SECTION 11 53 00 – HORIZONTAL LAMINAR FLOW BENCHES

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 15212 – (22 60 13) Laboratory Gas Connections

B. Section 16150 – (26 05 03) Electrical Connections

1.2 DESIGN AND PERFORMANCE CRITERIA

A. Provide laminar unidirectional airflow pattern in horizontal configuration with adequate workspace to provide product protection for research, experimentation and processes requiring sterile working environments.

1.3 SUBMITTALS

A. Shop Drawings: Show complete construction details, fittings, electrical connection, data connection, filters and other information necessary to fully describe each unit and its installation. Include plans and elevations. Indicate required clearances to wall and ceilings.

B. Product Data: Show test designs and performance charts.

C. Informational Submittals

1. Statement of manufacturer’s qualifications.

2. Certificates:
   a. Certify that factory tests have been performed and that work meets or exceeds ISO Class 5 (Class 100) specified requirements.
   b. Certify that each unit meets or exceeds electrical requirements for the class listed for the unit.

3. Start-up Test Report shall be submitted by independent 3rd party accredited by NSF to test and balance laminar flow benches.

4. Operation and Maintenance Data:
   a. Description of equipment operation and control, motor control and alarm systems.
   b. Wiring diagrams showing separate circuits for outlets, lights and blowers.
   c. Operator’s manual and performance factory test report for each unit by serial number.

5. Warranty: Warrant the cabinets for three years from date of delivery.

6. Field Reports: By independent qualified certification group.
1.4 QUALITY ASSURANCE
   A. List each cabinet as certified by cULus for electrical safety and integrity.
   B. Pre-Installation Conference: Conduct at project site with manufacturer’s representative to assure site is prepared for acceptance of equipment.

1.5 QUALIFICATIONS
   A. Manufacturer: Company specializing in the manufacture of products specified with a minimum ten years documented experience to the US market.

1.6 DELIVERY, STORAGE, AND HANDLING
   A. Protect finished surfaces during handling and installation with protective covering of polyethylene film or another suitable material. Supply each unit with a drop and tell indicator on the packaging to notify receiving personnel of any possible damage during transit.

1.7 PROJECT CONDITIONS
   A. Environmental Limitations: Do not deliver or install laminar flow benches until building is enclosed, wet work and utility roughing-in is complete, sheetrock, spackling, painting, flooring and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.8 EXTRA MATERIALS
   A. Furnish complete touchup kit for each type and color biological safety cabinet finish provided. Include fillers, primers, paints and other materials necessary to perform permanent repairs to damaged units.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
   A. Basis-of-Design Product: Subject to compliance with requirements, provide EdgeGARD Model EGx252 and EGx320 manufactured by The Baker Company.
   1. EG3252: Exterior dimensions – 38” w x 34” d x 64 to 66” h
   2. EG4252: Exterior dimensions – 50” w x 34”d x 64 to 66” h
   3. EG4320: Exterior dimensions - 50” w x 34”d x 70 to 72” h
   4. EG5252: Exterior dimensions – 62” w x 34” d x 64 to 66” h
   5. EG6252: Exterior dimensions – 74” w x 34” d x 64 to 66” h
   6. EG6320: Exterior dimensions - 74” w x 34”d x 70 to 72” h
   7. EG8252: Exterior dimensions – 98 ½” w 34” d x 64 to 66” h
2.2 MATERIALS

A. Construction: Cabinet Exterior – 18 gauge, cold rolled steel, with baked enamel white finish. Cabinet Interior- 16 gauge corrosion resistant stainless-Steel sheet, type 304, no. 4 finish, side walls and 22” deep work surface. Provide high velocity return air slots in the side walls and leading edges of the work surface to protect against backwash of dirty air entering the work area when items are placed within the air stream on the work surface. Provide welded, gasketed and/or sealed joints for cabinet components to achieve a seal when completely assembled. Unit work surface shall feature 5/8” Spill Guard at rear to prevent accidental spillage into Hepa filter area. Provide drain pan to capture spilled liquids. Drain pan shall have easy access for routine cleaning.

B. Controls – Unit shall have light and blower switches and analog pressure gauge for visual motor failure indicator.

C. Illumination: Cabinet shall have top mounted fluorescent lighting fixture with solid state ballasts producing an average of 150 foot candles at work surface. Design shall accommodate energy efficient bulbs and provide balanced lighting at the work surface.

D. Filters: One scan-tested, zero-probe HEPA Filter, 99.99 percent efficient on 0.3 micron particles by DOP test, serviceable and removable from top or side of unit. Provide stainless steel diffuser and stainless steel filter protector. Provide washable, reusable scott foam pre-filter to preserve the main Hepa filter. Dust count, leak test and particle count by single particle monitor or DOP photometer which conforms to requirements of Federal Standard 209b and USAFTO 00-25-203.

E. Calculated Air Velocity: Constant velocity of 100 FPM.

F. Provide Stedivolt speed controller that is capable of automatically compensating for voltage change to maintain constant voltage to motor while allowing for manual adjustments for filter loading over time. Unit shall be provided with permanent split capacitor type motor and special blower which automatically compensates for increasing pressure drop across filter in excess of that which is required by existing standards.

G. Electrical Requirements – 3’, 4’ and 5’ models shall be provided with dedicated 115V, 20 amp, 60 Hz single phase circuit shall be required for proper operation. The cabinet shall be pre-wired with an 11’ power cord terminated with a NEMA 5-20P plug. Provide one GFCI outlet protected by an independent self resetting breaker. 6’ and 8’ models shall be provided with a hard wire connection to a junction box.

H. Gaskets: Closed cell Neoprene to form airtight seals to suit installation conditions and cabinet function. Minimum 1/2 inch wide x 1/4 inch thick, fitted over bolt studs.

I. Cable Port – A port through negative pressure sidewalls to allow passage of tubes or cables. Design shall meet Class 100 (ISO Class 5) air cleanliness immediately inside opening in the work area as verified by a particle counter. Cabinet shall be NSF listed with this feature.

J. Optional Accessories:
   1. Leg Riser
   2. Stainless steel IV bar (removable)
   3. Casters
4. Utility Valve – Greaseless
5. Aluminum framed filter
6. Data ports
7. Additional duplex outlet
8. Isolated Motor Blower (for low vibration applications)
9. Seismic restraints
10. Audible Alarm for motor failure
11. 30” deep work area
12. Ergonomic Adjustable Chair
13. Ergonomic Sit/Stand Stool
14. Phocus Rx: Integrated pharmacy compounding validation software package

2.3 FABRICATION

A. General: Assemble clean bench in factory to greatest extent possible. Disassemble cabinet only as necessary for shipping and handling limitations.

B. Steel Exterior: Fabricate from steel sheet, 16 gauge 0.060 inch and 18 gauge 0.0478 inch nominal thickness, with durable powder coated white finish, with component parts bolted together to allow removal of end panels and front fascia to allow access to plumbing lines and service fittings and allow access for maintenance.

C. Light Fixtures: Units shall be provided with fluorescent light fixtures covered and protected inside a canopy. Units shall be provided with energy efficient fluorescent bulbs easily replaceable from front of cabinet.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of clean bench.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install clean benches according to Shop Drawings and manufacturer’s written instructions.

3.3 START-UP AND TESTING

1. Field test installed clean benches according to manufacturer’s instruction including tests of filters. Call manufacturer’s technical support and retest units that do not meet specified standards.
3.4 DEMONSTRATION

A. Provide demonstration and instruction on each type of unit furnished, using manufacturer’s representative.

END OF SECTION 11 53 00