

15A: Heating, Ventilating, and Air Conditioning:

15A-1 GENERAL INSTRUCTIONS

15A-1-1 GENERAL REQUIREMENTS

REQUIREMENTS UNDER DIVISION ONE AND THE GENERAL AND SUPPLEMENTARY CONDITIONS OF THESE SPECIFICATIONS SHALL BE A PART OF THIS SECTION.

THE SPECIFICATIONS AND DRAWINGS FOR THE PROJECT ARE COMPLEMENTARY, AND PORTIONS OF THE WORK DESCRIBED IN ONE SHALL BE PROVIDED AS IF REQUIRED CLARIFICATION PRIOR TO PROCEEDING WITH THE WORK INVOLVED.

15A-1-2 DEFINITIONS

FURNISH: THE TERM "FURNISH" IS USED TO MEAN "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION AND SIMILAR OPERATIONS."

INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT THE PROJECT SITE INCLUDING THE ACTUAL UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS.

PROVIDE: THE TERM "PROVIDE" MEANS TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.

FURNISHED BY OWNER OR FURNISHED BY OTHERS: THE ITEM WILL BE FURNISHED BY THE OWNER OR OTHERS. IT IS TO BE INSTALLED AND CONNECTED UNDER THE REQUIREMENTS OF THIS DIVISION, COMPLETE AND READY FOR OPERATION.

ENGINEER: THESE REFERENCES IN THIS DIVISION, "ENGINEER" IS THE ENGINEER OF RECORD AND THE DESIGN PROFESSIONAL OF RECORD UNDER THIS DIVISION. IT IS A CONSULTANT TO, AND AN AUTHORIZED REPRESENTATIVE OF THE ARCHITECT, AS DEFINED IN THE GENERAL CONDITIONS OF THESE SPECIFICATIONS.

ALL: THE LOCAL CODE AND/OR INSPECTION AGENCY (AUTHORITY) HAVING JURISDICTION OVER THE WORK.

THE TERMS "APPROVED EQUAL," "EQUIVALENT," OR "EQUAL" ARE USED SYNONYMously AND SHALL MEAN "ACCEPTED BY OR ACCEPTABLE TO THE ENGINEER AS EQUIVALENT TO THE ITEM OR MANUFACTURER SPECIFIED." THE TERM "APPROVED EQUAL" MEANS "ACCEPTED BY OR ACCEPTABLE TO THE RECOGNIZED TESTING LABORATORY (E.G. UL, ETL, CSA), AND ACCEPTABLE TO THE AHJ OVER THIS PROJECT."

15A-1-3 PRE-BID SITE VISIT

PRIOR TO SUBMITTING BID, VISIT THE SITE OF THE PROPOSED WORK AND BECOME FULLY INFORMED AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE DONE.

15A-1-4 MATERIAL AND WORKMANSHIP
PROVIDE NEW MATERIAL, EQUIPMENT, AND APPARATUS UNDER THIS CONTRACT UNLESS OTHERWISE STATED HEREIN, OF BEST QUALITY NORMALLY USED FOR THE PURPOSES IN SUCH CONDITIONS.

15A-1-5 COORDINATION
COORDINATE WORK WITH THAT OF OTHER TRADES SO THAT THE VARIOUS COMPONENTS OF THE SYSTEMS WILL BE INSTALLED AT THE PROPER TIME WILL FIT THE AVAILABLE SPACE, AND WILL ALLOW PROPER SERVICE ACCESS TO THOSE ITEMS REQUIRING MAINTENANCE.

15A-1-6 ORDINANCES AND CODES
WORK PERFORMED UNDER THIS CONTRACT SHALL AT A MINIMUM, BE IN CONFORMANCE WITH APPLICABLE NATIONAL, STATE, AND LOCAL CODES HAVING JURISDICTION OVER THE WORK.

15A-1-7 PROTECTION OF EQUIPMENT AND MATERIALS
STORE AND PROTECT FROM DAMAGE EQUIPMENT AND MATERIALS DELIVERED TO JOB SITE. COVER WITH WATER-RESISTANT HEAVY TAPE, PAPER, PLYWOOD, OR PLASTIC AS REQUIRED TO PROTECT FROM PLASTER, DIRT, PAINT, GREASE, OR PHYSICAL DAMAGE.

