



*Bids and Awards Committee for Goods and Services*

December 9, 2020

**BID BULLETIN NO. 1**

This Bid Bulletin No. 1 is issued to modify or amend items in the Bid Document with Bid ID No.: 287578 for the **Supply, Delivery, Installation and Integration of Fire Detection, Alarm and Sprinkler System**.

For the above-mentioned project, the following revisions in the bidding documents were effected:

1) Amendments to Section I – INVITATION TO BID

<i>Paragraph No.</i>	<i>Before</i>	<i>Revised</i>
<b>1</b>	The <i>PHILIPPINE SCIENCE HIGH SCHOOL – MAIN CAMPUS</i> , through the <i>GAA 2020</i> intends to apply the sum of <b><i>Three Million Four Hundred Thousand Pesos (Php 3,400,000.00)</i></b> being the ABC to payments under the contract for <b><i>Supply, Delivery, Installation and Integration of Fire Detection, Alarm and Sprinkler System</i></b> . Bids received in excess of the ABC shall be automatically rejected at bid opening.	The <i>PHILIPPINE SCIENCE HIGH SCHOOL – MAIN CAMPUS</i> , through the <i>GAA 2019</i> intends to apply the sum of <b><i>Three Million Four Hundred Thousand Pesos (Php 3,400,000.00)</i></b> being the ABC to payments under the contract for <b><i>Supply, Delivery, Installation and Integration of Fire Detection, Alarm and Sprinkler System</i></b> . Bids received in excess of the ABC shall be automatically rejected at bid opening.

2) Amendments to Section III – BID DATA SHEET

<i>ITB Clause</i>	<i>Before</i>	<i>Revised</i>
<b>5.3</b>	For this purpose, contracts similar to the Project shall be:  a. <b><i>Supply, Delivery, Installation and Integration of Fire Detection Alarm System</i></b> .  b. completed within <b><i>five (5) years</i></b> prior to the deadline for the submission and receipt of bids.	For this purpose, contracts similar to the Project shall be:  a. <b><i>Supply, Delivery, Installation and Integration of Fire Detection, Alarm and Sprinkler System</i></b> .  b. completed within <b><i>five (5) years</i></b> prior to the deadline for the submission and receipt of bids.

3) Amendments to Section VII – TECHNICAL SPECIFICATIONS

<i>Before</i>	<i>Revised</i>
<b>SUPPLY, DELIVERY, INSTALLATION AND INTEGRATION OF FIRE DETECTION ALARM SYSTEM</b>	<b>SUPPLY, DELIVERY, INSTALLATION AND INTEGRATION OF FIRE DETECTION ALARM SYSTEM</b>
<p>The work includes providing new fire protection systems for the proposed building. The equipment, material installations, workmanship, inspection and testing shall be in strict accordance with the required advisory provisions of National Fire Protection Association Standards, Fire Code of the Philippines and National Building Code, except as modified herein.</p> <p>The work includes the following:</p> <ul style="list-style-type: none"> <li>A. Complete wet pipe and automatic sprinkler system at the Administration Building 3rd Floor &amp; Academic Building system. System shall be complete including automatic fire sprinkler system, fire pump, fire department connection, valves, hose, hose valves, hose cabinet, etc.</li> <li>B. Painting of pipe work and equipment.</li> <li>C. Testing and commissioning.</li> <li>D. Provision of operating instructions and maintenance manuals.</li> <li>E. Training of the building's maintenance staff for proper operation of the entire system.</li> </ul> <p>The contractor shall be responsible for coordinating his work with the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space. Requirement for portable fire extinguisher shall comply with the local fire department policy.</p>	<p>The work includes providing new fire protection systems for the proposed building. The equipment, material installations, workmanship, inspection and testing shall be in strict accordance with the required advisory provisions of National Fire Protection Association Standards, Fire Code of the Philippines and National Building Code, except as modified herein.</p> <p>The work includes the following:</p> <ul style="list-style-type: none"> <li>F. Complete wet pipe and automatic sprinkler system at the Administration Building 3rd Floor &amp; Academic Building system. System shall be complete including automatic fire sprinkler system, fire pump, fire department connection, valves, hose, hose valves, hose cabinet, etc.</li> <li>G. Painting of pipe work and equipment.</li> <li>H. Testing and commissioning.</li> <li>I. Provision of operating instructions and maintenance manuals.</li> <li>J. Training of the building's maintenance staff for proper operation of the entire system.</li> </ul> <p>The contractor shall be responsible for coordinating his work with the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space. Requirement for portable fire extinguisher shall comply with the local fire department policy.</p>
<b><u>FIRE DETECTION AND ALARM SYSTEM</u></b>	<b><u>FIRE DETECTION AND ALARM SYSTEM</u></b>

