

PART 1 GENERAL1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Work Results for Electrical.

1.2 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-S524-14-AMD1, Standard for the Installation of Fire Alarm Systems.
 - .2 CAN/ULC-S525-16, Audible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories.
 - .3 CAN/ULC-S526-16, Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories.
 - .4 CAN/ULC-S527-11-AMD1 (2014), Standard for Control Units for Fire Alarm Systems.
 - .5 CAN/ULC-S528-14, Standard for Manual Stations for Fire Alarm Systems, Including Accessories.
 - .6 CAN/ULC-S529-16, Standard for Smoke Detectors for Fire Alarm Systems.
 - .7 CAN/ULC-S530-M91 (R1999), Standard for Heat Actuated Fire Detectors for Fire Alarm Systems.
 - .8 CAN/ULC-S536-13, Standard for Inspection and Testing of Fire Alarm Systems.
 - .9 CAN/ULC-S537-13, Standard for Verification of Fire Alarm Systems.
 - .10 CAN/ULC-S541-07, Speakers for Fire Alarm Systems, Including Accessories.

1.3 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:
 - .1 Indicate on shop drawings:
 - .1 Detail assembly and internal wiring diagrams for control units.

- .2 Overall system riser wiring diagram identifying control equipment, initiating zones, signaling circuits; identifying terminations, terminal numbers, conductors and raceways.
 - .3 Details for devices.
 - .4 Details and performance specifications for control, annunciation and peripherals with item by item cross reference to specification for compliance.
 - .5 Step-by-step operating sequence, cross referenced to logic flow diagram.
- .4 Sustainable Design Submittals:
- .1 Construction Waste Management:
 - .1 Submit project Reduction Workplan highlighting recycling and salvage requirements.

1.4 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 and voice communication systems for incorporation into manual.
- .3 Include:
 - .1 Instructions for complete fire alarm system to permit effective operation and maintenance.
 - .2 Technical data - illustrated parts lists with parts catalogue numbers.
 - .3 Copy of approved shop drawings with corrections completed and marks removed except review stamps.
 - .4 List of recommended spare parts for system.

1.5 MAINTENANCE MATERIAL SUBMITTALS

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

1.6 QUALITY ASSURANCE

- .1 Inspection tests to conform to: CAN/ULC-S536.
- .2 Submit inspection report, to Departmental Representative.

1.7 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.

PART 2 PRODUCTS

2.1 DESCRIPTION

- .1 Fire alarm and voice communication system is an existing Notifier panel.
- .2 System to carry out fire alarm and protection functions following the existing sequence of operations.
- .3 Equipment and devices: ULC listed and labelled and supplied by single manufacturer.
- .4 Audible signal devices: to CAN/ULC-S525.
- .5 Manual pull stations: to CAN/ULC-S528.
- .6 Thermal detectors: to CAN/ULC-S530.
- .7 Smoke detectors: to CAN/ULC-S529.
- .8 Speakers: to CAN/ULC-S541.
- .9 Regulatory requirements:
 - .1 System components: listed by ULC and comply with applicable provisions of NBC, and meet requirements of local Authority Having Jurisdiction.

2.2 SYSTEM OPERATION: VOICE COMMUNICATION - 2 STAGE - 3 CHANNEL

- .1 Actuation of alarm initiating device on first stage to:
 - .1 Cause electronic latch to lock-in alarm state at central control unit and data gathering panel/transponder.
- .2 Indicate zone of alarm at central control unit and remote annunciator.
 - .1 Cause audible devices throughout building to sound as per the existing sequence of operations.
 - .2 Transmit signal to central monitoring facility.
 - .3 Cause air conditioning and ventilation fans to shut down or to function to provide required control of smoke movement as per existing sequence of operations.
 - .4 Cause fire doors and smoke control doors, if normally held open, to close automatically as per existing sequence of operations.

- .5 Cause elevators to return to floor of egress, or to alternate floor, as required, as per existing sequence of operations.
- .3 Actuation of supervisory device to:
 - .1 Cause electronic latch to lock-in supervisory state at central control unit and data gathering panel/transponder.
 - .2 Indicate respective supervisory zone at central control unit and remote annunciator.
 - .3 Cause audible signal at central control unit to sound.
 - .4 Activate common supervisory sequence as per existing sequence.
- .4 Trouble on system to:
 - .1 Indicate circuit in trouble on central control unit.
 - .2 Activate "system trouble" indication, buzzer and common trouble sequence. Acknowledging trouble condition to silence audible indication; visual indication to remain until trouble is cleared and system is back to normal.
- .5 Trouble on system: suppressed during course of alarm.
- .6 Trouble condition on any circuit in system not to initiate alarm conditions.

2.3 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 speaker circuits: twisted, shielded pairs, and in accordance with manufacturer's requirements.
- .5 To telephone circuits: twisted, shielded pairs, and in accordance with manufacturer's requirements.

2.4 AUDIBLE SIGNAL DEVICES

- .1 Speakers:
 - .1 Cone type: recessed to match adjacent speakers.
 - .1 Multiple taps adjustable from 0.25 to 2 W.
 - .2 Frequency response: 200 to 8000 Hz.
 - .3 Output sound level: 90 db at 3 m with 1 W tap.

2.5 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, 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 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .2 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 T-taps are not permitted.
- .3 Connect alarm circuits to main control panel.
- .4 Install end-of-line devices at end of alarm and signalling circuits.
- .5 Sprinkler system: wire alarm and supervisory switches and connect to control panel as indicated.
- .6 Splices are not permitted.
- .7 Provide necessary raceways, cable and wiring to make interconnections to terminal boxes, annunciator equipment and CCU, as required by equipment manufacturer.
- .8 Ensure that wiring is free of opens, shorts or grounds, before system testing and handing over.
- .9 Identify circuits and other related wiring at central control unit, annunciators, and terminal boxes.
- .10 Install speakers and connect to speaker circuits.

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.
- .2 Perform test to ensure all signaling circuits are not overloaded. Provide test results.
- .3 Commissioning to be performed by at least one representative of the fire alarm supplier and Installer Contractor.

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 21 - Construction/Demolition Waste Management.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 DEMONSTRATION

- .1 Demonstration by fire alarm equipment manufacturer to train operational personnel in use and maintenance of fire alarm system.

3.6 MAINTENANCE

- .1 Monthly inspection and testing is already in place.