

SECTION 15000

MECHANICAL SPECIFICATIONS

1.01 SCOPE:

A. PROVIDE COMPLETE, FUNCTIONAL HEATING, VENTILATING, AIR CONDITIONING AND PLUMBING SYSTEMS AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREINAFTER.

1.02 DRAWINGS:

A. EXCEPT WHERE DIMENSIONS ARE SHOWN, THE MECHANICAL DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF THE SYSTEMS AND WORK INCLUDED IN THE CONTRACT. THE DRAWINGS DO NOT SHOW EVERY FITTING AND DETAIL; ALL PIPING SYSTEMS, DUCT SYSTEMS AND EQUIPMENT ARE INTENDED TO BE COMPLETE. THE CONTRACTOR SHALL INCLUDE IN HIS BID AND PROVIDE ALL NECESSARY OFFSETS, CONNECTIONS, SUPPORTS, FITTINGS, DETAILS, MATERIALS AND LABOR TO COMPLETE THE WORK AS SPECIFIED. DRAWINGS ARE NOT TO BE SCALED. THE DRAWINGS AND DETAILS SHALL BE EXAMINED FOR BUILDING DIMENSIONS AND EXACT LOCATION OF FIXTURES AND EQUIPMENT. WHERE THEY ARE NOT DEFINITELY LOCATED, THIS INFORMATION SHALL BE OBTAINED FROM THE ARCHITECT/ENGINEER.

1.03 COORDINATION:

A. COORDINATE REQUIREMENTS OF THE VARIOUS COMPONENTS OF THE HEATING, VENTILATING AND AIR CONDITIONING PLUMBING AND FIRE PROTECTION SYSTEMS SPECIFIED HEREIN; SUPERVISE INTERCONNECTION AND ADJUSTMENT OF THESE COMPONENTS SO AS TO OBTAIN A COMPLETE AND FUNCTIONAL SYSTEM.

1.04 CODES:

A. THIS SECTION SPECIFIES THE CODES, PERMITS AND INSPECTIONS FOR THE MECHANICAL SYSTEMS.

B. THE PLUMBING INSTALLATION AND EQUIPMENT SHALL CONFORM TO THE FOLLOWING:
1. INTERNATIONAL BUILDING CODE, 2012 EDITION.
2. INTERNATIONAL PLUMBING CODE, 2012 EDITION.
3. NATIONAL FIRE PROTECTION ASSOCIATION STANDARD NO. 70, 2012 EDITION.
4. NATIONAL ELECTRICAL CODE, 2017 EDITION.

C. THE HEATING, AIR CONDITIONING, AND VENTILATION INSTALLATION AND EQUIPMENT SHALL CONFORM TO THE FOLLOWING:
1. INTERNATIONAL BUILDING CODE, 2012 EDITION.
2. NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS NO. 90A, 2012 EDITIONS.
3. SAFETY CODE FOR MECHANICAL REFRIGERATION ANSI/ASHRAE 15 - 1989 EDITION.
4. INTERNATIONAL FIRE CODE, 2012 EDITION.
5. INTERNATIONAL MECHANICAL CODE, 2012 EDITION.
6. NATIONAL ELECTRICAL CODE, 2017 EDITION.

D. FIRE PROTECTION SYSTEM INSTALLATION AND EQUIPMENT SHALL CONFORM TO THE FOLLOWING:
1. INTERNATIONAL BUILDING CODE, 2012 EDITION.
2. NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS NO. 13 AND 101, 2012 EDITIONS.
3. NATIONAL ELECTRICAL CODE, 2017 EDITION.

E. OTHER CODES: PLUMBING SYSTEM, HEATING, VENTILATING AND AIR CONDITIONING SYSTEM AND FIRE PROTECTION SYSTEM SHALL COMPLY WITH ALL LOCAL CODES OF AUTHORITY HAVING JURISDICTION.

HVAC

2.01 SHEET METAL WORK

DESCRIPTION: (SHEET METAL)

A. DUCTWORK SHALL BE GALVANIZED STEEL AND OF THE GAUGES INDICATED IN THE SMACNA STANDARDS, EXCEPT AS NOTED OTHERWISE ON THE DRAWINGS.

