LABORATORY FUME HOODS

GENERAL INFORMATION

1.1 Laboratory Fume Hoods shall function as ventilated, enclosed work spaces, designed to capture and exhaust chemical fumes, vapors and particulate matter produced or generated within the enclosure.

1.2 Laboratory Fume Hoods shall comply with Columbia University Guidelines for Laboratory Design: Laboratory Ventilation and Fume Hood Exhaust Systems which will be provided by the CUF Project Management team.

1.3 Laboratory Fume Hoods shall comply with the RCNY 10-2008: Section FC 2706 Non-Production Chemical Laboratories NYC FDNY Fire Code, New York, NY 2008.

1.4 Laboratory Fume Hoods shall be of the High Performance type designed to operate with less exhaust air than a traditional hood but with improved containment.

1.5 Selection and specification of fume hoods shall be carefully coordinated with the requirements of the users, Columbia University’s Environmental Health and Safety (EHS) and Facilities, and with the design of the mechanical system of the project.

DESIGN REQUIREMENTS

2.1 Laboratory Fume Hoods shall be provided by a manufacturer listed in the COLUMBIA UNIVERSITY GUIDELINES for Laboratory Design. The manufacturer should have an established organization and production facilities, a demonstrated capability to produce the specified equipment and the proven capacity to complete an installation of the size and scope of the project within the required time limits. A minimum of 10 years experience in the manufacture of high performance fume hoods is required.

2.2 Laboratory Fume Hoods shall achieve a performance rating of 4.0 AM 0.01 or better for all tracer gas tests conducted per the ASHRAE 110-1995 test (or the most current published edition), with an average face velocity of 50 FPM through the fully opened (28”) vertical sash. Laboratory Fume Hoods shall achieve a rating of 6.0 AM 0.01 for all tracer gas tests conducted per the National...
Institute of Health (NIH) Fume Hood testing Protocol for Constant Volume Fume Hoods with an average face velocity of 60 FPM through the fully opened (28”) vertical sash.

2.3 Laboratory Fume Hoods shall operate safely with an average face velocity between 50 FPM and 60 FPM through the fully opened vertical sash. If installed as part of a VAV or a 2-position exhaust system, hoods shall operate safely with a face velocity of 60 FPM through the maximum horizontal sash opening.

2.4 Laboratory Fume Hoods shall be designed for consistent and safe air flow through the hood face. Negative variations of face velocity shall not exceed 20 percent of the average face velocity at any designated measuring point as defined in this section.

2.5 Average illumination of work area: Minimum 80 footcandles (860 lx). Work area shall be defined as the area inside the superstructure from side to side and from face of baffle to the inside face of the sash, and from the working surface to a height of 28 inches (710 mm).

2.6 Fume hood shall be designed to minimize static pressure loss.

2.7 Laboratory Fume Hoods liners and other materials shall be manufactured with a chemically-resistant “Laboratory Grade” (min.) finish when tested per the chemical spot test in the Scientific Equipment and Furniture Association (SEFA) Standard. All internal and working surfaces within the hoods should be impervious to moisture and attack of chemicals, and should be configured for easy cleaning.

2.8 Where a cup sink is provided (subject to the review and approval of Facilities and EHS), it shall have a lip above the work surface per FDNY code requirements.

2.9 Hood baffles must be tamper proof and configured in such a way that they may not be adjusted to restrict the volume flow rate of air exhausted from the hood.

2.10 Controls for hood services (gas, water, air, lighting, power, etc.) must be mounted exterior to the hood and within easy reach. They should be labeled clearly with standardized labels.

2.11 Perchloric Acid fume hoods must be clearly labeled as such, and shall be connected to a laboratory waste (acid) drain and cold water supply. The use of non-corrosive, smooth and watertight materials is required for all perchloric acid fume hood components. Internal hood baffles (as well as PAFH exhaust stack and fan) shall be provided with cold water spray nozzles activated by a series of electric solenoids controlled by a wash down timer control system. Review all perchloric acid fume hood requests with Facilities and EHS.
DESIGN REQUIREMENTS

2.12 Radioactive Materials fume hoods must be clearly labeled as such, and shall be constructed of stainless steel or other materials that will not be corroded by chemicals used in the hood. The cabinet on which the hood is installed must be adequate to support shielding of the radioactive material being used. Radioactive fume hood face velocity shall comply with ANSI standards. Radioactive fume hood shall be provided with means of containing minor spills.

CONSTRUCTION REQUIREMENTS

3.1 Laboratory Fume Hood shall be installed by the manufacturer, or by a contractor acceptable to the manufacturer, in accordance with manufacturer’s recommendations. Laboratory Fume Hoods shall be installed plumb, square, and straight with no distortion and shall be securely anchored. Adjust sash, fixtures, accessories and other moving or operating parts to function smoothly. All Laboratory Fume Hoods must be protected during and after installation and fully cleaned prior to start-up and testing.

3.2 Upon completion of installation, the Laboratory Fume Hood manufacturer shall have all fume hoods tested in accordance with the current ASHRAE 110 Standard. Field test reports must be performed and prepared by an independent third party organization acceptable to Columbia University. Results must indicate tracer gas performance ratings of 4.0 AI 0.05 or better for all tests at the specified face velocities. Manufacturer shall have a representative present for all tests and shall assist in trouble-shooting and correcting all non-conforming hoods.

3.3 The Testing Contractor shall provide a complete report of the results of the testing program including an executive summary, an outline of the test procedures and equipment used, a table of the results of each test conducted on each hood and a conclusion and recommendation section discussing the results and (if necessary) recommendations to improve fume hood performance.

3.4 Upon completion of the installation of Laboratory Fume Hoods, if so requested, the Manufacturer shall conduct a training seminar for the users at the Project site, discussing proper operation of the fume hood, fume hood features and best use practices. Training session shall be at least 30 minutes in length, not including a question and answer session. Training session shall be scheduled within 30 days on completion of the installation.

REFERENCE
4.1 The applicable CSI Specification Section is 11 53 13.