

(Single Classroom Complete System)

SECTION 22 66 59 - LABORATORY SAFETY DEVICE SYSTEM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions, Division 1 Specifications.

1.02 SECTION INCLUDES

- A. Furnishing and installation of the Laboratory Safety Device System as shown on the Drawings, as herein specified.

1.03 CODES AND REGULATIONS:

- A. NFPA 70, National Electrical Code
- B. NFPA 72, National Fire Alarm Code
- C. NFPA 90A, Installation of Air Conditioning and Ventilation Systems).
- D. Americans with Disabilities Act
- E. Local and State Building Codes
- F. NFPA 54 Natural Gas Code.
- G. UL508A
- H. All requirements of the local Authority Having Jurisdiction.
- I. All requirements of TEA Standards For Science Classrooms

1.04 WARRANTY

- A. Provide a 5 year minimum warranty from date of acceptance of project. Factory Start-up Required.

1.05 MANUFACTURER

Lab Automation Control Systems (LACS) by E&I

1.06 SUBMITTALS

- A. Submittal procedures: See Section 220050.
- B. Product Data:
 - Manufacturer
 - Model Number
 - Indicate all options and accessories
 - Engineered specific cut sheets
- C. Submit complete submittal package within 30 calendar days after award of this work for approval. Equipment is not to be ordered without approval and signed submittals. Submittals to include cut sheets indicating the exact size of all panels, list of building materials, solenoid valves, piping sizes, and all electrical schematics for each panel.

PART 2 - PRODUCTS

2.01 It is the intent of this specification to provide a complete and operational system, to include all necessary products and devices, power and controls wiring installed in accordance with Division 26, and all necessary interlocks

A.1 Lab Control Panel:

A. At each science classroom as shown on Drawings, provide a LACS by EI Series Lab Control Panel (LCP). Panel shall be UL Certified 508A and NEMA 1 flush mounted with concealed wall box. System shall include Power Supply 120VAC with circuit protection. Wiring to the input power terminals shall be per the drawings. Panel shall also consist of Green ON Pilot Light (Gas/Cold Water/Hot Water, Electric), Power ON Selector Switch. Switch located in an internal junction box with removable cover, Discrete Inputs, Relay Outputs, Terminal Blocks with Ground TB. System shall also include (2) 2 position keyed selector switch to enable, disable, system power. Additional circuits will be provided for monitoring of alarms as per drawings.

B. Panel shall have integral micro controller with Siemens Smart logic (logo power) device to provide relay output circuits to activate utilities as shown on drawings to include gas, hot and cold water, and electric output circuits located at the student work stations and as indicated on drawings; system shall also have the ability to shut down all utilities upon activation of the fire alarm. Lab Control Panel shall have provisions for each student and teacher area by a means of a normally open contact within the Lab Control Panel. Activation shall be enabled only by switch ON and then enabling each utility service button.

C. The Panel shall be equipped with an illuminated switch for each output circuit and a momentary enabling key switch. Deactivation of output circuits' shall not require engagement of enabling key. Panel shall be provided with N/O push/pull emergency operator to deactivate output circuits in case of emergency and shall include a clear drop down non keyed cover to prevent student tampering. Reset after panic shall occur by re-keying. Wiring connections shall be provided by Division 26 contractor.

A.2 Solenoid Panels

A. LACS by E&I (VP)

Furnish and install Valve Panel (VP) as indicated per drawings. The panel shall be NEMA 1 white powder coated with a concealed wall box provided. All Solenoid Valves shall be ASCO Red Hat "Next Generation" series normally closed general service, zero differential solenoids as indicated on drawings, line size as shown on drawings. Gas Solenoid Valve shall be aluminum body and rated for gas service. Solenoid coil shall be 120VAC. Solenoids and ball valves shall be UL listed and approved for services intended. Solenoids shall close upon loss of operating power or alarm and require re-keying for reactivation of service. Wye Strainers shall be included on all water services and located in piping within the panel. Wiring connections shall be provided by Division 26 Contractor.

A.3 Electric Contactor Panels

A. LACS by E&I (ECP)

Furnish and install UL508A Electrical Contactor Panel (ECP) as indicated per drawings. The panel shall be NEMA 1 Gray Powder Coated and located as shown on drawings. The panel shall consist of all required 4 pole contactors and required wiring to enable/disable all electrical outlets as indicated on drawings. All Circuits shall Close upon loss of operating

power and require re-keying for reactivation of service. Wiring connections shall be provided by Division 26 Contractor.

A.4 Remote Emergency Operator:

A. LACS by E&I (REO)

Furnish and install a line of sight Remote Emergency Operator (REO). Operator shall be provided with N/O push/pull mushroom button assembly to deactivate output circuits in case of emergency. Remote operator shall also be provided with a clear cover to prevent accidental operation. Wiring connections shall be provided by Division 26 Contractor.

3.01 INSTALLATION:

- A. Install in accordance with manufacturer's recommendations and instructions. Verify manufacturer's mounting heights to comply with ADA or other standards.
- B. Furnish and install all devices as shown on Drawings and as specified herein.
- C. Furnish, install and make final connections to monitoring and remote panic assembly panels. Ensure proper integration with the Energy Management Control and fire alarms if present.

3.02 CONDUIT:

- A. Provide conduits for control and integration wiring from point of connection to each device to accessible point above ceiling. Provide separate conduit for each device that is controlled and integrated with Controller. Conduits for monitoring panels, arrays and panic assemblies shall be separate from line voltage, control wiring and integrated systems wiring.

3.03 WIRING

- A. Operating Power: Shall be provided by Division 26.
- B. Wiring:
Provide wiring from Lab Control Panel (LCP) to each controlled utility or device. Make connections at controlled device and terminate at output terminal on control panel.
- C. Integrated Systems:
Provide wiring for integration to other systems as shown on Drawings. Verify voltage and wire sizes to comply with requirements of each system.
- D. System Monitoring Panels and Arrays:
Provide wiring from Lab Control Panel (LCP) to each monitoring panel or array. Make connections at monitoring device and terminate at output terminal on control panel.
- E. Remote Emergency Operator:
Provide control wiring from Lab Control Panel (LCP) to each Remote Emergency Operator within the classroom. Where Drawings indicate two or more operators, connect each in parallel.

3.04 SYSTEM TEST AND START-UP

- A. Prior to placing the Lab Control Panel System into service, a Certified Start-up must be performed by an authorized LACSs' start-up agent.
- B. Verify that all components and control devices comply with manufacturer's requirements and

recommendations, and that all devices and installations conform to Drawings and Specification requirements.

1. Verify that all piping systems have been thoroughly cleaned.
 2. Verify that all controlled devices and circuits are ON.
 3. Verify that connections to all integrated systems are complete.
 4. Verify that all monitoring systems respond to Panic.
 5. Verify that remote panic assemblies activate the Panic State.
 6. Verify that service to emergency showers and eyewashes are not affected by operation of system if applicable.
- C. Upon completion of ALL Start-up tests, place the system into service. Complete all warranty registration documents. Submit originals with other project related closeout and O & M documentation. Review all operating procedures and maintenance schedules with a representative of the Owner. Provide all System keys (2 Sets) to the Owner's representative.

END OF SECTION