

PART 1 - GENERAL1.1 REFERENCES

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .2 Underwriter's Laboratories of Canada (ULC)
 - .1 CAN/ULC-S524-2014, Standard for the Installation of Fire Alarm Systems.
 - .2 CAN/ULC-S525-2007, Audible Signal Device for Fire Alarm Systems.
 - .3 CAN/ULC-S526-2007, Visual Signal Devices for Fire Alarm Systems.
 - .4 CAN/ULC-S527-2011, Control Units.
 - .5 CAN/ULC-S528-2014, Manual Pull Stations for Fire Alarm Systems.
 - .6 CAN/ULC-S529-2009, Smoke Detectors for Fire Alarm Systems.
 - .7 CAN/ULC-S530-M91(R1999), Heat Actuated Fire Detectors for Fire Alarm Systems.
 - .8 CAN/ULC-S531-2014, Standard for Smoke Alarms.
 - .9 CAN/ULC-S537-2013, Verification of Fire Alarm Systems.
- .3 National Fire Protection Agency
 - .1 NFPA 72-2013, National Fire Alarm Code.
 - .2 NFPA 90A-2013, Installation of Air Conditioning and Ventilating Systems.
- .4 National Building Code of Canada (2015)

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
 - .1 Include:
 - .1 Layout of equipment.
 - .2 Zoning.
 - .3 Complete wiring diagram, including schematics of modules.
- .3 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.2 Instructions: submit manufacturer's installation instructions.
.3 Manufacturer's Field Reports: manufacturer's field reports specified.

- .4 Closeout Submittals:
.1 Submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals in accordance with ANSI/NFPA 20.
.2 Submit following:
.1 Test Reports:
.1 Open-area 2-wire smoke detectors.
.2 Preliminary testing:
.1 Final acceptance testing.
.2 Submit for inspections and tests specified under Field Quality Control.

1.3 QUALITY ASSURANCE

- .1 Provide services of representative or technician from manufacturer of system, experienced in installation and operation of type of system being provided, to supervise installation, adjustment, preliminary testing, and final testing of system and to provide instruction to project personnel.

1.4 DESIGNATED CONTRACTOR

- .1 Hire the services of Chubb Edwards to do the work of this section.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Equipment and devices: ULC listed and labelled and supplied by single manufacturer.
.2 Power supply: to CAN/ULC-S524.
.3 Audible signal devices: to CAN/ULC-S525.
.4 Visual signal devices: to CAN/ULC-S526.
.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.

2.2 CONTROL PANEL

- .1 Reuse existing control panel. New field devices shall be cross-listed and compatible.

2.3 MANUAL ALARM STATIONS

- .1 Provide non-coded single action type with mechanical reset features.
 - .1 Non-coded single pole normally open contact for single stage.
 - .2 General alarm key switch for two stage system.
- .2 Stations: surface, semi-flush mounted as indicated.
 - .1 For surface mounting provide station manufacturer's approved back box.
 - .2 Back box finish to match station finish.
- .3 Equip each station with terminal strip with contacts of proper number and type to perform functions required.
- .4 Stations: type not subject to operation by jarring or vibration.
 - .1 Break-glass-front stations are not permitted; pull-lever break-rod type is acceptable provided presence of rod is not required to reset station.
- .5 Station colour: red.
- .6 Provide station with visible indication of operation.
- .7 Restoration to require use of key.
 - .1 Keys: identical throughout system for stations and control panel(s).
- .8 Mount stations with operating lever not more than 1.2 m above finished floor.
- .9 Finish housings with red enamel paint and provide permanently affixed metal bilingual signage indicating "FIRE ALARM/ALARME INCENDIE" with white letters of 19 mm high.

2.4 AUTOMATIC ALARM INITIATING DEVICES

- .1 Heat detectors: provide heat detectors designed for detection of fire by combination fixed temperature rate-of-rise principle.