15A-1-8 SUBSTITUTIONS
THE BASE BID SHALL INCLUDE ONLY THE PRODUCTS FROM MANUFACTURERS SPECIFICALLY NAMED IN THE DRAWINGS AND SPECIFICATIONS. NO SUBSTITUTION WILL BE CONSIDERED PRIOR TO RECEIVING A WRITTEN REQUEST FOR APPROVAL.

15A-1-9 SHOP DRAWINGS
UPON BEING AWARDED A CONTRACT, SUBMIT TO THE ARCHITECT FOR APPROVAL, SIX (6) COPIES OF MANUFACTURER'S DRAWINGS FOR EQUIPMENT TO BE FURNISHED UNDER THIS CONTRACT.

15A-1-10 ELECTRONIC DRAWING FILES
IN PREPARATION OF SHOP DRAWINGS, CONTRACTOR MAY, AT HIS OPTION, OBTAIN ELECTRONIC DRAWING FILES IN PDF OR DWG FORMAT ON 4.5 INCH FLOPPY DISK, 100 MB ZIP DISK OR CD-ROM DISK, AS DESIRED.

15A-1-11 OPERATION AND MAINTENANCE INSTRUCTIONS
DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPIL A COMPLETE BROCHURE OF MATERIALS FURNISHED AND INSTALLED ON THIS PROJECT.

15A-1-12 TRAINING
AT A TIME MUTUALLY AGREED UPON BETWEEN THE OWNER AND CONTRACTOR, PROVIDE THE GENERAL CONTRACTOR AND DESIGNATED REPRESENTATIVE TO TRAIN OWNER'S DESIGNATED PERSONNEL ON THE OPERATION AND MAINTENANCE OF THE EQUIPMENT PROVIDED FOR THIS PROJECT.

15A-1-13 SPARE PARTS
FURNISH TO OWNER WITH RECEIPT, THE FOLLOWING SPARE PARTS FOR THE EQUIPMENT FURNISHED FOR THIS PROJECT:

15A-1-14 WARRANTIES
WARRANT EACH SYSTEM AND EACH ELEMENT THEREOF TO BE SUBJECTS DU TO FAULTY WORKMANSHIP, DESIGN OR MATERIAL FOR A PERIOD OF TWELVE (12) MONTHS FROM THE DATE OF SUBSTANTIAL COMPLETION OF THE PROJECT.

15A-1-15 CLEANING
PERFORM CUTTING OF WALLS, FLOORS, CEILING, ETC. AS REQUIRED TO INSTALL WORK UNDER THIS SECTION. OBTAIN PERMISSION FROM THE ARCHITECT PRIOR TO WORK UNDER THIS SECTION.

15A-1-16 ROUGH-IN
COORDINATE WITHOUT DELAY ROUGH-IN WITH GENERAL CONSTRUCTION, CONCRETE, AND CONDUIT ROUGH-IN EXCEPT IN UNFINISHED AREAS AND WHERE OTHERWISE SHOWN.

15A-1-17 CONCRETE BASES

PROVIDE CONCRETE BASES FOR EQUIPMENT WHERE INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN. CONCRETE BASES SHALL HAVE CHAMFERED EDGES. SIZE OF PAD SHALL BE A MINIMUM OF GREATER THAN THE FOOTPRINT OF THE EQUIPMENT THAT IT IS SUPPORTING AND SHALL HAVE A MINIMUM HEIGHT OF 3-1/2".

15A-1-18 STRUCTURAL STEEL
STRUCTURAL STEEL USED FOR SUPPORT OF EQUIPMENT, DUCTWORK AND PIPING SHALL BE NEW, CLEAN, AND CONFORM TO ASTM DESIGNATION A-36.

15A-1-19 SHOP DRAWINGS
UPON BEING AWARDED A CONTRACT, SUBMIT TO THE ARCHITECT FOR APPROVAL, SIX (6) COPIES OF MANUFACTURER'S DRAWINGS FOR EQUIPMENT TO BE FURNISHED UNDER THIS CONTRACT.

15A-1-20 PENETRATIONS
SEAL MECHANICAL FLOOR, EXTERIOR WALL AND ROOF PENETRATIONS WATERIGHT AND WEATHERTIGHT. SEAL AROUND MECHANICAL PENETRATIONS WITH 5/8" CP-25 FIRE BARRIER CAULK (THICKNESS AS REQUIRED AND RECOMMENDED BY MANUFACTURER) TO MAINTAIN FIRE RESISTANCE RATING OF FIRE-RATED ASSEMBLIES.

