



.1 General

- .1 The Mechanical Consultant shall submit to UVic, Facilities Management a design philosophy for the proposed building mechanical and plumbing systems. Major components of the philosophy must be accepted in principle by Facilities Management prior to the Construction document stage. Any deviations from the prescribed guidelines must be approved in writing by UVic Facilities Management.
- .2 Consultants are expected to produce designs that meet User needs and allow Facilities Management to continue to meet those needs in the future in a safe efficient manner.
- .3 Drawings shall show all mechanical and plumbing equipment in elevation or isometric in details when required. Ensure mounting heights for the equipment are specified. Consider maintenance access and function as part of the design. No mechanical room layout will be accepted with poor or difficult access for maintenance.
- .4 For new buildings, connection to the campus heating mains for primary heating or back-up only shall be discussed and agreed to with Facilities Management. As of 2010 the source of heat to the campus heating mains is four natural gas fired boiler plants (with backup diesel fuel for the largest plant).
- .5 The buildings within Ring Road and many of the larger buildings outside Ring Road are primarily heated by the campus mains heating system. Each building has a heat exchanger (or heat exchangers) to separate the campus heating water from the building heating water. The design was based on campus heating water entering the heat exchangers at 115°C (240°F) and leaving at 93°C (200°F) and the building water leaving at 93°C (200°F) (or 88°C (190°F) for the oldest buildings) and returning at between 71°C (160°F) and 82°C (180°F) (or 66°C (150°F) and 77°C (170°F) for the oldest buildings). However the campus mains typically run at about 111°C (232°F).
- .6 The campus mains may in future run at a lower temperature. Design of new heaters in existing buildings to provide the required heating with a heating water inlet temperature of 82°C (180°F) or lower and design all new buildings served by the campus heating mains with a maximum building heating water supply temperature of 82°C (180°F) or lower. All design temperatures to be discussed with FMGT.
- .7 The installation of rooftop equipment shall avoid placement within "Control Zones" (the area between an unguarded edge of a building or structure and a line which is set back a safe distance of at least two meters).
- .8 FMGT Operations shall be consulted in the design and layout of all Mechanical Room and service spaces as the end user of the facility.
- .9 Obtain parts supplier lists from FMGT Operations. Only products available through these suppliers shall be specified for:
 - .1 Plumbing
 - .2 HVAC
 - .3 Fire Protection

.2 Mechanical Cooling

- .1 UVic buildings are generally not air conditioned for occupant comfort. Where conditions require mechanical cooling, submissions for variance from this guideline shall be made as part of the initial submission of project design philosophy.



.3 Sustainable Design

- .1 The University is committed to working towards reducing its negative impact on the environment. That includes consuming less energy and reducing CO₂ and other environmentally harmful emissions. It also includes all initiatives that have been identified in such programs as LEED.
- .2 The Consultant shall determine from Facilities Management the extent to which a new building or a renovation should incorporate environmentally friendly measures in the mechanical systems. Even if there is no plan to participate in a LEED or other program, the consultant shall give due consideration to incorporating all practical measures to achieve sustainable mechanical systems. This is acknowledged as a complex balance between capital and life-cycle costs, functionality, dependability, consistence with existing systems, material and equipment, proven performance, flexibility in operation, flexibility to accommodate future changes, simplicity, operability, maintainability, visual and audible impact, use of natural resources, impact on the environment and perhaps other important issues for a given system.
- .3 The Consultant shall provide a list during schematic design of the intended sustainable measures that will be taken for a project. The consultant shall also list other sustainable measures that are recommended or suggested even though they may initially exceed the scope of the project for consideration by Facilities Management.
- .4 Systems shall be designed to minimize the use of municipal water and to preserving ground water conditions.
- .5 Systems shall be designed to minimize consumption of electrical power and fossil fuels. Electrical resistive heat shall be avoided.
- .6 Systems shall be designed to minimize emissions to air, water and ground.

.4 Existing Systems

- .1 An acceptable schedule for interrupting existing systems and services must be arranged in advance with Facilities Management. A minimum of 48hrs notice shall be the expected timeframe for service shut-downs.
- .2 Existing services may be shut down or placed back in service only by Facilities Management shop personnel.
- .3 Arrange work to minimize the duration of the shut down of any existing services.
- .4 Protect systems from contamination and protect areas outside of combustion zone.

.5 Mechanical Rooms

- .1 Coordinate with Architect to locate Mechanical Rooms in areas accessible from outdoors. Confirm that sufficient space is provided to remove largest piece of equipment from the Mechanical Room.
- .2 Where rooftop mechanical rooms are designed, stairway or elevator access to the roof is mandatory, to suit service and maintenance requirements.
- .3 Provide full perimeter containment wells encompassing DHW or other water tanks / storage equipment with adequate drainage.

.6 Acceptable Products

- .1 Obtain a list of mechanical parts suppliers from Facilities Management. Specify matching products. This includes but is not limited to the following areas:



- .1 Plumbing.
 - .2 Fire Protection.
 - .3 HVAC.
- .7 Site Services**
- .1 Avoid running site utilities through or under buildings. Exceptions must be accepted in advance by Facilities Management.
- .8 Operation and Maintenance Manuals**
- .1 Coordinate requirements with Section 1.4.
 - .2 Plumbing and Mechanical Sections shall be separated.
- .9 Record Drawings**
- .1 Record drawings shall be electronic AutoCAD drawings and electronic pdf format drawings and must comply with Industry Standard.
- .10 Electric Motors**
- .1 Open drip-proof except where service requires different.
 - .2 Specify high or premium efficiency.
 - .3 Specify inverter duty where driven by variable frequency drive.
 - .4 Motors less than 1/2 hp shall be 120/1/60. Motors 1/2 hp and larger shall be three phase.
- .11 Belt Drives**
- .1 Specify multiple belt drives with matching belts on 3/4 hp motors and larger.
 - .2 Adjustable bases with adjusting screws for alignment and belt tension.
 - .3 Specify variable pitch motor sheave only up to 7.5 hp.
 - .4 Motor sheaves shall be steel or cast iron.
 - .5 Drives shall be selected for minimum 150% of motor hp.
 - .6 Do not specify synchronous belt drives.
- .12 Drive Guards**
- .1 Specify means to permit lubrication and use of test instruments with guards in place.
- .13 Unprotected Fan Inlets or Outlets**
- .1 Guards or screens, removable for servicing.
- .14 Spare Parts**
- .1 Specify provision of the following spare parts:
 - .1 One set of belts for each drive.
 - .2 One set of filter media for each filter or filter bank in addition to final operating set.
- .15 Automatic Drains**
- .1 Automatic air vents, relief vents and any automatic drain from a closed piping system shall be located in an accessible location where the drainage can be readily and easily observed. Where the source of the drainage (e.g. automatic air vent) cannot be easily observed, that drain shall be clearly labelled to indicate the type and location of the source.