

Addendum 02

PROJECT: **Holmstedt Hall Teaching and Research Laboratory Renovation**

ADDENDUM # 02

DATE: 05.08.17

TO: ALL INTERESTED BIDDERS OF RECORD

BID NUMBER: B0025306

This Addendum #02 forms part of the Contract Documents and modifies the original Bidding Documents. Acknowledge receipt of this addendum in the space provided on the Bid Form. Failure to acknowledge this addendum may subject Bidder to disqualification.

GENERAL INFO

1. Sherwin Williams, Ceramic Capet #400 is an approved equal to Stonhard epoxy flooring.
 - a. Submit full range for color selection.

SPECIFICATION REVISIONS

1. Added Section: 115313 Fume Hoods – use this or exact equal, coordinate with all trades

DRAWING REVISIONS

1. **A201:** Door 129A to be a HM door with HM frame, grout solid, paint both.

QUESTION AND ANSWERS

- Q RM HH119 – are all of the zero threshold skeleton cabinets new and part of the lab casework. Also is standard 84” height cabinets good for that application?
- A Yes, they will all be new, included in base bid. 84” will work.
- Q In general there is no fixture schedule indicating size of the epoxy sinks and type of water fixtures at them. Also an eyewash is indicated is there a standard model ISU would want?
- A The eyewash fixtures to be provided by Plumbing Contractor.
See Section 123552 in the project manual for specifications on the plumbing fixtures. The two sinks in 129/129A to be 24”x18” – material and mounting as specified in Section 123552 in the project manual. The sink in 119 to be 24”x18”- material and mounting as specified in Section 123552 in the project manual.
- Q One of the Plan Rooms states the budget for this project is \$1.2 Million. Is that correct?
- A No. Construction Cost for this project should run a little over \$400,000.00

End of Addendum # 02

Attachments: Specification Section 115313 Fume Hoods

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PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Laboratory fume hoods.

B. Related Sections:

1. Section 123552 – Kewaunee Scientific Corporation, SIGNATURE SERIES CONTEMPORARY FULL OVERLAY – STYLE 5 Laboratory Furniture.
2. Division 22 – Rough ins and installation of plumbing utilities and final connections to fume hoods.
3. Division 23 – Rough ins and installation of exhaust duct work and equipment, and final connection of fume hoods.
4. Division 26 – Rough ins and installation of electrical utilities and final connections to fume hoods.

1.02 FUME HOOD GENERAL DESIGN REQUIREMENTS

- A. Fume hoods shall function as ventilated, enclosed workspaces, designed to capture, confine and exhaust fumes, vapors and particulate matter produced or generated within the enclosure.
- B. Design fume hoods for consistent and safe air flow through the hood face. Negative variations of face velocity shall not exceed 20% of the average face velocity at any designated measuring point as defined in this section.
- C. Average illumination of work area: Minimum 80 footcandles. 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.
- D. Fume hood shall be designed to minimize static pressure loss with adequate slot area and bell shaped exhaust collar configuration. Maximum average static pressure loss readings taken three diameters above the hood outlet from four points, 90 degrees apart, shall not exceed the following maximums with sash in full open position:

Face Velocity Measured S.P.L. (W.G.)
75 F.P.M. .18 inches
100 F.P.M. .30 inches
125 F.P.M. .45 inches
150 F.P.M. .60 inches
- E. Fume hood shall maintain essentially constant exhaust volume at any baffle position for safety. Maximum variation in exhaust CFM, static pressure and average face velocity as a result of baffle adjustment shall not exceed 5% for any baffle position at the specified face velocity.
- F. Fume hoods shall be field convertible, from bypass type to auxiliary air by simple component replacement or addition. Change-over shall be accomplished without construction modifications and without special tools.
- G. Noise Criteria: Test data of octave band analysis verifying hood is capable of a 50 NC value when connected to a 50 NC HVAC source. Reading taken 3' in front of open sash at 100 fpm face velocity.

1.03 SUBMITTALS

- A. Shop Drawings: Indicate equipment locations, large scale plans, elevations, cross sections, rough-in and anchor placement dimensions and tolerances and all required clearances.

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- B. Product Data: Submit manufacturer's data for each component and item of laboratory equipment specified. Include component dimensions, configurations, construction details, joint details, and attachments, utility and service requirements and locations.
- C. Test Reports: Submit test reports on each size and type of hood verifying conformance to test performances specified. Test report must accompany each hood as part of installation and usage package. Submit independent test reports as required by specification.
- D. Instructions: Submit for review and approval
 - 1. Instructions to be inscribed on instruction plate to be attached to hood, as specified in Part 2 of this Section.
 - 2. Written instructions in booklet form providing additional details on safe and proper operation and maintenance.

