

**1. HEATING AND COOLING 23 00 10**

1. Supply and install all heating and cooling devices and other cooling systems and piping components thereof for a complete and fully operational system.
2. Supply and install all natural gas, propane, oil systems as indicated on the drawings and in conformance with all local codes and authorities.
3. For equipment start-up follow manufacturer's instructions and have manufacturer's representative present to certify the installation and procedures. Provide manufacturer's certification to O & M Manuals.
4. Mount all devices to permit ease of operation, service and replacement.
5. Piping take-offs from mains shall be on a 45° angle from perpendicular.
6. Isolate all expansion tanks with lock shield style valve.
7. Maintain all required clearances as indicated on manufacturer's cut sheets and as required by code authority having jurisdiction.
8. Supply and install all necessary chemical treatment, glycol and devices as required for a complete treated and operational system.

Install all automatic control valves as supplied by Controls Division 26 09 10.

**1. VENTILATION 23 30 10**

1. Supply and install a complete ventilation system as indicated on the drawings and as required by local codes and authorities. Do all work to latest SMACNA Standards for applicable duct velocity.
2. System shall include all ducts, fire dampers, transfer air openings, fans, balance dampers, grilles, and diffusers indicated on drawings and as required by code.
3. Assist with air balancing as required (scaffolds ladders, operation, etc.).
4. Install all automatic dampers as supplied by Division 26 09 10 Controls.
5. Provide access doors on both sides of fire dampers, control dampers and all coils. Access doors constructed of 22-gauge material with flat iron framing complete with sash lock latching.
6. Provide acoustic insulation where indicated on drawings 1" thick.
7. Provide ULC labeled fire dampers and flaps where required by Code and at all rated separations. Protect ceiling diffusers with CK 2000 thermal blanket.
8. Provide flexible connections at all air handling equipment.
9. Protect and keep closed open ends of duct systems while under construction to prevent dust and debris penetration.
10. Provide baffles to reduce objectionable noise as directed by the Contract Administrator at no additional cost.

Seal all joints in duct system with water based approved sealant.