

SECTION 15900 FACILITY NATURAL GAS PIPING AND SPECIALITIES

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions, Division 1 Specifications and Section 16010, apply to this Section.

SECTION INCLUDES:

Furnishing and installation of the Gas Detection System as shown on the Drawings as herein specified.

RELATED SECTIONS:

Basic Mechanical Requirements – Section 15010

Basic Electrical Requirements - Section 16010

Raceways AND CONDUITS - Section 16110

Wires and Cables - Section 16120

Energy Management Control System – Section 15970

Any requirements for additional systems indicated by the plans and specifications.

CODES AND REGULATIONS:

NFPA 70, National Electrical Code.

NFPA 72, National Fire Alarm Code.

NFPA 90A, Installation of Air Conditioning and Ventilation Systems.

ANSI/UL 2075, Gas and Vapor Detectors and Sensors.

Americans with Disabilities Act.

Uniform Building Codes (UBC).

Local and State Building Codes.

All requirements of the local Authority Having Jurisdiction.

WARRANTY:

Provide a 3 year minimum warranty from date of acceptance of project.

MANUFACTURER:

American Gas Safety, LLC Clearwater, FL TEL: 727-608-4375

SUBMITTALS:

Submittal procedures: See Section 16010.

Product Data:

Manufacturer

Model Number

Indicate all options and accessories

Catalog data sheet with photographs

Submit complete submittal package within 30 calendar days after award of this work for approval. Equipment is not to be ordered without approval.

SCOPE OF WORK:

Each Gas Detection System where shown on the Drawings and herein specified shall operate as an independent Control System

Plumbing:

It shall be the responsibility of the Plumbing Contractor to provide in his base bid all devices and other provisions for the Gas Detection System as outlined in the Drawings and Specifications

Electrical:

It shall be the responsibility of the Electrical Contractor to provide in his base bid all devices, conduit systems, standard electrical boxes, operating power, all low voltage control wiring for the Gas Detection System as outlined in the Drawings and Specifications

PART 2 – PRODUCTS

All Products and Devices for a complete Gas Detection System shall be provided as shown on Drawings and as listed in the Equipment Schedule of the Section.

System:

The system shall include a control panel and remote detectors. The system shall comply with UL 2075. The control panel shall provide outputs to isolate the supply of the combustible gas via an electronic solenoid. The control panel shall provide clear indication of the status of the combustible gas supply via fascia mounted LED display. Detection of the combustible gas by the remote detectors shall alarm the control panel, the alarm function shall de-energize the control output to the electronic solenoid, emit an audible alarm and show a clear indication of the alarm condition on the fascia LED display. The control panel shall be constructed of heavy gauge molded plastic and conform to UL 61010-1 3rd edition.

The Control Panel:

The control panel shall provide inputs for F.A.C.P. shut down, remote emergency stop buttons, gas detectors and electronic heat detectors. The control panel shall provide outputs for remote audible alarm beacons, advisory relay output for BAS / BMS integration. The control panel shall provide a fascia mounted emergency shut-off button, clear power indication. The Control panel shall provide an audible and LED indication of alarm conditions. Basis of design, American Gas Safety, model GDP2 or equal.

The Detector:

The detectors shall be designed for Methane (natural) Gas detection, requiring a power supply of 7-30vdc, 80mA Max provided by the Control panel. The detectors shall contain a passive semiconductor type sensor conforming to UL 2075. The detectors shall provide a clear LED display of the power and alarm condition. The detectors shall be hard wired, low voltage units with a normally closed output signal. The detectors shall provide a low level

and high level alarm indication. The detectors shall be mounted on a single gang rough in box. The Methane detectors shall have a measuring range of 300-10000ppm. The detectors shall alarm at low level of 0.4% of volume or 8% LEL and at high level of 0.5% of volume or 10% LEL. Basis of design, American Gas Safety, LLC Model AGSNGXS or equal.

Solenoid Valve:

The solenoid valve shall be UL Listed 429, CSA Certified, gas safety shut-off valve. Aluminum body, two-way normally closed valve rated for natural gas (methane) and LPG (liquid petroleum gas). Size to be same as pipe size indicated on plans, 120 volt ac single phase actuator, 15 watts, and 2 PSI maximum operating pressure capacity. Basis of design, American Gas Safety, LLC Model MERLIN**** (size dependent) or equal.

