

15050 BASIC MECHANICAL REQUIREMENTS

1. GENERAL

- A. THE OWNER ACCEPTS NO RESPONSIBILITY FOR LOSS OR DAMAGE TO MATERIALS OR STRUCTURES ON SITE... B. CONTRACTOR SHALL FILE, SECURE, AND PAY FOR ANY NECESSARY APPROVALS, PERMITS AND INSPECTIONS... C. ALL SYSTEMS SHALL BE TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION... D. PRIOR TO TESTING, THE CONTRACTOR SHALL MAKE ALL SYSTEM ADJUSTMENTS REQUIRED FOR PROPER OPERATION.

2. SCOPE OF WORK

- A. IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATION THAT THE CONTRACTOR SHALL PROVIDE A WORKING INSTALLATION COMPLETE IN EVERY DETAIL AND ALL ITEMS NECESSARY FOR A COMPLETE INSTALLATION... B. UPON COMPLETION OF THE WORK, ALL EQUIPMENT SHALL BE THOROUGHLY CLEANED AND LEFT IN FIRST CLASS CONDITION... C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE START UP OF ALL SYSTEMS.

3. WORK BY OTHERS

- A. THE GENERAL CONTRACTOR WILL BUILD INTO HIS WORK ALL SLEEVES, ANCHORS, INSERTS, CHASES, RECESSES, OPENINGS, ETC. NECESSARY FOR INSTALLATION OF THE HEATING AND VENTILATING WORK... B. EQUIPMENT SPECIFIED TO BE FURNISHED UNDER THIS SECTION SHALL BE COMPLETE WITH ELECTRIC MOTORS AND STARTING EQUIPMENT WERE REQUIRED OR SPECIFIED.

4. DRAWINGS

- A. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE INSTALLED... B. PREPARE A SET OF LEGIBLE RECORD DRAWINGS SHOWING ALL INTERIOR AND EXTERIOR PIPING AND EQUIPMENT WITH SIZING AND LOCATION BY DIMENSION.

5. REGULATIONS

- A. THE MECHANICAL INSTALLATION SHALL MEET THE LATEST REQUIREMENTS OF THE INTERNATIONAL BUILDING CODES, AND NFPA... B. UNDERWRITERS' LABORATORIES (UL) LISTINGS AND NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATIONS (NEMA) STAMPS OR SEALS SHALL BE EVIDENCED WHERE APPLICABLE TO ELECTRICAL APPARATUS FORMING PARTS OF THE MECHANICAL EQUIPMENT.

6. SHOP DRAWINGS AND CATALOG DATA

- A. THE CONTRACTOR SHALL SUBMIT SEVEN (7) COPIES OF SHOP DRAWINGS, CATALOG CUTS, ETC. TO THE ARCHITECT OF ALL EQUIPMENT... B. CORRECTED AS DIRECTED BY THE ARCHITECT/ENGINEER AND BE RE-SUBMITTED UNTIL SATISFACTORY.

7. WARRANTY

- A. THIS CONTRACTOR SHALL WARRANT THAT THE MATERIALS AND WORKMANSHIP USED IN THE ERECTION OF THIS INSTALLATION ARE AS HEREIN SPECIFIED... B. UNDERWRITERS' LABORATORIES (UL) LISTINGS AND NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATIONS (NEMA) STAMPS OR SEALS SHALL BE EVIDENCED WHERE APPLICABLE TO ELECTRICAL APPARATUS FORMING PARTS OF THE MECHANICAL EQUIPMENT.

8. WORKMANSHIP AND MATERIALS

- A. ALL WORK SHALL BE INSTALLED IN A FIRST-CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS EXPERIENCED IN THE TRADE INVOLVED AND SHALL BE ACCEPTABLE TO THE ARCHITECT... B. CORRECTED AS DIRECTED BY THE ARCHITECT/ENGINEER AND BE RE-SUBMITTED UNTIL SATISFACTORY.

