FLAME SPREAD AND SMOKE DEVELOPED RATING OF ALL MATERIAL UTILIZED IN AND FOR THE INSTALLATION OF ALL INSULATION SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA).
D. ALL REFRIGERANT PIPING (WHERE REQUIRED) MUST HAVE A MINIMUM OF 1/2" ARMOR INSULATED AND SEALED WITH FACTORY APPROVED SEALANT PER MANUFACTURER'S SPECIFICATION. EXTERIOR INSULATION MUST BE COATED WITH ULTRAVIOLET COATING - MINIMUM TWO COATINGS.

2. ALL UNEXPOSED SUPPLY AND RETURN AIR DUCTWORK, OUTSIDE AIR AND ANY UNEXPOSED DUCTWORK WITHIN BUILDING SHALL HAVE 1-1/2" (OR 2" DEPENDING ON CLIMATE), 1 POUND DENSITY FIBERGLASS DUCT WRAP INSULATION WITH FOIL FACE VAPOR BARRIER, ADHERED WITH WHITE MASTIC CEMENT AND FOIL TAPE. ALL EXPOSED DUCT THAT REQUIRES INSULATION (SUPPLY, RETURN & OUTSIDE AIR DUCTWORK) SHALL BE INTERNALLY LINED.

3. LEADING EDGES OF DUCT INSULATION SHALL BE OVERLAPPED BY ADJOINING INSULATION FOR 6" MINIMUM AND THEN SEALED WITH FOIL VAPOR BARRIER ADHESIVE TAPE AND COATED WITH WHITE MASTIC CEMENT SO THAT NO FIBERGLASS INSULATION IS VISIBLE. MECHANICAL CONTRACTOR SHALL REFER TO MANUFACTURER'S INSTALLATION MANUAL FOR ADDITIONAL REQUIREMENTS, RECOMMENDATIONS, PROCEDURES, ETC.

4. ALL INSULATION ON EXISTING PIPING OR DUCTS THAT IS WETTED, DAMAGED, DISTURBED OR REMOVED SHALL BE REPLACED.

5. MAXIMUM FLAME SPREAD SHALL BE 25 AND MAXIMUM SMOKE DEVELOPED CRITERIA SHALL BE 50 OR LESS TO MEET MORE STRINGENT LOCAL CODE CRITERIA.

6. INTERNALLY LINED DUCTWORK TO BE INSULATED WITH 1" THICK, 3 PCF DENSITY, NEOPRENE COATED, LONG TEXTILE FIBER TYPE DUCT LINER, WITH COATING ON THE AIR STREAM SIDE CONFORMING TO NFPA 90A. DUCT LINER ADHESIVE SHALL BE AS RECOMMENDED BY DUCT LINER MANUFACTURER, AND SHALL COMPLY WITH ASTM C-916. DUCT LINER FASTENERS SHALL COMPLY WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", LATEST EDITION. THERMAL CONDUCTIVITY SHALL BE EQUAL TO OR LESS THAN 0.26 AT 75°F. DUCT DIMENSIONS INDICATED ARE NET INSIDE DIMENSIONS REQUIRED FOR AIRFLOW. INCREASE DUCT SIZE TO ALLOW FOR INSULATION THICKNESS. DUCT LINER IS PERMITTED ONLY IN URBAN OUTFITTERS STORES. FOR ACOUSTICAL PURPOSES. THE LENGTH OF DUCT LINER SHALL BE THE FIRST 15'-0" OF DUCTWORK FROM THE UNIT DISCHARGE, AND/OR THE FIRST TWO (2) 90° ELLS, WHICHEVER CONDITION IS MET FIRST.

VIII. FLEXIBLE CONNECTIONS

FINAL CONNECTIONS TO EXHAUST FAN(S) SHALL BE WITH A HEAVY AIRTIGHT ACID RESISTANT FIRE RETARDANT FIBER GLASSED NEOPRENE CONNECTOR, A MINIMUM OF SIX (6) INCHES IN LENGTH. THE CONNECTOR SHALL BE FASTENED TO EQUIPMENT AND DUCT WITH TWO FLEXIBLE REMOVABLE BRASS STRAPS, OR ALTERNATE APPROVED METHOD.

