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PART 1 - GENERAL

1.1 SUMMARY

- .1 Existing Fire Alarm system is by Notifier.  
Model is NFS-640
- .2 Section Includes:
  - .1 Alarm initiating devices.
  - .2 Audible/Visual signal devices.
- .3 Scope of work to include:
  - .1 Addition of 4 new horn/strobe devices.
  - .2 Addition of 11 new smoke detectors.

1.2 REFERENCES

- .1 Government of Canada
    - .1 TB OSH Chapter 3-03, 1997-01-28,  
Treasury Board of Canada, Occupational Safety  
and Health, Chapter 3-03, Standard for Fire  
protection Electronic Data Processing  
Equipment.
    - .2 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 Health Canada/Workplace Hazardous Materials  
Information System (WHMIS)
    - .1 Material Safety Data Sheets (MSDS).
  - .3 Underwriter's Laboratories of Canada (ULC)
    - .1 CAN/ULC-S524-2006, Standard for the  
Installation of Fire Alarm Systems.
    - .2 CAN/ULC-S525-1999, Audible Signal Device  
for Fire Alarm Systems.
    - .3 CAN/ULC-S526-2002, Visual Signal Devices  
for Fire Alarm Systems.
    - .4 CAN/ULC-S529-2002, Smoke Detectors for  
Fire Alarm Systems.
    - .5 CAN/ULC-S536-S537-2004, Burglar and Fire  
Alarm Systems and Components.
  - .4 National Fire Protection Agency
    - .1 NFPA 72-2002, National Fire Alarm Code.
    - .2 NFPA 90A-2002, Installation of Air  
Conditioning and Ventilating Systems.
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1.3 SUBMITTALS

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures.
    - .1 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
  - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
    - .1 Shop drawings: stamped and signed by professional engineer registered or licensed in New Brunswick, Canada.
  - .2 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 Authority of Jurisdiction will delegate authority for review and approval of submittals required by this Section.
  - .3 Submit to Authority of Jurisdiction 2 sets of approved submittals and drawings immediately after approval but no later than 15 working days to prior to final inspection.
  - .4 Submit following:
    - .1 Manufacturer's Data for:
      - .1 Open-area smoke detectors.
      - .2 Horn/Strobe

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1.4 QUALITY  
ASSURANCE

- .1 Qualifications:
  - .1 Installer: company or person specializing in fire alarm system installations with 5-years documented experience 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.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Equipment and devices: ULC listed and labelled and supplied by single manufacturer.
- .2 Audible signal devices: to CAN/ULC-S525.
- .3 Visual signal devices: to CAN/ULC-S526.
- .4 Smoke detectors: to CAN/ULC-S529.

2.2 AUTOMATIC ALARM  
INITIATING DEVICES

- .1 Addressable variable-sensitivity smoke detectors.
  - .1 Combined Ionization and Photo-electric type.
  - .2 Electronics to communicate detector's status to addressable module/transponder.
  - .3 Detector address to be set on detector base and head in field.
  - .4 Sensitivity settings: determined and operated by control panel. No shifting in detector sensitivity due to atmospheric conditions (dust, dirt) within certain parameters.
  - .5 Ability to annunciate minimum of 2 levels of detector contamination automatically with trouble condition at control panel.
  - .6 Duct mounted where indicated. Duct mounted detectors shall come c/w with relay base for fan shut down.
  - .7 Acceptable material: To match existing.

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- 2.2 AUTOMATIC ALARM .2 Addressable Interface Modules (AIM).  
INITIATING DEVICES  
(Cont'd)
- .1 To provide ability to communicate with CCU for sprinkler supervisory devices and other equipment which would otherwise be unaddressed.
  - .2 Provide as indicated.
  - .3 Acceptable material: To match existing.
- .3 Addressable Relays.
- .1 To allow the CCU to selectively monitor and control equipment.
  - .2 Provide as indicated.
  - .3 Acceptable material To match existing.
- 2.3 COMBINATION .1 Temporal horn electronic signals and temporal  
AUDIO/VISUAL DEVICES strobe.
- .2 Synchronized tone and strobes.
  - .3 Acceptable material: To match existing.
- 2.4 ALARM .1 Detector spacing and location: in accordance  
INITIATING DEVICE with manufacturer's recommendations and  
SPACING AND requirements of NFPA 72.  
LOCATION
- .2 Provide at least 2 detectors in rooms of 54 square meters or larger.
  - .3 Spacing: not to exceed m by 9m per detector, and 9 linear m per detector along corridors.
  - .4 Locate detectors minimum 1.5m from air discharge or return grille, and not closer than 300mm to lighting fixtures.
- 2.5 END-OF-LINE .1 End-of-line devices to control supervisory  
DEVICES 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 and remotely as indicated.
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- 2.6 CONDUIT
- .1 Rigid Steel Conduit:
    - .1 Zinc-Coated.
  - .2 Intermediate Metal Conduit (IMC):
    - .1 Zinc-coated steel only.
  - .3 Electrical Metallic Tubing (EMT).
  - .4 Surface Metal Raceway and Fittings:
    - .1 Two-piece painted steel.
    - .2 Totally enclosed snap-cover type.
- 2.7 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 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 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
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- 3.2 INSTALLATION (Cont'd) .2 (Cont'd)  
(Cont'd)
- .3 and around detectors. Locate duct type detectors in straight portions of ducts.
- .3 Connect alarm circuits to main control panel.
- .4 Locate and install horn/visual signal devices and connect to signalling circuits.
- .5 Connect signalling circuits to main control panel.
- .6 Install end-of-line devices at end of alarm and signalling circuits if necessary.
- 3.3 FIELD QUALITY CONTROL .1 Site Tests:
- .1 Perform tests in accordance with Section 26 05 01 - Common Work Results - for Electrical and CAN/ULC-S537.
- .2 Fire alarm system:
- .1 Test each device and alarm circuit to ensure smoke detectors transmit alarm to control panel and actuate general alarm and 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 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
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3.3 FIELD QUALITY CONTROL .1  
(Cont'd)

- Site Tests:(Cont'd)  
.2 Fire alarm system:(Cont'd)  
.5 (Cont'd)

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.

3.4 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.