<p><u>PART I: GENERAL</u></p>	<p><u>PART I: GENERAL</u></p>
<p>1.1 DESCRIPTION</p> <p>A. Provide fire detection and alarm system in accordance with the Contract Documents.</p> <p>B. The fire detection and alarm system shall be a stand-alone system operating independently of other control systems. It shall have an automatic dial-up feature to the BFP Fire Station.</p> <p>C. Related work specified in other divisions of these specifications:</p> <ol style="list-style-type: none"> <li>1. Sprinkler water flow and tamper switches.</li> <li>2. Magnetic door holders and electric door locking hardware.</li> <li>3. Public Address Emergency Announcement</li> </ol> <p>Life Safety Equipment Interfaces</p>	<p>1.1 DESCRIPTION</p> <p>D. Provide fire detection and alarm system in accordance with the Contract Documents.</p> <p>E. The fire detection and alarm system shall be a stand-alone system operating independently of other control systems. It shall have an automatic dial-up feature to the BFP Fire Station.</p> <p>F. Related work specified in other divisions of these specifications:</p> <ol style="list-style-type: none"> <li>4. Sprinkler water flow and tamper switches.</li> <li>5. Magnetic door holders and electric door locking hardware.</li> <li>6. Public Address Emergency Announcement</li> </ol> <p>Life Safety Equipment Interfaces</p>
<p>1.2 RELATED DOCUMENTS</p> <p>A. All work specified in this specification is subject to the provisions of Electronics General Provisions.</p> <p>Refer to the following specification of related work in connection with the Fire Detection and Alarm System: Background Music (BGM) and Public Address (PA) System</p>	<p>1.2 RELATED DOCUMENTS</p> <p>B. All work specified in this specification is subject to the provisions of Electronics General Provisions.</p> <p>Refer to the following specification of related work in connection with the Fire Detection and Alarm System: Background Music (BGM) and Public Address (PA) System</p>
<p>1.3 QUALITY ASSURANCE</p> <p>A. Fire Department approval of fire detection and alarm system.</p> <p>B. Manufacturer and equipment supplier shall have a minimum of ten (10) years of experience as a contractor of fire detection and alarm system and shall have at least five (5) completed or on-going FDAS installation in the Philippines.</p>	<p>1.3 QUALITY ASSURANCE</p> <p>E. Fire Department approval of fire detection and alarm system.</p> <p>F. Manufacturer and equipment supplier shall have a minimum of ten (10) years of experience as a contractor of fire detection and alarm system and shall have at least five (5) completed or on-going FDAS installation in the Philippines.</p>

