SECTION 11 53 53
BIOLOGICAL SAFETY CABINETS

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies and describes relocation and other work related to the Biological Safety Cabinet: Class II, Type A2.

1.2 DEFINITIONS

A. Class II Biological Safety Cabinet: A ventilated cabinet for exposure protection of personnel, product and the environment, suitable for work involving low to moderate risk agents (BSL 1,2, and 3). Cabinet air is exhausted through a HEPA filter either into the laboratory or to the outside. Class II cabinets are available as two types (A and B) based on construction, air flow velocities and patterns, and exhaust systems. Refer to Table 1.

1.3 RELATED WORK

A. Section 23 09 23, DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC: Pressure Switches.

B. Section 23 31 00, HVAC DUCTS and CASINGS: Ductwork.

C. Section 23 36 00, AIR TERMINAL UNITS: Airflow Control Valves.

D. Section 23 40 00, HVAC AIR CLEANING DEVICES: HEPA Filters.

E. Section 26 05 21, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS and CABLES (600 VOLTS AND BELOW): Electrical Connections.

F. Section 26 27 26, WIRING DEVICES: Electrical Devices.

1.4 QUALITY CONTROL

A. Mechanical, electrical and associated systems shall be safe, reliable, efficient, durable, easily and safely operable, maintainable, and accessible.

B. Standard Products: Material and equipment shall be the standard products of the selected manufacturer, and they should be regularly engaged in the manufacture of such products for at least 3 years.

C. All items furnished shall be free from defects that would adversely affect the performance, maintainability and appearance of individual components and overall assembly.

D. NSF Compliance: Equipment bears NSF (National Sanitation Foundation) Certification Mark indicating compliance with NSF 49. This certification applies only to Class 1 and 2 Biological Safety Cabinets, not LAFW.

E. Electrical Components and Devices: UL listed and labeled for intended use.

1.5 SUBMITTALS

A. Submit in accordance with specification Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's Literature and Data: Include the following:

1. Illustrations and descriptions of the unit and factory-installed devices associated with it.
2. Catalog or model numbers for each item incorporated into the work.
3. Utility requirements.

C. Shop Drawings: Show details of fabrication, installation, adjoining construction, coordination with mechanical and electrical work, anchorage, and other work required for complete installation.

D. Factory Testing: Provide manufacturer’s QC checklist or other reports that indicate comprehensive factory testing has been performed, and the results of these tests.

E. Field Test Reports: Provide certification reports from accredited service technicians or installers.

F. Operating Instructions: Comply with requirements in specification Section 01 00 00, GENERAL REQUIREMENTS.

1.6 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American National Standards Institute / National Electrical Manufacturers Association (ANSI/NEMA):
WD 6-2002 (R2008).....Wiring Devices--Dimensional Specifications

C. National Sanitation Foundation International / American National Standards Institute (NSF/ANSI):
49-2009.....Biosafety Cabinetry: Design, Construction, Performance and Field Certification

D. Scientific Equipment and Furniture Association (SEFA):
2-1999.....Recommended Practices for Installation
7-2007.....Recommended Practices for Fixtures

E. National Fire Protection Association (NFPA):
45-2011.....Standard on Fire Protection for Laboratories using Chemicals

PART 2 - PRODUCTS

2.1 BIOLOGICAL SAFETY CABINETS

A. General Specification for Biological Safety Cabinets

1. Biological safety cabinet is currently in use in room 2275-1, Microbiology, purchased in Oct 2004; to be relocated to Microbiology Lab 6212.
2. Existing BSC: Germfree BBF-3SSRX, s/n: 3S-15-BR-11503. Germfree, 11 Aviator Way, Ormond Beach Florida 32174, (800) 888-5357, www.germfree.com.
3. Duct: Stainless-steel duct to direct air from the recirculation blower cabinet to the exterior. Refer to Section 23 31 00, HVAC DUCTS and CASINGS.
4. HEPA Filtering: 99.99 percent effective on 0.3 microns for both recirculated and exhausted air. Refer to Section 23 40 00, HVAC AIR CLEANING DEVICES.
5. Lighting: Fluorescent lights producing a minimum of 1076 lux (100 fc) of non-glare illumination in the work area, and ultraviolet lamp electrically interlocked to be inoperable while fluorescent lighting is "on."
6. Magnehelic Gauge: Located on the front of the cabinet to indicate cabinet interior pressure. Provide DDC sensor with remote indicator. Refer to Section 23 09 23, DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC.
7. Provide an indirect canopy (“thimble”) connection by the cabinet manufacturer or equivalent field fabricated.

B. Class II Biological Safety Cabinet Types: Install Class II biological safety cabinet, according to the following table:

Table 1

TYPE	AIRFLOW	MAXIMUM FACE VELOCITY	Biosafety Level	COMMENTS
A2	30 percent indirect exhaust / 70 percent recirculated	0.51 m/s (100 fpm)	1,2,3	Contaminated plenums must be surrounded by negative pressure.

2.3 BSC SERVICE CONTRACT

A. Existing contractor for BSC work:

Class 1 Air
6579 N. Sidney Place
Milwaukee, WI 53209
Phone: 414-228-1213

www.classoneaire.com
NSF Accredited
Jim Lewandowski
contract # V69DP6232

PART 3 – EXECUTION

3.1 PREPARATION

Relocate equipment after installation of finish flooring in rooms to receive cabinets has been completed and working in close coordination with Owner.

3.2 DECONTAMINATION

A. Clean and decontaminate hood in accordance with generally accepted practices.

B. Provide temporary rigid cap on opening exposing the internal HEPA filter. Maintain cap until unit moved to final location, ready for final hookup.

3.2 INSTALLATION

A. General:

1. Install biohazard safety cabinets and LAFWs according to manufacturer's written instructions
2. Coordinate installation with related mechanical and electrical work. Provide cutouts and openings for plumbing and electrical work as indicated or as required by trades involved.
3. Install level, plumb, true, and straight without distortion.
   a. Shim cabinets using concealed shims.
4. Adjust hardware so that doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended in writing by manufacturer.
5. Locate unit away from fans, heating and air conditioning registers, laboratory hoods, high traffic areas and doors that could interfere with airflow patterns.

3.3 TESTING

A. Biological Safety Cabinets: After installation, an independent accredited service technician must test the biological safety cabinet according to NSF 49 and permanently attach certificate of compliance to equipment.

3.4 PROTECTING AND CLEANING

A. Protect equipment from dirt, water, and chemical or mechanical injury during the remainder of the construction period.

B. At the completion of work, clean equipment as required to produce ready-for-use condition.

3.5 INSTRUCTIONS

Instruct personnel and transmit operating instructions in accordance with requirements in specification.

- - - E N D - - -