



## Service Agreement

Agreement No. 802

### CHEMICAL VENT HOOD REPLACEMENT

THIS Chemical Vent Hood Replacement Agreement ("Agreement") is entered into by and between Haldeman Homme, Inc. ("Contractor"), of Minneapolis, Minnesota with offices in Austin, Texas and Houston Texas and the City of Corpus Christi, a Texas home-rule municipal corporation ("City"), effective for all purposes upon execution by the City Manager or designee ("City Manager").

WHEREAS, Contractor has bid to provide Chemical Vent Hood Replacement in response to the City's Request for Bids ("RFB No. 84") which RFB with any related Scope of Work and specifications, and bid response, are incorporated by reference into this Agreement as Exhibits "1 and 2";

WHEREAS, the City has determined Contractor to be the lowest, responsive, responsible bidder;

NOW, THEREFORE, Contractor and City enter into this Agreement and agree as follows:

1. **Scope.** Contractor will provide **Chemical Vent Hood Replacement ("Services")** in accordance with this Agreement and the Scope of Work as shown in Attachment "A".
2. **Term.** This Agreement is for 17 weeks, commencing on the issuance of a notice to proceed.
3. **Compensation and Payment.** This Agreement is for a lump sum of \$88,215 subject to authorized extensions and changes. Payments will be allowed in accordance with Attachment "B" Schedule of Pricing. Payment terms are net 30 days after the goods are provided or services are completed, as required or a correct invoice is received, whichever is later.
4. **Contract Administrator.** The contract administrator designated by the City is responsible for approval of all phases of performance and operations under this Agreement including deductions for non-performance and authorizations for payment. All of the Contractor's notices or communications regarding this

Agreement must be directed to the Contract Administrator or designee ("Contract Administrator") as follows:

John Hornsby, Forensic Services Supervisor  
Corpus Christi Police Department  
321 John Sartain St.  
(361) 886-2636 [JohnH@cctexas.com](mailto:JohnH@cctexas.com)

5. **Independent Contractor.** Contractor will perform the Services as an independent contractor and will furnish such Services in its own manner and method, and under no circumstances or conditions may any agent, servant or employee of the Contractor be considered an employee of the City.
6. **Insurance.** Before Services can begin under this Agreement, the Contractor's insurance company (ies), must deliver a Certificate of Insurance, as proof of the required insurance coverage, to the Contract Administrator. Additionally, the Certificate must state that the Contract Administrator will be given at least 30 days notice, by certified mail, of cancellation, material change in the coverages or intent not to renew any of the policies. The City must be named as an Additional Insured. The City Attorney must be given copies of all insurance policies within 15 days of the City Manager's written request. Insurance Requirements are outlined in Attachment "C".
7. **Warranty.** The Contractor warrants that all products supplied under this Agreement are new, quality items that are free from defects, fit for their intended purpose, and of good material and workmanship. The Contractor warrants that it has clear title to the products and that the products are free of liens or encumbrances. In addition, materials and workmanship under this Agreement shall be warranted by the Supplier for a period of one year from date of installation and includes replacement of parts (except lamps) and labor. The warranty under this section shall survive the expiration or earlier termination of this agreement.
8. **Assignment.** No assignment of this Agreement or of any right or interest contained in this Agreement by the Contractor is effective unless the City Manager first gives its written consent to such assignment. The performance of this Agreement by the Contractor is of the essence of this Agreement, and the City's right to withhold consent to such assignment is within the sole discretion of the City on any ground whatsoever.
9. **Fiscal Year.** All parties recognize that the continuation of any contract after the close of any fiscal year of the City (the City's fiscal year ends on September 30th) is subject to appropriations and budget approval providing for such contract item as an expenditure in the budget. The City does not



represent that said budget item will be actually adopted, as that determination is within the sole discretion of the City Council at the time of adoption of each budget.

- 10. Waiver.** No waiver by either party of any breach of any term or condition of this Agreement waives any subsequent breach of the same.
- 11. Governing Law.** This Agreement is subject to all federal, state and local laws, rules and regulations. The applicable law for any legal disputes arising out of this Agreement is the law of Texas and such form and venue for such disputes is the appropriate district, county or justice court in and for Nueces County, Texas.
- 12. Subcontractors.** The Contractor may use subcontractors in connection with the Services to be performed under this Agreement. When using subcontractors, however, the Contractor must obtain prior written approval from the Contract Administrator unless such subcontractors were named and included with the Contractor's response. In using subcontractors, the Contractor shall be responsible for all their acts and omissions to the same extent as if the subcontractor and its employees were employees of the Contractor. All requirements set forth as part of this Agreement are applicable to all subcontractors and their employees to the same extent as if the Contractor and its employees had performed the Services.
- 13. Amendments/Extensions.** This Agreement may be amended only in writing and upon execution by authorized representatives of both parties. Such amendment will be in the form of a change order or amendment. Extensions to this Agreement will be at the sole discretion of the City and if offered to the Contractor will be mutually agreed to in the form of a bilateral change order.
- 14. Termination.**
  - a. The City Manager may terminate this Agreement for Contractor's failure to perform the Services specified in this Agreement. Failure to keep any required insurance policies in force for the entire term of this Agreement is grounds for termination. The Contract Administrator must give the Contractor 10 days written notice of the breach and set out a reasonable opportunity to cure. If the Contractor has not cured within the cure period, the City Manager may terminate this Agreement immediately thereafter.
  - b. Alternatively, the City Manager may terminate this Agreement without cause upon 30 days written notice to the Contractor. However, the City may terminate this Agreement upon 24 hours written notice to the Contractor for Contractor's failure to pay or provide proof of payment of taxes, as set out in this Agreement.

**15. Taxes.** The Contractor covenants to pay payroll taxes, Medicare taxes, FICA taxes, unemployment taxes and all other related taxes. Upon request, the City Manager shall be provided proof of payment of these taxes within 15 days of such request. Failure to pay or provide proof of payment is grounds for the City Manager to immediately terminate this Agreement.

**16. Certificate of Interested Parties.** Contractor agrees to comply with Texas Government Code Section 2252.908 and complete Form 1295 "Certificate of Interested Parties" as part of this Agreement.

**17. Notice.** Notice may be given by fax, email, hand delivery or certified mail, postage prepaid, and is received on the day faxed, emailed or hand-delivered and on the third day after postmarked by the U.S. mail if sent certified mail. Notice must be sent as follows:

IF TO CITY:

**City of Corpus Christi**

Attention: John Hornsby, Forensic Services Supervisor  
1201 Leopard St.  
Corpus Christi, Texas 78401  
Fax: (361) 886-2642  
Email: [JohnH@cctexas.com](mailto:JohnH@cctexas.com)

IF TO CONTRACTOR:

**Haldeman Homme, Inc.**

Attention: Drew Starr, Laboratory and Technical Facility Consultant  
8120 Exchange Dr. Ste. 200  
Fax: (612) 378-2236  
Email: [DStarr@HALDEMANHOMME.com](mailto:DStarr@HALDEMANHOMME.com)

**18. Severability.** Each provision of this Agreement is considered to be severable and if, for any reason, any such provision or any part thereof, is determined to be invalid and contrary to any existing or future applicable law, such invalidity shall not impair the operation of or affect those portions of this Agreement that are valid, but this Agreement shall be construed and enforced in all respects as if the invalid or unenforceable provision or part thereof had been omitted.

