

SECTION TWO

SCOPE OF SERVICES

GENERAL DESCRIPTION

The University of Trinidad and Tobago (UTT) wishes to engage a suitable contractor to expand its Fire Alarm System at the Valsayn Campus to include buildings J and K.

The successful Contractor will be required to supply all materials, equipment and labour required to carry out the following works mentioned under, to agreed industry and UTT standards.

GLOSSARY

Candela	The basic unit of luminous adopted under the Systeme International d'Unites; equal to 1/60 of the luminous intensity per square centimeter of a black body radiating at the temperature of 2,046 degrees Kelvin
db	decibel
FACP	Fire Alarm Control Panel
HAVC	Heating, ventilation and air-conditioning
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LEL	Physical property of a gas, lowest concentration (percentage) of gas or vapor in air capable of producing a flash of fire in presence of an ignition source (arc, flame, heat) Concentrations lower than LEL are 'too lean' to burn.
NEMA	National Electrical Manufacturers Association
NEMA X4 Rated	– Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against falling dirt, rain, sleet, snow, windblown dust, splashing water, and hose-directed water; and that will be damaged by the external formation of ice on the enclosure. Also includes protection against corrosion
SLC	Signal Line Circuit
SSL	Secure Socket Layer
UL 94-5V Flammability Rating	– This is the highest (most flame retardant) UL94 rating. A product is rated for flammability depending on its Flash Point (the temperature of the product at which it will ignite if exposed to a flame)
UL Listed	If a wire or cable product is UL recognized or listed, the product meets public safety requirements as designated by the Underwriters Laboratories. Each UL spec is different.
UL 1638	Standard for Safety Visual Signaling Appliances – Private Mode Emergency and General Utility Signaling
UL 464	Standard for Safety Audible Appliances

Background

The installation and commissioning of the existing Honeywell Notifier™ addressable fire alarm system at Valsayn campus was completed prior to the construction of buildings J and K. As such it is necessary to install additional components to include buildings not covered by the existing system in order to guarantee its full effectiveness.

The successful contractor will be required to supply and install an expandable early detection and warning fire alarm system, inclusive of control panels, sensors, alarms, cables & wiring, trunking, raceways, builders' works and all other necessary labour and equipment to provide a fully functional and operational system.

Participants are required to determine the most appropriate sensors to be used and their locations based on the climate and environmental conditions existing at the facility.

This project will impact the following buildings at the Valsayn Campus

1. Block J – a two storey lecture and administrative building approx. 15,000 S.F.
see attached Floor Plan
2. Block K – a two storey lecture building of approximately 26,000 S.F.
see attached Floor Plan
3. Block G – Cafeteria kitchen: *see attached Floor Plan*
4. Block A – 2nd floor Laboratories.

The following components listed will constitute this system.

- Addressable control panel and system for Blocks A, G, J and K (placement in Block A to be verified during site visit).
- Remote annunciator - For location inside main security booth at the entrance of the facility
- Addressable smoke detectors -Strategically located throughout the facility
- Addressable heat detectors - Strategically located inside specific rooms, e.g. all laboratories, kitchen.
- Addressable pull stations
- Vandal resistant cover on all pull stations located as per specification and regulations
- Horns with Strobe lighting
- Gas point sensors - For all laboratories
- Equipment installation labour and materials
- Programming and commissioning

Participants are required to survey the premises and propose an adequate system which fully fit the needs of the existing facility and buildings and include separate quotations for six monthly inspections and maintenance of the fire alarm systems to be installed.

Each participant must provide with his tender submission, brochures for all the proposed equipment.

SCOPE OF WORKS:

The works include, but is not limited to, the following:

- Design of an appropriate system, Supply, Installation and commissioning of the fire alarm system to the two new classroom building, namely blocks J and K inclusive of all smoke detectors, heat detectors, vandal proof Pull stations, Horn Strobes, connection to main fire panel in Block A, all infrastructure works required for proper installations – conduits, wires, fittings, fixtures, Trenching & Ducting works and Builders works; **as an expansion to the existing fire alarm system.**
- Linking the existing Conventional fire alarm panel in the Canteen to the Addressable fire alarm system;
- Installation of Gas detectors on the first floor of Block A – i.e. the Physics, Chemistry and Biology Labs; and linking these detectors to the main fire alarm panel.
- Install new devices, pulls stations and horn strobes in several locations of the old campus. All the conduit & wiring works have been done but only the devices & fixtures are required.
- Supply, installation and commissioning of missing smoke & heat detectors, pull stations, Horn strobes and vandal proof covers to various areas of the old campus; i.e. blocks A, B, C, D, E, F and G.