PART 3 – INTEGRATION AND CONFIGURATION

INTEGRATION WITH OTHER BUILDING SYSTEMS:

CAUTION – Gas Detection System is a life safety device and any alarm condition must be dealt with as if it is a true alarm condition.

Energy Management Control System:

Where shown on Drawings, provide low voltage integration wiring to connection point of mechanical air handling device that serves each space where a Gas Detection System is installed. Verify available voltage as either 24 VAC or 5 VDC. Make connection of wiring and configure Controller to activate with available control voltage.

Building Alarm System:

Where shown on Drawings, provide low voltage integration wiring from each Gas Detection System to connection point of Building Alarm System. Configure panel to comply with Alarm System monitoring requirements. From Building Alarm System, provide low voltage wiring to receive output signal from that system for shutdown of Controller in case of fire alarm. Final connection by others.

PART 4- EXECUTION

INSTALLATION:

Install in accordance with manufacturer's recommendations and instructions. Verify manufacturer's mounting heights to comply with ADA or other standards.

Furnish and install all devices as shown on Drawings and as specified herein. Where device is to be installed by other trades, furnish and then turn over to appropriate trade for installation.

Furnish, install and make final connections to monitoring and remote panic assembly panels as indicated on Drawings and specified herein. Furnish and install low voltage

control wiring from Gas Detection System to connection point of Energy Management Control System and Building Alarm. Final connection by others.

PLUMBING:

Make final connections to all piping systems where indicated by Drawings and specifications. Install in accordance with SECTION 15060 – PIPE AND PIPE FITTINGS.

ELECTRICAL:

Electrical Contractor shall furnish all conduit and wiring, making final wiring connections to all equipment as indicated by Drawings and specifications. Contractor shall be responsible for all system configurations, integration, test and start-up.

CONDUIT:

Unless otherwise specified for wiring systems, 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 along side the panel within a common wall, install conduct for low voltage control wiring between the devices.

WIRING:

Operating Power:

Provide dedicated electrical service to each Gas Detection panel. Verify wiring requirements with Manufacturer's requirements. Minimum 15 amp circuit.

Low Voltage Control Wiring:

Provide 12 VDC control wiring from Gas Detection panel to each remote detector or device. Make connections at detector and terminate at output terminal on control panel. Minimum wiring, 22 AWG, plenum rated cable. Provide cable with required conductors plus two spares.

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.

System Monitoring Panels and Arrays:

Provide 24 VAC control wiring from Gas Detection panel to each monitoring panel or array. Make connections at monitoring device and terminate at output terminal on Controller's control panel. Minimum wiring, 22 AWG, plenum rated cable. Provide cable with required conductors plus two spares.

Remote Panic Assembly:

Provide volt free dry contact control wiring from Gas Detection panel to each Remote Panic Assembly within the space. Make connections at panel and terminate at panels PC Board. Minimum wiring, 22 AWG, plenum rated cable. Provide cable with required conductors plus two spares. Multiple remote panic assemblies wires in series.

PART 5 - SYSTEM TEST AND START-UP

Prior to placing the Gas Detection System into service, perform ALL Start-up procedures and Checklists as stated in Manufacturer's Operations and Maintenance Procedure literature.

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.

- Verify that all controlled piping systems have been thoroughly cleaned.
- Verify that all controlled devices and circuits are ON.
- Verify that connections to all integrated systems are complete.
- Verify that all monitoring systems respond to Panic.
- Verify that remote panic assemblies activate the Panic State.
- Verify that service to emergency showers and eyewashes are not affected by operation of system.

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 with a representative of the Owner.

PART 6 – EQUIPMENT SCHEDULE:

Model Number	Description	Options
GDP2	2 Zone Control Panel (up to 6 detectors)	Any combination of Nat Gas, LPG, CO, Oxygen depletion, Hydrogen or refrigerant
GDP4	4 Zone Control Panel (up to 12 detectors)	Same
AGSNGXS	Methane (Nat Gas) Detector	
Merlin****	120vac Gas Solenoid, Normally Closed 0-2PSI	Size options available
AGSEPOTW	Red Mushroom Panic Button assembly	Twist release, key lock release, audible alarm, various colors

Notes for Fuel Gas Sensors:

Gas Detectors for Natural Gas (Methane) should be wall mounted about one foot below the ceiling. Detectors are passive and need to be located in accumulation zones, dead air and draft zones should be considered when locating detectors.