1. GENERAL

1.01 SECTION INCLUDES

.1 Linear heat detection cable systems for the following applications:

.1 [Elevator hoistways.]

.2 [Attics.]

.2 Linear heat detection cable is generally used in applications where it may be difficult or hazardous to access to perform verification, or testing of spot type heat detectors.

1.02 RELATED REQUIREMENTS

.1 Section 28 46 13 – Fire-Alarm Systems.

.2 Section 28 46 51.14 – Fire-Alarm Supervised Interface Hardware for Elevators.

1.03 REFERENCES

.1 CSA B44:19, Safety code for elevators and escalators (Binational standard with ASME A17.1).

.2 Underwriters Laboratories Canada (c-UL-us) Fire Protection Equipment Directory.

.3 Underwriters Laboratories of Canada:

.1 CAN/ULC-S524-14 – Standard for Installation of Fire Alarm Systems.

.2 CAN/ULC-S536-13 - Standard for Inspection and Testing of Fire Alarm Systems.

.3 CAN/ULC-S537-13 – Standard for Verification of Fire Alarm Systems.

.4 CAN/ULC-S1001-11 (R2018) – Integrated Systems Testing of Fire Protection and Life Safety Systems.

1.04 COORDINATION

.1 Coordinate work performed under this section with work specified in other sections as noted.

1.05 SUBMITTALS

.1 Submit product data and shop drawings including isometric and plan view layouts of the system under provisions of Section 01 33 00.

.2 The manufacturer must supply their proposed system design for the area(s) to be protected together with a letter certifying that the design strictly complies with the limitations established by the manufacturer.

.3 Include cut sheets of all components.

1.06 CLOSEOUT SUBMITTALS

.1 Supply one copy of the manufacturer's installation and operation manuals after completion of installation.

.2 Supply one copy of the manufacturer's startup forms within 30 days after installed and commissioned.

1.07 MAINTENANCE CONTRACT

.1 Maintenance Service: Shall be provided by a factory authorized and factory trained representative in accordance with the manufacturer, CAN/ULC-S524, and local requirements of the authority having jurisdiction.

1.08 QUALITY ASSURANCE

.1 Qualifications:

.1 Contractor: The contractor shall have a minimum of 5 years experience in the design and installation of fire detection systems.

.2 Equipment suppliers: The equipment suppliers shall be factory authorized and trained by the manufacturer every other year to design, install, and maintain all aspects of the system.

.2 Regulatory Requirements:

.1 Codes and approvals: Equipment supplier shall conform to the local code requirements and approvals applicable to this section. Supplier must obtain and pay all necessary permits prior to beginning work in this section.

.2 The system shall be certified by a testing body accredited by the Standards Council of Canada, i.e. cUL or ULC listing.

1.09 SITE CONDITIONS

.1 Physical/Environmental Requirements:

.1 The cabinet shall be permanently mounted where specified on the shop drawings or in a location to facilitate access and ease of service.

.2 The cabinet must be mounted in an ambient temperature range of 0 degrees C (32 degrees F) to 52 degrees C (125 degrees F).

.3 Where the environment is harsh, the releasing control panel shall be fitted with a NEMA 12 enclosure.

2. PRODUCTS

2.01 MANUFACTURERS

.1 Protectowire.
Canadian distributor: Levitt Safety, Ph.: 905-287-3539.

.2 Safe Fire Detection
5915 Stockbridge Dr. Monroe, NC 28110, Ph.: 704-821-7920, Fax: 704-821-4327.

2.02 DESCRIPTION

.1 Detection method: Linear Heat Detection.

.1 The detection principle shall be linear heat type, and be capable of detecting fires as it was designed at a fixed temperature.

.2 Design requirements:

.1 Consist of an approved linear heat detector and control/releasing panel that are designed and installed to detect the heat from a fire as it was designed.

.2 The control/releasing panel shall be any approved self-contained, micro-controlled base technology that indicates alarms, faults and system integrity or as approved by the manufacturer. The intent of the panel is to alarm when the linear heat detector senses a fire and either alarm, or alarm and release an extinguishing agent. The panel shall also have 24 hour battery backup.

.3 The linear heat detection systems spacing shall be determined by CAN/ULC-S524, and the manufacturer's recommendations.

.3 Performance Requirements:

.1 Shall be UL, C-UL-US, FM, MEA and CSFM tested and approved.

.2 Shall be listed for up to 10 m (35 foot) spacing.

.3 Shall be compatible with any ULC listed fire alarm panel.

.4 Must not require proprietary panel.

.5 Shall detect a fire at its approved temperature.

.6 Shall report any equipment related fault through a fault output relay.

.7 Shall be installed to comply with ULC standards (and the authority having jurisdiction).

