Product Description/Purchase Specifications

Exterior Dust Collection System (EDCS) for the U.S. Army Heritage and Education Center's (USAHEC) Exhibit Fabrication Shop in Building 952

1. Requirement Overview/Executive Summary

The U.S. Army Heritage and Education Center (USAHEC) requires an Exterior Dust Collection System (EDCS) to support safe and compliant operation of woodworking equipment within the exhibit fabrication shop, Building 952. The system is necessary to manage combustible wood dust generated during exhibit fabrication activities and to ensure compliance with applicable safety standards, including National Fire Protection Association (NFPA) guidance and International Mechanical Code (IMC).

Market research conducted in accordance with FAR Part 10 confirms that commercially available solutions exist and that multiple vendors are capable of providing compliant, integrated systems. The requirement includes a dust collector, spark detection and extinguishment system, abort damper, and explosion isolation device operating as one coordinated safety system and connected to the ten (10) woodworking machines in the exhibit fabrication shop. Acquisition of a complete, engineered, single-system solution is necessary to ensure system compatibility, life-safety compliance, and long-term operational reliability in support of USAHEC's mission.

2. System Performance Requirements

The Exterior Dust Collection System (EDCS) shall support the following fabrication equipment in USAHEC's fabrication shop (building 952):

Item	Machine	Branch Duct Size	Required CFM
1	Planer	4"	350
2	Jointer	4"	350
3	Band Saw	(2) 4"	700
4	Wide Belt Sander	4"	350
5	Spindle Sander	4"	350
6	Belt/Disc Sander	4"	350
7	Chop Saw	5"	550
8	Router Table	4"	350
9	Table Saw	4"	350
10	Panel Saw	3"	195
		TOTAL REQUIRED SYSTEM CFM	3895

*Note: CFM = cubic feet per minute (volume)

3. *System Requirements:*

The Exterior Dust Collection System consists of five (5) parts:

3.1. Dust Collector

The dust collector shall be an outdoor-rated, high-efficiency fabric filter system designed specifically for combustible wood dust collection and sized to support approximately 3895 CFM system airflow. The collector shall include a non-sparking blower, automatic filter cleaning mechanism, and dust storage drums to support continuous woodworking operations while maintaining airflow performance. Construction shall be exterior-rated, heavy-gauge steel with sealed housing, weatherproof design, and integrated explosion relief in accordance with NFPA guidance. Filter media shall be designed to maintain high collection efficiency and allow safe, automated dust removal without requiring entry into the unit for routine maintenance. The system shall include factory-wired controls, safety interlocks, and operational features supporting safe startup, shutdown, and ongoing maintenance.

The system must provide sufficient total CFM to meet equipment demand while maintaining approximately 4,000 FPM (feet per minute) transport velocity throughout the ductwork to keep wood dust entrained.

3.2. Spark Detection System

The spark detection and extinguishment system shall provide continuous monitoring of airflow within the ductwork to identify and suppress ignition sources before they reach the dust collector. The system shall include infrared spark detectors, a programmable control panel, water spray extinguishment assemblies, supervision features, and alarm notification capability. Upon detection of a spark or abnormal condition, the system shall automatically activate suppression components and interface with downstream safety devices such as shutdown controls and abort dampers. The control system shall include event logging, diagnostic monitoring, and backup power to ensure reliable operation. Installation and commissioning shall be performed in accordance with manufacturer specifications and NFPA requirements for combustible dust protection.

3.3. Abort Damper

The abort damper shall serve as an emergency diversion device designed to redirect airflow and burning material away from the dust collector when activated by the spark detection system. The damper shall be constructed of heavy-gauge galvanized steel with corrosion-resistant finishing suitable for exterior installation. Activation shall occur automatically through a control signal, positioning the gate

into the abort mode until manually reset following resolution of the alarm condition. The assembly shall include a protective cowl and bird screen to ensure safe outdoor operation. The device shall be compliant with NFPA requirements and integrated into the overall system fire-protection strategy.

3.4. No Return Valve

The no-return valve shall be provided as an explosion isolation device designed to prevent flame and pressure propagation between connected process equipment and the dust collector. The valve shall automatically close in response to pressure changes associated with deflagration events to protect personnel, equipment, and facility infrastructure. Construction shall be heavy-duty welded steel with safety coatings, grounding provisions, and flanged connections for secure duct integration. The unit shall meet NFPA 69 requirements, be ATEX certified, and include monitoring components such as microswitches and dust sensors connected to a dedicated control panel. System integration shall allow monitoring, status indication, and safe system shutdown when required.

3.5. Ducting Infrastructure

The ducting infrastructure shall be fabricated and connected to the ten (10) items listed in Paragraph 2 above using galvanized steel ductwork IAW codes referenced in Paragraph 1 above to each machine location. Each machine location shall have a flexible connection to the machine that allows full use of the machine's inherent movement and capabilities, fabricated of appropriate material IAW codes listed in Paragraph 1 above. The system must provide sufficient total CFM to meet equipment demand while maintaining approximately 4,000 FPM (feet per minute) transport velocity throughout the ductwork to keep wood dust contained. Ducting must provide a complete connection to all machines listed in Paragraph 2 and all components of the system listed in Paragraphs 3.1, 3.2, 3.3, and 3.4.

4. ***Installation Requirements***:

4.1 System installation and equipment hook up

4.1.1 The Exterior Dust Collection System must connect to:

4.1.1.1 A 460-3-60 electrical connection at the rear of building 952

4.1.1.2 Three 120-volt 15-amp breakers inside of the carpentry shop in building 952

4.1.1.3 A water hookup in woodshop with at least 50 PSI pressure

4.1.1.4 And be placed on an exterior concrete pad at the rear of building 952 measuring (107" long x 62" wide x 8" deep).

4.2 Provide onsite start up and balancing.

4.2.1 Take airflow readings at connection to set and maintain proper velocity throughout the system.

4.2.2 Provide startup report to the customer..

4.3. Provide onsite system operator and user preventive maintenance training.

5. ***Warranty and Additional Requirements:*** The contractor shall provide the following:

5.1. Freight, shipping and handling expenses.

5.2. Complete installation and connection.

5.3. All necessary equipment to conduct installation.

5.4. All required and manufacturer recommended or suggested maintenance services for one (1) year from installation.

5.5. Minimum one (1) year warranty on system.

6. ***Summary Statement***

The Exterior Dust Collection System shall be provided as a complete, integrated system meeting the performance, safety, and installation requirements described herein IAW applicable codes listed in paragraph 1. The system shall support safe, efficient, and sustainable exhibit fabrication operations at USAHEC.