15A-1-21 AIR FILTERS
PROVIDE FARR 30/20 PLEATED THROWAWAY TYPE FILTERS, UNLESS OTHERWISE INDICATED. FILTERS SHALL BE STAINLESS STEEL UNLESS WHEN USED IN REGENERATED AIR SYSTEMS. FILTERS SHALL BE MANUFACTURED BY AMERICAN AIR FILTER, FARR, FLANAGAN, OR APPROVED EQUAL.

15A-1-22 MOTORS AND STARTERS
PROVIDE EVERY MOTOR, EXCEPT FRACTIONAL HORSEPOWER SINGLE PHASE MOTORS WITH AN APPROVED TYPE OF "BUILT-IN" THERMAL OVERLOAD PROTECTION, WITH A MOTOR STARTER. EACH STARTER SHALL BE PROVIDED WITH OVERLOAD HEATERS CORRESPONDING TO THE MOTOR'S FULL-LOAD CURRENT.

15A-1-23 ELECTRICAL WIRING
LINE VOLTAGE WIRING SHALL BE PROVIDED BY DIVISION 16. LINE VOLTAGE CONTROL AND INTERLOCK WIRING FOR MECHANICAL SYSTEMS SHALL ALSO BE PROVIDED BY DIVISION 16. CONDUIT AND WIRING SHALL BE PROVIDED BY DIVISION 16.

15A-1-24 REFRIGERANT AND OIL
PROVIDE FULL REFRIGERANT AND OIL CHARGE IN FULL NEW AIR CONDITIONING REFRIGERATION SYSTEMS, AND MAINTAIN IT FOR FULL TERM OF THE GUARANTEE.

15A-1-25 FINAL TESTING AND ADJUSTMENTS
FINAL SYSTEM TESTING, BALANCING AND ADJUSTMENTS SHALL BE PERFORMED BY CONTRACTOR CERTIFIED BY THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB), ASSOCIATED AIR BALANCE (AABO) OR OTHER APPROVED AGENCY.

15A-1-26 EQUIPMENT FURNISHED BY OTHERS
IF NECESSARY EQUIPMENT AND ACCESSORIES THAT ARE NOT PROVIDED BY THE EQUIPMENT SUPPLIER OR OWNER TO COMPLETE INSTALLATION OF COOKING EQUIPMENT, WASHING EQUIPMENT, ETC. FURNISHED BY OTHERS, IN LOCATIONS AS SHOWN ON DRAWINGS AND WHERE NECESSARY, THE GENERAL CONTRACTOR SHALL OBTAIN THE EQUIPMENT, EQUIPMENT AND ACCESSORIES NOT PROVIDED BY THE EQUIPMENT SUPPLIER.

15A-1-27 BUILDING OPERATION
COMPLY WITH THE SCHEDULE OF OPERATIONS AS OUTLINED IN THE ARCHITECTURAL PORTIONS OF THIS SPECIFICATION. BUILDING SHALL BE IN CONTINUOUS OPERATION.

15A-1-28 AIR DAMPERS
PROVIDE BALANCING DAMPERS MANUFACTURED BY BUSKIN, GREENHECK, MALOR INDUSTRIES, OR APPROVED EQUAL. DAMPERS, MOTOR OR WRENCH ADJUSTED, WHERE SHOWN ON DRAWINGS AND WHERE NECESSARY, SHALL BE CONTROLLED BY LOCKING GUARANTEES.

15A-1-29 DAMPERS
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15A-1-30 FLEXIBLE ISOLATION
LOW PRESSURE (DUCT PRESSURE CLASS UP TO AND INCLUDING 2" W.G.) FLEXIBLE DUCT SHALL BE POLYESTER FIBERGLASS INSULATION. PROVIDE ONE LAYER WITH FLEXIBLE DUCT RISERS SHALL NOT EXCEED 5 FEET IN LENGTH, AND SHALL BE INSTALLED STRAIGHT AS POSSIBLE AVOIDING TIGHT TURNS.

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LOW PRESSURE (DUCT PRESSURE CLASS UP TO AND INCLUDING 2" W.G.) FLEXIBLE DUCT SHALL BE POLYESTER FIBERGLASS INSULATION. PROVIDE ONE LAYER WITH FLEXIBLE DUCT RISERS SHALL NOT EXCEED 5 FEET IN LENGTH, AND SHALL BE INSTALLED STRAIGHT AS POSSIBLE AVOIDING TIGHT TURNS.