B. CROSSBREAK OR MACHINE BEAD ALL PANELS OVER 12" WIDE EXCEPT WHERE INSULATED WITH RIGID BOARD. CAULK JOINTS WITH FOSTER 30-02 TO OBTAIN TIGHTNESS.

C. ELBOWS:
1. RADIUS ELBOWS WITH CENTERLINE RADIUS LESS THAN 1/2 TIMES WIDTH SHALL HAVE TURNING VANES THAT COMPLY WITH SMACNA RECOMMENDATIONS.
2. SQUARE ELBOWS OR ANY DUCT THAT HAS A CHANGE IN DIRECTION OF 30 DEGREES OR LARGER SHALL HAVE SINGLE THICKNESS VANES WITH 2" RADIUS SPREAD 1-1/2" OR AERO/DYNE HEP VANES, WHERE TWO OR MORE SQUARE ELBOWS ARE USED IN SERIES, THE VANES SHALL HAVE 3/4" (MIN.) LONG TRAILING EDGES.

D. TRANSFORMATIONS SHALL BE 1:1 WHERE SPACE CONDITIONS PERMIT, OR A MINIMUM OF 1:2.

E. ALL RISES AND/OR DROPS IN SHEET METAL DUCTWORK SHALL BE MADE BY USING EITHER OFFSETS OR RADIUS ELBOWS AND STRAIGHT SECTIONS OF DUCTWORK. SLOPING OFFSETS IN WHICH FREE AREA IS REDUCED BY MORE THAN 5% SHALL BE PROHIBITED.

F. DUCT HANGERS FOR HORIZONTAL DUCTS SHALL BE NOT OVER 8" O.C. WITH #10 U.S. GAUGE, 1" WIDE FOR DUCTS 18" GREATEST DIMENSION AND SMALLER, #12 U.S. GAUGE, 1-1/2" WIDE, FOR LARGER DUCTS.

G. DUCTS MODIFIED TO RESOLVE CONFLICTS SHALL BE SIZED TO PROVIDE THE SAME CAPACITY AND FRICTION LOSS AS DUCT SIZES SHOWN ON DOCUMENTS.

2.02 SPIRAL ROUND DUCTWORK AND FITTINGS:

A. THE CONTRACTOR SHALL UTILIZE THE FOLLOWING METHOD OF CONSTRUCTION FOR ALL ROUND DUCTWORK INDICATED ON THE CONTRACT DOCUMENTS.

B. DUCTWORK SHALL BE FACTORY FABRICATED SINGLE WALL TYPE.

C. DUCTWORK AND FITTINGS SHALL BE GALVANIZED STEEL AND GAUGES OF METAL SHALL CONFORM TO SMACNA STANDARDS, EXCEPT GALVANEALD SHALL BE PROVIDED FOR EXPOSED DUCT.

D. WHERE DUCTWORK IS EXPOSED TO VIEW, THE DUCTWORK SHALL BE MANUFACTURED, SHIPPED, AND INSTALLED TO PROVIDE ARCHITECTURAL QUALITY INSTALLATIONS. THIS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
1. CARBON ARC WELDING.
2. GRINDING OF ANY WELDING IRREGULARITIES.
3. ALIGNMENT OF SPIRAL SEAMS TO FORM CONTINUOUS SPIRAL SEAM ACROSS JOINTS.
4. ALL PIECE MARKING AND TACK WELDING INSIDE DUCTWORK.
5. GRINDING SMOOTH ANY WELDS AT SPIRAL JOINTS OR END CAPS.
6. GALVANEALD OR OTHER TYPE STEEL WHICH WILL ACCEPT FIELD PAINTING.
7. NO EXPOSED SEALANT, FABRICATION, WATER OR DIRT/MUD MARKS.

E. TRANSFORMATIONS SHALL NOT BE LESS THAN 1:4.

F. DUCTWORK AND FITTINGS SHALL BE AS MANUFACTURED BY SEMCO, R.V. MONEY, DIXIE SHEET METAL, MONROE METALS, AIR DISTRIBUTION SYSTEMS OR UNITED-MCGILL. NO SUBSTITUTIONS SHALL BE PERMITTED WITHOUT WRITTEN PERMISSION FROM THE ARCHITECT.

