Design Guidelines 017823
Operations, Maintenance and Training

Scope

Operations and maintenance costs are of prime concern to the University and thus the A/E shall design the systems to be both energy efficient and easily maintainable.

Where justifiable and appropriate, systems and components are to match existing. A written justification for sole-sourcing is normally required in such cases.

Systems are to be simple to operate and designed to fail in the least harmful position. Protect mechanical and electrical services from physical abuse. Provide permanent access routes as appropriate.

Show on plan and elevation drawings required clearances at equipment needed for maintenance.

Related Sections

U-M Design Guideline Section:

Section 230000 – Basic Mechanical Requirements

U-M Master Specification Sections:

Section 017823 – Operation and Maintenance Manuals Section 230900 – Mechanical Systems Controls (A digitally accessible version is pending; please email AEC-Digital Accessibility Support if assistance is needed)

Training Requirements

The A/E is responsible for meeting with the U of M Maintenance Manager (contact the Design Manger) early in the design phase of the project in order to determine the number of training sessions required, and to reflect this in the construction specification. Most training should be conducted both in a classroom and at the system/equipment location.

The need for training will vary, in part depending on the complexity of a system, its uniqueness (at the U of M), and the familiarity of the area maintenance staff with that system, material, or application.

For particular equipment, materials or components, the Contractor or supplier will normally conduct training. For complex systems such as HVAC systems, special lighting controls or communications systems, the A/E must conduct the training so that the design intent can be fully explained. It may be appropriate for systems training to be conducted jointly with a major vendor (e.g., the automatic temperature controls contractor may assist the A/E in presenting an HVAC training session).

Operating and Maintenance Instruction Manuals

Four sets of **job specific** operations and maintenance manuals shall be provided for each project. The construction specifications shall require the contractor to submit job specific O & M manuals a minimum of two (2) weeks prior to any scheduled training. The manuals shall be collected in indexed three ring binders and contain manufacturer's operating and maintenance literature for every equipment item furnished for the project. Generic wiring or piping schematics are NOT acceptable; they must be job specific, reflecting the actual furnished equipment, including all options and interfaces with other equipment or systems.