**19. CONTRACTOR AGREES TO INDEMNIFY, HOLD HARMLESS AND DEFEND THE CITY OF CORPUS CHRISTI AND ITS OFFICERS, EMPLOYEES AND AGENTS ("INDEMNITEES") FROM AND AGAINST ANY AND ALL LIABILITY, LOSS, CLAIMS, DEMANDS, SUITS AND CAUSES OF ACTION OF ANY NATURE ON ACCOUNT OF DEATH, PERSONAL INJURIES, PROPERTY LOSS OR DAMAGE OR ANY OTHER KIND OF DAMAGE, INCLUDING ALL**



**EXPENSES OF LITIGATION, COURT COSTS, ATTORNEYS' FEES AND EXPERT WITNESS FEES WHICH ARISE OR ARE CLAIMED TO ARISE OUT OF OR IN CONNECTION WITH THIS CONTRACT OR THE PERFORMANCE OF THIS CONTRACT, REGARDLESS OF WHETHER THE INJURIES, DEATH OR DAMAGES ARE CAUSED OR ARE CLAIMED TO BE CAUSED BY THE CONCURRENT OR CONTRIBUTORY NEGLIGENCE OF INDEMNITEES, BUT NOT IF BY THE SOLE NEGLIGENCE OF INDEMNITEES UNMIXED WITH THE FAULT OF ANY OTHER PERSON OR GROUP. CONTRACTOR MUST, AT ITS OWN EXPENSE, INVESTIGATE ALL CLAIMS AND DEMANDS, ATTEND TO THEIR SETTLEMENT OR OTHER DISPOSITION, DEFEND ALL ACTIONS BASED THEREON WITH COUNSEL SATISFACTORY TO INDEMNITEES AND PAY ALL CHARGES OF ATTORNEYS AND ALL OTHER COSTS AND EXPENSES OF ANY KIND ARISING FROM ANY SAID LIABILITY, DAMAGE, LOSS, CLAIMS, DEMANDS OR ACTIONS. THE INDEMNIFICATION OBLIGATIONS OF CONTRACTOR UNDER THIS SECTION SHALL SURVIVE THE EXPIRATION OR EARLIER TERMINATION OF THIS AGREEMENT.**

**20. Order of Precedence.** In the event of conflicts or inconsistencies between this Agreement and its exhibits or attachments, such conflicts or inconsistencies will be resolved by reference to the documents in the following order of priority:

- a. this Agreement and its Attachments,
- b. the RFB documents including Addenda,
- c. the bid response.

**21. Entire Agreement.** This Agreement constitutes the entire agreement between the parties concerning the subject matter of this Agreement and supersedes all prior negotiations, arrangements, agreements and understandings, either oral or written, between the parties.

**CONTRACTOR**

Signature: \_\_\_\_\_

Printed Name: DAN MORAN

Title: GENERAL MANAGER

Date: 6-27-16

**CITY OF CORPUS CHRISTI**

Signature: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

APPROVED AS TO LEGAL FORM:

\_\_\_\_\_  
Buck Brice (Date)  
Assistant City Attorney  
For City Attorney

**Attached:**

Attachment A: Scope of Work  
Attachment B: Schedule of Pricing  
Attachment C: Insurance Requirements

**Incorporated by Reference Only:**

Exhibit 1: RFB No. 84 Chemical Vent Hood Replacement  
Exhibit 2: Contractor's Bid Response

# ATTACHMENT A - SCOPE OF WORK

## VENT HOOD SPECIFICATIONS & SCOPE OF WORK

### PART 1 – GENERAL

#### 1.01 SUMMARY

- A. Section Includes:
  - 1. Bench-top High-Performance Laboratory Fume Hoods.
  - 2. Service fixtures (ie. water, gas, etc.) and electrical service fittings in fume hoods.
  - 3. Piping and wiring within service fittings, light fixtures, switches, and other electrical devices.
  - 4. Fume hood base support.
  - 5. Work Surfaces within fume hoods.
  - 6. Laboratory sinks and cup sinks in fume hoods.
  - 7. Filler panels and ceiling enclosures for fume hoods.

#### 1.02 SCOPE AND CLASSIFICATION

- A. This specification covers the requirements for the purchase of bench mounted laboratory fume hoods for use with remote exhaust blower systems. Work to include demo of existing fume hoods, exhaust system and fans. Installation to be turn key.
- B. Bench-mounted laboratory fume hoods in 4 and 8-foot widths. Provide separate proposals for each size.
- C. This specification sets the intent for quality, performance and appearance.

#### 1.03 REFERENCES

- A. The laboratory hoods must conform to the following regulations and standards.
  - 1. SEFA 1-2010, Scientific Equipment and Furniture Association , Recommended Practices for Laboratory Fume Hoods
  - 2. SEFA 8-2010, Recommended Practices for Laboratory Grade Metal Casework, 8.0 Cabinet Surface Finish Tests
  - 3. NFPA 45-2011, National Fire Protection Association, Fire Protection for Laboratories Using Chemicals
  - 4. ASTM E84-09C, ANSI 2.5, NFPA 255, UL 723, UBC 8-1 (42-1), Standard Test method for Surface Burning Characteristics of Building Materials
  - 5. ASHRAE 110-95, American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Method of Testing Performance of Laboratory Fume Hoods

6. ANSI/AIHA Z9.5-2011, American Industrial Hygiene Association, Laboratory Ventilation
  7. OSHA, Federal Register 29 CFR Part 1910, Occupational Safety & Health Administration, U.S. Department of Labor, Occupational exposures to hazardous chemicals in laboratories.
- B. The laboratory fume hoods must carry the ETL listed mark for the following.
1. UL 61010-1 (formerly 3101-1), Underwriters Laboratories Inc., Electrical Equipment for Laboratory Use
  2. CAN/CSA C22.2 No. 61010-1, Canadian Standards Association, Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use
  3. UL 1805, Underwriters Laboratories Inc., Standard for Laboratory Hoods and Cabinets
- C. 230 volt model fume hoods must carry the CE conformity marking as required by the Council of European Communities.

#### 1.04 PERFORMANCE REQUIREMENTS

- A. General Design Requirements (See Part 2 for details)
1. Fume hoods shall function as ventilated, enclosed workspaces, designed to capture, contain and exhaust fumes, vapors and particulate matter produced or generated within the enclosure.
  2. Fume hood shall be factory designed to function as a by-pass fume hood.
  3. Structure and Materials of construction
    - a. Hoods are of double-wall construction
    - b. Powder-coated, cold rolled steel exterior
    - c. Galvanized steel support members
    - d. Sheet molded composite panel internal liner
  4. Baffles
    - a. Baffle slot pattern designed to optimize face velocity profile.
    - b. Moving or adjustable baffles are not acceptable
  5. Sash
    - a. Maximum opening is 28".
    - b. Unobstructed viewing height is 37.5".
    - c. Hood incorporates a perforated sash handle to bleed air into the hood chamber directing fume concentrations away from the user's breathing zone.
  6. Airfoil:
    - a. Hoods are provided with an air foil across the bottom of the sash area to allow airflow into the hood regardless of user's position.
  7. Besides the exhaust blower, no additional blowers are required for specified containment.
  8. Access for maintenance is from both the front, interior, and exterior sides of the hood.
  9. Services:
    - a. Furnishing and delivering all service outlets, accessory fittings, electrical receptacles and switches, as listed in these specifications, equipment schedules or as shown on drawings.
    - b. Plumbing fittings mounted on the fume hood superstructures shall be pre-plumbed per section 2.03.
    - c. Final plumbing and electrical connections are the responsibility of the fume hood supplier and is included within the scope of work.



- d. All electrical services are pre-wired to a single point internal junction box at the top right of the hood.