2.03 ACCESSORIES:

A. SPLITTER DAMPER SHALL BE DOUBLE THICKNESS WITH ROUNDED LEADING EDGE, CONSTRUCTED OF SAME MATERIAL AS DUCTWORK AND TWO GAUGES HEAVIER THAN DUCTWORK IN WHICH INSTALLED. DAMPER HEEL SHALL BE ATTACHED TO COLD-ROLLED GALVANIZED STEEL PIVOT ROD WITH BEARING AT EACH END. DAMPER LEADING EDGE SHALL BE ADJUSTED BY A COLD-ROLLED GALVANIZED STEEL CONTROL ROD WHICH PASSES THROUGH A LOCKABLE BALL JOINT BRACKET INSTALLED ON DUCT EXTERIOR.

B. MANUAL VOLUME DAMPER SHALL BE MULTI-OPPOSED BLADE TYPE; FRAMES SHALL BE FORMED GALVANIZED STEEL CHANNEL WITH CORNER BRACES ABOVE SIZE 20" WIDE AND 20" HIGH; BLADES SHALL BE 6" (MAXIMUM) WIDE, CONSTRUCTED OF 16 U.S. GAUGE (MINIMUM THICKNESS) FORMED GALVANIZED STEEL ATTACHED TO COLD-ROLLED GALVANIZED STEEL AXLE; AXLE BEARINGS SHALL BE SELF-LUBRICATING NYLON OR TEFLON. DAMPER SHALL BE CONTROLLED BY A GALVANIZED LOCKING TYPE DIAL REGULATOR INSTALLED ON DUCT EXTERIOR.

C. FIRE DAMPERS: FIRE DAMPERS SHALL BE MANUFACTURED BY AIR BALANCE, NAILOR-HART, NATIONAL CONTROLLED AIR, PREFCO, RUSKIN, SAFE AIR, OR UNITED SHEET METAL.
1. FIRE DAMPERS FOR HORIZONTAL AIR FLOW SHALL BE GRAVITY OPERATED CURTAIN TYPE.
2. FIRE DAMPERS FOR VERTICAL AIR FLOW SHALL BE SPRING OPERATED CURTAIN TYPE.
3. FUSIBLE LINKS SHALL BREAK AT 160 DEGREES F IN RETURN AND EXHAUST DUCTS, AND SHALL BREAK AT 160 DEGREES F IN SUPPLY DUCTS.
4. DUCTS: DAMPER MANUFACTURER SHALL FURNISH WALL COLLARS.
5. FOR 1-1/2" AND 2 HOUR RATINGS: FIRE DAMPER OR INSTALLATION IN DUCTWORK SHALL BE RUSKIN CURTAIN TYPE 1BD2 STYLE B OR EQUAL.

2.04 INSULATION:

A. ALL BASIC INSULATING MATERIALS INCLUDING JOINTS, FACING, ADHESIVES, TAPES, MASTICS AND FINISHING MATERIALS SHALL BE LISTED WITH A FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPED RATING OF 50 OR LESS. DUCT INSULATION SHALL HAVE PASSED A COMPOSITE RATING TEST BY UL 723. PRIOR TO INSTALLATION, CERTIFY IN WRITING THAT ALL PRODUCTS TO BE USED WILL MEET THE ABOVE CRITERIA.

2.05 SHEET METAL INSULATION:

PROVIDE AS FOLLOWS AND WHERE INDICATED ON DRAWINGS:

Table with 4 columns: LOCATION, UNLESS INDICATED OTHERWISE, TYPE, THICKNESS, LB./CU.FT., DENSITY. Includes entries for SUPPLY, DUCTWORK AND OTHER ITEMS AS DESIGNATED ON PLANS.

2.06 INSTALLATION:

A. GENERAL:
1. CONTRACTOR SHALL NOT FABRICATE AND/OR INSTALL DUCTWORK UNTIL ARCHITECT/ENGINEER HAS REVIEWED SHOP DRAWINGS FOR COMPLIANCE WITH ENGINEERING DESIGN CONCEPT.
2. ANY DUCTWORK FABRICATED AND/OR INSTALLED PRIOR TO ARCHITECT/ENGINEER'S REVIEW FOUND TO BE IN NON-COMPLIANCE SHALL BE REMOVED OR CORRECTED AS PER INSTRUCTIONS FROM ARCHITECT/ENGINEER AT CONTRACTOR'S EXPENSE.

