

HVAC SPEC

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...

3) "FURNISH" OR "SUPPLY," TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE UNITS OR SYSTEMS.
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 CONCEALED...

C. CONTRACTOR SHALL SUBMIT BID BASED ON SPECIFIED ITEMS AND SHALL SUPPLY AS AN ALTERNATE PRICE ANY SUBSTITUTIONS.
6. ACCESS DOORS IN GENERAL CONSTRUCTION
A. THIS CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR APPROVAL A PLAN INDICATING THE SIZE (MINIMUM 18 INCH X 18 INCH) AND LOCATION OF ALL ACCESS DOORS REQUIRED FOR OPERATION AND MAINTENANCE OF ALL CONCEALED EQUIPMENT, DEVICES, VALVES, DAMPERS AND CONTROLS...

7. SHEET METAL WORK
A. DUCT CONSTRUCTION, INCLUDING SHEET METAL THICKNESSES, SEAM AND JOINT CONSTRUCTION, REINFORCEMENTS, AND HANGERS AND SUPPORTS, SHALL COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE, LATEST EDITION" AND PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED.
B. EXCEPT AS OTHERWISE SHOWN OR NOTED, ALL DUCTWORK AND OTHER SHEET METAL WORK SHALL BE GALVANIZED SHEET STEEL.
C. DESCRIPTION OF DUCTWORK PRESSURE CLASS AND EQUIPMENT:
1) 4 INCH AND GREATER DUCT CLASS: ALL SUPPLY DUCTWORK FROM DISCHARGE OF FANS, AIR HANDLING UNITS OR AC UNITS TO INLETS OF TERMINAL BOXES ON FLOOR, ALL OUTDOOR DUCTWORK AND ALL DUCTWORK RUNNING THROUGH UNCONDITIONED SPACES. SEAL CLASS "X," LEAKAGE CLASS 6 (RECTANGULAR METAL) OR CLASS 3 (ROUND)...

