

**Part 1 General**

**1.1 REFERENCES**

- .1 Treasury Board of Canada Secretariat (TBS), Occupational Safety and Health (OSH)
  - .1 Fire Protection Standard-10.
- .2 Underwriter's Laboratories of Canada (ULC)
  - .1 CAN/ULC-S524-06-AM1, Standard for the Installation of Fire Alarm Systems.
  - .2 CAN/ULC-S525-2007, Audible Signal Appliances for Fire Alarm.
  - .3 CAN/ULC-S526-07, Visible Signal Devices for Fire Alarm Systems, Including Accessories.
  - .4 CAN/ULC-S527-2011, Standard for Control Units for Fire Alarm Systems.
  - .5 CAN/ULC-S528-05, Manual Stations for Fire Alarm Systems, Including Accessories.
  - .6 CAN/ULC-S529-09, Smoke Detectors for Fire Alarm Systems.
  - .7 CAN/ULC-S530-91(R1999), Heat Actuated Fire Detectors for Fire Alarm Systems.
  - .8 CAN/ULC-S537-[04], Standard for the Verification of Fire Alarm Systems.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for multiplex fire alarm system and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
  - .2 Indicate on shop drawings:
    - .1 Details for devices.
    - .2 Details and performance specifications for peripherals with item by item cross reference to specification for compliance.

**1.3 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for fire alarm system for incorporation into manual.
- .3 Include:
  - .1 Copy of approved shop drawings with corrections completed and marks removed except review stamps.

**1.4 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

**1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect materials from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return of packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 19 - Waste Management and Disposal.

## **Part 2 Products**

### **2.1 DESCRIPTION**

- .1 The Fire Alarm System is an existing Simplex 4100U. The main panel is near the north building entrance in Room 010. There is a remote annunciator panel in Room 101B. The fire computer is in the guard post at the north entrance of the building.
- .2 Johnson controls is the Base Building Fire Alarm Contractor
- .3 Audible signal devices: to CAN/ULC-S524.
- .4 Visual signal devices: to CAN/ULC-S526.
- .5 Manual pull stations: to CAN/ULC-S528.
- .6 Thermal detectors: to CAN/ULC-S530.
- .7 Smoke detectors: to CAN/ULC-S529.
- .8 Regulatory Requirements:
  - .1 To TBS Fire Protection Standard.
  - .2 Subject to Fire Commissioner of Canada (FC) approval.
  - .3 Subject to FC inspection for final acceptance.
  - .4 System components: listed by ULC and comply with applicable provisions of NBC and meet requirements of local authority having jurisdiction.

### **2.2 WIRING**

- .1 Twisted copper conductors: rated 300 V.
- .2 To initiating circuits: 18 AWG minimum, and in accordance with manufacturer's requirements.
- .3 To signal circuits: 16 AWG minimum, and in accordance with manufacturer's requirements.
- .4 To control circuits: 14 AWG minimum, and in accordance with manufacturer's requirements.

### **2.3 MANUAL ALARM STATIONS**

- .1 Manual alarm stations: pull lever, wall mounted type, bilingual signage. To match Base Building Standard.

## **2.4 AUTOMATIC ALARM INITIATING DEVICES**

- .1 Heat detectors, fixed temperature, rated 57 degrees C. To match Base Building Standard.
- .2 Thermal fire detectors, combination fixed temperature and rate of rise, non-restorable fixed temperature element, self-restoring rate of rise, fixed temperature 57 degrees C, rate of rise 8.3 degrees C per minute. To match Base Building Standard.
- .3 Smoke detector: photo-electric type. To match Base Building Standard.
- .4 Aspiration type smoke detectors with addressable interfacing module. Main enclosure of system shall contain key detector components. The non-serviceable main processor board and detector chamber shall be mounted away from the general access area. The front cover shall have minimum of 5 indication LED's (Fire/Alarm, Pre-Alarm/Alert, Fault, OK, Reset/Isolate), Reset/Isolate push button. System shall continuously draw air through a pipe network into the detector chamber. The sample air shall pass through a flow sensor then a dual stage dust filter before entering the chamber. The detection system shall use laser light to detect smoke in the air sample. Detection system shall include integrated power supply to provide 24 V operating power with battery backup and battery charger.

## **2.5 AUDIBLE SIGNAL DEVICES**

- .1 Speakers: surface or flush mounting, colour to match Base Building Standard.

## **2.6 END-OF-LINE DEVICES**

- .1 End-of-line devices to control supervisory current in alarm circuits and signalling circuits, sized to ensure correct supervisory current for each circuit. Open or ground fault in any circuit will alter supervisory current in that circuit, producing audible and visible alarm at main control panel. To match Base Building Standard.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for fire alarm installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

### **3.2 INSTALLATION**

- .1 Install systems in accordance with CAN/ULC-S524 and TB Fire Protection Standard.
- .2 Install manual alarm stations and connect to alarm circuit wiring.
- .3 Locate and install detectors and connect to alarm circuit wiring. Mount detectors more than 1 m from air outlets. Maintain at least 600 mm radius clear space on ceiling, below and around detectors. Locate duct type detectors in straight portions of ducts.
- .4 Connect alarm circuits to main control panel.

- .5 Install speakers and connect to signalling circuits.
- .6 Connect signalling circuits to main control panel.
- .7 Install end-of-line devices at end of alarm and signalling circuits.
- .8 Splices are not permitted.
- .9 Provide necessary raceways, cable and wiring to make interconnections to terminal boxes, annunciator equipment and CCU, as required by equipment manufacturer.
- .10 Ensure that wiring is free of opens, shorts or grounds, before system testing and handing over.
- .11 Identify circuits and other related wiring at central control unit, annunciators, and terminal boxes.

### **3.3 FIELD QUALITY CONTROL**

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical and CAN/ULC-S537.
- .2 Fire alarm system:
  - .1 Test such device and alarm circuit to ensure manual stations, thermal and smoke detectors transmit alarm to control panel and actuate general alarm.
  - .2 Check annunciator panels to ensure modified and new zones are shown correctly.
  - .3 Simulate grounds and breaks on modified and new alarm and signalling circuits to ensure proper operation of systems.
- .3 Provide final PROM program re-burn for system Departmental Representative incorporating program changes made during construction.

### **3.4 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
  - .2 Place materials defined as hazardous or toxic waste in designated containers.

### **3.5 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by fire alarm system installation.

**END OF SECTION**