2.07 SPLIT SYSTEM HEAT PUMP UNITS.

A. SPLIT SYSTEM HEAT PUMP UNITS SHALL BE AS SCHEDULED ON THE "SPLIT SYSTEM HEAT PUMP SCHEDULE" ON P201.

B. PROVIDE APPROVED SMOKE DETECTORS IN THE SUPPLY SIDE OF EACH UNIT I.A.W. 606.2.1 OF THE 2012 IMC WITH GEORGIA AMENDMENTS. UPON ACTIVATION, DETECTORS SHALL COMPLY WITH 606.4 OF THE 2012 IMC WITH GEORGIA AMENDMENTS.

C. OMITTED

2.08 CONTROLS:

A. MOUNT THERMOSTATS 60" ABOVE FINISHED FLOOR.

B. THERMOSTATS SHALL BE ELECTRONIC PROGRAMMABLE.

2.09 FANS

A. EXHAUST FANS: ACCEPTABLE MANUFACTURERS ARE BREIDERT, ACME, GREENHECK, JENN-AIR, LOREN COOK, PENN OR APPROVED EQUAL.

B. EXHAUST FANS SHALL BE AS SCHEDULED ON THE DRAWINGS.

2.10 GRILLES, REGISTERS AND DIFFUSERS

SCOPE:

A. CONTRACTOR SHALL FURNISH AND INSTALL GRILLES, REGISTERS AND DIFFUSERS WHERE INDICATED ON THE DRAWINGS.

B. MANUFACTURER SHALL PROVIDE TOUCH-UP MATERIALS FOR FIELD APPLICATION BY THE CONTRACTOR.

C. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATIONS OF ALL GRILLES, REGISTERS AND DIFFUSERS.

MANUFACTURERS:

A. AIR GUIDE, RUSKIN, E. H. PRICE, LTD., KRUEGER, METAL-AIR, AND TITUS ARE ACCEPTABLE MANUFACTURERS.

B. GRILLES, REGISTERS AND DIFFUSERS SHALL BE AS SCHEDULED ON THE DRAWINGS.

INSTALLATION:

A. GRILLE, REGISTER AND DIFFUSER INSTALLATION SHALL CONFORM TO THE MANUFACTURERS RECOMMENDATIONS.

PLUMBING

1.01 MANUFACTURERS: KOHLER, AMERICAN STANDARD, ELJER AND CRANE.

1.02 PLUMBING FIXTURES SHALL BE AS SCHEDULED ON THE DRAWINGS.

1.03 INSTALLATION:

A. ADEQUATELY SUPPORT ALL FIXTURES. SUPPORT ALL WALL HUNG FIXTURES WITH THE PROPER CHAIR CARRIER.

B. EXPOSED PENETRATIONS THROUGH WALLS AND FLOORS IN FINISHED AREAS SHALL HAVE CHROME PLATED ESCUTCHEONS NEATLY AND FIRMLY SECURED IN PLACE.

C. EXPOSED PIPING IN CONNECTION WITH FIXTURES SHALL BE CHROME PLATED BRASS.

D. PROVIDE STOP VALVES FOR EACH PLUMBING FIXTURE.

E. INSTALL CHROME PLATED PIPE AND FITTINGS WITH A STRAP WRENCH. ANY MARKED PIPE OR FITTINGS SHALL BE REMOVED AND REPLACED AT AN ADDITIONAL COST TO THE OWNER.

F. CAULK JUNCTIONS OF FIXTURES WITH WALLS AND FLOORS ALL AROUND WITH A SELF-HEALING CAULKING COMPOUND.

1.04 PIPING

TYPE I PIPING (COPPER TUBE):

A. COPPER PIPE TYPE I PIPING SHALL BE USED FOR:

DOMESTIC WATER PIPING

UNDER SLAB - 2-1/2" AND SMALLER:

1. PIPE: TYPE "K" SOFT ANNEALED COPPER, ASTM B88 WITH NO JOINTS UNDER FLOOR.

C. UNDERGROUND (NOT UNDER SLAB) - 3" AND SMALLER:

1. PIPE: TYPE "L" HARD ANNEALED COPPER, ASTM B88.
2. FITTINGS: CAST COPPER, ANSI B16.18 OR WROUGHT COPPER, ANSI B16.22.
3. SOLDER: 95% TIN/5% ANTIMONY, ANSI/ASTM B32.

