

## **MCB CAMP LEJEUNE, N.C. MECHANICAL POLICIES**

1. Avoid rooftop HVAC equipment, unless absolutely unavoidable.
2. Avoid HVAC systems that modulate cooling supply air temperatures unless outside air is separately conditioned.
3. Avoid use of chilled water fan coil (FCU) systems due the high maintenance associated with them and their poor latent capacity. Coil condensate drain pans are especially problematic. If FCU's are used, ensure adequacy of the drain system.
4. Chilled water VAV with zone reheat is the preferred HVAC system and should be considered wherever appropriate.
5. Avoid use of economizers (dry bulb or enthalpy). High humidity and poor control reliability prohibit success with economizers.
6. Provide phenolic coating or copper fins on copper tubes for outdoor coils within 1500 feet of the water (river or ocean). The heat transfer rating of phenolic-coated coils should be derated.
7. Do not use cooling towers.
8. Do not use centrifugal or steam absorption chillers. Helical screw compressors are desirable. Reciprocating compressors are acceptable.
9. Provide adequate thermal mass in chilled water systems to ensure proper control and longevity of chillers. Chiller manufacturers recommend 2 to 7 minute water loop return times; use a minimum of 5 minutes to size inertia tanks.
10. HVAC equipment should not be installed in attics or above suspended ceilings, unless absolutely necessary. When placement in an attic is dictated by necessity, provide stairs to access the attic; ships ladders are not permissible.
11. Air handling unit filter access doors should be specified as hinged and lockable with quarter-turn or half-turn thumb screws. Do not specify or approve access panels that are unhinged and/or retained by sheet metal screws.
12. Require contractors to provide a listing of the HVAC filters for each piece of equipment along with their dimensions (width, height and thickness) and types (permanent/washable, throwaway, etc).
13. Do not use plastic preinsulated pipe for buried dual temperature water distribution; use preinsulated copper pipe.

14. Do not specify mineral fiber or flexible unicellular insulation on chilled water pipes. Use rigid insulation on all pipes subject to being stepped on or damaged. Cellular glass polyisocyanurate up to 1-½ inches (40 mm) thick is preferred on chilled water pipes.
15. Automatic flow control balancing valves should only be used in conjunction with piping systems employing centrifugal separators. Use centrifugal separators regardless of pipe material (steel or copper).
16. Direct Digital Control (DDC) systems are the preferred HVAC control systems for new and replacement control systems. Pneumatics should only be used for applications such as for pilot operators on large control valves. Re-establish monitoring and control capabilities for replacement control systems. Contact Jim Elliott, telephone: (910) 451-3658; email: elliottJA@lejeune.usmc.mil, for the latest information for connecting to the base energy management system and the interface devices required.
17. Where DDC is not practical, such as with small unitary equipment, use programmable thermostats.
18. CO2 sensors should be considered in facilities with highly varying occupancies.
19. Meters are required for steam, water and electrical service to MWR facilities and all other reimbursable customers. Use target, strain gauge type steam meters. Do not use orifice plate steam meters. Provide “pulsed output” steam and water meters. Provide “KYZ” electric metering. Camp Lejeune reads meters by telemetry.
20. Provide separate mechanical and electrical rooms with exterior, ground level entrances.
21. Install all steam equipment in a separate room from other HVAC equipment. Provide the steam room with an exterior door; do not provide a door(s) to adjacent spaces.
22. Do not install steam pits within mechanical rooms. Steam lines should be counter flowed from an exterior manhole.
23. Steam condensate receiver pumps should be steam pressure powered. Do not use electric duplex condensate pumps. Servicing electric duplex condensate pumps cause and overlap of responsibility between the electrical and mechanical trades.
24. Minimize use of steam manholes. Those required must be raised 18 inches (450 mm) above finish grade and equipped with a full grated top.
25. Do not use FRP pipe for buried steam condensate lines. Use schedule 80 black steel pipe in condensate systems.

26. Steam trenches are preferred by base utilities over direct buried preinsulated steam and condensate systems. Trench tops may double as a sidewalk where appropriate.
27. Use externally pressurized bellows expansion joints when inline expansion in steam lines is required and where loops cannot be utilized. Slip tube expansion joints are acceptable but not preferred over externally pressurized bellows joints.
28. Provide check valves at all steam condensate drip traps.
29. Base operating steam pressures are as follows:

<u>Steam Plant</u>	<u>Steam Pressure</u>
Plant 1700	150 psi (1034 kPa)
Plant AS4151	150 psi (1034 kPa)
Plant G650	100 psi (690 kPa)
Plant M626	100 psi (690 kPa)
Plant RR15	50 psi (345 kPa)
Plant PP2615	50 psi (345 kPa)
Plant M230	50 psi (345 kPa)
Plant BB9	100 psi (690 kPa)

30. Specify steam control valve actuators that can withstand heat conducted from steam lines and equipment. Do not specify, or approve, hydraulic powered actuators in steam applications.
31. Install blow down valves on all strainers.
32. Lubrication oil lines should not be installed below building floor slabs. Lubrication oil lines installed within service bays should be installed in trenches with removable tops.
33. Install shop air compressors in accessible locations with appropriate space for periodic service. Shop air compressors should not be installed within mechanical rooms since occupant access is prohibited by base maintenance. Shop air compressors should be provided with sufficient cooling ventilation. Install air compressors associated with building HVAC controls within mechanical rooms.