<p>C. Equipment supplier shall have twenty-four (24) hour parts and labor service available with a maximum of four (4) hour response time.</p> <p>D. Prior to making required submittals, system supplier shall meet with the Fire Department and make an informal presentation of the fire alarm and detection system. Meeting minutes shall be issued and comments incorporated into the required submittals.</p> <p>Engineer In-Charge supervising the work shall be a duly registered Electronics Engineer supervised by a Professional Electronics Engineer as required by RA 9292 and the revised IRR of The National Building Code of the Philippines.</p>	<p>G. Equipment supplier shall have twenty-four (24) hour parts and labor service available with a maximum of four (4) hour response time.</p> <p>H. Prior to making required submittals, system supplier shall meet with the Fire Department and make an informal presentation of the fire alarm and detection system. Meeting minutes shall be issued and comments incorporated into the required submittals.</p> <p>Engineer In-Charge supervising the work shall be a duly registered Electronics Engineer supervised by a Professional Electronics Engineer as required by RA 9292 and the revised IRR of The National Building Code of the Philippines.</p>
<p>1.4 STANDARDS</p> <p>A. Fire Department Requirements B. National Building Code of the Philippines C. National Fire Protection Association (NFPA 72, 101, 5000)</p> <p>RA 9514 Revised Fire Code of the Philippines of 2008 and its IRR</p>	<p>1.4 STANDARDS</p> <p>D. Fire Department Requirements E. National Building Code of the Philippines F. National Fire Protection Association (NFPA 72, 101, 5000)</p> <p>RA 9514 Revised Fire Code of the Philippines of 2008 and its IRR</p>
<p>1.4 ABBREVIATIONS</p> <p>A. FACP Fire Alarm Control Panel B. FTS Firefighter's Telephone System</p> <p>FCC Fire Command Center</p>	<p>1.4 ABBREVIATIONS</p> <p>C. FACP Fire Alarm Control Panel D. FTS Firefighter's Telephone System</p> <p>FCC Fire Command Center</p>
<p>1.5 SUBMITTALS</p> <p>A. Minutes of system supplier's meeting with the Fire Department. B. Manufacturer's product data sheets for equipment including Fire Marshal listing numbers. C. Floor plans (minimum 1:100 scale) showing device locations and interconnecting conduit and wire. Floor plan (minimum 1:25 scale) of the FCC indicating fire management</p>	<p>1.5 SUBMITTALS</p> <p>L. Minutes of system supplier's meeting with the Fire Department. M. Manufacturer's product data sheets for equipment including Fire Marshal listing numbers. N. Floor plans (minimum 1:100 scale) showing device locations and interconnecting conduit and wire. Floor plan (minimum 1:25 scale) of the FCC indicating fire management</p>

<p>system equipment, equipment furnished by others, tables, plan racks, and required clearances. Elevations (minimum 1:25 scale) of each wall of the FCC.</p> <p>D. Riser diagram showing devices, equipment, and interconnecting conduit and wire. Indicate points of connection to other equipment such as fire pump controllers, dry pipe sprinkler systems, elevator machine rooms and shafts and kitchen hood fire protection systems.</p> <p>E. Scaled detail drawings of FACP</p> <p>F. Wiring diagram for each device.</p> <p>G. Wiring diagrams for smoke control sequence.</p> <p>H. Voltage drop calculations.</p> <p>I. Interface installation shop drawing for magnetic door holders, and electric door locking hardware.</p> <p>J. List of all devices with address identification.</p> <p>K. Seismic restraint calculations.</p> <p>Layout of Fire Alarm Sub-panels.</p>	<p>system equipment, equipment furnished by others, tables, plan racks, and required clearances. Elevations (minimum 1:25 scale) of each wall of the FCC.</p> <p>O. Riser diagram showing devices, equipment, and interconnecting conduit and wire. Indicate points of connection to other equipment such as fire pump controllers, dry pipe sprinkler systems, elevator machine rooms and shafts and kitchen hood fire protection systems.</p> <p>P. Scaled detail drawings of FACP</p> <p>Q. Wiring diagram for each device.</p> <p>R. Wiring diagrams for smoke control sequence.</p> <p>S. Voltage drop calculations.</p> <p>T. Interface installation shop drawing for magnetic door holders, and electric door locking hardware.</p> <p>U. List of all devices with address identification.</p> <p>V. Seismic restraint calculations.</p> <p>Layout of Fire Alarm Sub-panels.</p>
<p>1.7 FIELD TESTING</p> <p>A. Wiring shall be inspected and tested for continuity and short circuits. The minimum allowable resistance between any two conductors or between conductors and ground is ten mega ohms measured with a 500-volt megger.</p> <p>B. Field Test Reports:</p> <ol style="list-style-type: none"> <li>1. Certification that equipment has been properly installed and is in satisfactory operating condition.</li> <li>2. Sensitivity settings for smoke detectors.</li> <li>3. Detailed operational test report in matrix form indicating each initiating device, each signaling device, each communication device, and each control and indicating light on each piece of equipment. Report shall certify the following:</li> </ol>	<p>1.7 FIELD TESTING</p> <p>C. Wiring shall be inspected and tested for continuity and short circuits. The minimum allowable resistance between any two conductors or between conductors and ground is ten mega ohms measured with a 500-volt megger.</p> <p>D. Field Test Reports:</p> <ol style="list-style-type: none"> <li>4. Certification that equipment has been properly installed and is in satisfactory operating condition.</li> <li>5. Sensitivity settings for smoke detectors.</li> <li>6. Detailed operational test report in matrix form indicating each initiating device, each signaling device, each communication device, and each control and indicating light on each piece of equipment. Report shall certify the following:</li> </ol>