B. Containment

1. The purpose of this section is to set a standard of performance for the bidder's laboratory fume hood before award of contract, and may not necessarily represent the operating conditions of the hoods after installation. Before or after award of contract, owners may require representative witness to said testing at their option, with failure to meet passing criteria as grounds for rejection of the bidder. Test data shall be provided at no cost to the owner.
2. Evaluation of manufacturer's standard product shall take place in manufacturer's test facility meeting the following criteria.
  - a. Lab to be located at manufacturer's place of business for the testing of bench-mounted laboratory hoods in accordance with ASHRAE Standard 110.
  - b. Room shall accommodate hoods up to 16' wide, while maintaining sufficient area so that a minimum of 15 feet of clear space is available in front of and 5' on both sides of hoods for viewing tests.
  - c. The facility's ventilation system shall have adequate heating and air conditioning so that room air temperatures can be maintained within the desired ranges.
  - d. One hundred percent non-recirculated air to be both carbon and HEPA filtered to ensure removal of contaminants that could interfere with containment testing before entering the lab.
  - e. Make-up air to the test room shall be ceiling-supplied through any combination of multiple diffusers to either minimize adverse airflow, or increase it depending on test objectives.
  - f. Exhaust volumes shall be computer controlled and measured via AMCA calibrated orifices and flow station at each exhaust trunk.
  - g. Room pressurization must be digitally monitored, and variable depending on test objectives.
  - h. All equipment must be properly calibrated.
  - i. Qualified personnel familiar with the laboratory and its operation shall be available to perform the test.
  - j. Include the following instrumentation and test equipment:
    - 1) Properly calibrated hot wire thermal anemometer capable of measuring air velocities from 10 to 600 ft/minute; correlate with computer data acquisition format to provide simultaneous readings at all points.
    - 2) Theatrical smoke generator or other source of high volume smoke.
    - 3) Smoke tubes or other source of localized smoke.
    - 4) Leakmeter with traceable calibration, calibrated just before test, to indicated concentration of sulfur hexafluoride.
    - 5) Tracer gas: Sulfur hexafluoride supplied from a cylinder with two stage regulator.
    - 6) Adjustable mannequin, 5' 0" to 5'8" in height, with reasonable human proportions, clothed in a smock
    - 7) Inclined manometer with graduations no greater than 0.2 inch of water.
    - 8) Ejector system: Tracer gas ejector built to specific ASHRAE-110 requirements.
    - 9) Critical orifice: Sized to provide tracer gas at four or eight liters per minute at an upstream pressure sufficient to maintain release rate.

- 10) Data acquisition software to include HoodPro™ and LabMeasurePro™ from Exposure Control Technologies, Inc.
3. Hood shall be tested to ASHRAE 110 modified test method as detailed below.
4. Some fume hoods may use face velocity controls, motorized baffles, integral auxiliary make up, or supply fans. Because all of these devices are subject to failure, containment testing shall show both operational containment and product containment with these systems off.
5. Fume hood sashes shall be placed in their full open position, at least 28" from the work surface, unless noted otherwise.
6. Ambient Temperature: 68 to 74 degrees F
7. **Average Face Velocity:** Face velocity average shall be 60 fpm, as noted below in subsection 8.d, parts 1 and 2, plus or minus 5%.
  - a. An imaginary grid is formed comprised of equal 12" by 12" squares, or smaller, across the face opening of the laboratory hood. Airflow velocity readings are taken at the intersections of these grids with calibrated hot wire anemometer over a twenty second period of time. Probes shall communicate readings to a computer data acquisition package, which will provide an average of each reading over the one-minute period and also an overall average upon completion of data acquisition. Face velocity shall be determined by averaging readings at the hood face.
  - b. Average face velocity must be achieved without exceeding the CFM noted in part C.
8. **Tracer Gas Detection:** Hood shall achieve a rating of 4.0AM0.00 maximum average and 4.0AM0.01 maximum spike (unless specifically otherwise noted), wherein:
  - a. 4.0 = tracer gas release in liters/minute, AM = as manufactured, 0.01 = tracer gas in parts per million (PPM)
  - b. With the ejector body 6" from the rear of the sash plane, the test shall be conducted for each ejector position noted.
    - 1) Left position with ejector 12" from the left interior wall.
    - 2) Center position with ejector equidistant from the sidewalls.
    - 3) Right position with ejector 12" from the right interior wall.
  - c. Install mannequin positioned in front of the hood, centered on the ejector.
  - d. Detector probes shall be placed 3" in front of the sash plane. The test shall be conducted for each detector probe position and corresponding face velocity.
    - 1) Detector probe in the region of the **nose and mouth of the mannequin**. Test with average face velocity of **60 fpm**.
    - 2) With the mannequin height reduced 4", place detector probe in the **chest of the mannequin**, and even with the height of the ejector. Test with average face velocity of **60 fpm**.
  - e. Open tracer gas valve, and collect readings with a computer data acquisition package, which is capable of monitoring and visually recording a minimum of one reading per second for a minimal five minute time period for each position.
  - f. The single control rating of the fume hood shall be the results of the test position yielding the highest average levels of tracer gas in any of the six mannequin/ejector configurations.
  - g. With the ejector and mannequin in the center position, detector probe in the region of the **nose and mouth of the mannequin**, average face velocity of **60 fpm**, tracer gas released, and concentration recorded, open and close the sash in a smooth motion. Test to be repeated three times, with peak values of 0.01 PPM or less.
  - h. With the mannequin removed, the periphery of the hood is traversed by the probe at 1" in front of the hood opening at a rate of 3 inches per second. The hood shall have a maximum perimeter reading of 0.03 PPM or less.

9. Flow Visualization:

- a. Test the operation of the lower air bypass airflow opening and hood periphery by introducing light smoke under the air foil, and around the perimeter of the sash opening. If any smoke that enters the hood reverses directions and escapes from any of these locations, the hood fails this portion of the test and receives no rating.
- b. Introduce smoke along both walls and the hood floor in a line parallel to the hood face and 6 inches (152 mm) back into the hood. Define air movement toward the face of the hood as reverse airflow and define lack of movement as dead air space. All smoke should be carried to the back of the hood and out.
- c. Introduce a large volume of smoke at the work surface in the center of the hood, and 6" inside the plane of the sash. Define air movement toward the face of the hood as reverse airflow and define lack of movement as dead air space. All smoke should be carried to the back of the hood and out.
- d. All data on the above, including instrumentation and equipment, and test conditions shall be provided on a report, including the average face velocities, and a separate graph-type performance curve on all tracer gas tests for all required fume hood widths. Performance test data for a 6' representative hood shall be conducted by an independent testing agency and by a specific individual certified to perform such tests by the National Environmental Balancing Bureau (NEBB).

C. Efficiencies

1. The fume hood shall maintain constant volumetric rate (+/- 5 CFM) and static pressure losses (+/- 0.01" H<sub>2</sub>O) across all sash positions, unless the hood has a restricted by-pass for use with a variable air volume (VAV) system.
2. The fume hood shall demonstrate a minimization of the volumetric rate of air (CFM) requirement at any given face velocity. Required CFM to achieve desired face velocity shall not exceed that which is noted in the chart below.
3. The fume hood shall demonstrate a minimization of static pressure loss (inches of H<sub>2</sub>O) at any given CFM. Static pressure loss at desired face velocity, and corresponding CFM, shall not exceed that which is noted in the chart below.

Face Velocity (fpm) Sash at 28" Open	Airflow, Volumetric Rate (CFM) @ Static Pressure (inches of H <sub>2</sub> O)					
	3' Hood	4' Hood	5' Hood	6' Hood	7' Hood	8' Hood
100	495, 0.13"	725, 0.27"	955, 0.34"	1180, 0.46"	1410, 0.23"	1640, 0.31"
80	395, 0.08"	580, 0.17"	765, 0.22"	945, 0.29"	1125, 0.15"	1310, 0.20"
60	295, 0.05"	435, 0.10"	575, 0.12"	710, 0.17"	845, 0.08"	985, 0.11"
50*	250, 0.03"	365, 0.07"	480, 0.09"	590, 0.11"	705, 0.06"	820, 0.08"
Face Velocity (fpm) Sash at 18" Open	Airflow, Volumetric Rate (CFM) @ Static Pressure (inches of H <sub>2</sub> O)					
	3' Hood	4' Hood	5' Hood	6' Hood	7' Hood	8' Hood
100	310, 0.05"	450, 0.11"	595, 0.13"	735, 0.18"	880, 0.09"	1025, 0.12"
80	250, 0.03"	365, 0.07"	480, 0.09"	590, 0.11"	705, 0.06"	820, 0.08"
60	185, 0.02"	270, 0.04"	360, 0.05"	440, 0.07"	525, 0.03"	615, 0.04"

\*There is not a written standard that would suggest a design face velocity below 60 fpm. This data is for informational purposes only.