- .2 Heat Detectors designed for outlet box mounting and supported independently of conduit, tubing or wiring connections.
 - .1 Contacts: self-resetting after response to rate-of-rise actuation
 - .2 Operation under fixed temperature actuation to result in external indication.
 - .3 Detector units located in boiler rooms, showers, or other areas subject to abnormal temperature changes to operate on fixed temperature principle only.
- .3 Open-Area Smoke Detectors: provide detectors designed for detection of abnormal smoke densities by photoelectric principle.
 - .1 Provide necessary control and power modules required for operation integral with control panel.
 - .2 Detectors and associated modules: compatible with control panel and suitable for use in supervised circuit.
 - .3 Malfunction of electrical circuits to detector or its control or power units to result in operation of system trouble signals.
 - .4 Equip each detector with visible indicator lamp that will flash when detector is in normal standby mode and glow continuously when detector is activated.
 - .5 Provide remote indicator lamps for each detector that is located above suspended ceilings or concealed from view.
 - .6 Each detector: plug-in type with tab-lock or twist-lock, quick disconnect head and separate base in which detector base contains screw terminals for making wiring connections.
 - .7 Detector head: removable from its base without disconnecting wires. Removal of detector head from its base to cause activation of system trouble signals.
 - .8 Screen each detector to prevent entrance of insects into detection chamber(s).
- .4 Photoelectric Detectors: operate on light scattering principle using LED light source.
 - .1 Detector: respond to both flaming and smoldering fires.
- .5 Mount detectors at underside of ceiling or deck above unless otherwise indicated.
- .6 Temperature rating of detectors: in accordance with NFPA 72.
- .7 Locate detectors minimum 300 mm to lighting fixtures and not closer than 600 mm to air supply or return diffuser.

- .8 Ensure detectors, located in areas subject to moisture or exterior atmospheric conditions or hazardous locations as defined by NFPA 70, are approved for such locations.
- .9 Provide detectors with terminal screw type connections.
- .10 Removal of detector head from its base to cause activation of system trouble signals if detectors are provided with separable heads and bases.

2.5 ALARM INITIATING DEVICE SPACING AND LOCATION

- .1 Detector spacing and location: in accordance with manufacturer's recommendations and requirements of NFPA 72.
- .2 Spacing: not to exceed 9 m by 9 m per detector, and 9 linear m per detector along corridors.
- .3 Locate detectors minimum 1.5 m from air discharge or return grille, and not closer than 300 mm to lighting fixtures.
- .4 In areas without finished ceilings, mount detectors at underside of deck above unless otherwise indicated.

2.6 AUDIBLE SIGNAL DEVICES

- .1 Do not exceed 80 percent of listed rating in amperes of notification appliance circuit. Provide additional circuits above those shown if required to meet this requirement.
- .2 Speakers: 100 mm round, ceiling mounted, recessed complete with box, white coverplate. Provide finished back box where shown surface mounted.
 - .1 Adjustable from 0.25 watts to 2 watts.
 - .2 Frequency response: 400 Hz to 8000 Hz.
 - .3 Output: 84 db at 3 m with 1 watt tap.
- .3 Provide appliances specifically listed for outdoor use in locations exposed to weather.
- .4 Finish appliances in red enamel.
- .5 For surface mounting provide appliance manufacturer's approved back box. Back box finish to match appliance finish.

<u>2.7 END-OF-LINE DEVICES</u>	.1	End-of-line devices where required 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.
<u>2.8 VISUAL ALARM SIGNAL DEVICES</u>	.1	Stroboscopic type suitable for use in electrically supervised circuit and powered from notification appliance circuits.
	.2	Appliances: minimum of 30 candela measured as approved by ULC, but not less than effective intensity required by National Building Code of Canada for appliance spacing and location shown.
	.3	Protect lamps with thermoplastic lens and labelled "FIRE/FEU" in letters at least 12 mm high.
	.4	Provide visible appliances within 300 mm of each audible appliance as indicated.
	.5	Visible appliances may be part of audio-visual assembly, where more than two appliances are located in same room or corridor.
<u>2.9 CONDUIT</u>	.1	As per Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.
<u>2.10 WIRING</u>	.1	As per Section 26 05 21 - Wires and Cables (0-1000V).
<u>2.11 ANCILLARY DEVICES</u>	.1	Remote relay unit to initiate fan shutdown.
<u>2.12 ACCEPTABLE MATERIALS</u>	.1	The only acceptable materials are Chubb Edwards.

PART 3 - EXECUTION3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION

- .1 Install systems in accordance with CAN/ULC-S524.
- .2 Locate and install manual alarm stations and connect to alarm circuit wiring.
- .3 Locate and install detectors and connect to alarm circuit wiring. 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 Locate and install signal and visual signal devices and connect to signalling circuits. No T-taps.
- .6 Connect signalling circuits to main control panel.
- .7 Install end-of-line devices at end of alarm and signalling circuits.
- .8 Locate and install remote relay units to control fan shut down.
- .9 Sprinkler system: wire alarm and supervisory switches and connect to control panel.
- .10 Leave fire alarm devices active during fitup to eliminate nuisance troubles. Provide soft key bypass to fire alarm system for bypassing system during construction.
- .11 Protect existing sensors from dust during construction.
- .12 Splices in wiring shall not be permitted.

3.3 FIELD QUALITY CONTROL

- .1 Site Verification:
 - .1 Perform verification in accordance with Section 26 05 00 - Common Work Results for Electrical and CAN/ULC-S537.

- .2 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
 - .3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

END OF SECTION