PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

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

1.2 REFERENCES

.1 Government of Canada
  .1 TB OSH Chapter 3-04, 1994-12-22, Treasury Board of Canada, Occupational Safety and Health, Chapter 3-04, Standard for Fire Alarm Systems.

.2 Underwriter's Laboratories of Canada (ULC)
  .1 CAN/ULC-S524-14, Standard for the Installation of Fire Alarm Systems.
  .2 CAN/ULC-S527-11, Control Units.
  .3 CAN/ULC-S537-13, Verification of Fire Alarm Systems.

.3 National Fire Protection Agency
  .1 NFPA (Fire) 70, National Electrical Code (NEC), 2014 Edition.
  .2 NFPA (Fire) 72, National Fire Alarm and Signaling Code, 2013 Edition.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 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.

1.4 QUALITY ASSURANCE

.1 Qualifications:
  .1 Installer: company or person specializing in fire alarm system installations approved by manufacturer.

.2 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.

1.5 DESIGNATED CONTRACTOR

.1 Hire the services of Siemens to do all the work related to the fire alarm system. Retain and pay all cost for services of company currently operating/servicing the building Fire Alarm System, to operate and protect all devices relating to modification and/or temporary by-pass, shut down of fire alarms, fire suppression, extinguishing or protection systems; and/or, similar action during cutting, welding, soldering or other construction activities which might activate fire protection systems. Contact: Laureen Sloan Service Account Administrator Siemens Canada Limited Building Technologies Division 2435 Holly Lane, Ottawa, ON K1V 7P2 Office: 613-733-9348 ext. 273 Fax: 1-877-208-8587 Cell: 613-884-3635 Laureen.Sloan@Siemens.com.

PART 2 - PRODUCTS

2.1 SYSTEM OPERATION

.1 Provide separate circuits from control panel to each zone of initiating devices. Transmission of signals from more than one zone over common circuit to control panel is prohibited.

.2 Single stage operation. Operation to actuation following:
- .1 Manual station.
- .2 Heat detector.
- .3 Smoke detector.
- .4 Automatic fire sprinkler system.
- .5 Fire extinguishing system.
- .6 Fire standpipe system.

.3 Actuation of single operation device to initiate following:
- .1 Building evacuation alarm devices to operate continuously.
- .2 Transmit signal to fire department via fire alarm transmitter.
- .3 Zone of alarm device to be indicated on control panel and remote annunciators.

.4 Two stage operation: operation to actuation following:
- .1 Manual station.
- .2 Heat detector.
- .3 Smoke detector.
- .4 Automatic fire sprinkler system.
- .5 Fire extinguishing system.
- .6 Fire standpipe system.

.5 Actuation of two stage operation device to initiate following:
- .1 Audible signal devices throughout building to sound at 20 strokes per minute.
- .2 Audible signal devices in zone of alarm and adjacent zones on same floor level.
- .3 Zone of alarm to be indicated on control panel and remote annunciator.
- .4 Transmit signal to fire department via fire alarm transmitter.
- .5 Air conditioning and ventilating fans to shut down or to function so as to provide required control of smoke movement.
- .6 Fire doors and smoke control doors if normally held open, to close automatically.
- .7 Electro-magnetic door holders to de-energize.
- .8 Operations to remain in alarm mode (except alarm notification appliances if manually silenced) until system is manually restored to normal.

.6 Operation of alarm initiating device on second stage to:
- .1 Cause audible signal devices throughout building to sound continuously.

.7 Capability to program smoke detector status change confirmation on any or zones in accordance with CAN/ULC-S527, Appendix C.

2.2 AUTOMATIC ALARM INITIATING DEVICES

.1 Locate detectors in accordance with their listing by ULC and the requirements of NFPA (Fire) 72, except provide at least 2 detectors in rooms of 54 square meters or larger in area.

.2 Mount detectors at underside of ceiling or deck above unless otherwise indicated.
- .1 For mounting heights greater than 3 m above floor level, reduce actual detector linear spacing from listed spacing as required by NFPA (Fire) 72.
- .2 For heights greater than 9 m space detectors no farther apart than 34% of their listed spacing.

.3 Temperature rating of detectors: in accordance with NFPA (Fire) 72.

.4 Locate detectors minimum 300 mm to lighting fixtures and not closer than 600 mm to air supply or return diffuser.

.5 Ensure detectors, located in areas subject to moisture or exterior atmospheric conditions or hazardous locations as defined by NFPA (Fire) 70, are approved for such locations.

2.3 ALARM INITIATING DEVICE SPACING AND LOCATION

.1 In areas without finished ceilings, mount detectors at underside of deck above unless otherwise indicated.

2.4 CONDUIT

.1 Rigid Steel Conduit:
- .1 Zinc-Coated.

.2 Intermediate Metal Conduit (IMC):
- .1 Zinc-coated steel only.

.3 Electrical Metallic Tubing (EMT): 21 mm.

.4 Surface Metal Raceway and Fittings:
- .1 Two-piece painted steel.
- .2 Totally enclosed snap-cover type.

2.5 WIRING

.1 Wire for 120 V circuits: No. 12 AWG minimum solid copper conductor.

.2 Wire for low voltage DC circuits: No. 14 AWG minimum solid copper conductor

.3 Wire to remote annunciators: No. 18 AWG minimum solid copper conductor.

.4 Wire for connection to base telegraphic alarm loop: No. 12 AWG minimum solid copper conductor.

.5 Insulation 75 degrees C minimum with nylon jacket.

.6 Colour code wiring.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install systems in accordance with CAN/ULC-S524 and TB OSH Chapter 3-04.

.2 Locate and install manual alarm stations and connect to alarm circuit wiring.

.3 Locate and install detectors and connect to alarm circuit wiring. Do not mount detectors within 1 m of air outlets. 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, bells, horns and visual signal devices and connect to signalling circuits.

.6 Connect signalling circuits to main control panel.

.7 Install end-of-line devices at end of alarm and signalling circuits.

.8 Connect to annunciator circuit wiring.

3.2 FIELD QUALITY CONTROL

.1 Site Tests:
- .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 each device and alarm circuit to ensure manual stations, thermal and smoke detectors, sprinkler system, Halon system transmit alarm to control panel and actuate first stage alarm.
  - .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 system.
  - .4 Class A circuits.
    - .1 Test each conductor on circuits for capability of providing alarm signal on each side of single open-circuit fault condition imposed near midmost point of circuit. Reset control unit after each alarm function and correct imposed fault after completion of each test.
    - .2 Test each conductor on circuits for capability of providing alarm signal during ground-fault condition imposed near midmost point of circuit. Reset control unit after each alarm function and correct imposed fault after completion of each test.
  - .5 Class B circuits.
    - .1 Test each conductor on circuits for capability of providing alarm signal on line side of single open-circuit fault condition imposed at electrically most remote device on circuit. Reset control unit after each alarm function and correct imposed fault after completion of each test.
    - .2 Test each conductor on circuits for capability of providing alarm signal during ground-fault condition imposed at electrically most remote device on circuit. Reset control unit after each alarm function and correct imposed fault after completion of each test.

.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.

.3 Verification requirements: Contractor's Verification, include:
- .1 Materials and resources.
- .2 Storage and collection of recyclables.
- .3 Construction waste management.
- .4 Resource reuse.
- .5 Recycled content.
- .6 Local/regional materials.
- .7 Low-emitting materials.

3.3 TRAINING

.1 Arrange and pay for on-site lectures and demonstrations by fire alarm equipment manufacturer to train operational personnel in use and maintenance of fire alarm system.

3.4 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

.2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END