

## **Basis of Design**

The purpose of this section is to provide the guidelines for the development of specifications for the procurement and installation of laboratory fume hoods.

### **Overview**

This specification applies to new construction and renovation projects at the UW. The Environmental Health and Safety (EH&S) Department maintains design standards for laboratory ventilation including fume hood exhaust systems as well as pre-approves fume hoods for installation. EH&S also conducts final acceptance testing once fume hoods have been installed and tested by the contractor.

### **Fume Hood Specification/Selection**

EH&S maintains a list of fume hoods pre-approved for use in laboratories. This list is updated every two years and is posted on the EH&S website. It includes conventional and low velocity models from several manufacturers. Fume hoods must be selected from this pre-approved list for use in UW construction projects. Coordinate selection of fume hood accessories with the end user.

### **Fume Hood Exhaust System Design Criteria**

Fume hood exhaust system design shall comply with the UW Laboratory Safety Design Guide available on the EH&S website.

### **Acceptance Testing**

After fume hoods have been installed, the Testing and Balancing Agency hired by the Contractor will conduct initial face velocity tests of the fume hood (typically using a Shortridge VelGrid or equivalent), measure noise levels, and verify VAV functioning. The testing is conducted after the HVAC system is operating and has been balanced, the monitor is functioning and calibrated, lab doors are closed, and ceiling tiles replaced.

After receipt of the test report submittals from the Contractor, EH&S conducts confirmation testing of fume hoods with the SEFA protocol. Any fume hoods that fail confirmation testing will be repaired/adjusted by the Contractor, re-tested by the Contractor at his expense, and then re-tested by EH&S upon receipt of test report submittals. Once the final testing is accepted and completed, EH&S will place appropriate UW labels on the fume hoods.

The Contractor must schedule and attend a coordination meeting with the Owner prior to starting their initial face velocity testing. The purpose of the meeting is to coordinate the Contractor's initial face velocity tests with the Owner's SEFA confirmation testing and to schedule a side-by-side comparison of Contractor's and Owner's testing procedures.

ASHRAE 110 (as installed) testing is only conducted on fume hoods not previously used on the UW campus, when approved by EH&S for pilot testing.

## **Design Evaluation Submittals**

**The following information is required to evaluate the design:**

- Programming Phase: Design narrative/concept outlining the number and type of fume hoods provided per laboratory. Include any unique design aspects of laboratory ventilation system and any proposed deviations from the EH&S Laboratory Safety Design Guide.

- Schematic Design Phase: Fume hood exhaust system description, fume hood and placement design scope and any unique challenges or aspects of project. Include diversity assumptions.
- Design Development Phase: Provide exhaust ventilation design layout, location of fume hoods, utility connections.
- Construction Document Phase: Provide final wiring/plumbing/HVAC interface details. Resolve of all previous University design comments. Provide the Laboratory Fume Hoods Specification Section ##### tailored for the project.

### **Construction Submittals**

- Fume Hood Contractor Shop Drawings and Product Submittals: As noted in Laboratory Fume Hoods, subsection 1.09; submit for review and approval by the Owner. The Owner's representative for this section is Environmental Health and Safety.

### **Products, Materials and Equipment**

- See background above and the guide specification for approved products. Contact EH&S for alternates.

### **Installation, Fabrication and Construction**

- See attached Laboratory Fume Hoods guide specification for details. The selection criteria for pre-approved fume hoods is maintained on file with the Manager of the EH&S Facility Safety Office.

END OF DESIGN GUIDE