9. INSTRUCTIONS TO OPERATING PERSONNEL

- A. THE CONTRACTOR SHALL FURNISH THE SERVICES OF QUALIFIED PERSONNEL, APPROVED BY THE ARCHITECT, AND THOROUGHLY FAMILIAR WITH EACH COMPLETED INSTALLATION, TO INSTRUCT THE OWNER'S OPERATING PERSONNEL IN THE PROPER OPERATION OF ALL SYSTEMS, AND THE PROPER CARE OF ALL EQUIPMENT AND APPARATUS INCLUDED UNDER THIS CONTRACT.

15080 MECHANICAL INSULATION

1. QUALITY ASSURANCE

- A. APPLICATOR: COMPANY SPECIALIZING IN MECHANICAL INSULATION APPLICATION WITH MINIMUM FIVE YEARS EXPERIENCE ON SIMILAR TYPE PROJECTS... B. MATERIALS: UL LISTED; FLAME SPREAD/SMOKE DEVELOPED RATING OF 1/50 IN ACCORDANCE WITH LATEST EDITIONS OF ASTM E84, NFPA 255, UL 181 AND UL 723... C. ENERGY EFFICIENCY: CONFORM TO THICKNESS SPECIFIED HEREIN AND TO MEET THE REQUIREMENTS OF NORTH AMERICAN INSULATION MANUFACTURERS ASSOCIATION (NAIMA) AND ASHRAE STANDARD 90.1 - 1989 AND APPLICABLE ADDENDUMS... D. INSTALLATION: ALL INSULATION SHALL BE INSTALLED IN ACCORDANCE WITH NATIONAL INSULATION CONTRACTORS ASSOCIATION (NICA) NATIONAL STANDARDS, NFPA 90A AND 90B... E. ALL ADHESIVES, CEMENTS, FINISHES, JACKETS, ETC. SHALL BE UL LISTED OR LABELED FOR USE AS APPLIED TO INSULATION AND DESIGNED SPECIFICALLY FOR USE IN THE INSULATION.

2. SUBMITTALS

- A. SUBMIT SHOP DRAWINGS AND PRODUCT DATA UNDER PROVISIONS OF DIVISION 1 AND SECTION 15050... B. INCLUDE PRODUCT DESCRIPTION, LIST OF MATERIALS AND THICKNESS FOR EACH SERVICE, AND LOCATIONS.

3. DUCT INSULATION MATERIALS

- A. FLEXIBLE GLASS FIBER BLANKET: ASTM C 1290; COMMERCIAL GRADE; NONCOMBUSTIBLE; 1. VAPOR BARRIER JACKET: FOIL-SCRIM-KRAFT (FSK); ASTM C 1136, TYPE I MAXIMUM VAPOR TRANSMISSION RATE OF .02 PERMS. 2. APPLIES TO ALL DUCTWORK HARD AND FLEXIBLE.

15080 MECHANICAL INSULATION (CONT.)

4. EXECUTION

- A. VERIFY THAT SITE CONDITIONS ARE READY TO RECEIVE WORK IN COMPLIANCE WITH MANUFACTURER RECOMMENDATIONS... B. COMMENCEMENT OF INSTALLATION INDICATES ACCEPTANCE OF SITE CONDITIONS BY THE INSTALLER... C. ENSURE THAT TESTING OF EQUIPMENT AND DUCTWORK HAS BEEN SUCCESSFULLY COMPLETED PRIOR TO INSTALLING INSULATION... D. ENSURE THAT EQUIPMENT AND DUCTWORK ARE CLEAN AND DRY AND THAT INSULATION IS CLEAN AND DRY, AND IN GOOD MECHANICAL CONDITION WITH ALL FACTORY APPLIED VAPOR OR WEATHER BARRIERS INTACT AND UNDAMAGED... E. INSTALL MATERIALS AND ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS... F. MAINTAIN AMBIENT TEMPERATURES AND CONDITIONS REQUIRED BY MANUFACTURERS OF ADHESIVES, MASTICS AND INSULATION CEMENTS DURING AND AFTER INSTALLATION FOR A MINIMUM PERIOD OF 24 HOURS... G. REPLACE EXISTING DUCT INSULATION DISTURBED IN MAKING NEW CONNECTIONS WITH NEW INSULATION AND COVERING TO MATCH EXISTING... H. ON COLD SURFACES WHERE A VAPOR BARRIER MUST BE MAINTAINED, INSULATION SHALL BE APPLIED WITH A CONTINUOUS, UNBROKEN MOISTURE AND VAPOR SEAL.