- D. Noise Criterion: The hood shall have a Noise Criterion (NC) rating of less than 50; measured 36" in front of the hood with full open sash, at 100 fpm face velocity. NC is a factor of sound pressure level (dB) and frequency.
- E. Illumination: Shall be a minimum average of 80 foot-candles inside the work area. Work area is defined as the area inside the lined portion of the fume hood, from the face of baffle to sash plane, from interior left to interior right, and from the work surface to a height of 28 inches.
- F. Materials of Construction: Interior and Exterior materials of construction and finishes shall meet the requirements in Part 2 of this specification.

#### 1.05 QUALITY ASSURANCE

- A. Fume hoods shall be designed, including comprehensive engineering analysis, by a qualified, licensed Professional Engineer.
- B. Manufacturer's Qualifications
  - 1. ISO 9001 Certified manufacturing plant and processes.
  - 2. Ten installations of equal or larger size and requirements. Provide contact at each.
  - 3. Only hood manufacturers who have had fume hoods as a principal product for 50 years are considered.
- C. Fume hoods shall be **Made in America**
  - 1. 95% or more of raw material and component suppliers shall be United States based.
  - 2. Stainless and cold rolled steel used in manufacturing shall be sourced from United States steel mills.
  - 3. Final product must be fabricated and assembled within the United States of America.
  - 4. Owner reserves the right to evaluate Made in America claims for compliance with the Bureau of Consumer Protection.
- D. Supply all equipment in accordance with this specification. Offering a product differing in materials, construction, or performance from this specification requires written approval obtained seven days or more before the proposal deadline.
- E. The owner/architect reserves the right to reject qualified or alternate proposals and to award based on product value where such action assures the owner greater integrity of product.
- F. Manufacturer's warranty against defects in material or workmanship on its fume hoods will be for 1 year from date of installation or 2 years from date of purchase, whichever is sooner, and includes replacement of parts (except lamps) and labor.

#### 1.06 SUBMITTALS

- A. Action Submittals
  - 1. Laboratory hood specification sheets and product manuals shall be submitted by the hood manufacturer upon request, and include safe and proper operation and maintenance information.
  - 2. Shop Drawings: Include plans, elevations, sections, and details.

- a. Indicate details for anchoring fume hoods to permanent building construction including locations of blocking and other supports.
    - b. Indicate locations and types of service fittings together with associated service supply connection required.
    - c. Indicate duct connections, electrical connections, and locations of access panels.
    - d. Include roughing-in information for mechanical, plumbing, and electrical connections.
    - e. Provide face opening, volumetric rates, and static pressure drop data.
  - 3. Submit a document detailing the information supplied on the Hood Safety Practices Label to verify compliance to specifications.
- B. Informational Submittals
- 1. Product Test Reports: Showing compliance with specified performance requirements, including NEBB representative test report as defined previously.
  - 2. Independent validation:
    - a. Written verification that the laboratory fume hoods carry the ETL listed mark for the following.
      - 1) UL 61010-1 (formerly 3101-1), Underwriters Laboratories Inc., Electrical Equipment for Laboratory Use
      - 2) CAN/CSA C22.2 No. 61010-1, Canadian Standards Association, Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use
      - 3) UL 1805, Underwriters Laboratories Inc., Standard for Laboratory Hoods and Cabinets
    - b. Written verification that 230 volt model fume hoods carry the CE conformity marking as required by the Council of European Communities.
    - c. Written verification from an outside testing agency confirming coating compliance to SEFA 8-2010, Recommended Practices for Laboratory Grade Metal Casework, 8.0 Cabinet Surface Finish Tests
  - 3. Documentation of ISO 9001 Certified manufacturing plant and processes.
  - 4. List of five installations (of equal or larger size and requirements) is available upon request. Provide contact at each.
  - 5. Declaration of Made in America. Owner reserves the right to evaluate Made in America claims for compliance with the Bureau of Consumer Protection.
- C. Material Submittals
- 1. Samples for Verification: of the hood exterior wall material, interior liner and baffle material, epoxy work surface material, and color selection chips are available from the hood manufacturer upon request.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect finished surfaces during handling and installation with protective covering of polyethylene film or another suitable material.
- B. Schedule delivery of equipment so that spaces are sufficiently complete that equipment can be installed immediately following delivery.

#### 1.08 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install fume hoods until building is enclosed, wet work and utility roughing-in are complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

### PART 2 - PRODUCTS

#### 2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Labconco Corporation, 8811 Prospect Avenue, Kansas City, Missouri 64132
- B. Basis-of-Design Product: Labconco Protector XL

#### 2.02 MATERIALS

- A. Hood Interior Liner and Baffle
  - 1. Liner material must comply with UL 1805, and be listed within NRTL test report as proof of compliance.
  - 2. General Material Properties
    - a. Nonflammable, corrosion and chemical-resistant
    - b. Sheet molded homogenous polyester panels
    - c. Minimum thickness is 3/16"
    - d. Smooth, white finish
  - 3. Mechanical Properties
    - a. Tensile Strength: 7,500 PSI (51.7 Mpa)
    - b. Tensile Modulus:  $1.7 \times 10^6$  PSI (11,700 Mpa)
    - c. Flexural Strength: 21,000 PSI (145 Mpa)
    - d. Flexural Strength at 130 degrees C: 12,900 PSI (89 Mpa)
    - e. Compressive Strength: 32,500 PSI (224 Mpa)
    - f. IZOD Impact Strength (Notched): 8.4 Ft Lb/in (4.5 J/cm)
  - 4. Flame and Smoke Characteristics
    - a. Flame retardant, self-extinguishing, with a flame spread rating of 25 or less in accordance with ASTM-E84
    - b. Oxygen Index: 35%
    - c. Smoke Density: 115
  - 5. Physical Properties
    - a. Water Absorption: 0.4%
    - b. Specific Gravity: 4.81

### LABORATORY FUME HOODS



- c. Coefficient of Thermal Expansion:  $2 \text{ In/in/ degree C} \times 10^{-5}$
- d. Thermal Conductivity:  $1.9 \text{ BTU/Hr/Ft}^2\text{/In/degree F}$
- 6. Chemical Resistance
  - a. Splash and Spill Resistance:
    - 1) Suspend sample panel in a vertical plane
    - 2) Apply five drops of each reagent listed with an eyedropper
    - 3) Apply liquid reagents at top of panel and allow to flow down full panel height
  - b. Fume Resistance:
    - 1) Place 25 milliliters of reagent into 100 milliliters beakers and position panel over beaker tops in the proper sequence. Ensure beaker pouring lip permits air to enter the interior atmosphere.
    - 2) After 24 hours remove panel, flush with water, clean with detergent, rinse, wipe dry and evaluate
  - c. Evaluation ratings: Change in surface finish and function shall be described by the following numerical ratings
    - 1) No Effect: No change in color or gloss
    - 2) Excellent: Slight detectable change in color or gloss, but no change to the function or life of the work surface material
    - 3) Good: Clearly discernible change in color or gloss, but no significant impairment of function or life
    - 4) Fair: Objectionable change in appearance due to surface discoloration or etch, possibly resulting in deterioration of function over an extended period
    - 5) Failure: Pitting, cratering or erosion of work surface material; obvious and significant deterioration
  - d. Required minimum results for each reagent (Reagent: Fume Resistance Rating, Splash and Spill Resistance Rating)
 

1) Hydrochloric Acid (37%):	2,1
2) Sulfuric Acid (33%):	2,1
3) Sulfuric Acid (77%):	1,1
4) Sulfuric Acid (96%):	1,2
5) Formic Acid (90%):	2,1
6) Nitric Acid (20%):	2,2
7) Nitric Acid (30%):	1,2
8) Nitric Acid (70%):	3,2
9) Hydrofluoric Acid (48%):	2,2
10) Phosphoric Acid (85%):	1,1
11) Chromic Acid (60%):	1,4
12) Acetic Acid (98%):	1,1
13) Ammonium Hydroxide (20%):	1,1
14) Sodium Hydroxide (10%):	1,1
15) Sodium Hydroxide (20%):	1,3
16) Sodium Hydroxide (40%):	1,3
17) Sodium Hydroxide Flake:	1,-
18) Sodium Sulfide:	1,1
19) Zinc Chloride:	2,1
20) Tincture of Iodine:	3,3
21) Silver Nitrate:	2,1
22) Methyl Alcohol:	1,1
23) Ethyl Alcohol:	1,1
24) Butyl Alcohol:	1,1

