1.0 GENERAL

1.1 Related UBC Guidelines & Documents

.1 Section 23 00 00 HVAC (and all subsections)
.2 Section 20 00 00 Mechanical - General Requirements
.3 All other Tech Guidelines as may be applicable to a given project.

1.2 Related Documents External to UBC

.1 BC Plumbing Code and all references contained there within
.2 BC Building Code and all references contained there within
.3 Work Safe BC Occupational Health and Safety Regulation

1.3 Description

.1 The Guidelines apply to all work completed within buildings on both UBC Vancouver and UBC Okanagan campuses unless stated otherwise.
.2 In instances where conflicts are found between these guidelines and provincial regulations or codes, please notify UBC Mechanical Engineer.
.3 These guidelines are intended to be read by designers and their content integrated into construction drawings and specifications. Construction documents are not to reference the technical guidelines directly.
.4 It is the requirement of the mechanical designer to coordinate these requirements with other disciplines.

2.0 MATERIAL AND DESIGN REQUIREMENTS

These are requirements specific to UBC that may not exist in code or other jurisdictions. Any deviation from these guidelines requires a variance be granted.

2.1 Design Requirements

.1 TSBC / CSA B52 Requirements for Chillers. UBC TSBC Inspector has provided the below interpretations of CSA B52. Please reach out to TSBC for clarification during design if additional information is needed.

.1 When calculating the refrigerant volume in a room, table 1 of CSA B52 only applies to occupied spaces. Mechanical Rooms are not considered occupied spaces and therefore any room with a chiller, even if it is a modular chiller will need to meet the requirements of a machine room including the requisite ventilation and leak detection.
.2 In addition to the signage requirements described in CSA B52, signs posted on the egress doors and the entrance to the machinery room shall include the following "For assistance contact UBC Building Operations Service Centre: 604-822-2173".

.2 Refrigerant leak detector requirements are:

.1 Visual and audible alarm inside the mechanical room and outside each door.
.2 Refrigerant PPM display outside the mechanical room.
.3 Signage on the door(s) indicating the equipment type, refrigerant type and quantity per TSBC Reqs.
.4 Manual override button for the exhaust fan.
.5 BMS to monitor the refrigerant detector alarm as well as the fan status.

2.2 Equipment Requirements

.1 See section 23 21 00 – Hydronic Systems for building level chiller requirements

.2 Use of domestic water cooled condensing units (i.e. once through cooling) is not permitted. This includes HVAC equipment as well as specialty lab equipment, cold rooms, ice makers and other similar devices.

.3 When VRF or split systems (neither of which are preferred) are used, they must be integrated into BMS (as with all heating/cooling equipment). This varies from manufacturer to manufacturer but may require ordering additional components.

2.3 Construction and Material Requirements

.1 Brazed joints are required for all field installed refrigeration joints. Compression couplings aren’t acceptable.

.2 All exterior refrigerant piping insulation shall have aluminum hard covers to protect the insulation from UV and birds.

3.0 LESSONS LEARNED & COMMON MISSES ON UBC PROJECTS

Items in this section are not specific requirements of UBC but are code or industry best practices which have been missed on past jobs. These items should be considered in mechanical designs at UBC. However, if they’re not applicable then a variance is not required.

.1 Unitary refrigerant equipment such as terminal heatpumps, split systems and especially VRF systems often have higher maintenance cost and lower reliability compared to chilled water systems. Applications where these systems are being considered should be carefully reviewed to determine if they provide the lowest lifecycle cost.

***END OF SECTION***