Please note that the contractor is only required to supply, install and commission the fixtures outlined below, the wiring & conduit work for these fixtures have already been completed previously. See table below

Device / Fixture type	Quantity	Remarks
FSI 851 Smoke detectors	20 only	Infrastructure installed up to base of fixture; contractor required to supply, install and commission smoke detector Head.
Manual Pull Stations and Horn Strobes	12 each (24 total)	Infrastructure installed up to nearest Junction Box; contractor required to supply, install and commission the Pull Station and Horn strobe at the location identified.
Vandal proof covers (old campus)	15 only	These covers must be installed to protect some of the high risk pull stations around the campus. Vandal proof covers for block J & K must be prices separately.

- Supply, install and commission a new remote Annunciator panel to the Guard Booth (at the entrance of the compound); inclusive of any trenching & PVC ducting works to get to the guard booth.
- The new remote Annunciator will have to be installed in the new guard booth building, and not the existing old booth.
- All the wiring for the expansion works in blocks J and K must be done as FULL CONDUIT WIRING WORKS and the bidders should be guided accordingly. Contractors are asked to specify the type of conduit they intend to use, whether they are EMT or PVC type conduits.

- The system must be programmed to include a delay in the sounding of the horn strobe in areas other than the point of initial alert.
- The contractor must include for a One (1) year maintenance and Service contract of the entire fire alarm system, which will commence after the successful commissioning of the new combined existing & new system.

SOME GENERAL GUIDANCE FOR DIVICES

THERMAL (HEAT) DETECTORS

Thermal (Heat) Detectors shall meet with the following minimum requirements:

- State-of-the-art thermistor technology for fast response
- Rate-of-rise, 15°F (8.3°C) per minute
- Factory preset at 135°F (57°C); high temperature model at 90°F (38°C)
- Addressable by device
- Visible LEDs “blink” every time the unit is addressable
- 360°-field viewing angle of the visual alarm indicators (two bi-color LEDs). LEDs blink green in Normal condition and turn on steady red in Alarm
- Integral communications and built-in device-type identification
- Remote test feature from panel
- Built-in functional test switch activated by external magnet
- Low standby current
- Built-in tamper-resistant feature
- Designed for direct-surface or electrical-box mounting
- Sealed against back pressure
- UL 94-5V plastic flammability rating
- Connection Remote annunciator
- Optional sounder, relay, and isolator bases.

GAS SENSORS

Gas Sensors shall meet with the following minimum requirements:

- Addressable
- Detects all heating gases including; Natural Gas; LP, Propane and Methane Gas
- Ignition proof design
- 12-24 VAC or VDC input
- Connection to remote annunciator
- High and Low level relays that allows dual level alarm (Standard calibration of 10% and 25% of the LEL of Methane)
- Minimum of two sealed reed type dry contact relays
- Little to no periodic maintenance required
- Supervised/ Fail- Safe system

Sensors and Detectors are to be strategically located throughout the facility; heat detector and gas sensors to be placed in specific rooms (e.g. laboratories).

PULL STATIONS

Pull Stations shall meet with the following minimum requirements:

- Addressable
- Vandal resistant covers on pull stations in exposed areas
- Maintenance personnel can open station for inspection and address setting without causing an alarm condition
- Built-in bicolor LED, which is visible through the handle of the station, flashes in normal operation and latches steady red when in Alarm
- Handle latches in down position and the word "ACTIVATED" appears to clearly indicate the station has been operated
- Captive screw terminals wire-ready for easy connection to SLC loop
- Can be surface mounted or semi-flush mounted. Semi-flush mounts to a standard single gang, double-gang, or 4" square electrical box
- Highly visible
- Key reset
- Includes Braille text on station handle
- Connection to remote annunciator
- Optional trim ring

Pull Stations must be strategically located inside and outside of all buildings

HORN/ STROBES

Horns/ Strobes shall meet with the following minimum requirements:

- Addressable
- Automatic selection of 12 or 24-volt operation at 15 and 15/75 candela
- Plug-in design
- Field selectable candela settings on wall and ceiling units: 15, 15/75, 30, 75, 95, 110, 115, 135, 150, 177, 185
- Same mounting plate for wall and ceiling mounting units
- Shorting spring on mounting plate for continuity check before installation
- Temper resistant construction
- Outdoor wall and ceiling products rated from -40°F to 151°F
- Design allows minimal intrusion into the back box
- Horn rated at 88+ dbA at 16 volts
- Rotary switch for horn tone and three volume selections
- Outdoor products UL listed to UL 1638 (strobe) and UL 464 (horn) outdoor requirements
- Connection to remote annunciator
- Outdoor products NEMA 4X rated

Horn/ Strobes must be placed strategically inside and outside of all buildings.

