Part 1 General

1.1 REFERENCES

.1 Canada Green Building Council (CaGBC)

.2 Treasury Board of Canada Secretariat (TBS), Occupational Safety and Health (OSH)

.1 Fire Protection Standard-10.

.3 Underwriter's Laboratories of Canada (ULC)

.1 CAN/ULC-S524, Standard for the Installation of Fire Alarm Systems.
.2 CAN/ULC-S525, Audible Signal Devices for Fire Alarm Systems, Including Accessories.
.3 CAN/ULC-S526, Visual Signal Devices for Fire Alarm Systems.
.4 CAN/ULC-S527, Standard for Control Units for Fire Alarm Systems.
.5 CAN/ULC-S528, Manual Pull Stations for Fire Alarm Systems.
.6 CAN/ULC-S529, Smoke Detectors for Fire Alarm Systems.
.7 CAN/ULC-S530, Heat Actuated Fire Detectors.
.8 CAN/ULC-S531, Standard for Smoke Alarms.
.9 CAN/ULC-S536, Inspection and Testing of Fire Alarm Systems.
.10 CAN/ULC-S537, 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 voice communication systems and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.

1.3 CLOSEOUT SUBMITTALS

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

1.4 MAINTENANCE MATERIAL SUBMITTALS

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

.2 Extra Stock Materials: submit 2 spare glass rods for manual pull box stations if applicable.

1.5 QUALITY ASSURANCE

.1 Inspection tests to conform to: CAN/ULC-S536.

.2 Submit inspection report, to Departmental Representative.

1.6 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. Storage and Handling Requirements:

.1 Store materials indoors 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.

1.7 RELATED SECTION

.1 Section 01 91 13 – General Commissioning (Cx) Requirements.

Part 2 Products

2.1 DESCRIPTION

.1 FA devices to match existing devices in building.

.2 Equipment and devices: ULC listed and labelled and supplied by single manufacturer.

.3 Power supply: to CAN/ULC-S524.

.4 Audible signal devices: to CAN/ULC-S525.

.5 Control unit: to CAN/ULC-S527.

.6 Manual pull stations: to CAN/ULC-S528.

.7 Thermal detectors: to CAN/ULC-S530.

.8 Smoke detectors: to CAN/ULC-S529.

.9 Smoke alarms: to CAN/ULC-S531.

.10 Regulatory requirements:

.1 System:

.1 To TBS Fire Protection Standard.

.2 Subject to Fire Commissioner of Canada (FC) approval.

.3 Subject to FC inspection for final acceptance.

.4 To Canadian Forces Fire Marshal approval.

.2 System components: listed by ULC and comply with applicable provisions of Provincial Building Code, and meet requirements of local authority having jurisdiction.

.11 Inspection and testing of Fire alarm System: to CAN/ULC S536.

2.2 INITIATING/ INPUT CIRCUITS

.1 Receiving circuits for alarm initiating devices such as manual pull stations, smoke detectors, heat detectors.

.2 Alarm receiving circuits active and spare: compatible with smoke detectors and open contact devices.

.3 Actuation of alarm initiating device: cause system to operate as specified in "System Operation".

.4 Actuation of supervisory initiating device: cause system to operate as specified in "System Operation".

2.3 ALARM OUTPUT CIRCUITS

.1 Alarm output circuit: connected to Bell, wired in Class A and Class B configuration to central control unit.

.1 Signal circuits' operation to follow system programming; capable of sounding [bells] continuously. Each signal circuit: rated at 2 A, 24 V DC; fuse-protected from overloading/overcurrent.

.2 Manual alarm silence, automatic alarm silence and alarm silence inhibit to be provided by system's common control.

2.4 WIRING

.1 Copper conductors.

.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.

.5 Risers: twisted, shielded pairs, 1 h fire-rated configured to eliminate interference and cross-talk.

2.5 AUTOMATIC ALARM INITIATING DEVICES

.1 Heat detectors.

.1 Electronics to communicate detector's status to addressable module/transponder.

.2 Detector address to be set on detector base in field.

.2 Smoke detector: photo-electric type.

.1 Twistlock plug-in type with fixed base.

.2 Wire-in base assembly with integral red alarm LED, and terminals for remote relay alarm LED.

2.6 AUDIBLE SIGNAL DEVICES

.1 Bells: surface mounted, to match existing, polarized.

.2 Bells: vibrating or motorized type, gongs of special alloy steel, 24 V dc, to match existing.

2.7 END-OF-LINE DEVICES

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

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 and communication systems 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 to CAN/ULC-S524.

.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 signal bells to CAN/ULC-S525 to CAN/ULC-S526 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 Room detection system.

.1 Install detectors. Make necessary connections between room detection panel and main fire alarm panel.

.2 Locate and install audible signals.

.3 Locate and install detectors facing downward under raised floor. Fasten to steel brackets approximately 300 mm above sub-floor level to clear cables and conduits.

.9 Splices are not permitted.

.10 Provide necessary raceways, cable and wiring to make interconnections to terminal boxes, annunciator equipment and CCU, as required by equipment manufacturer.

.11 Ensure that wiring is free of opens, shorts or grounds, before system testing and handing over.

.12 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 to CAN/ULC-S537 and in accordance with Section 01 91 13 – General Commissioning (CX) Requirments.

.2 Fire alarm system:

.1 Test device and alarm circuit to ensure manual stations, thermal and smoke detectors transmit alarm to control panel and actuate alarm.

.2 Simulate grounds and breaks on alarm and signalling circuits to ensure proper operation of system.

.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.Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 DEMONSTRATION

.1 Develop and deliver on-site lectures and demonstration by fire alarm equipment manufacturer to train operational personnel in use and maintenance of fire alarm system.

3.6 MAINTENANCE

.1 Provide one year's free maintenance with two inspections by manufacturer during warranty period.

.2 Inspection to be done in accordance with CAN/ULC S536 & S537.

.3 Provide one year’s free maintenante with two (2) inspections by manufacturer according to CAN/ULC-536 during warranty period.

END OF SECTION