15A-1-35 FLEXIBLE ISOLATION
LOW PRESSURE (DUCT PRESSURE CLASS UP TO AND INCLUDING 2" W.G.) FLEXIBLE DUCT SHALL BE POLYESTER FIBERGLASS INSULATION. PROVIDE ONE LAYER WITH FLEXIBLE DUCT RISERS SHALL NOT EXCEED 5 FEET IN LENGTH, AND SHALL BE INSTALLED STRAIGHT AS POSSIBLE AVOIDING TIGHT TURNS.

15A-1-36 FLEXIBLE ISOLATION
LOW PRESSURE (DUCT PRESSURE CLASS UP TO AND INCLUDING 2" W.G.) FLEXIBLE DUCT SHALL BE POLYESTER FIBERGLASS INSULATION. PROVIDE ONE LAYER WITH FLEXIBLE DUCT RISERS SHALL NOT EXCEED 5 FEET IN LENGTH, AND SHALL BE INSTALLED STRAIGHT AS POSSIBLE AVOIDING TIGHT TURNS.

15A-1-37 FLEXIBLE ISOLATION
LOW PRESSURE (DUCT PRESSURE CLASS UP TO AND INCLUDING 2" W.G.) FLEXIBLE DUCT SHALL BE POLYESTER FIBERGLASS INSULATION. PROVIDE ONE LAYER WITH FLEXIBLE DUCT RISERS SHALL NOT EXCEED 5 FEET IN LENGTH, AND SHALL BE INSTALLED STRAIGHT AS POSSIBLE AVOIDING TIGHT TURNS.

15A-1-38 FLEXIBLE ISOLATION
LOW PRESSURE (DUCT PRESSURE CLASS UP TO AND INCLUDING 2" W.G.) FLEXIBLE DUCT SHALL BE POLYESTER FIBERGLASS INSULATION. PROVIDE ONE LAYER WITH FLEXIBLE DUCT RISERS SHALL NOT EXCEED 5 FEET IN LENGTH, AND SHALL BE INSTALLED STRAIGHT AS POSSIBLE AVOIDING TIGHT TURNS.

15A-1-39 FLEXIBLE ISOLATION
LOW PRESSURE (DUCT PRESSURE CLASS UP TO AND INCLUDING 2" W.G.) FLEXIBLE DUCT SHALL BE POLYESTER FIBERGLASS INSULATION. PROVIDE ONE LAYER WITH FLEXIBLE DUCT RISERS SHALL NOT EXCEED 5 FEET IN LENGTH, AND SHALL BE INSTALLED STRAIGHT AS POSSIBLE AVOIDING TIGHT TURNS.

15A-1-40 FLEXIBLE ISOLATION
LOW PRESSURE (DUCT PRESSURE CLASS UP TO AND INCLUDING 2" W.G.) FLEXIBLE DUCT SHALL BE POLYESTER FIBERGLASS INSULATION. PROVIDE ONE LAYER WITH FLEXIBLE DUCT RISERS SHALL NOT EXCEED 5 FEET IN LENGTH, AND SHALL BE INSTALLED STRAIGHT AS POSSIBLE AVOIDING TIGHT TURNS.

15A-1-17 CONCRETE BASES

PROVIDE CONCRETE BASES FOR EQUIPMENT WHERE INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN. CONCRETE BASES SHALL HAVE CHAMFERED EDGES. SIZE OF PAD SHALL BE A MINIMUM OF GREATER THAN THE FOOTPRINT OF THE EQUIPMENT THAT IT IS SUPPORTING AND SHALL HAVE A MINIMUM HEIGHT OF 3-1/2".

15A-1-18 STRUCTURAL STEEL
STRUCTURAL STEEL USED FOR SUPPORT OF EQUIPMENT, DUCTWORK AND PIPING SHALL BE NEW, CLEAN, AND CONFORM TO ASTM DESIGNATION A-36.

15A-1-19 SHOP DRAWINGS
UPON BEING AWARDED A CONTRACT, SUBMIT TO THE ARCHITECT FOR APPROVAL, SIX (6) COPIES OF MANUFACTURER'S DRAWINGS FOR EQUIPMENT TO BE FURNISHED UNDER THIS CONTRACT.

15A-1-20 PENETRATIONS
SEAL MECHANICAL FLOOR, EXTERIOR WALL AND ROOF PENETRATIONS WATERIGHT AND WEATHERTIGHT. SEAL AROUND MECHANICAL PENETRATIONS WITH 5/8" CP-25 FIRE BARRIER CAULK (THICKNESS AS REQUIRED AND RECOMMENDED BY MANUFACTURER) TO MAINTAIN FIRE RESISTANCE RATING OF FIRE-RATED ASSEMBLIES.