<ul style="list-style-type: none"> <li>a. Successful operation of each alarm and supervisory initiating device.</li> <li>b. Successful operation of each signaling device.</li> <li>c. Successful operation of automatic smoke control sequences.</li> <li>d. Successful operation of FACP</li> <li>e. Successful operation of Fireman’s Telephone Systems</li> <li>f. Successful operation of line supervision devices.</li> <li>g. Successful operation of offsite alarm monitoring system connection (optional).</li> </ul> <p>Successful operation of unlocking electronically locked doors.</p>	<ul style="list-style-type: none"> <li>h. Successful operation of each alarm and supervisory initiating device.</li> <li>i. Successful operation of each signaling device.</li> <li>j. Successful operation of automatic smoke control sequences.</li> <li>k. Successful operation of FACP</li> <li>l. Successful operation of Fireman’s Telephone Systems</li> <li>m. Successful operation of line supervision devices.</li> <li>n. Successful operation of offsite alarm monitoring system connection (optional).</li> </ul> <p>Successful operation of unlocking electronically locked doors.</p>
<p>1.8 IDENTIFICATION</p> <p>Provide an identification nameplate for each equipment cabinet.</p>	<p>1.8 IDENTIFICATION</p> <p>Provide an identification nameplate for each equipment cabinet.</p>
<p>1.9 SEQUENCE OF OPERATION</p> <ul style="list-style-type: none"> <li>A. A computerized intelligent addressable, non-coded, two stage evacuation system complete with integrated emergency voice two-way communications system will be provided. The system will be designed using National Building Code and Fire Code of the Philippines and other related standards such as NFPA as reference.</li> <li>B. The main design principle of the proposed system is to provide localized microprocessor based intelligent Fire Alarm Control Panel, FACP with Emergency Voice Evacuation System, Detectors and system are able to identify</li> </ul>	<p>1.9 SEQUENCE OF OPERATION</p> <ul style="list-style-type: none"> <li>I. A computerized intelligent addressable, non-coded, two stage evacuation system complete with integrated emergency voice two-way communications system will be provided. The system will be designed using National Building Code and Fire Code of the Philippines and other related standards such as NFPA as reference.</li> <li>J. The main design principle of the proposed system is to provide localized microprocessor based intelligent Fire Alarm Control Panel, FACP with Emergency Voice Evacuation System, Detectors and system are able to identify</li> </ul>