25)	Benzene:	1,1
26)	Xylene:	1,1
27)	Toluene:	1,1
28)	Gasoline:	1,1
29)	Dichloro Acetic Acid:	2,2
30)	Dimethyl Formamide:	2,2
31)	Ethyl Acetate:	1,1
32)	Amyl Acetate:	1,1
33)	Acetone:	1,1
34)	Chloroform:	1,1
35)	Carbon Tetrachloride:	1,1
36)	Phenol:	2,2
37)	Cresol:	1,1
38)	Formaldehyde:	1,1
39)	Trichloroethylene:	1,1
40)	Ethyl Ether:	1,1
41)	Furfural:	1,3
42)	Methylene Chloride:	1,1
43)	Mono Chloro Benzene:	1,1
44)	Dioxane:	1,1
45)	Methyl Ethyl Ketone:	1,1
46)	Acid Dichromate:	1,2
47)	Hydrogen Peroxide:	1,1
48)	Napthalene:	1,1

B. Sheet Steel

1. Side panels and access panels 20-gauge (or heavier) sheet steel.
2. Hood corner posts are 16-gauge sheet steel.
3. Ceiling enclosure panels are 18 gauge sheet steel.
4. Cold-rolled, commercial steel (CS) sheet, complying with ASTM A 1008/A 1008M.

C. Chemical Resistant Finish

1. General: Prepare, treat, and finish welded assemblies after welding. Prepare, treat, and finish components that are to be assembled with mechanical fasteners before assembling.
2. Chemical and Physical Resistance of Finish System: Finish complies with acceptance levels of cabinet surface finish tests in SEFA 8. Third party validation required.
3. Powder-coat process required. Paint processes that release Volatile Organic Compounds (VOC) are not acceptable
4. Color for Fume Hood Finish: As selected by architect from Manufacturer's full range

D. Safety Glass

1. Tempered
  - a. Clarity and temper test to be as specified in latest edition of Glass Tempering Association, *Engineering Standards Manual*, Section 8.1.
  - b. Surface and interior visible quality to be as specified per ASTM C 1036, *Standard Specification for Flat Glass*, Table 4, Quality level Q3.

## 2.03 CONSTRUCTION

### A. Superstructure:

1. Self-supporting, rigid structural assembly, to support inner wall consisting of fume hood liner and outer wall of sheet metal exterior.
2. Fabricated from galvanized steel.
3. Space shall accommodate fume hood wiring and plumbing components for service fixtures.
4. Access to fixture valves concealed in wall provided by exterior removable access panels, gasket access panels on the inside liner walls, or through removable access panels on the front posts.

### B. Exterior

1. Fabricate from steel sheet with component parts screwed together.
2. Apply chemical-resistant finish to interior and exterior surfaces of component parts before assembly.
3. Interchangeable side panels shall lift off without the use of tools to allow access to plumbing lines, service fittings, electrical wiring, counterbalance sash weights, and light fixtures. Exposed fasteners or hardware, and Velcro type fasteners, are not acceptable.
4. Corner posts
  - a. Pre-punched and plugged to accommodate up to 4 service fixtures per side
  - b. All services are accessible from the front of the hood.
  - c. Aerodynamic shape
  - d. Accommodate two electrical duplexes per side.
  - e. Right hand corner post includes electrical switches and pre-cut for Airflow monitor installation.
  - f. Un-used penetrations shall be plugged.
5. Top and sides of face opening to provide an aerodynamic shape to ensure smooth, even flow of air into fume hood.
6. Panel above header shall be removable without the use of tools to allow access to mechanical connection, electrical wiring, counterbalance sash weights, and light fixtures. Exposed fasteners or hardware, and Velcro type fasteners, are not acceptable.

### C. Dimensions

1. Overall exterior dimensions are as follows:
  - a. 4 foot nominal width: 48" w x 59" h x 31.7"
  - b. 8 foot nominal width: 96" w x 59" h x 31.7"
2. Overall interior dimensions are as follows:
  - a. 4 foot nominal width: 38.1" w x 48" h x 23.6"
  - b. 8 foot nominal width: 86.1" w x 48" h x 23.6"

### D. Hood Liner

1. Adhere interior liner components to superstructure.
2. Stainless steel fasteners shall be used on the interior ceiling for structural integrity.
3. Fasteners exposed to chemical environment are not acceptable.
4. Punch fume hood lining side panels to receive four service fittings, for use with remote controls, per side. Provide removable plug buttons for holes not used for indicated fittings.



5. Each side wall shall include an oval interior access panel to provide access to the side wall of the fume hood for plumbing service access. Access panel material shall be that of the liner, and gasketed to form a vapor proof seal.
- E. Hood Baffle
1. Baffle system shall be designed to optimize the face velocity profile, and to capture a wide range of gaseous densities without adjustment or moving components.
  2. Shall provide a continuous horizontal slot at the work surface. Baffle panels shall have multiple horizontal slots, with a chamfered entry. Slot pattern shall be proven to optimize face velocity profile.
  3. The baffle system shall be constructed with the same material as the fume hood liner.
  4. The baffles shall be removable for cleaning. The primary baffles shall be three pieces to allow removal without the use of tools.
  5. Exposed components to be non-metallic. Metal components exposed to chemical environment are not acceptable.
  6. Moving parts or adjustment of any kind is not acceptable.
- F. Exhaust Connection
1. 316 stainless steel with Chemical-Resistant Finish
  2. 12.81" ID to accommodate any 12" nominal duct without the need for a transition adapter. 3, 4, 5, and 6-foot hoods have one exhaust connection, 7 and 8-foot hoods have two exhaust connections. Additional components required to accommodate 12" nominal mechanical system are not acceptable.
  3. Ducting shall go inside the duct collar to ensure condensate travels into the hood and evaporates. Duct collars that allow duct connection over the collar are not acceptable.
- G. Airfoil
1. Cold Rolled Steel with Chemical-Resistant Finish.
  2. Airfoil shall have an aerodynamic radius to sweep the air into the hood with minimal turbulence. Airfoil directs airflow across work top to remove heavier-than-air gases.
  3. Must have 5 rows of perforations to allow the air to bypass underneath and through the foil and sweep across the work surface to prevent any back flow of fumes escaping from the front of the hood opening. This airflow continues even if blocked by the presence of the operator.
  4. Foil must extend back under the sash to prevent closure of the lower by-pass opening when the sash is in the fully closed position, directly on top of the airfoil.
- H. Sash Assembly
1. Glass: Fully tempered safety glass with unobstructed, side-to-side view of fume hood interior and service fixture connections.
  2. Dimensions: The full sash opening height is 28", the total unobstructed viewing height is 37.5" measured from the work surface.
  3. Sash Tracks: Steel with Chemical Resistant Finish. Shall include bump stops for opening and closing.
  4. Sash Handle: extruded aluminum with Chemical Resistant Finish. Sash handle includes a perforated air passage directly atop the handle to bleed air into the hood chamber and direct chemical fumes away from the user's breathing zone. The handle is ergonomic in design and is easy to grasp when operating
  5. Sash guides: Corrosion resistant extruded poly-vinyl chloride.
  6. Sash System
    - a. Vertical Sash (Chain and Sprocket)

- 1) Hoods have a single vertical sash counterbalanced by a single weight.
- 2) Sash and weight to be connected via #35 chains.
- 3) Rear sprockets shall be connected via timing shaft to prevent sash tilting and permit one finger operation at any point along full width sash handle. Maximum 7 pounds pull required to raise or lower sash throughout its full length of travel.
- 4) Design system to hold sash at any position without creep and to prevent sash drop in the event of chain failure.
- 5) Include a defeatable, and automatically resetting sash stop positioned for an 18" sash height.