5) THE HVAC CONTRACTOR SHALL PROVIDE ALL DEVICES, RELAYS, END SWITCHES, END SWITCHES, CONTROL DEVICES, AIR PIPING, POWER WIRING, CONTROL WIRING AND INTERLOCK WIRING AS REQUIRED TO ACCOMPLISH THE SEQUENCE OF OPERATION FOR THESE DAMPERS.
6) DAMPERS SHALL BE MANUFACTURED BY RUSKIN MODEL FSD-60, POTROFF OR APPROVED EQUAL.
7) MODULATING COMBINATION FRESH/AIR DAMPERS TO BE PROVIDED WITH ACTUATORS RATED AND TESTED FOR THIS APPLICATION.
8) SEE INSTALLATION ON DRAWINGS.
L. ALL DUCT DIMENSIONS INDICATED ON PLANS ARE INSIDE CLEAR DIMENSIONS.
M. AUTOMATIC DAMPERS: COMPLETE WITH LINKAGE AND ELECTRIC OPERATOR. OPPOSED BLADE DAMPER OR GALVANIZED STEEL MIN. 4 INCH MAX. 8 INCH WIDE WITH COMPRESSIBLE EDGE SEALS TO PREVENT LEAKAGE. FACTORY-ASSEMBLED STEEL LINKAGE AND SHAFT WITH NYLON OR OIL-IMPREGNATED BRONZE BEARINGS. MOTOR WITH SUFFICIENT POWER TO LIMIT LEAKAGE TO 10 CM PER SQUARE FEET. LINKAGE TO WITHSTAND LOAD EQUAL TO TWICE MAXIMUM OPERATING FORCE WITHOUT DEFLECTION. DAMPER MOUNTED IN WELDED STEEL CHANNEL FRAME.
N. WIRE MESH SCREEN (WMS): NO. 10 USGS, 34 SQUARE MESH, IN 1 INCH WIDE GALVANIZED STEEL ENCLOSURE FRAME. FLANGED DUCT OPENING TO RECEIVE FRAME.
O. EXISTING DUCTWORK TO BE REUSED:
1) THIS CONTRACTOR SHALL INSPECT, SEAL PER SMACNA REQUIREMENTS, LEAK TEST AND INSULATE ALL EXISTING DUCTWORK TO BE REUSED. EXISTING DUCTWORK SHALL CONFORM TO SPECIFICATIONS FOR NEW DUCTWORK LISTED HEREIN. ALL REQUIRED WORK SHALL BE PART OF BID.
8. AIR OUTLETS
A. GENERAL:
1) MARGIN TYPES, COLORS, FINISH AND METHODS OF ATTACHMENT FOR ALL DIFFUSERS, GRILLES AND REGISTERS SHALL BE COORDINATED WITH ARCHITECTURAL CEILING AND WALL DETAILS AND SPECIFICATIONS. FINISH SHALL MATCH COLOR SAMPLE AS APPROVED.
2) FRAME TYPE SUITABLE FOR MOUNTING IN CEILING OR WALL CONSTRUCTION AS INDICATED ON ARCHITECTURAL PLANS.
3) EXACT LOCATION OF ALL AIR OUTLETS AS PER ARCHITECTURAL PLANS.
4) PROVIDE MOUNTING AND BLOCKING
5) SUITABLE FOR OPERATION AT 20% EXCESS AND 20% LESS THAN NOTED CAPACITY FOR CONSTANT VOLUME SYSTEMS AND AT 20% EXCESS AND 60% LESS THAN NOTED CAPACITY FOR VARIABLE VOLUME SYSTEMS.
6) MANUFACTURER RESPONSIBLE FOR EXAMINING APPLICATION OF EACH OUTLET AND GUARANTEE THAT EACH UNIT PROVIDE REQUIRED NOISE LEVELS AND COMFORM SPACE CONDITIONS WITHOUT DRAFTS THROUGH OPERATING RANGE.
7) PROVIDE SHEETMETAL BLANK OFF AS REQUIRED FOR 1 WAY, 2 WAY OR 3 WAY DIFFUSERS, OR DRIFUSERS WITH PATTERNS IDENTIFIED ON DRAWINGS.
8) PROVIDE BLANKING FOR PROPER COVERAGE AND BLOW WITHOUT PRODUCING OBJECTIBLE NOISE OR AIR MOTION AT OCCUPIED LEVEL.
9) MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
a. ANEMOSTAT PRODUCTS: A NESTEK COMPANY.
b. TITUS.
c. TUTTLE AND BAILEY
d. PRICE
e. METALAIR
B. LINEAR DIFFUSERS: EXTRUDED ALUMINUM CONSTRUCTION, FINISH AS PER ARCHITECT. REMOVABLE CORE, AIR DEFLECTION VANE AND CABLE DAMPER IN EACH BRANCH TAP WITH 3 FEET CABLE TO DIFFUSER FACE.
1) LINEAR DIFFUSERS: FRAME TYPES SHALL MATCH WITH CEILING. PROVIDE MEANS TO TIGHTLY BUTT AND ALIGN UNITS TO GIVE CONTINUOUS APPEARANCE WITHOUT BUTTING FLANGES. NO SCREW HOLES OR WELDED CORNERS VISIBLE ON DIFFUSERS OR FRAMES WILL BE PERMITTED. AIR VOLUME SHALL BE ADJUSTABLE THROUGH AIR SUPPLY FACE WITHOUT REQUIRING REMOVAL OF FACE PANEL. PROVIDE BLANKED SECTIONS FOR INACTIVE LENGTHS. PROVIDE PLASTER FRAMES AND OVERLAP BLADE ARCHITECTURAL DRAWINGS WITH REMOTE OPERATORS WHERE NOTED. REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING DETAILS AND APPROVED LENGTHS.