- I. WHERE INSULATED DUCTS PASS THROUGH OPENINGS, THE FULL SPECIFIED THICKNESS OF THE INSULATION SHALL PASS THROUGH THE OPENING... J. THE FINISHED INSTALLATION SHALL PRESENT A NEAT AND ACCEPTABLE APPEARANCE WHICH INCLUDES BUT IS NOT LIMITED TO: ALL JACKETS SMOOTH, ALL VAPOR BARRIERS SEALED PROPERLY, NO EVIDENCE OF "BALLOONING" OF THE JACKETS, OR SAGGING INSULATION, ALL VALVES, DAMPER, GAUGES, UNIONS, ETC. ACCESSIBLE... K. INSULATION SHALL BE PROTECTED FROM MOISTURE AND WEATHER DURING STORAGE AND INSTALLATION.

5. DUCT INSULATION INSTALLATION

- A. INSTALL INSULATION MATERIALS WITH SMOOTH AND EVEN SURFACES... B. MAINTAIN THE INTEGRITY OF FACTORY APPLIED VAPOR BARRIER JACKETING ON ALL INSULATION... C. DUCT INSULATION AT FIRE DAMPERS SHALL BE EXTENDED OVER SUPPORTING ANGLE IRON AND SEALED TO WALL... D. THE TOPS OF ALL DIFFUSERS SHALL BE INSULATED SIMILAR TO THE CONNECTING DUCTWORK TO PREVENT CONDENSATION... E. PENETRATIONS: EXTEND DUCTWORK INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS, AND SIMILAR DUCTWORK PENETRATIONS... F. INSTALL FLEXIBLE GLASS FIBER BLANKET INSULATION TO OBTAIN SPECIFIED R-VALUE.

6. DUCT INSULATION SCHEDULE

- A. INTERIOR, CONCEALED LOCATIONS; 1. FLEXIBLE GLASS FIBER BLANKET: 2" THICK (R-8 MIN. INSTALLED)... B. EXTERIOR, ROOF MOUNTED LOCATIONS; 1. REFER TO PROJECT SPECIFICATIONS: 2" THICK (R-12 MIN.)... A. REFRIGERANT TUBING: COPPER REFRIGERANT TUBE, ASTM B280, CLEANED, DEHYDRATED AND SEALED... B. FITTINGS: BRASS OR COPPER FITTINGS, ANSI B16.22... C. SOLDER: CADMIUM FREE ALUMINUM 5-8, 45 PERCENT SILVER BRAZING ALLOY, CLASS B-AG 5.

7. REFRIGERANT SPECIALTIES

- A. THERMAL EXPANSION VALVES 1. ANGLE OR STRAIGHT THROUGH TYPE: BRASS BODY, ADJUSTABLE SUPER HEAT SETTING... B. FILTER-DRIERS: 1. PERMANENT STRAIGHT THRU TYPE: UL LISTED, STEEL SHELL WITH MOLDED DESICCANT FILTER CORE... C. MOISTURE AND LIQUID INDICATORS: 1. SINGLE PORT TYPE: UL LISTED WITH COPPER OR BRASS BODY, FLARED OR SOLDER ENDS... D. INSULATION: 1. PROVIDE 1" FLEXIBLE ELASTOMERIC (EXTERIOR TO HAVE ALUMINUM JACKET) 2. INSULATE ALL REFRIGERANT PIPING

