

PART 1 - GENERAL

- 1.1 RELATED REQUIREMENTS** .1 Section 26 05 00 - Common Work Results for Electrical.
- 1.2 REFERENCES** .1 Underwriter's Laboratories of Canada (ULC)
.1 CAN/ULC-S524-06, Standard for the Installation of Fire Alarm Systems.
.2 CAN/ULC-S537-04, Standard for the Verification of Fire Alarm Systems.
- 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 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 Overall system riser wiring diagram identifying control equipment initiating zones signaling circuits; identifying terminations, terminal numbers, conductors and raceways.
.2 Details for devices.
.3 Details and performance specifications for control, annunciation and peripherals with item by item cross reference to specification for compliance.
.4 Step-by-step operating sequence, cross referenced to logic flow diagram.
- 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 system 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.

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| <u>1.6 DELIVERY,
STORAGE AND
HANDLING</u> | .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. |

PART 2 - PRODUCTS

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| <u>2.1 DESCRIPTION</u> | .1 | Existing fully supervised, microprocessor-based, fire alarm system, utilizing digital techniques for data control and digital, and multiplexing techniques for data transmission. |
| | .2 | System carries out fire alarm and protection functions; including receiving alarm signals; initiating two-stage alarm; supervising components and wiring; actuating annunciators and auxiliary functions; initiating trouble signals and signalling to monitoring agency. |
| | .3 | Zoned, non-coded two stage. |
| | .4 | Regulatory Requirements: <ul style="list-style-type: none">.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..5 System components: listed by ULC and comply with applicable provisions of NBC, and meet requirements of local authority having jurisdiction. |
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| <u>2.2 SYSTEM
OPERATION: TWO
STAGE - SIGNALS
ONLY</u> | .1 | Actuation of any alarm initiating device on first stage to: <ul style="list-style-type: none">.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..3 For high rise buildings:<ul style="list-style-type: none">.1 Cause audible signalling devices to sound in ALERT tone..4 Transmit signal to fire department via central station..5 Cause air conditioning and ventilation fans to shut down or to function to provide required control of smoke movement..6 Cause fire doors and smoke control doors, if normally held open, to close automatically..7 Cause elevators to return to floor of egress, or to alternate floor, as required. |
| | .2 | Actuation of any alarm initiating device on second stage to: <ul style="list-style-type: none">.1 Cause audible signalling devices to sound in alarm tone throughout building. |
| | .3 | If first stage alarm is not acknowledged within 5 minutes, ensure system automatically goes into second stage. |
| | .4 | Acknowledging alarm: indicated at central control unit. |
| | .5 | Subsequent alarm, received after previous alarm has been silenced, to re-activate signals. |
| | .6 | Actuation of any supervisory device to: <ul style="list-style-type: none">.1 Cause electronic latch to lock-in supervisory state at central control unit and data gathering panel/transponder. |

2.2 SYSTEM
OPERATION: TWO
STAGE - SIGNALS
ONLY
(Cont'd)

- .6 (Cont'd)
 - .2 Indicate respective supervisory zone at central control unit.
 - .3 Cause audible signal at central control unit to sound.
 - .4 Activate common supervisory sequence.
- .7 Trouble on system to:
 - .1 Indicate circuit in trouble at 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.
- .8 Troubles on system: suppressed during course of alarm.
- .9 Trouble condition on any circuit in system not to initiate alarm conditions.

2.3 WIRING

- .1 Twisted copper conductors: rated 120 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.

2.4 AUTOMATIC
ALARM INITIATING
DEVICES

- .1 Addressable 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.
 - .1 Electronics to communicate detector's status to addressable module/transponder.
 - .2 Detector address to be set on detector base in field.
- .2 Addressable smoke detector.
 - .1 Photo-electric type.
 - .2 Electronics to communicate detector's status to addressable module/transponder.
 - .3 Detector address to be set on detector base head in field.

2.5 END-OF-LINE
DEVICES

- .1 End-of-line devices to control supervisory current in alarm 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.

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 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.
 - .3 Connect alarm circuits to existing F.A. circuits.
 - .4 Install end-of-line devices at end of alarm circuits.
 - .5 Splices are not permitted.
 - .6 Ensure that wiring is free of opens, shorts or grounds, before system testing and handing over.
- 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 first stage alarm ancillary devices.
 - .2 Check annunciator panels to ensure zones are shown correctly.
 - .3 Simulate grounds and breaks on alarm and signalling circuits to ensure proper operation of systems.
 - .4 Addressable circuits system style DCLA:
 - .1 Test each conductor on all DCLA addressable links for capability of providing 3 or more subsequent alarm signals on each side of single open-circuit fault condition imposed near midmost point of each link. Operate Acknowledge/Silence switch after reception of each of the 3 signals. Correct imposed fault after completion of each series of tests.
 - .2 Test each conductor on all DCLA addressable links for capability of providing 3 or more subsequent alarm signals during ground-fault condition imposed near midmost point of each link. Operate Acknowledge/Silence switch after reception of each of the 3 signals. Correct imposed fault after completion of each series of tests.
- .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 01 00 - General Instructions.
.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 01 00 - General Instructions.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 01 00 - General Instructions.
.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.