## I. Electrical Components

### 1. Lighting

- a. Provide UL Listed, high-efficiency, quick-start, T8 fluorescent lighting systems, including bulbs.
  - 1) 4 Foot Hoods - 2 each, 3-foot 25-watt fluorescent lamps
  - 2) 5 Foot Hoods - 2 each, 4-foot 32-watt fluorescent lamps
  - 3) 6 Foot Hoods - 2 each, 4-foot 32-watt fluorescent lamps
  - 4) 8 Foot Hoods - 4 each, 3-foot 25-watt fluorescent lamps
- b. Vapor-Proof: all electrical components shall be outside of the contaminated air space. Lighting shall be located behind a laminated safety glass shield, sealed to the top of the hood liner.
- c. The fluorescent light assemblies shall be serviceable from outside the fume hood cavity, without the use of tools.
- d. Light switch to be included on the lower right corner post, at heights compliant with the Americans with Disabilities Act (ADA).

### 2. Blower Switch

- a. Hoods shall be provided with blower switch, on the lower right corner post, at heights compliant with the Americans with Disabilities Act (ADA).

### 3. Electrical Receptacles

- a. The hoods shall accommodate up to four (two per corner post) electrical receptacles as indicted in schedule or drawings. Options to include:
  - 1) 115 volt, 60 Hz, three-wire polarized and grounded electrical duplex
  - 2) 115 volt, 60 Hz, three-wire polarized and grounded electrical duplex, with Ground Fault Circuit Interruption (GFCI)
  - 3) 230volt, 60 Hz, three-wire polarized and grounded electrical duplex
- b. Receptacles shall be individually wired to field wiring box, and each rated at 20 Amperes.
- c. Cover plates shall be acid resistant thermoplastic.

### 4. Wiring

- a. Every electrical component shall be individually wired to a single point internal field wiring box (including individual duplexes/receptacles).
- b. Field wiring box to be 7" x 4" x 2.5", grounded, and have (12) 7/8" diameter knock out penetrations.
- c. Final wiring and circuit dedication is to be by others.
- d. Each receptacle circuit shall accommodate being wired to a dedicated building circuit rated at 20A, or the receptacles ganged together on a building circuit with the total load not exceeding 20 Amperes.

### 5. Fume hood to have third party validation of compliance to UL 1805 and UL 61010-1 by a Nationally Recognized Testing Laboratory (NRTL)

J. By-Pass Opening

1. The size of the by-pass opening is controlled by sash position for use with a constant volume mechanical system. The hood shall not have a change in static pressure or exhaust volume across all sash positions.

K. Hood Safety Practices Label: Corrosion resistant plate attached to the left corner post of the fume hood with the following Hood Safety Practices:

1. For use with substances that produce hazardous levels of airborne chemicals: gas, fumes, vapors, dust
2. Do not put your head in the hood.
3. Minimize drafts and sudden movements in front of the hood.
4. Work a minimum of six inches inside the hood.
5. Elevate equipment above the work surface.
6. Keep sill and baffle unobstructed.
7. Do not use the hood for storage.
8. Adjust the sash to smallest opening possible when in use.
9. Close sash when unattended.
10. Do not remove any of the hood components.
11. Do not place flammable solvents near heat, flame or sparks.
12. Do not evaporate large amounts of flammable liquids.
13. Wipe up spills immediately.
14. Routinely validate airflow.
15. If the ventilation system malfunctions, or airflow alarm indicates unsafe condition, close sash and discontinue hood operation immediately-call for help.
16. Do not use with Biohazards and Perchloric Acid

L. Fume Hood Accessories

1. Service Fixtures: Color-coded hose nozzle outlets and valves mounted inside the fume hood and controlled from the exterior with color-coded index handles
  - a. The hoods are equipped without service fixtures.
2. Face Velocity Monitor/Alarm
  - a. Shall not be included on EP rated hoods
  - b. Digital Airflow Monitor
    - 1) Provide audible and visual alarm in the event of an unsafe face velocity.
    - 2) Alarm must sit flush with the fume hood corner post.
    - 3) Based on a thermally compensated thermistor in the alarm module, and air passing through a separate airstream into the hood interior.
    - 4) Velocity shall be displayed digitally on the user facing LCD in fpm or m/s.
    - 5) LED lights display red for alarm, yellow for caution, and green for normal operation.
    - 6) Must include external alarm and night setback functions.
    - 7) Alarm mute shall be accessible from the front of the monitor; visual alarm must remain activated until alarm condition is corrected.
    - 8) UL Listed electrical components
    - 9) Calibration shall be through a menu driven step by step procedure.
    - 10) Calibration is the responsibility of the owner, following a complete balancing of the mechanical system, and concurrently with As-Installed testing.
    - 11) Must include external alarm and night setback functions.
    - 12) Alarm mute shall be accessible from the front of the monitor; visual alarm must remain activated until alarm condition is corrected.

M. Work Surface

1. 1.25" thick, molded from solid modified epoxy resin, with smooth, non-specular, black finish.
2. One inch radius front edge for optimal fume hood performance.
3. 3/8" dished area to match the fume hood interior work space and form a water tight pan for spill containment.
4. Include a 2.5" diameter hole on each side for service pass-through and piping. Hole to be covered by hood superstructure upon installation.
5. Include two 1.5" diameter penetrations to accommodate base cabinet venting. Holes to be located outside of dished area and under the fume hood baffles. Include plugs.
6. Physical Properties:
  - a. Flexural Strength: Not less than 10,000 psi (70 MPa).
  - b. Modulus of Elasticity: Not less than 2,000,000 psi (1400 MPa).
  - c. Hardness (Rockwell M): Not less than 100.
  - d. Water Absorption (24 Hours): Not more than 0.02 percent.
  - e. Heat Distortion Point: Not less than 260 deg F (127 deg C).
  - f. Flame-Spread Index: 25 or less per ASTM E 84.

N. Supporting Base Cabinets

1. Base cabinets shall be in depths of 22", widths, quantities, and types called out in the equipment schedule and meet the requirements of this specification.
2. Construction requirements for all cabinets
  - a. Exterior construction is 18 gauge (or heavier) cold rolled sheet steel with Chemical Resistant Finish.
  - b. Hinges are 10 gauge (or heavier) plate with self-clinching pilot pin. Knuckle, bullet, or piano type hinges are not accepted.
  - c. The rear panel will feature a 12" x 8" removable plumbing access panel.
  - d. Units 24" wide or less have only one door.
  - e. Each cabinet includes four leveling feet.
  - f. Capable of supporting up to 800 pounds.
  - g. A 14" filler panel is required to increase the cabinet depth to 36".
3. Standard Storage
  - a. Overall exterior dimensions:
    - 1) 48" 48" w x 22" d x 35.5"-36.75"
    - 2) 36" 36" w x 22" d x 35.5"-36.75"
    - 3) 30" 30" w x 22" d x 35.5"-36.75"
    - 4) 24" 24" w x 22" d x 35.5"-36.75" h or 31.5"-32.75" for ADA cabinet
    - 5) 18" 18" w x 22" d x 35.5"-36.75" h or 31.5"-32.75" for ADA cabinet
    - 6) 12" 12" w x 22" d x 35.5"-36.75" h or 31.5"-32.75" for ADA cabinet
  - b. Flush pull handles are ABS, low gloss black.
4. Acid Storage
  - a. Overall exterior dimensions:
    - 1) 48" 48" w x 22" d x 35.5"-36.75"
    - 2) 36" 36" w x 22" d x 35.5"-36.75"
    - 3) 30" 30" w x 22" d x 35.5"-36.75"
    - 4) 24" 24" w x 22" d x 35.5"-36.75" h or 31.5"-32.75" for ADA cabinet
    - 5) 18" 18" w x 22" d x 35.5"-36.75" h or 31.5"-32.75" for ADA cabinet
  - b. Completely lined with a polyethylene corrosion resistant liner. The liner is 3/16" thick, with a vacuum formed PVC liner pan at the bottom to contain spills. Each door has a 3/16" sheet polyethylene liner.
  - c. The cabinet is labeled: "ACID".

