

**(Lab Solenoid Control Panel with Electric Contactor Panel and Remote Emergency Operator)**

**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. Furnishings 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. Texas Education Code
- J. International Fuel Gas Code 2013

1.04 WARRANTY

- A. Provide a 2 year minimum warranty from date of acceptance of project.

1.05 MANUFACTURER

- A. Lab Automation Control Systems (LACS) by E&I or approved equal.

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 SOLENOID CONTROL PANEL:**

#### A. **LACS by E&I Model (LSCP) Model #LSCP**

At each science classroom as shown on Drawings, provide a LACS Lab Solenoid Control Panel (LSCP). Panel shall be UL 508A Certified and NEMA 1 semi-recessed, white powder coated with concealed wall box. System shall include all required relays and contacts to control all utilities as indicated on drawings. Panel shall also include connection to Fire Alarm Monitoring as well as a single connect point to the Building Management System. Wiring to the input power terminals shall be per the drawings. Panel shall also consist of illuminated push buttons to enable/disable as indicated on drawings. Circuit Protection located within the LSCP as well as Discrete Inputs, Relay Outputs, Terminal Blocks with Ground TB are required. System shall also include (1) 2 position keyed selector switch to enable, disable, system power. All Solenoid Valves shall be ASCO Red Hat "Next Generation" series normally closed general service, zero differential as indicated on drawings, line size as shown on drawings. Gas Solenoid Valve shall be aluminum body and UL/CSA 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. Connection of 120VAC Power Supply shall be by Division 26 Contractor.

B. System shall have the ability to shut down all utilities upon activation of the fire alarm. Control Panel shall have provisions for each student and teacher area by a means of a normally open contact within the Lab Solenoid Control Panel. Activation shall be enabled only by switch ON and then enabling each utility service.

C. The Panel shall be equipped with an illuminated push button for each output circuit. Deactivation of output circuits' shall not require engagement of enabling key. Panel shall be provided with push/pull panic operator button assembly to deactivate output circuits in case of an emergency. Reset after panic shall occur by re-keying. Wiring connections shall be provided by Division 26 contractor.

### A.2 **Electrical Panel**

#### A. **LACS by E&I (ECP) Model #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.3 Remote Emergency Operator Assembly:**

#### **A. LACS by E&I Model (REO-CC)**

Furnish and install a line of sight remote emergency operator. Panel shall be provided with N/O push/pull emergency operator mushroom button assembly to deactivate output circuits in case of emergency and clear cover to prevent accidental tampering. Remote Operator will energize classroom fan to second speed once pushed to quickly exhaust room. Remote panic assemble shall be Stainless Steel 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. Prior to the starting of the project, a pre-construction/installation meeting with the local LACS Representative is required to review the installation instructions with all trades. 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 emergency operators if present. 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 if present. Conduits for 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. System Arrays:  
Provide wiring from Lab Solenoid Control Panel to each array. Make connections at monitoring device and terminate at output terminal on control panel if present.
- C. Remote Emergency Operator:  
Provide control wiring from control panel to each Remote Emergency Operator Assembly 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 Solenoid Control Panel into service, an authorized Start-up must be performed by an authorized LACS start-up agent or factory personnel to activate 2 year factory warranty.
- 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 controlled 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 (3 Sets) to the Owner's representative.

**END OF SECTION**