2) SQUARE DIFFUSERS: DIFFUSERS SHALL BE STEEL CONSTRUCTION PAINTED WHITE GRAY FOR THE TYPE OF CEILING.
D. REGISTERS AND GRILLES:
1) RETURN AND EXHAUST REGISTERS: STEEL CONSTRUCTION.
2) SUPPLY REGISTERS: STEEL CONSTRUCTION ADJUSTABLE DOUBLE DEFLECTION STEEL AIRFLOW LOUVERS, WITH VOLUME DAMPER. PROVIDE AIR EQUALIZING DEFLECTOR WHERE REGISTER COLLAR DUCT IS LESS THAN 2 FEET LONG.
3) TRANSFER GRILLES: STEEL CONSTRUCTION WITHOUT VOLUME DAMPER.
9. TESTING AND BALANCING
A. ALL AIR AND WATER BALANCING SHALL BE BY AN INDEPENDENT NOT AFFILIATED WITH THE MECHANICAL CONTRACTOR AND IN ACCORDANCE WITH LOCAL STANDARDS. CONTRACTOR SHALL UTILIZE BASE BUILDING BALANCING CONTRACTOR OR APPROVED EQUIV. CONTACT BUILDING MANAGEMENT.
B. CONTRACTOR TO BALANCE ENTIRE SYSTEM TO AIR AND/OR WATER QUANTITIES AS SHOWN ON ALL RELATED DRAWINGS FOR THIS JOB, AND AS DESCRIBED HEREIN. BALANCING MUST BE DONE IN THE PRESENCE OF A BUILDING ENGINEER.
C. AIR BALANCING SHALL BE ACCOMPLISHED BY ADJUSTMENT OF FANS AND BRANCH DAMPERS FOR MAJOR ADJUSTMENTS. AIR SUPPLY OUTLETS TO BE BALANCED TO A UNIFORM SUPPLY ACROSS ENTIRE FACE. ADJUSTMENT OF TERMINAL DAMPERS AND DEVICES SHALL BE FOR TRIM OR MINOR ADJUSTMENT. THIS SHALL BE DONE IN SUCH A MANNER AS TO PERMIT THE LEAST NOISE GENERATION IN THE TERMINAL AREAS AND UTILIZE MINIMUM FAN ENERGY.
D. WATER BALANCING SHALL BE ACCOMPLISHED BY ADJUSTMENT OF BALANCING VALVES AT PUMPS FOR PROPER FLOW. ADJUST FLOW THROUGH COOLS AS REQUIRED.
E. FANS, AIR HANDLING UNITS, PUMPS, CHILLERS, HEAT EXCHANGERS AND COILS SHALL BE BALANCED TO WITHIN 4% OF THEIR DESIGN CAPACITIES. ALL OTHER AIR AND WATER QUANTITIES SHALL BE BALANCED TO WITHIN 10% OF THEIR DESIGN QUANTITIES.
F. UPON COMPLETION OF THE INSTALLATION, THE CONTRACTOR SHALL REBALANCE ANY EXISTING PORTIONS OF AIR DISTRIBUTION SYSTEM AND WATER DISTRIBUTION SYSTEM AFFECTED BY THE RENOVATION AND ALSO BALANCE ALL NEW WORK.
G. IF DISCREPANCIES EXIST IN THE REPORT THAT REQUIRE FIELD VERIFICATION, THE TESTING AND BALANCING COMPANY IN THE PRESENCE OF THE ENGINEER SHALL VISIT THE JOB SITE FOR FIELD VERIFICATION OF THE REPORT.
H. THE CONTRACTOR SHALL PROVIDE ALL LABOR, PRESSURE GAUGES, FLOW METERS, SHEAVES, AND BELTS REQUIRED TO BALANCE SYSTEMS.
I. BALANCING REPORT SHALL BE PROVIDED ON NEBB OR AABC-TYPE FORMS.
J. BALANCING AND TESTING SHALL BE PERFORMED AND SUPERVISED BY A CERTIFIED NEBB OR AABC TECHNICIAN.
K. THE PERFORMANCE AND CAPACITY OF ALL SYSTEMS AND EQUIPMENT TO BE DEMONSTRATED BY THE CONTRACTOR.
10. INSULATION - GENERAL REQUIREMENTS
A. ALL INSULATION MATERIALS, INCLUDING JACKETS, FACINGS, ADHESIVE, COATINGS AND ACCESSORIES ARE TO BE FIRE HAZARD RATED AND LISTED BY UNDERWRITERS LABORATORIES, INC. USING STEELER TUNING, TEST METHOD FOR FIRE HAZARD CLASSIFICATION OF BUILDING MATERIALS, STANDARD UL 723 (ASTM E-84), (ASA 42.5-1993). FLAME SPREAD: MAXIMUM 25. FUEL CONTRIBUTION AND SMOKE DEVELOPED: RATED CEILING, EXIT CORRIDOR WALLS. PROVIDE ACCESS TO DETECTION FROM MOISTURE OR HUMIDITY ARE NOT ACCEPTABLE.
B. PRODUCTS SHALL NOT CONTAIN ARSENITES, LEAD, MERCURY, OR MERCURY COMPOUNDS.
C. DEFINITIONS:
1) CONCEALED: INDOOR DUCTS, PIPING OR EQUIPMENT WHICH IS NOT EXPOSED.
11. DUCTWORK INSULATION
A. INSULATE ALL DUCTWORK IN ACCORDANCE WITH INSULATION SCHEDULE EXCEPT AS OTHERWISE NOTED.
INSULATION SCHEDULE - DUCTWORK
SERVICE LOCATION THICKNESS MATERIAL FINISH
SUPPLY/RETURN CONCEALED 2" D-1 VAPORSEAL
RETURN CONCEALED IN UNCONDITIONED SPACE 2" D-1 VAPORSEAL