- d. Flush pull handles are ABS, low gloss black.
  - e. Each cabinet is vented into the fume hood with a 1-1/2" vent pipe. It should provide a positive airflow directly into the fume hood exhaust system.
  - f. Supply an epoxy coated steel shelf with PVC liner pan if indicated in the schedule.
  - g. Acid cabinets with louvers are not acceptable
5. Solvent Storage
- a. Overall exterior dimensions:
    - 1) 48" 48" w x 22" d x 35.5"-36.75"
    - 2) 36" 36" w x 22" d x 35.5"-36.75"
    - 3) 30" 30" w x 22" d x 35.5"-36.75"
    - 4) 24" 24" w x 22" d x 35.5"-36.75" h or 31.5"-32.75" for ADA cabinet
  - b. Solvent storage cabinets are specifically designed for the storage of flammable and combustible liquids.
  - c. Solvent Storage Cabinet must be compliant with NFPA 30 "Flammability and Combustible Liquids Code."
  - d. Cabinets 30" wide and greater shall be tested and approved by Factory Mutual to meet Factory Mutual Approval Standard 6050.
  - e. The bottoms, top, sides, and doors are fabricated of 18 gauge steel and are all double panel construction with a 1-1/2" air space between panels.
  - f. All joints are welded or screwed to provide a rigid enclosure. A 2" deep liquid tight pan that covers the entire bottom of the cabinet is furnished to contain liquid leaks and spills.
  - g. A full-depth, 18 gauge steel, adjustable shelf is also provided. Shelves are sealed leak tight.
  - h. Two diametrically opposed flame arrestor vents with spark screens are provided in the back of the cabinet, as well as a grounding screw.
  - i. The cabinet has an interior finish same as the exterior.
  - j. The cabinet is labeled: "FLAMMABLE - KEEP FIRE AWAY".
  - k. The right hand door shall have a three point latching device.
  - l. Door handles include a key lock. Solvent storage handles are locking lever handles with bright chrome finish.
  - m. If noted on the schedule, self-closing/self-latching models shall be provided with a fusible-link feature to ensure the doors will close if the temperature outside the cabinet exceeds 165 degrees Fahrenheit. The doors are synchronized so that both doors will fully close.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Examine areas, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of fume hoods.
- B. Coordinate with other trades for the proper and correct installation of plumbing and electrical rough-in and for rough opening dimensions required for the installation of the hood.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.



### 3.02 INSTALLATION

- A. General: Install fume hoods according to shop drawings and manufacturer's written instructions.
- B. Install level, plumb, and true; shim as required, using concealed shims, and securely anchor to building and adjacent laboratory casework.
- C. Securely attach access panels, but provide for easy removal and secure reattachment. Where fume hoods abut other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.
- D. Neighboring splash blocks shall not be attached directly to the hood.
- E. Install according to standards required by authority having jurisdiction.
- F. Sequence installations to ensure utility connections are achieved in an orderly and expeditious manner.
- G. Touch up minor damaged surfaces caused by installation. Replace damaged components as directed by Architect.
- H. Furnish and install epoxy coated exhaust fans with zero-pressure stacks.
- I. Furnish and install epoxy coated spiral ductwork with blast gates.
- J. Start up system, test, balance and certify laboratory hoods and exhaust systems.
- K. Provide written report of systems performance.
- L. Demo existing hood, ductwork and exhaust fans.

### 3.03 FIELD QUALITY CONTROL

- A. NFPA 45 requires that fume hoods be field tested when installed.
- B. Field test installed fume hoods according to ASHRAE 110 to verify compliance with performance requirements.
  - 1. Adjust fume hoods, hood exhaust fans, building's HVAC system, and make other corrections until tested hoods perform as specified in fume hood schedule.
  - 2. After making corrections, retest fume hoods that failed to perform as specified.

### 3.04 ADJUSTING AND CLEANING

- A. Adjust moving parts for smooth, near silent, accurate sash operation with one hand. Adjust sashes for uniform contact of rubber bumpers. Verify that counterbalances operate without interference.
- B. Clean finished surfaces, including both sides of glass; touch up as required; and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.
- C. Clean adjacent construction and surfaces that may have been soiled in the course of installation of work in this section.
- D. Provide all necessary protective measures to prevent exposure of equipment and surfaces from exposure to other construction activity.
- E. Advise contractor of procedures and precautions for protection of material and installed equipment and casework from damage by work of other trades.



# HALDEMAN HOMME, INC.

15344 Vantage Pkwy E Ste. 150, Houston, TX 77032  
Tel: 832-626-1060 Fax: 612-378-2236

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- Laboratory Equipment
- Laboratory Furniture
- Library & File Systems
- Lockers
- School Equipment
- Storage Systems
- Tracks
- Turf Fields

## The Haldeman Homme Family of Companies:

- Academic Specialties
- Academic Specialties TX
- Anderson Ladd
- IDEA



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## CORPUS CHRISTI EVENT 84 BID

To: Jeannette Palacios Tijerina,  
City of Corpus Christi Purchasing, 361-826-3163  
Project: Corpus Christi Event 84 Bid Haldeman Homme.  
Date: 5.25.16

Regarding Haldeman Homme proposal 45621.2 City of Corpus Christi Event 84 bid project, Haldman Homme has agreed to keep the pricing valid until July 30<sup>th</sup> 2016. If you have any questions please respond to Drew Starr, Haldeman-Homme Laboratory/Technical Facility Consultant on any questions you may have.

Regards,

Drew Starr  
Laboratory/Technical Facility Consultant  
832-626-2518 (Office)  
832-622-1387(Cell)  
[DSTARR@HHBESTLAB.COM](mailto:DSTARR@HHBESTLAB.COM)

**DREW STARR**



# HALDEMAN HOMME, INC.

8120 Exchange Drive Suite 200, Austin, TX 78754  
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## PROPOSAL HH45621.2

**To: Mr. Diego Rivera  
Corpus Christi Police Dept**

**Date: 1.20.2016  
Project: CC Crime Lab  
Location: Corpus Christi, TX**

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We propose to furnish the following using standard design, materials, construction sizes and colors as specified in solicitation for **Event #84**.

**Material, freight and installation**.....**\$47,889.00**  
**Pricing Includes:** 96" Airfoil Style Hood Assembly

1. 96" Dished Epoxy Top
2. 1 Light Switch 120v Black
3. 1 Blower Switch / Red
4. GFI 1 Ground Fault Receptacle
5. ALARM 1000 ALARM OPTION
6. PRE-WIRE OPTION(ea. Fixture)
7. 2 Flammable Storage - 35"h x 36"w x 22"D
8. Demo existing duct work, exhaust fans and Lab hood as needed.
9. Install (1) new laboratory hood.
10. Make final services tie-ins as necessary.
11. Furnish and install (1) new rooftop laboratory exhaust fans with zero-pressure stacks.
12. Furnish and install new epoxy coated spiral duct work with blast-gates; run new duct from new hood through existing roof penetrations to new exhaust fans.
13. Start-up, test, balance and certify new laboratory hood and exhaust systems.
14. Provide written report of system's performance based upon ASHRAE 110 Test

**Material, freight and installation**.....**\$40,326.00**  
**Pricing Includes:** 48" Airfoil Style Hood Assembly

15. 48" Dished Epoxy Top
16. 1 Light Switch 120v Black
17. 1 Blower Switch / Red
18. GFI 1 Ground Fault Receptacle
19. ALARM 1000 ALARM OPTION
20. PRE-WIRE OPTION(ea. Fixture)
21. 1 Acid Storage Cabinet 35"H x 48"W x 22"D w/ 43"x16"x1" poly tray-VENT KIT 1 VENT KIT FOR ACID BASE UNIT (Non-Squeezed Top)
22. Demo existing duct work, exhaust fans and Lab hood as needed.
23. Install (1) new laboratory hood.
24. Make final services tie-ins as necessary.
25. Furnish and install (1) new rooftop laboratory exhaust fans with zero-pressure stacks.
26. Furnish and install new epoxy coated spiral duct work with blast-gates; run new duct from new hood through existing roof penetrations to new exhaust fans.
27. Start-up, test, balance and certify new laboratory hood and exhaust systems.
28. Provide written report of system's performance based upon ASHRAE 110 Test.

