1. GENERAL

1.01 SECTION INCLUDES

.1 Communications conductors and cables for fire detection, suppression, and alarm systems.

.2 Conduit for fire detection, suppression, and alarm systems.

1.02 RELATED REQUIREMENTS

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

.2 Section 28 46 31 – Fire-Alarm Initiating Devices.

1.03 DEFINITIONS

.1 ULC-S524: CLASS A CIRCUIT (Return Loop Circuit) – A circuit having one continuous path connecting all components on the circuit and terminating through an alternate connection path in the source enclosure.

.2 ULC-S524: CLASS B CIRCUIT (Terminated Circuit) – A circuit having one continuous path connecting all devices on the circuit and terminating at an end-of-line device.

1.04 REFERENCES

.1 CSA C22.1:21, Canadian Electrical Code, Part 1 (25th Edition), Safety Standard for Electrical Installations.

.2 Ontario Electrical Safety Code (28th edition/2021).

.3 CSA C22.2 No. 208-14 – Fire Alarm and Signal Cable.

.4 CAN/ULC-S139:2017 – Standard for Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control, and Data Cables.

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

1.05 DELIVERY, STORAGE, AND HANDLING

.1 In accordance with Section 01 61 00.

1.06 WARRANTY

.1 All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one year from the date of acceptance.

2. PRODUCTS

2.01 CONDUIT AND WIRE FOR FIRE ALARM SYSTEM

.1 Conduit:

.1 In accordance with Section 26 05 33.13.

.2 All wiring shall be installed in conduit or raceway.

.2 Terminal Boxes, Junction Boxes and Cabinets:

.1 All boxes and cabinets shall be listed for their purpose and use.

2.02 FIRE ALARM CABLE

.1 Wiring shall be in accordance with local, provincial, and national codes and as recommended by the manufacturer of the fire alarm system. Number and size of conductors shall be as outlined in the Ontario Electrical Safety Code, and as recommended by the fire alarm system manufacturer.

.2 All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signalling system, as outlined in the Ontario Electrical Safety Code.

.3 Certified by CSA as fire alarm and signal cable type FAS 105 to CSA C22.2 No. 208.

.4 Conductors:

.1 300 V rated multiconductor, insulated, colour coded, copper conductor.

.1 Use solid conductors unless noted otherwise.

.2 Use stranded conductors for connections between closest junction box and vibrating equipment i.e. generator set supervisory connection.

.2 Minimum 16 AWG for initiation circuits.

.3 Minimum 12 AWG for strobe signal circuits.

.4 Minimum 14 AWG for horn signal circuits.

.5 Minimum 12 AWG for bell signal circuits.

.5 Non-Fire rated cable:

.1 Insulation: 105°C flame retardant PVC.

.2 Outer Jacket: 105°C flame retardant PVC Red.

.3 Armour: Interlocking aluminum without overall Jacket. For drops to devices in suspended ceilings from conduit system.

.6 Fire rated fire alarm cable:

.1 Pentair Pyrotenax 1850 series mineral insulated (MI) cable with 2 hour fire rating to ULC-S139 and to meet Ontario Building Code Rule 3.2.7.10.

.2 Substitution: VITALink CIC Type FAS105, manufactured by Comtran (listed by ULC under ULC category code 'FHIT7' and 'FHJR7', dated 19 May 2015), installed in EMT conduit.

.3 Substitutions such as "Lifeline" installed in conduit may only be considered if listed by ULC under ULC Category Code 'FHIT7'.

3. EXECUTION

3.01 INSTALLATION

.1 All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.

.2 The entire system shall be installed in accordance with the latest edition of CAN/ULC-S524 and the approved manufacturer's manuals and wiring diagrams.

.3 The contractor shall furnish all labour, conduit, wiring, outlet boxes, junction boxes, cabinets, and similar devices necessary for installation of system devices.

.4 Provide all necessary power supply, interconnecting and remote signal wire in dedicated conduit throughout and installed in accordance with the manufacturer's wiring diagrams and the requirements of the Ontario Electrical Safety Code and the Inspection Authority.

.5 All penetration of floor slabs and fire walls shall be fire stopped in accordance with all local fire codes.

.6 Install all wiring in metal raceways.

.7 Provide wiring suitable for fire alarm circuits.

.1 Class A wiring for initiating circuits.

.2 Class B wiring for signalling circuits.

.8 Fire rated conductors:

.1 Install fire rated conductors in accordance with the manufacturer's installation guidelines.

.2 Install 2 hour fire rated cables for fire alarm circuits as required by the building code where transponders (data gathering panels) or annunciators are installed in a separate fire compartment from the main FACP CPU.

.3 Install 2 hour fire rated cables for fire alarm system branch circuits where the transponder or DGP is not within the same storey as the first initiation, signalling, or voice communication device in the loop for that storey.

.4 In lieu of fire rated cables for the above noted cases, Contractor may, when reviewed beforehand by the Consultant, install non rated conductors in be located in a service space that is separated from the remainder of the building by a fire separation that has a fire resistance rating of not less than 2 hours.

3.02 SITE TESTS AND INSPECTIONS

.1 The manufacturer's representative shall perform an inspection of the fire alarm equipment. The inspection shall comprise an examination and test of such equipment for the following:

.1 That the type of conductors and cables installed are that designated by the specifications.

.2 That the specified equipment has been installed in accordance with the manufacturer's recommendations.

.3 That the supervisory wiring of all devices connected to a supervised circuit is operating and that the wiring has been met to the satisfaction of the inspecting officials.

.2 Testing to be done in the presence of the local building inspector, and the local fire inspector.

End of Section