<p>maintenance points, malfunctioning and line discontinuity.</p> <p>C. The primary means of detection/suppression will be a system of smoke detectors integrated with the automatic sprinkler system. Smoke detectors will be provided in all areas of the building to comply with local codes, and will be supplemented by the following types of early warning detection.</p> <p>D. All detectors and zone control and monitor modules will be connected on an addressable loop and will each possess a unique address to allow specific identification in the case of alarm or malfunction and environmental sensitivity adjustment.</p> <p>E. Upon activation of any alarm, initiating devices the system will send signal to:</p> <ol style="list-style-type: none"> <li>1. Transmit an evacuation broadcast to the fire floor and floor above.</li> <li>2. Transmit an alert broadcast, IF: <ol style="list-style-type: none"> <li>a. Fire alarm within the floor is not acknowledged within 5 minutes.</li> <li>b. Manual pull station is activated within the fire alarm floor.</li> <li>c. Sprinkler flow switch/supervisory switch is activated.</li> <li>d. Another detector is triggered/ activated within the floor.</li> </ol> </li> <li>3. Automatically stop all building floors recirculating air handling systems(fans).</li> <li>4. Automatically start all smoke removal and pressurization fan systems as well as open/close appropriate dampers.</li> <li>5. Activate all fire shutters to stage position.</li> <li>6. Release all secured door magnetic locks.</li> </ol>	<p>maintenance points, malfunctioning and line discontinuity.</p> <p>K. The primary means of detection/suppression will be a system of smoke detectors integrated with the automatic sprinkler system. Smoke detectors will be provided in all areas of the building to comply with local codes, and will be supplemented by the following types of early warning detection.</p> <p>L. All detectors and zone control and monitor modules will be connected on an addressable loop and will each possess a unique address to allow specific identification in the case of alarm or malfunction and environmental sensitivity adjustment.</p> <p>M. Upon activation of any alarm, initiating devices the system will send signal to:</p> <ol style="list-style-type: none"> <li>11. Transmit an evacuation broadcast to the fire floor and floor above.</li> <li>12. Transmit an alert broadcast, IF: <ol style="list-style-type: none"> <li>e. Fire alarm within the floor is not acknowledged within 5 minutes.</li> <li>f. Manual pull station is activated within the fire alarm floor.</li> <li>g. Sprinkler flow switch/supervisory switch is activated.</li> <li>h. Another detector is triggered/ activated within the floor.</li> </ol> </li> <li>13. Automatically stop all building floors recirculating air handling systems(fans).</li> <li>14. Automatically start all smoke removal and pressurization fan systems as well as open/close appropriate dampers.</li> <li>15. Activate all fire shutters to stage position.</li> <li>16. Release all secured door magnetic locks.</li> </ol>
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<ul style="list-style-type: none"> <li>7. Annunciate all functions at the Fire Alarm Control Panel at the Ground Floor.</li> <li>8. Should the initial alarm not be acknowledged within five minutes, an evacuation broadcast will be transmitted to the entire building complex.</li> <li>9. Transmit signal to the local fire department.</li> <li>10. A hard copy printout to be initiated at the printer.</li> </ul> <p>F. A selective paging system will be integrated with the signaling system to allow authorized announcements.</p> <p>G. An integrated UL or equivalent listed dedicated two-way firefighter's telephone system will be provided at each exit stair entry to allow direct communication between the fire fighters and the Fire Command Center.</p> <p>H. The main control panel will consist of a central processing unit, printer and color LCD unit annunciator with a complete graphics package identifying all fire zone status.</p> <p>The printer shall be as an event and status printer, it shall be laser jet type with a minimum speed of 200 characters per second at 10 characters per inch.</p>	<ul style="list-style-type: none"> <li>17. Annunciate all functions at the Fire Alarm Control Panel at the Ground Floor.</li> <li>18. Should the initial alarm not be acknowledged within five minutes, an evacuation broadcast will be transmitted to the entire building complex.</li> <li>19. Transmit signal to the local fire department.</li> <li>20. A hard copy printout to be initiated at the printer.</li> </ul> <p>N. A selective paging system will be integrated with the signaling system to allow authorized announcements.</p> <p>O. An integrated UL or equivalent listed dedicated two-way firefighter's telephone system will be provided at each exit stair entry to allow direct communication between the fire fighters and the Fire Command Center.</p> <p>P. The main control panel will consist of a central processing unit, printer and color LCD unit annunciator with a complete graphics package identifying all fire zone status.</p> <p>The printer shall be as an event and status printer, it shall be laser jet type with a minimum speed of 200 characters per second at 10 characters per inch.</p>
<p>1.10 SYSTEM ZONING <i>(To be further coordinated with the fire and life safety consultant)</i></p> <p>A. Firefighter's Telephone System:</p> <ul style="list-style-type: none"> <li>1. Plug in jacks: Each stairwell shall be a separate, individual zone.</li> <li>2. Emergency telephones: Each stairwell shall be a separate, individual zone.</li> <li>3. Each bank of elevator cabs shall be a separate, individual zone.</li> <li>4. Each elevator lobby bank riser shall be a separate, individual zone.</li> </ul> <p>B. Damper Override Control and Status Indication:</p>	<p>1.10 SYSTEM ZONING <i>(To be further coordinated with the fire and life safety consultant)</i></p> <p>C. Firefighter's Telephone System:</p> <ul style="list-style-type: none"> <li>5. Plug in jacks: Each stairwell shall be a separate, individual zone.</li> <li>6. Emergency telephones: Each stairwell shall be a separate, individual zone.</li> <li>7. Each bank of elevator cabs shall be a separate, individual zone.</li> <li>8. Each elevator lobby bank riser shall be a separate, individual zone.</li> </ul> <p>D. Damper Override Control and Status Indication:</p>