NETWORK CONTROL ANNUNCIATOR (NCA)

NCA's shall meet with the following minimum requirements:

- Full supervision of all inputs and network integrity
- Enhanced-format 640-character LCD display with backlighting
- ACS bus for LED or graphic annunciators
- Optically isolated for printer interface
- LED status indicators: Power, Controls Active, Fire Alarm
- Pre-Alarm, Security, Alert, Supervisory, Trouble, Signal, Silence, CPU Failure, Point Disabled, Outer Event
- Status relays: Alarm, Trouble, Supervisory, Security
- Nonvolatile real-time clock can be synchronized with network by master node
- Security Tamper switch
- Network paging control, HVAC control
- Network-wide: Acknowledge, Silence, Reset
- History Buffer
- Print programming and history reports
- Report status of networked panels and their respective field devices to a central station
- Online programming and alter-status programs
- Intuitive user guidance program including interactive soft keys
- Fully programmable node-mapping subsystem
- Timer control for Auto Silence, AC Fail Delay

NCA to be located inside both Security Booths.

ADDITIONAL INFORMATION:

Site sketch # 1 –

- Identifies the electrical pull box (along the roadway) in front of block J, where any new wiring can be run through the ducts underground.

Site sketch # 2 –

- Shows that there is an existing 50 mm (2") diameter PVC duct located outside the canteen building, which can be used to gain underground access to the electrical pull box across the roadway.
- Contains the approximate measurements of the buildings (in plan).

The existing panel in block A

- Have the capacity to carry 159 devices (smoke & heat detectors) and 159 fixtures (pull stations, Horn strobes).
- Currently has 50 devices and 15 fixtures programmed it. The panel (a Honeywell Notifier type, model # NFS 640) can be fitted with one additional circuit board (if needed) to accommodate all the new requirements for the expansion works.

Vandal proof covers will be required for areas considered to be high risk of being tampered by students.

NOTES

General:

Attendees are asked as well to make note of the following key items which would impact on the pricing of the Works. These include:

1. Safety – Contractors to adhere to standard safety requirements (PPE, provision of proper signage during the execution of the works, dust and noise pollution, zero tolerance on use of drugs and alcohol and proper housekeeping).
2. Security – Contractors are to include in their quotation for the provision of security as the onsite security covers UTT's scope and UTT will not be responsible for loss or damage of contractor's materials, tools or equipment.
3. Attendance – The location of points of access to the ceiling areas and electrical power for the works will be identified on site by the UTT maintenance Staff.
4. Protection – The Contractors were advised of the need for adequate hard barriers and hoardings during the execution of the Works due to the proximity to the existing Car Parks; glass doors and particular the main access to the campus administrative offices.

All bidders are asked to make special reference to the closing date, to the compliance documents required (VAT & Income Tax clearance, NIS registration, Certificate of Incorporation, Contractors Risk Assessment form (including duration of the proposed works), evidence of relevant Insurances, as requested in the RFP invitation document, otherwise run the risk of their Bid submission being deemed unresponsive and returned to the contractor.

Contractor Requirements:

The Contractor will be required to:

- Supply and install an early warning fire alarm system, inclusive of control panel, sensors, alarm bells, wiring etc.
- Supply a detailed bill of quantities listing devices to be installed.
- Determine the most appropriate sensor and the exact location of where the sensors are to be installed.
- Furnish drawings showing proposed locations of devices.
- Train approximately ten UTT personnel on the function and use of the system.
- Guarantee performance of the system, for a minimum of one (1) year, after successful commissioning and acceptance by UTT.
- Supply all technical literature on commissioning.
- Exercise due care in the use and disposal of all materials used in this project so as not to contaminate the environment.
- Make good any and all damages occasioned by the said works.
- Clean area and dispose of all debris and surplus material in an environmentally friendly manner.

- Supply all necessary hoarding, temporary road access and dust control during the works.
- Follow all relevant OSHA standards shall apply.
- Provide full PPE for all workers on site during construction
- Specify the **time period** in which the required works could be done- STATED on Contractors Risk Assessment Form.

A schedule with timelines showing the period required for completion, bearing in mind the above, shall accompany this proposal.

Delivery Period:

All works are to be carried out so as not to obstruct the operations of the university. The hours of operation of the university are 8:00 a.m. to 6:00 p.m. Mondays to Fridays and 8:00 a.m. to 4:00 p.m. on Saturdays. Works that are not disruptive can be carried out during normal working hours.

Preparing BIDS:

Quotations are to include price, duration and assumptions made. The contractor shall read the scope of works carefully in order to precisely determine all the materials that are necessary to complete the works. He shall visit the site to ascertain the nature of the works to be done and the condition of the site (i.e. **attendance at site visits is mandatory**).

Consequently, when bids are closed, all participants will be deemed to have visited the site and clearly ascertained all the conditions likely to affect the carrying out of the Services. Therefore, any activity or activities deemed necessary to achieve the objective, which are not captured in this scope of works, should be included in the bid separately. Thus, no provisions or variations would be made for neglect or omissions by the contractor.