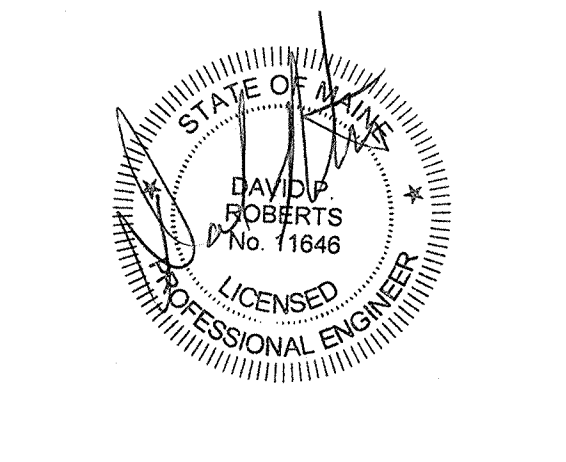
B. RESULATE ALL DUCTWORK AND PIPING WHICH IS EXISTING AND WHICH IS COMPLETELY UNEXPOSED TO BE RELOCATED. INSULATE WITH SAME MATERIAL AND THICKNESS.
C. NON-INSULATED RETURN:
1) AIR CONDITIONING RETURN AIR DUCTWORK EXPOSED IN AIR CONDITIONED SPACES AND INSTALLED IN UNCONDITIONED SPACES IMMEDIATELY ABOVE AND BELOW ARE BOTH AIR CONDITIONED.
D. MATERIAL:
1) TYPE D-1: MINIMUM 1.5 LB DENSITY FIBERGLASS BLANKET HAVING AN INSTALLED GFCI COMPRESSION R VALUE OF 1.1 MINIMUM MAXIMUM 0.28 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY-APPLIED FOIL-SKIM-KRAFT FACINGS SIMILAR TO MANVILLE MICROULTE.
E. INSTALLATION:
1) FIBERGLASS BLANKET: 2 INCH LAP STRIPS AT ALL SEAMS. SECURE BOTTOM OF ALL DUCTS OVER 24 INCH WIDE WITH MIN. 2 ROWS OF WELD PINS 12 INCH ON CENTER. SECURE ALL SEAMS WITH FOIL VAPOR BARRIER TAPE AND VAPORSEAL ADHESIVE.
2) FIBERGLASS BOARD: SEAL JOINTS AND BREAKS IN FACINGS WITH 3 INCH WIDE TAPE TO MATCH FACINGS AND INSULATE WITH VAPOR SEAL ADHESIVE. APPLY 5 INCH WIDE TAPE AT CORNERS, WELD PINS ON TOP, SIDES AND BOTTOM.
12. PIPING INSULATION
A. INSULATE ALL PIPING IN ACCORDANCE WITH INSULATION SCHEDULE EXCEPT AS OTHERWISE NOTED.
INSULATION SCHEDULE - PIPING
SERVICE SIZE THICKNESS MATERIAL FINISH
HOT (101°-200°F) UP TO 8" 2" P-1 ---
FITTINGS & VALVES UP TO 8" 2" P-4 --- F-1
HOT (201°-250°F) UP TO 3" 2-1/2" P-1 ---
FITTINGS & VALVES UP TO 3" 2-1/2" P-4 --- F-1
HOT (201°-250°F) 4" - 8" 3" P-1 ---
FITTINGS & VALVES 4" - 8" 3" P-4 --- F-1
B. PIPING, VALVES AND FITTINGS TO BE INSULATED:
1) LOW TEMPERATURE HOT PIPING SYSTEMS - 100° TO 200°F INCLUDING:
a. LOW TEMPERATURE HOT WATER SUPPLY AND RETURN.
2) MEDIUM TEMPERATURE HOT PIPING SYSTEMS: 200° TO 250°F INCLUDING:
a. LOW PRESSURE STEAM SUPPLY TO 15 PSIG.
b. LOW PRESSURE CONDENSATE RETURN, EXCEPT STEAM TRAPS AND TRAP ASSEMBLY AND RADIATION RUNOUTS CONCEALED IN RADIATION ENCLOSURES.
c. PUMPED CONDENSATE DISCHARGE
C. MATERIAL:
1) TYPE P-1: MINIMUM 1 LB DENSITY MOLDED FIBERGLASS, MAXIMUM 0.28 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY-APPLIED FIRE-RETARDANT FOIL-SKIM-KRAFT FACINGS. ALL SERVICE JACKETS. SIMILAR TO OWENS-CORNING 650 ASJ.
2) TYPE P-4: MINIMUM 1 LB DENSITY FIBERGLASS FITTING INSERTS, MAXIMUM 0.28 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO MANVILLE H-LO TEMP INSULATION INSERTS.
D. FINISH:
1) TYPE F-1: FITTINGS 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 INCH LAP 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 SERVICES OR INSPECTION SHALL HAVE INSULATION REMOVABLE AND REPLACEABLE WITHOUT DAMAGE.
13. PIPING - GENERAL REQUIREMENTS
A. COMPLETE WITH: PIPE, FITTINGS, VALVES, STRAINERS, MOTORIZED 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 (MSV).