IX. FLEXIBLE DUCT

FLEXIBLE DUCT FOR CONNECTIONS SHALL BE A FACTORY FABRICATED ASSEMBLY CONSISTING OF AN INNER SLEEVE, INSULATION AND AN OUTER FOIL (ALUMINIZED) VAPOR BARRIER. THE INNER SLEEVE SHALL BE CONSTRUCTED OF A CONTINUOUS VINYL COATED SPRING STEEL WIRE HELIX FUSED TO A CONTINUOUS LAYER OF FIBERGLASS IMPREGNATED AND COATED VINYL. A 1-1/4" THICK LAYER OF INSULATING BLANKET OF FIBERGLASS WOOL SHALL ENCASE THE INNER SLEEVE AND BE SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BIDIRECTIONAL REINFORCED METALIZED VAPOR BARRIER. THE FLEXIBLE DUCT SHALL BE RATED FOR A MAXIMUM WORKING VELOCITY OF 5000 FPM AND SHALL BE LISTED BY THE UNDERWRITERS LABORATORIES UNDER THEIR UL-181 STANDARDS AS A CLASS 1 DUCT AND SHALL COMPLY WITH NFPA STANDARD - 90A. THE FLEXIBLE DUCT SHALL BE THERMAFLEX M-KE OR APPROVED EQUIVALENT. FLEXIBLE DUCT SHALL ROUTE FROM SHEET METAL DUCTWORK TO CEILING DIFFUSERS ONLY. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 6'-0" MAXIMUM. THERE SHALL BE NO EXPOSED FLEXIBLE DUCT. FLEXIBLE DUCT BENDS MUST NOT BE GREATER THAN 45° OVER A 3 FOOT SPAN. KINKS OR BUNCHING OF FLEXIBLE DUCT IS PROHIBITED.

X. INDOOR AIR QUALITY

1. NO ANALYSIS HAS BEEN MADE WITH REGARD TO SOURCES OR POTENTIAL SOURCES OF INDOOR OR OUTDOOR AIR CONTAMINANTS OR LEVELS OF CONTAMINATION.

2. IT IS THE RESPONSIBILITY OF THE GENERAL AND MECHANICAL CONTRACTOR TO INFORM THE TENANT'S REPRESENTATIVE, LANDLORD AND TENANT'S ARCHITECT IF ANY SOURCE OR POTENTIAL SOURCE OF INDOOR AIR CONTAMINATION IS IDENTIFIED.

3. PRIOR TO ENCLOSING SPACES SUCH AS PLUMBING CHASES, AIR SHAFTS AND RETURN AIR PLENUMS CLEAN ALL AREAS THOROUGHLY. THE CONTRACTOR SHALL GUARANTEE THAT THE PLENUM CHAMBER USED FOR RECIRCULATING OF AIR WILL BE OF TIGHT CONSTRUCTION AND THAT ALL SOURCES OF CONTAMINATION FROM TRAPS, SOIL STACKS, DOWNSPOUTS, VENTS, EXHAUST DISCHARGES AND OTHER SOURCES WILL BE ENCLOSED SO THAT NO CONTAMINATED AIR WILL BE RECIRCULATED.

4. PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES SHUT OFF THE HVAC SYSTEM, BLOCK OFF ALL AIR GRILLS, DIFFUSERS, AND OTHER OPENINGS OUTSIDE THE IMMEDIATE CONSTRUCTION AREA. OPENINGS TO ADJACENT TENANT SPACES SHALL BE COVERED WITH FILTER MEDIA TO PREVENT DUST AND OTHER AIRBORNE CONTAMINANTS FROM PASSING TO ADJOINING SPACES.