8. INSTALLATION

- A. INSTALL EQUIPMENT AND SPECIALTIES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS... B. INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH THE SERVICE APPLICATION MANUAL OF THE REFRIGERATION SERVICE ENGINEERS SOCIETY AND ASHRAE STANDARD 15... C. SUCTION LINES SHALL BE INSULATED WITH 1" ARMAFLEX TYPE INSULATION... 1. VAPOR BARRIER JACKET: FOIL-SCRIM-KRAFT (FSK); ASTM C 1136, TYPE I MAXIMUM VAPOR TRANSMISSION RATE OF .02 PERMS. 2. APPLIES TO ALL DUCTWORK HARD AND FLEXIBLE.

6. FIELD QUALITY CONTROL

- A. PARTIAL EXTRACT FROM ASHRAE 15, "FIELD TEST": 1. TEST MEDIUM: OXYGEN, OR ANY COMBUSTIBLE GAS, OR COMBUSTIBLE MIXTURE OF GASES... B. SYSTEM TEST AND CHARGING: AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER... C. PRESSURE TEST SYSTEM WITH DRY NITROGEN TO 200 PSIG... D. PROVIDE INITIAL AND COOLING SEASON START-UP, AND WINTER SEASON SHUT DOWN DURING FIRST YEAR OF OPERATION... E. SUPPLY INITIAL CHARGE OF REFRIGERANT AND OIL FOR EACH REFRIGERANT CIRCUIT.

15580 CONDENSATE PIPING

1. REGULATORY REQUIREMENTS

- A. GENERAL: ALL MATERIALS SPECIFIED IN THIS SECTION SHALL CONFORM WITH THE APPROPRIATE SECTIONS OF NFPA 90A, NFPA 90B, NFPA 91, NFPA 96 AND OTHER SPECIFIC REQUIREMENTS AS SPECIFIED HEREIN.

2. CONDENSATE PIPING

- 1. FITTINGS AND JOINTS 2" AND UNDER: WROUGHT COPPER CONFORMING TO ASME B16.15 AND B16.18... 2. INSULATION 1. PROVIDE 1" FLEXIBLE ELASTOMERIC ON ALL INTERIOR CONDENSATE PIPING.

15855 AIR DISTRIBUTION

1. REGULATORY REQUIREMENTS

- A. GENERAL: ALL MATERIALS SPECIFIED IN THIS SECTION SHALL CONFORM WITH THE APPROPRIATE SECTIONS OF NFPA 90A, NFPA 90B, NFPA 91, NFPA 96 AND OTHER SPECIFIC REQUIREMENTS AS SPECIFIED HEREIN... B. THE FABRICATION OF ALL DUCTWORK AND DUCTWORK ACCESSORIES SHALL CONFORM TO THE APPROPRIATE SMACNA STANDARDS.

2. SUBMITTALS

- A. SUBMIT SHOP DRAWINGS AND PRODUCT DATA UNDER PROVISIONS OF SECTION 15050... B. DUCTWORK: 1. COORDINATION DRAWINGS: REFER TO ARTICLE 15050, MECHANICAL MATERIALS AND METHODS... 2. INDICATE DUCT MATERIAL PRESSURE CLASSIFICATIONS, JOINT CONSTRUCTION AND SEAL METHOD... C. FLEXIBLE DUCTS AND SHAPES WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS... D. FURNISH SHEETMETAL SHOP DRAWINGS OF DUCT SYSTEM.

3. OPERATION AND MAINTENANCE DATA

- A. SUBMIT OPERATION AND MAINTENANCE DATA TO REQUIREMENTS OF SECTION 15050... B. INCLUDE MANUFACTURER'S DESCRIPTIVE LITERATURE, OPERATING INSTRUCTIONS, AND MAINTENANCE AND REPAIR DATA, AND PARTS LISTS... C. INCLUDE INSTRUCTIONS FOR OPERATING, CHANGING, AND PERIODIC CLEANING OF FILTERS... D. INCLUDE IN OPERATING INSTRUCTIONS, DIRECTIONS FOR RESETTING CONSTANT VOLUME REGULATORS.