15A-1-21 AIR FILTERS
PROVIDE FARR 30/20 PLEATED THROWAWAY TYPE FILTERS, UNLESS OTHERWISE INDICATED. FILTERS SHALL BE STAINLESS STEEL UNLESS WHEN USED IN REGENERATED AIR SYSTEMS. FILTERS SHALL BE MANUFACTURED BY AMERICAN AIR FILTER, FARR, FLANAGAN, OR APPROVED EQUAL.

15A-1-22 MOTORS AND STARTERS
PROVIDE EVERY MOTOR, EXCEPT FRACTIONAL HORSEPOWER SINGLE PHASE MOTORS WITH AN APPROVED TYPE OF "BUILT-IN" THERMAL OVERLOAD PROTECTION, WITH A MOTOR STARTER. EACH STARTER SHALL BE PROVIDED WITH OVERLOAD HEATERS CORRESPONDING TO THE MOTOR'S FULL-LOAD CURRENT.

15A-1-23 ELECTRICAL WIRING
LINE VOLTAGE WIRING SHALL BE PROVIDED BY DIVISION 16. LINE VOLTAGE CONTROL AND INTERLOCK WIRING FOR MECHANICAL SYSTEMS SHALL ALSO BE PROVIDED BY DIVISION 16. CONDUIT AND WIRING SHALL BE PROVIDED BY DIVISION 16.

15A-1-24 REFRIGERANT AND OIL
PROVIDE FULL REFRIGERANT AND OIL CHARGE IN FULL NEW AIR CONDITIONING REFRIGERATION SYSTEMS, AND MAINTAIN IT FOR FULL TERM OF THE GUARANTEE.

15A-1-25 FINAL TESTING AND ADJUSTMENTS
FINAL SYSTEM TESTING, BALANCING AND ADJUSTMENTS SHALL BE PERFORMED BY CONTRACTOR CERTIFIED BY THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB), ASSOCIATED AIR BALANCE (AABO) OR OTHER APPROVED AGENCY.

15A-1-26 EQUIPMENT FURNISHED BY OTHERS
IF NECESSARY EQUIPMENT AND ACCESSORIES THAT ARE NOT PROVIDED BY THE EQUIPMENT SUPPLIER OR OWNER TO COMPLETE INSTALLATION OF COOKING EQUIPMENT, WASHING EQUIPMENT, ETC. FURNISHED BY OTHERS, IN LOCATIONS AS SHOWN ON DRAWINGS AND WHERE NECESSARY, THE GENERAL CONTRACTOR SHALL OBTAIN THE EQUIPMENT, EQUIPMENT AND ACCESSORIES NOT PROVIDED BY THE EQUIPMENT SUPPLIER.

15A-1-27 BUILDING OPERATION
COMPLY WITH THE SCHEDULE OF OPERATIONS AS OUTLINED IN THE ARCHITECTURAL PORTIONS OF THIS SPECIFICATION. BUILDING SHALL BE IN CONTINUOUS OPERATION.

15A-1-28 AIR DAMPERS
PROVIDE BALANCING DAMPERS MANUFACTURED BY BUSKIN, GREENHECK, MALOR INDUSTRIES, OR APPROVED EQUAL. DAMPERS, MOTOR OR WRENCH ADJUSTED, WHERE SHOWN ON DRAWINGS AND WHERE NECESSARY, SHALL BE CONTROLLED BY LOCKING GUARANTEES.

15A-1-29 DAMPERS
PROVIDE BALANCING DAMPERS MANUFACTURED BY BUSKIN, GREENHECK, MALOR INDUSTRIES, OR APPROVED EQUAL. DAMPERS, MOTOR OR WRENCH ADJUSTED, WHERE SHOWN ON DRAWINGS AND WHERE NECESSARY, SHALL BE CONTROLLED BY LOCKING GUARANTEES.

15A-1-30 FLEXIBLE ISOLATION
LOW PRESSURE (DUCT PRESSURE CLASS UP TO AND INCLUDING 2" W.G.) FLEXIBLE DUCT SHALL BE POLYESTER FIBERGLASS INSULATION. PROVIDE ONE LAYER WITH FLEXIBLE DUCT RISERS SHALL NOT EXCEED 5 FEET IN LENGTH, AND SHALL BE INSTALLED STRA