5. CONTRACTOR TO INSTALL TEMPORARY EXHAUST SYSTEM TO VENTILATE CONSTRUCTION SITE AND KEEP SITE UNDER SLIGHT NEGATIVE PRESSURE DURING ALL HOURS OF CONSTRUCTION, EVEN IF AFTER NORMAL BUSINESS HOURS.

6. CONTRACTOR TO INSTALL TEMPORARY BARRIERS TO PROTECT ADJACENT SPACES FROM DUST, PARTICULATES, VAPORS AND NOISE. WHERE TEMPORARY BARRIERS ARE INSTALLED ALWAYS MAINTAIN FIRE EXITS AND EXITWAYS.

TEMPERATURE CONTROL

1. FOR EQUIPMENT FOR STAND-ALONE THERMOSTATS.
A. LANDLORD SHALL PROVIDE THERMOSTATS THAT WILL BE HONEYWELL VISION PRO 8000. THE THERMOSTATS WILL HAVE THE REMOTE TEMPERATURE SENSOR OPTION (C7189).
B. THE LOCATION FOR THE BASE STATION THERMOSTAT SHALL BE COORDINATED IN THE DRAWINGS WITH THE ARCHITECT OR IN THE FIELD. THE TYPICAL LOCATION FOR THE BASE STATION THERMOSTATS WILL BE THE MANAGER'S OFFICE. THE LOCATION FOR THE REMOTE TEMPERATURE SENSOR SHALL BE IN THE AREA IN WHICH THE UNIT THAT IS ASSOCIATED WITH SERVES. REMOTE TEMPERATURE SENSORS SHALL BE LOCATED AS INDICATED ON THE DRAWING. ELEMENTS SHALL BE CONSIDERED (BUT NOT LIMITED TO) WHEN PLACING SENSORS SHALL INCLUDE VISUAL APPEARANCE, LOCATION WITHIN THE SPACE, IF NATURAL LIGHT WILL FALL ON THE SENSOR, IF CONDITIONED AIR WILL BE BLOWING ON THE SENSOR, AND IF THE SENSOR WILL BE AFFECTED BY OPENING AND CLOSING DOORS BEING IN CLOSE PROXIMITY.

SEQUENCE OF OPERATION

SPLIT SYSTEM, DX COOLING WITH HOT WATER HEAT:

COOLING CYCLE – OCCUPIED HOURS:
UPON A RISE IN SPACE TEMPERATURE ABOVE THE OCCUPIED COOLING SETPOINT OF THE THERMOSTAT, THE REFRIGERATION SYSTEM SHALL CYCLE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AT THE THERMOSTAT SETPOINT. THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY. THE OUTDOOR AIR DAMPER SHALL BE OPEN TO THE MINIMUM POSITION.

HEATING CYCLE – OCCUPIED HOURS:
THE THERMOSTAT SHALL MODULATE THE HOT WATER CONTROL VALVE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AT THE OCCUPIED HEATING SETPOINT OF THE THERMOSTAT. THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY AND THE OUTDOOR AIR DAMPER SHALL BE OPEN TO THE MINIMUM POSITION.

COOLING CYCLE – UNOCCUPIED HOURS:
UPON A RISE IN SPACE TEMPERATURE ABOVE THE UNOCCUPIED COOLING SETPOINT OF THE THERMOSTAT, THE REFRIGERATION SYSTEM SHALL CYCLE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AT THE THERMOSTAT SETPOINT. THE SUPPLY FAN SHALL CYCLE AS REQUIRED AND THE OUTDOOR AIR DAMPER SHALL BE CLOSED.

HEATING CYCLE – UNOCCUPIED HOURS:
THE THERMOSTAT SHALL MODULATE THE HOT WATER CONTROL VALVE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AT THE UNOCCUPIED HEATING SETPOINT OF THE THERMOSTAT. THE SUPPLY FAN SHALL CYCLE AS REQUIRED AND THE OUTDOOR AIR DAMPER SHALL BE CLOSED.

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