D. ABOVE GROUND:

1. PIPE: TYPE "L" HARD ANNEALED COPPER, ASTM B88.
2. FITTINGS: CAST COPPER, ANSI B16.18 OR WROUGHT COPPER, ANSI B16.22.
3. SOLDER: 95% TIN/5% ANTIMONY, ANSI/ASTM B32.

4. VALVES:

A. GATE: CLASS 125, 1/2 INCH TO 3 INCH, BRONZE CONSTRUCTION, BRASS PACKING GLAND AND NUT, MALLEABLE IRON HAND WHEEL, RISING STEM, SCREWED BONNET, TEFLON ASBESTOS PACKING, SOLID DISC.

B. GLOBE: CLASS 125, 1/2 INCH TO 2 INCH, BRONZE CONSTRUCTION, SCREWED BONNET, NON-ASBESTOS PACKING, TEFLON DISC, BRASS PACKING NUT.

C. CHECK: CLASS 125, BRONZE CONSTRUCTION, SWING CHECK, SCREWED CAP, BRASS OR BRONZE DISC HOLDER, BUNA-N OR TEFLON DISC.

E. NIPPLES USED WITH COPPER PIPE SHALL BE BRASS.

TYPE II PIPING (CAST IRON SOIL PIPE):

A. CAST IRON SOIL PIPE, TYPE II PIPING, SHALL BE USED FOR:

SANITARY WASTE AND VENT SYSTEM.

B. ABOVE GROUND - 1-1/2" AND LARGER:

1. PIPE AND FITTINGS: COATED SERVICE WEIGHT CAST IRON NO-HUB SOIL PIPE, CISPI 301.
2. GASKET (SLEEVE): NEOPRENE RUBBER, CISPI 310.
3. COMPRESSION BAND: STAINLESS STEEL, CISPI 310.

C. UNDERGROUND - 2" AND LARGER:

1. PIPE AND FITTINGS: COATED (SERVICE WEIGHT, EXTRA HEAVY) CAST IRON HUB AND SPIGOT SOIL PIPE, ASTM A74, ANSI A112.5.1, FEDERAL SPEC. WW-P-401E.
2. GASKET: NEOPRENE RUBBER, CS-188.

D. GENERAL:

1. HORIZONTAL DRAINAGE PIPING SHALL BE INSTALLED IN PRACTICAL ALIGNMENT WITHIN THE BUILDING PER APPLICABLE CODE.

TYPE III PIPING (DWV-COPPER):

A. DWV-COPPER, TYPE VIII PIPING SHALL BE PERMITTED FOR:

WASTE PIPING, ABOVE GRADE AS INDICATED.

B. PIPE: DRAINAGE, WASTE AND VENT COPPER MANUFACTURED IN ACCORDANCE WITH ASTM B-306.

C. FITTINGS: WROUGHT COPPER DRAINAGE FITTINGS MANUFACTURED IN ACCORDANCE WITH ANSI, B-16.29.

D. SOLDER: 95% TIN/5% ANTIMONY, ANSI/ASTM B32.

E. USE DWV COPPER FOR ALL 1-1/4" AND 1-1/2" FIXTURE BRANCH ARMS CONCEALED IN PIPE CHASES OR WALLS AND 2" DRAINS AT SINKS. 2" SINK DRAINS SHALL BE PAINTED SILVER OR CHROME PLATED.

GENERAL INSTALLATION:

A. DETERMINE IN ADVANCE OF CONSTRUCTION, LOCATIONS OF ALL PIPING, SLEEVES, HANGERS, FLOW LINES, ELEVATIONS, ETC. PIPE SHALL BE ERECTED NEATLY AND WORKMANLIKE, PARALLEL WITH BUILDING LINES.

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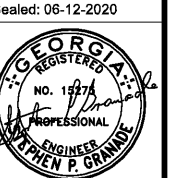
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Sealed: 06-12-2020



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Table with 2 columns: DATE, DESCRIPTION

MECHANICAL SPECIFICATIONS

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HFR 20-164.00