C. GASKETS: ONE PCE/PIN TYPE 1/16 INCH MINIMUM THICKNESS NIPERG 14400 ONLY (OR APPROV. EQUAL, SUBMIT FOR APPROVAL, BEFORE USE).
D. WELDING
1) ALL WELDING SHALL BE DONE IN ACCORDANCE WITH ALL CODES APPLICABLE TO THE PARTICULAR SERVICE. WELDING FILLER METALS SHALL BE WELDED WITH AWS A5.102 (1/8 INCH OR THICKER) OR APPROPRIATE FOR WALL THICKNESS AND CHEMICAL ANALYSIS OF STEEL PIPE BEING WELDED.
2) COMPLY WITH SECTION II, PART C OF THE ASME BOILER AND PRESSURE VESSEL CODE FOR WELDING MATERIALS APPROPRIATE FOR WALL THICKNESS AND FOR CHEMICAL ANALYSIS OF PIPE BEING WELDED.
3) QUALIFY PROCESSES AND OPERATORS ACCORDING TO ASME BOILER AND PRESSURE VESSEL CODE - SECTION IX, WELDING AND BRAZING QUALIFICATIONS. COMPLY WITH PROVISIONS IN ASME B31 SERIES, "CODE FOR PRESSURE PIPING."
4) WELDERS SHALL BE QUALIFIED FOR ALL REQUIRED PIPE SIZES, MATERIAL, WALL THICKNESS, AND POSITION IN ACCORDANCE WITH THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION IX, BOILER AND PRESSURE VESSEL CODE. CERTIFY THAT EACH WELDER HAS PASSED ANY QUALIFICATION TESTS FOR WELDING PROCESSES INVOLVED AND THAT CERTIFICATION IS CURRENT.
5) COPIES OF THE CERTIFIED WELDER QUALIFICATION REPORTS SHALL BE MAINTAINED BY THE RESPONSIBLE WELDING AGENCY AND THE COMPANY PERFORMING THE WELDING, AND SHALL BE SUBMITTED TO THE OWNER AND/OR ENGINEER UPON REQUEST.
6) ALL DEFECTIVE WELDS SHALL BE CHIPPED OUT AND REPAIRED AT THE COST TO THE OWNER, BASED ON PROCEDURE TO BE SPECIFIED AT THE TIME.
E. COPPER TUBE BRAZING
1) ALL BRAZING SHALL BE DONE IN ACCORDANCE WITH ALL CODES APPLICABLE TO THE PARTICULAR SERVICE. BRAZING FILLER METALS: AWS A5.8, BCUP SERIES, COPPER-PHOSPHORUS ALLOYS FOR JOINING COPPER WITH COPPER, OR BC4-1, SILVER ALLOY FOR JOINING COPPER WITH BRONZE OR STEEL.
2) QUALIFY PROCESS AND OPERATORS IN ACCORDANCE WITH ASME BOILER AND PRESSURE VESSEL CODE, SECTION IX, WELDING AND BRAZING QUALIFICATIONS."
3) BRAZERS SHALL BE QUALIFIED FOR ALL REQUIRED PIPE SIZES, MATERIAL, WALL THICKNESS, AND POSITION IN ACCORDANCE WITH THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION IX, BOILER AND PRESSURE VESSEL CODE.
4) COPIES OF THE CERTIFIED BRAZER QUALIFICATION REPORTS SHALL BE MAINTAINED BY THE RESPONSIBLE BRAZING AGENCY AND THE COMPANY PERFORMING THE BRAZING, AND SHALL BE SUBMITTED TO THE OWNER AND/OR ENGINEER UPON REQUEST.
b. ALL DEFECTIVE BRAZEMENTS SHALL BE CHIPPED OUT AND REPAIRED AT THE COST TO THE OWNER, BASED ON PROCEDURE TO BE SPECIFIED AT THE TIME.
Sheet
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Revisions

Table with 3 columns: NO, ISSUE, DATE. Contains revision entries for permit and issue dates.

Sheet Information table with columns: Date, Job Number, Drawn, Title, Checked, Approved, Title.

MECHANICAL SPECIFICATIONS