4. GENERAL INSTALLATION

- A. INSTALL DEVICES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS... B. SEAL ALL CONNECTIONS AIRTIGHT... C. CLEAN AND REMOVE ALL DIRT AND DEBRIS... D. RE-PAINT/TOUCH-UP AS NECESSARY.

5. DUCT CONSTRUCTION AND INSTALLATION

- A. FABRICATE AND INSTALL DUCTWORK AND ACCESSORIES IN ACCORDANCE WITH REFERENCED SMACNA STANDARDS: 1. DRAWINGS SHOW THE GENERAL LAYOUT OF DUCTWORK AND ACCESSORIES... 2. PROVIDE DUCT TRANSITIONS, OFFSETS AND CONNECTIONS TO DAMPERS, COILS, AND OTHER EQUIPMENT... 3. PROVIDE BOLTED CONSTRUCTION AND TIE-ROD REINFORCEMENT... 4. CONSTRUCT CASINGS, ELIMINATORS, AND PIPE PENETRATIONS... 5. PROPER PROVISIONS SHALL BE MADE FOR EXPANSION AND CONTRACTION OF DUCT WORK... B. INSTALL DUCT HANGERS AND SUPPORTS IN ACCORDANCE WITH SMACNA STANDARDS, SECTION VII.

DIFFUSERS, REGISTERS, AND GRILLES

- A. INSTALL ALL INLETS AND OUTLETS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS... B. COORDINATE EXACT LOCATION OF AIR OUTLETS AND INLETS AND MAKE NECESSARY ADJUSTMENTS... C. CHECK AND VERIFY THE VARIOUS CEILING AND WALL TYPES WITH THE ARCHITECT... D. WHERE DIFFUSERS, REGISTERS AND GRILLES CANNOT BE INSTALLED TO AVOID SEEING INSIDE THE DUCT... E. WHERE DIFFUSERS, REGISTERS AND GRILLES CANNOT BE INSTALLED TO AVOID SEEING INSIDE THE DUCT... F. FURNISH TO THE OWNER, WITH RECEIPT, THREE OPERATING KEYS FOR EACH TYPE OF AIR OUTLET AND INLET THAT REQUIRES THEM.

15990 TESTING, ADJUSTING AND BALANCING

1. COORDINATION OF WORK AND INTENT

- A. IT IS THE INTENT OF THIS SPECIFICATION SECTION TO PROVIDE FOR A COMPLETELY TESTED, ADJUSTED AND BALANCED (TAB) INSTALLATION... B. ANY ADDITIONAL BALANCING DAMPERS WHICH ARE REQUIRED FOR BALANCING SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR.

2. WORK INCLUDED, BUT NOT LIMITED TO

- A. ADJUSTING AND SETTING OF ALL VOLUME CONTROL DEVICES TO ACHIEVE PROPER AIR DISTRIBUTION... B. ADJUSTING AND SETTING OF BELT DRIVEN FANS TO ACHIEVE DESIGN OR OPTIMUM TOTAL DELIVERED AIRFLOW... C. AIR SYSTEM BALANCING 1. ADJUSTING OF INDIVIDUAL OUTLETS SHALL BE PERFORMED... E. ALL MEASURED AIR QUANTITIES SHALL BE WITHIN ±10% OF DESIGN AIR QUANTITIES WHEN ACHIEVABLE.

4. REPORT REQUIREMENTS

- B. SUBMIT WRITTEN REPORTS UPON COMPLETION OF THE BALANCING WORK.



Table with columns: Date, Description, No., No. (revision), No. (revision), No. (revision), No. (revision). Includes a disclaimer about electronic documents and a note about the drawing being a revision.

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