

(Multiple Classroom with Touch Screen)

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. Texas Education Agency
- J. International Fuel Gas Code 2013

1.04 WARRANTY

- A. Provide a 5 year minimum warranty from date of acceptance of project with factory start-up.

1.05 MANUFACTURER

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 CONTROL PANEL:

A. At each science classroom as shown on Drawings, provide a LACS by E&I Lab Control Panel(LCP-TS). Panel shall be UL Certified 508A and NEMA 1 flush mounted with concealed wall box. System shall include Power Supply with circuit protection. Wiring to the input power terminals shall be per the drawings. Panel shall be provided with a HMI Touch Screen to allow control of all classrooms as indicated by drawings. Panels with ON/OFF Pilot Lights and switches of any type to control the (Gas/Cold Water /Electric) will not be permitted. The LCP-TS shall be provided with a LAN connection and an IP address provided by the ISD/School to allow remote individual classroom operation of utilities through the facilities internet sources from the instructor's computer connection available. Additional circuits will be provided for monitoring of fire alarms, intruder alerts, and BMS.

B. Panel shall be equipped with contacts and relay output circuits to activate utilities as shown on drawings to include gas, hot 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, and BMS.

C. The Panel shall not be equipped with a service switch for each output circuit and an enabling key switch as well as ON and OFF indicator lights. Deactivation of output circuits' shall not require engagement of enabling key. Panel shall be provided with N/O panic button assembly to deactivate output circuits in case of emergency. Reset after panic shall occur by re-keying. Wiring connections shall be provided by Division 26 contractor.

A.2 Valve Panels

A. LACS by E&I Model (VP) (Sizes as indicated on detail)

Furnish and install LACS Valve Panel (VP) as indicated per drawings. The panel shall be NEMA 1 white powder coated and provided with all options as indicated on drawings. All Solenoid Valves shall be ASCO series Red Hat Next Generation normally closed general service, zero differential solenoids as indicated on drawings, line size as shown on drawings. Gas Solenoid Valve shall be ASCO series Red Hat Next Generation aluminum body and rated for gas service, UL & CSA certified. 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. Wiring connections shall be provided by Division 26 Contractor.

A.3 Electric Contactor Panels

A. LACS by E&I Model (ECP)

Furnish and install UL508A LACS Electric Contactor Panel (LCP) as indicated per drawings. The panel shall be NEMA 1 Grey Powder coat, surface mounted, and located as shown on drawings.

The panel shall consist of all required 4 pole contactors and required wiring to enable/disable all student and teacher 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 Model (REO)

Furnish and install a LACS 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 and a keyed reset. Remote panic assembly shall 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. Where system components are mounted alongside the Controller within a common wall, install for low voltage control wiring between the devices.

3.03 WIRING

- A. Operating Power: Shall be provided by Division 26.
- B. Wiring:
Provide wiring from Lab Control Panel to each controlled utility or device. Make connections at controlled device and terminate at output terminal on main control panel.
- C. Integrated Systems:
Provide low voltage 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 control wiring from Lab Control Panel to each monitoring panel or array. Make connections at monitoring device and terminate at output terminal on lab control panel.
- E. Remote Emergency Operator:

Provide control wiring from Lab Control Panel to each Remote Emergency Operator within the classroom. Where Drawings indicate two or more remote operators, connect each in parallel.

3.04 SYSTEM TEST AND START-UP

- A. Prior to placing the Lab Control Panel into service, a Certified Start-up must be performed.
- 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.