1.04 QUALITY ASSURANCE

- A. Single source responsibility: Fume hood casework, work surfaces, and other laboratory equipment and accessories shall be manufactured or furnished by a single laboratory furniture company.
- B. Manufacturer's qualifications: Modern plant with proper tools, dies, fixtures and skilled workmen to produce high quality laboratory casework and equipment, and shall meet the following minimum requirements:
 - 1. Five years or more experience in manufacture of laboratory casework and equipment of type specified.
 - 2. Ten installations of equal or larger size and requirements.
 - 3. UL 1805 Specification: Fume Hood must be Underwriters Laboratories subject 1805 classified. The 805 standard covers electrical and mechanical hazards, investigates the flammability of materials and measures the effectiveness of airflow characteristics. Proper labeling must be affixed to the face of each fume hood indicating classification to the UL 1805 standard for Laboratory Fume Hoods. UL listing covering electrical components only or other listings that do not encompass all issues covered in UL 1805 is insufficient. All factory testing shall be performed in a U.L. certified test facility.
- C. Installer's qualifications: Factory certified by the manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Schedule delivery of equipment so that spaces are sufficiently complete that equipment can be installed immediately following delivery.
- B. Protect finished surfaces from soiling or damage during handling and installation. Keep covered with polyethylene film or other protective coating.
- C. Protect all work surfaces throughout construction period with 1/4" corrugated cardboard completely covering the top and securely taped to edges. Mark cardboard in large lettering "No Standing".

1.06 PROJECT CONDITIONS

- A. Do not deliver or install equipment until the following conditions have been met:
 - 1. Windows and doors are installed and the building is secure and weather tight.
 - 2. Ceiling, overhead ductwork and lighting are installed.
 - 3. All painting is completed and floor tile located below casework is installed.

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PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Casework and equipment manufacturer: Kewaunee Scientific Corporation
- B. Safaire I
- C. Air Master Systems
- D. Campbell Rhea-1C1

2.02 FUME HOOD MATERIALS

- A. Steel: High quality, cold rolled, mild steel meeting requirements of ASTM A366; gauges U.S. Standard and galvanized.
- B. Stainless steel: Type 304; gauges U.S. Standard.
- C. Ceiling closure panels: Minimum 18 gauge; finish to match hood exterior.
- D. Bypass grilles: Low resistant type, 18 gauge steel, upward directional louvers.
- E. Safety glass: 7/32" thick laminated safety glass.
- F. Sash cables: Stainless steel, uncoated, 1/8" diameter military spec. quality. (MIL-W-83420D-3)
- G. Sash guides: Corrosion resistant poly-vinyl chloride.
- H. Pulley assembly for sash cable: 2" diameter, zinc dichromate finish, ball bearing type, with cable retaining device. (Nylon tired-not acceptable.)
- I. Sash pull: Full width corrosion resistant plastic, stainless steel or steel with chemical resistant powder coating.
- J. Gaskets: 70 durometer PVC for interior access panels. Gasket interior access panels to eliminate air leakage and to retain liquids inside hood.
- K. Fastenings:
 - 1. Exterior structural members attachments: Sheet metal screws, zinc plated.
 - 2. Interior fastening devices concealed. Exposed screws not acceptable. (Screw head "caps" not acceptable.)
 - 3. Exterior panel member fastening devices to be corrosion resistant, non-metallic material. Exposed screws not acceptable.
- L. Instruction plate: Corrosion resistant or plastic plate attached to the fume hood exterior with condensed information covering recommended locations for apparatus and accessories, baffle settings and use of sash.

2.03 FUME HOOD CONSTRUCTION

- A. Superstructure: Rigid, self supporting assembly of double wall construction, maximum 4-7/8" thick.
 - 1. Wall consists of a sheet steel outer shell and a corrosion resistant inner liner, and houses and conceals steel framing members, attaching brackets and remote operating service fixture mechanisms and services. Panels must be attached to a full frame construction, minimum 14 gauge galvanized members. Panels and brackets attached to eliminate screw heads and metallic bracketry from hood interior.
 - 2. Access to fixture valves concealed in wall provided by exterior removable access panels, gasketed access panels on the inside liner walls, or through removable front posts.
- B. Exhaust outlet: Rectangular with ends radiused, shaped and flanged, 18 gauge
 - 1. Provide 316 stainless steel rectangular exhaust collar