<p>1. Separate zone for each damper actuator.</p> <p>Damper switches each with open close and auto functions as well as positive indication shall be provided at each floor and are to be provided at the main control panel.</p>	<p>2. Separate zone for each damper actuator.</p> <p>Damper switches each with open close and auto functions as well as positive indication shall be provided at each floor and are to be provided at the main control panel.</p>
<p>1.11 SCOPE</p> <p>The scope of work under this head shall include design, supply, and installation of additional Fire Alarm System devices to the whole building complex. The work under this system shall consist of supply, installation, testing, training &amp; handing over of all materials, equipment's and appliances and labor necessary to commission the said system, complete with Addressable fire alarm system for all common areas. The system shall comprise of Smoke Detectors, Heat Detectors, Alarm Notification Devices, Manual Pull Stations, Modules, and Relays for interfacing with other systems. It shall also include laying of cabling, necessary for installation of the system as indicated in the specification and Bill of Quantities. Any openings/chasing in the wall/ceiling required to be made for the installation shall be made good in an appropriate manner.</p>	<p>1.11 SCOPE</p> <p>The scope of work under this head shall include design, supply, and installation of additional Fire Alarm System devices to the whole building complex. The work under this system shall consist of supply, installation, testing, training &amp; handing over of all materials, equipment's and appliances and labor necessary to commission the said system, complete with Addressable fire alarm system for all common areas. The system shall comprise of Smoke Detectors, Heat Detectors, Alarm Notification Devices, Manual Pull Stations, Modules, and Relays for interfacing with other systems. It shall also include laying of cabling, necessary for installation of the system as indicated in the specification and Bill of Quantities. Any openings/chasing in the wall/ceiling required to be made for the installation shall be made good in an appropriate manner.</p>
<p>1.12 OTHER APPROVALS</p> <p>The system shall have proper listing and/or approval from the following nationally recognized agencies:</p> <p style="padding-left: 40px;">UL Underwriters Laboratories Inc ULC Underwriters Laboratories Canada FM Factory Mutual MEA Material Equipment Acceptance (NYC) CSFM California State Fire Marshal</p>	<p>1.12 OTHER APPROVALS</p> <p>The system shall have proper listing and/or approval from the following nationally recognized agencies:</p> <p style="padding-left: 40px;">UL Underwriters Laboratories Inc ULC Underwriters Laboratories Canada FM Factory Mutual MEA Material Equipment Acceptance (NYC) CSFM California State Fire Marshal</p>
<p><u>PART II: PRODUCTS</u></p>	<p><u>PART II: PRODUCTS</u></p>
<p>2.1 ACCEPTABLE MANUFACTURERS</p>	<p>2.1 ACCEPTABLE MANUFACTURERS</p>