2.03 [ELEVATOR HOISTWAY APPLICATION]

.1 Elevator protection requires accessing, testing, and verifying the linear heat detector from outside the elevator hoistway without transitioning to extension cable in conduit inside the elevator shaft or pit.

.2 Provide linear heat detection cable in the following locations:

.1 At the top of each elevator hoistway.

.2 At the bottom of each elevator hoistway in the elevator pit.

.3 Components:

.1 Confirm all part numbers for the application with the manufacturer.

.2 Linear Heat Detection Cable:

.1 The Linear Heat Detector shall be a fixed temperature single line-sensing element consisting of two electrical current carrying wires separated by a heat sensitive coating. The temperature must be clearly printed on the detector.

.2 Protectowire CTI (Confirmed Temperature Initiation), CTI-*190-XCR.

.1 CTI linear heat detector 190 alarm point temp / 150°F max ambient with XCR fluoropolymer out jacket and high abrasion resistance.

.2 The Protectowire CTI Series Linear Heat Detection can discriminate between a "mechanical short" and an actual “heat activated event”.

.3 Safe Fire Detection SafeCable LHD, TC155 series, 68°C (155°F).

.3 Cable accessories:

.1 Mounting fasteners:

.1 Spaced per manufacturer's recommendations.

.2 Protectowire JD-1 series CTI fastener clip. Maximum spacing every 1.2 m (5 feet).

.2 Strain relief devices:

.1 Provide strain relief connectors when the linear heat detection cable enters any zone box. One strain relief per zone box.

.2 Protectowire SR-502-N.

.3 Sealant and firestopping:

.1 In accordance with Section 26 05 44.13 – Firestopping for Electrical Systems.

.2 Ensure sealant is non-exothermic and approved for use by the manufacturer to ensure it does not affect the linear heat detection cable.

.3 Provide conduit through the elevator hoistway wall to pass the cable thorough.

.4 Interface Module:

.1 The control panel for the linear heat detection releasing system must be a microprocessor-based control capable of protecting multiple hazards in one control panel. It shall be UL listed under Standard 864 for Local Control Units for Releasing Service. The control must also be approved by FM and be compatible with the requirements of NFPA 72 (Local: A, M, SS service types; NC signaling type) and NFPA 13, NFPA 15, and NFPA 16.

.2 cUL or ULC listed for connection to addressable panel or conventional panel.

.3 Protectowire CTM-530-E.

.1 CTI interface module, one required per zone.

.2 By using dissimilar metal conductors that form a thermocouple in the CTI liner heat detector, the CTM-530 interface module continually monitors this thermocouple voltage confirming an actual heat activated event.

.3 Interface module draws approximately 88 mA. Provide power supply and battery back up from fire alarm system.

.4 NMEA 4X (IP66) enclosure.

.4 Safe Fire Detection DLM-Z2.

.5 Zone Box:

.1 Provide at start of run of linear heat detection cable.

.2 Protectowire:

.1 ZB-HD-5-QC-NT zone box with included TCTBNT terminal block at start and end of run of cable.

.2 For class B install, end-of line resistor included with CTM module.

2.04 [ATTIC APPLICATION]

.1 Secure linear heat detection to the underside of the roof, spaced in accordance with manufacturer's instructions.

.2 Provide zone boxes in accessible back of house spaces of the top storey below the attic to allow for verification and testing of the linear heat detection cable. Where back of house spaces are not available, provide an access panel in accordance with Section 08 31 00.

.3 Protectowire PHSC series (basis of design).

3. EXECUTION

3.01 INSTALLATION

.1 Installation to CAN/ULC-S524 as described Section 28 46 13.

.2 The Linear Heat Detection System: The Contractor shall install the system in accordance with the manufacturer's installation recommendations and operational manual.

3.02 FIELD QUALITY CONTROL

.1 Commission the complete installation in the presence of the end user or their appointed representative.

.2 Provide materials all necessary instrumentation, test equipment, labour.

.3 Record all test and commissioning requirements and a copy shall be provided to the end user or an authorized representative.

.4 Checks must be made to ensure that all ancillary equipment and warning devices are operational as designed and specified with care taken not to discharge a suppression system.

.5 Upon completion of commissioning and testing provide the end user or authorized representative with the isometric as-built drawings as well as the System Start-Up forms, Installation and Operation manuals.

.6 The Contractor shall be or be represented by an authorized representative of the manufacturer. This person must have successfully completed manufacturer's training and show proof of it by means of a valid certificate. The company listed on the certificate at the time of the testing and commissioning must employ, this person who must be present or the certificate is not valid. The certificate is valid for a period of two years from the date on the certificate.

3.03 SITE TESTS AND INSPECTIONS

.1 Perform testing, inspection, and verification to CAN/ULC-S537 as described in Section 28 46 13.

.2 Perform functional testing in accordance with CAN/ULC-S1001 as described in Section 28 08 46.

End of Section