[www.haldemanhomme.com](http://www.haldemanhomme.com)

[www.hhbestlab.com](http://www.hhbestlab.com)

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- Tracks
- Turf Fields

## The Haldeman Homme Family of Companies:

- Academic Specialties
- Academic Specialties  
TX
- Anderson Ladd
- IDEA



Employee Owned

## **Qualifications:**

1. Pricing good for 1 production run and 1 delivery with completion not later than 6-30-16.
2. Dumpster to be provided for demo and installation by CC Crime Lab.
3. Proposed project schedule:
 

Shop Drawings	1 week
Approval Process	1 week
Manufacturing Lead Time	10-12 weeks
Shipping	2 weeks
Installation	1 week

## **Excludes:**

1. State Sales & Use Taxes. Purchaser by acceptance of this quotation agrees to furnish Tax Exemption Certificates when requested on non-taxable materials, otherwise any applicable tax will be added at time of invoicing.
2. Any Liquidated, Consequential and/or Actual Damages clauses.
3. Charges for vertical transportation, Mechanical utilities and connections, Electrical utilities and connections, Bonds, Removal of existing equipment, Traps, Ducts, Fume hood fan/blowers, Fume hood testing/balancing, Rubber/vinyl base, In-wall backing/blocking.
4. Note: Clean-up to be limited to removing all debris, dirt and rubbish accumulated as a result of our installation to a dumpster provided by others, leaving the premises broom clean and orderly.

## **SEE PAGE 3 for Terms & Conditions**

**This proposal is based upon usage of the AGC/ASA/ASC "Standard Form Construction Subcontract", 1996 Edition or a subcontract form otherwise acceptable to Haldeman-Homme, Inc.**

TERMS: Net 30 Days

ACCEPTED: Company \_\_\_\_\_

Name \_\_\_\_\_

Date \_\_\_\_\_

RESPECTFULLY,

**HALDEMAN-HOMME, INC.**

By ***Roger Brigrance*** \_\_\_\_\_

General Manager

[rbrigrance@hhbestlab.com](mailto:rbrigrance@hhbestlab.com)

512.592.9390

Note: This quotation is offered for acceptance within 30 days and is subject to revision beyond that time.

[www.haldemanhomme.com](http://www.haldemanhomme.com)

[www.hhbestlab.com](http://www.hhbestlab.com)

Arkansas — Colorado — Idaho — Illinois — Indiana — Iowa — Kansas — Michigan — Minnesota — Montana — Nebraska — Nevada — New Mexico — North Dakota — Oklahoma — South Dakota — Texas — Utah — Wisconsin — Wyoming

## ATTACHMENT C - INSURANCE REQUIREMENTS

### I. CONTRACTOR'S LIABILITY INSURANCE

- A. Contractor must not commence work under this contract until all insurance required has been obtained and such insurance has been approved by the City. Contractor must not allow any subcontractor to commence work until all similar insurance required of any subcontractor has been obtained.
- B. Contractor must furnish to the City's Risk Manager and Director of Facility and Property Management, one (1) copy of Certificates of Insurance with applicable policy endorsements showing the following minimum coverage by an insurance company(s) acceptable to the City's Risk Manager. The City must be listed as an additional insured on the General liability and Auto Liability policies **by endorsement**, and a waiver of subrogation **by endorsement** is required on all applicable policies. **Endorsements** must be provided with Certificate of Insurance. Project name and/or number must be listed in Description Box of Certificate of Insurance.

TYPE OF INSURANCE	MINIMUM INSURANCE COVERAGE
<b>30-day advance written notice of cancellation, non-renewal, material change or termination required on all certificates and policies.</b>	<b>Bodily Injury and Property Damage</b> Per occurrence - aggregate
Commercial General Liability including: 1. Commercial Broad Form 2. Premises – Operations 3. Products/ Completed Operations 4. Contractual Liability 5. Independent Contractors 6. Personal Injury- Advertising Injury	\$1,000,000 Per Occurrence \$2,000,000 Aggregate
AUTO LIABILITY (including) 1. Owned 2. Hired and Non-Owned 3. Rented/Leased	\$500,000 Combined Single Limit
WORKERS'S COMPENSATION (All States Endorsement if Company is not domiciled in Texas)	Statutory and complies with Part II of this Exhibit.
Employer's Liability	\$500,000/\$500,000/\$500,000

- C. In the event of accidents of any kind related to this contract, Contractor must furnish the Risk Manager with copies of all reports of any accidents within 10 days of the accident.



## II. ADDITIONAL REQUIREMENTS

- A. Applicable for paid employees, Contractor must obtain workers' compensation coverage through a licensed insurance company. The coverage must be written on a policy and endorsements approved by the Texas Department of Insurance. The workers' compensation coverage provided must be in an amount sufficient to assure that all workers' compensation obligations incurred by the Contractor will be promptly met. An All States Endorsement shall be required if Contractor is not domiciled in the State of Texas.
- B. Contractor shall obtain and maintain in full force and effect for the duration of this Contract, and any extension hereof, at Contractor's sole expense, insurance coverage written on an occurrence basis by companies authorized and admitted to do business in the State of Texas and with an A.M. Best's rating of no less than A- VII.
- C. Contractor shall be required to submit a copy of the replacement Certificate of Insurance to City at the address provided below within 10 days of any change made by the Contractor or as requested by the City. Contractor shall pay any costs incurred resulting from said changes. All notices under this Exhibit shall be given to City at the following address:

City of Corpus Christi  
Attn: Risk Manager  
P.O. Box 9277  
Corpus Christi, TX 78469-9277

- D. **Contractor agrees that, with respect to the above required insurance, all insurance policies are to contain or be endorsed to contain the following required provisions:**
- List the City and its officers, officials, employees, and volunteers, as additional insureds by endorsement with regard to operations, completed operations, and activities of or on behalf of the named insured performed under contract with the City, with the exception of the workers' compensation policy;
  - Provide for an endorsement that the "other insurance" clause shall not apply to the City of Corpus Christi where the City is an additional insured shown on the policy;
  - Workers' compensation and employers' liability policies will provide a waiver of subrogation in favor of the City; and
  - Provide thirty (30) calendar days advance written notice directly to City of any, cancellation, non-renewal, material change or termination in coverage and not less than ten (10) calendar days advance written notice for nonpayment of premium.
- E. Within five (5) calendar days of a cancellation, non-renewal, material change or termination of coverage, Contractor shall provide a replacement Certificate of Insurance and applicable endorsements to City. City shall have the option to suspend Contractor's performance should there be a lapse in coverage at any time during this contract. Failure to provide and to maintain the required insurance shall constitute a material breach of this contract.
- F. In addition to any other remedies the City may have upon Contractor's failure to provide and maintain any insurance or policy endorsements to the extent and within the time herein required, the City shall have the right to order Contractor to stop work hereunder, and/or withhold any payment(s) which

become due to Contractor hereunder until Contractor demonstrates compliance with the requirements hereof.

- G. Nothing herein contained shall be construed as limiting in any way the extent to which Contractor may be held responsible for payments of damages to persons or property resulting from Contractor's or its subcontractor's performance of the work covered under this contract.
- H. It is agreed that Contractor's insurance shall be deemed primary and non-contributory with respect to any insurance or self insurance carried by the City of Corpus Christi for liability arising out of operations under this contract.
- I. It is understood and agreed that the insurance required is in addition to and separate from any other obligation contained in this contract.

2015 Insurance Requirements  
Facility and Property Management.  
Vent Hood Installation  
12/31/2015 ds Risk Management