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- C. Access opening perimeter: Air foil or streamlined shape with all right angle corners radiused or angled. Bottom horizontal foil shall provide nominal one inch bypass when sash is in the closed position. Bottom foil shall be removable without use of special tools. Bottom foil shall provide access areas for electrical cords. Bottom foil: 316 Stainless Steel
- D. Fume hood sash: Combination vertical rising and horizontal sliding fume hood sashes 304 stainless steel
 - 1. Bottom sash rail: 2" maximum, 18 gauge steel with urethane powder coat finish. Provide integral formed, flush pull the full width of bottom rail.
 - 2. Set safety glass into rails in deep form, extruded poly-vinyl chloride glazing channels.
 - 3. Counter balance system: Single weight, pulley, cable, counter balance system which prevents sash tilting and permits one finger operation at any point along full width pull. Maximum 7 pounds pull required to raise or lower sash throughout its full length of travel. Design system to hold sash at any position without creep and to prevent sash drop in the event of cable failure. Life cycle test 100 pound sash and weight to 100,000 cycles without sign of failure. Provide independent test data.
 - 4. Open and close sash against rubber bumper stops.
- E. Fume hood liner: Poly-resin (product number denoted by the suffix "P"): Reinforced polyester panel; smooth finish and white color in final appearance. Flexural strength: 14,000 psi. Flame spread: 25 or less per U.L. 723 and ASTM E84-80.
- F. Baffles: Baffles providing controlled air vectors into and through the fume hood must be fabricated of the same material as the liner. Provide exhaust slots full height on vertical sides of the baffle with upper slots adjustable. All baffle supports/brackets to be non-metallic.
- G. Remote baffle adjustment: Toggle style, one handed, single point control, accomplished while hood is in use, without disturbing apparatus, from outside right hand corner post of fume hood with sash in either the open or closed position, and permitting setting for (1) high thermal loading and (2) normal or average operation.
 - 1. Remote adjuster: Toggle style control handle and an acid resistant label indicating proper control handle location for baffle function.
 - 2. Rigidly correlate control handles to baffle positioner; cable-type adjustments are not acceptable
 - 3. Design baffle adjuster to engage and disengage from the adjustable baffle without the use of tools.
 - 4. Must comply with OSHA Lab Standard Guidelines. (Easily reached/adjusted with only arm in hood.)
 - 5. Baffles providing no adjustment or requiring internal manipulations are not acceptable.
 - 6. Non-metallic supports and fasteners required inside of hood.
- H. Service fixtures and fittings: Color coded washers at hose nozzle outlets and valves mounted inside the fume hood and controlled from the exterior with color coded index handles.
 - 1. Valves: Front loaded needle point valves with chrome plated handles. Provided color coded nylon index button to match service provided
 - 2. Provide top vacuum breakers on all remote control water fixtures
 - 3. Provide fine needle control valves for special gases
 - 3. Factory pre pipe all service fixtures from valve to outlet. Pre pipe to 2" above fume hood. Galvanized iron or copper for water, air and vacuum and black iron for gas services.

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4. Fixtures exposed to hood interior: Brass with chemically resistant black powder coating color coded to match service provided
5. Services: As shown on casework drawings.
- I. Hood light fixture: Two lamp/T8, rapid start, UL listed fluorescent light fixture with sound rated ballast installed on exterior of roof. Provide safety glass panel cemented and sealed to the hood roof.
 1. Interior of fixture: White, high reflecting plastic enamel.
 2. Size of fixture: Largest possible up to 48" for hoods with superstructures up to six feet. Provide two 36" fixtures for hoods with eight foot superstructures.
 3. Include lamps with fixtures.
 4. Illumination: Per performance values, Part 1 of this Section.
- J. Electrical services: Three wire grounding type receptacles rated at 120 V.A.C. at 20 amperes. Receptacle and light switch to be Grey. Flush plates: 304 stainless steel.
- K. Fume hoods shall be factory pre wired to a junction box on top of hood.
- L. Safety Monitor/Alarm System: Where shown or specified provide Safety Monitor/Alarm System which monitors face velocity and provides audible and visual alarm if face velocity drops below safe levels.

2.04 RESTRICTED BYPASS FUME HOODS

- A. Bypass shall be sufficient in size to allow 25% flow with sash closed. Bypass must be achieved through grill or louver on face of front lintel panel.
- B. Sash: Framed combination sash vertically rising with sliding glass panels
- C. Low impedance, directionally louvered panel provided in the lintel bypass area and one inch bypass provided immediately above the work surface and directly below the bottom horizontal sash rail.

2.05 METAL FINISH

- A. Preparation: Spray clean metal with a heated cleaner/phosphate solution, pretreat with iron phosphate spray, water rinse, and neutral final seal. Immediately dry in heated ovens, gradually cooled, prior to application of finish.
- B. Application: Electrostatically apply urethane powder coat of selected color and bake in controlled high temperature oven to assure a smooth, hard satin finish. Surfaces shall have a chemical resistant, high grade laboratory furniture quality finish of the following thicknesses:
 1. Exterior and interior surfaces exposed to view: 1.5 mil average and 1.2 mil minimum.
 2. Backs of cabinets and other surfaces not exposed to view: 1.0 mil average.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Installation:
 1. Install fume hoods and equipment in accordance with manufacturer's instructions.
 2. Install equipment plumb, square, and straight with no distortion and securely anchored as required.
 3. Secure work surfaces to casework and equipment components with material and procedures recommended by the manufacturer.
- B. Accessory installation: Install accessories and fittings in accordance with manufacturer's recommendations.

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3.02 ADJUSTING

- A. Repair or remove and replace defective work, as directed by [Architect] [Owner] upon completion of installation.
- B. Adjust sash, fixtures, accessories and other moving or operating parts to function smoothly.

3.03 CLEANING

- A. Clean equipment, touch up as required.

3.04 PROTECTION OF FINISHED WORK

- A. Provide all necessary protective measures to prevent exposure of equipment from exposure to other construction activity.
- B. Advise contractor of procedures and precautions for protection of material and installed fume hoods from damage by work of other trades.

END OF SECTION 115313