<p>A. Fire Alarm and Detection System components shall be of the same manufacturer, unless otherwise noted.</p> <p>Contractor must have at least ten (10) years of experience and existence.</p>	<p>B. Fire Alarm and Detection System components shall be of the same manufacturer, unless otherwise noted.</p> <p>Contractor must have at least ten (10) years of experience and existence.</p>
<p>2.1 GENERAL</p> <p>A. Alarm and trouble signals shall be digitally encoded by listed electronic devices onto a NFPA Style 6 or 7 (Class A) looped multiplex communication system.</p> <p>B. Alarm and trouble signals from all addressable devices shall be digitally encoded NFPA Style 6 or 7 (Class A) signaling line conduit.</p> <p>C. Digitized electronic signals shall employ check digits or multiple polling.</p> <p>D. Response time between alarm initiation and recording is not to exceed five (5) seconds.</p> <p>E. The fire alarm control panel (FACP) shall consist of low current, solid-state integrated circuits, and shall be powered from centralized emergency power line source and centralized standby battery power source.</p> <p>F. Power for initiating and signaling devices may be from the fire alarm control panel to which they are connected.</p> <p>G. A single ground or open on any system signaling line circuits, i.e., communication network (multiplex loop) shall not cause system malfunction or loss of operating power.</p> <p>H. Alarm signals arriving at the FACP shall not be lost following a power failure (or outage) until the alarm signal is transmitted and recorded.</p> <p>I. Speaker circuits shall be electrically supervised for open and short circuit per smoke zone.</p> <p>J. Two-way telephone communication circuits shall be arranged so as to</p>	<p>2.1 GENERAL</p> <p>K. Alarm and trouble signals shall be digitally encoded by listed electronic devices onto a NFPA Style 6 or 7 (Class A) looped multiplex communication system.</p> <p>L. Alarm and trouble signals from all addressable devices shall be digitally encoded NFPA Style 6 or 7 (Class A) signaling line conduit.</p> <p>M. Digitized electronic signals shall employ check digits or multiple polling.</p> <p>N. Response time between alarm initiation and recording is not to exceed five (5) seconds.</p> <p>O. The fire alarm control panel (FACP) shall consist of low current, solid-state integrated circuits, and shall be powered from centralized emergency power line source and centralized standby battery power source.</p> <p>P. Power for initiating and signaling devices may be from the fire alarm control panel to which they are connected.</p> <p>Q. A single ground or open on any system signaling line circuits, i.e., communication network (multiplex loop) shall not cause system malfunction or loss of operating power.</p> <p>R. Alarm signals arriving at the FACP shall not be lost following a power failure (or outage) until the alarm signal is transmitted and recorded.</p> <p>S. Speaker circuits shall be electrically supervised for open and short circuit per smoke zone.</p> <p>T. Two-way telephone communication circuits shall be arranged so as to</p>

<p>allow communication between the fire command center and remote telephone locations.</p> <p>It shall be possible to connect the telephone circuits to the speaker circuits to allow voice communication over the speaker circuit from a telephone handset.</p>	<p>allow communication between the fire command center and remote telephone locations.</p> <p>It shall be possible to connect the telephone circuits to the speaker circuits to allow voice communication over the speaker circuit from a telephone handset.</p>
<p><b>2.3 LINE SUPERVISION</b></p> <p>A. All system equipment and wiring shall be supervised.</p> <p>B. Style 7 wiring shall be arranged so that the system shall not be affected by a single open, short, or ground condition. Report trouble condition and automatically switch over to alternate wiring path.</p> <p>C. Style Y wiring shall utilize end of line resistors.</p> <p>D. Addressable Channel Wiring: Style 6.</p> <p>E. Multiplex Channel Wiring: Style 7.</p> <p>F. Non-Addressable Initiating Device Wiring: Style Y.</p> <p>VCS and FTS Device Wiring: Style Y.</p>	<p><b>2.3 LINE SUPERVISION</b></p> <p>G. All system equipment and wiring shall be supervised.</p> <p>H. Style 7 wiring shall be arranged so that the system shall not be affected by a single open, short, or ground condition. Report trouble condition and automatically switch over to alternate wiring path.</p> <p>I. Style Y wiring shall utilize end of line resistors.</p> <p>J. Addressable Channel Wiring: Style 6.</p> <p>K. Multiplex Channel Wiring: Style 7.</p> <p>L. Non-Addressable Initiating Device Wiring: Style Y.</p> <p>VCS and FTS Device Wiring: Style Y.</p>
<p><b>2.4 STANDBY BATTERIES</b></p> <p>A. Provide sufficient battery (sealed lead-acid type) capacity to operate the entire system upon loss of power under maximum normal load for a minimum period of 24 hours with a minimum of 5 minutes of alarm operation at the end of this period.</p> <p>The system shall automatically transfer to the standby batteries upon power failure. Battery charging and recharging shall be automatic.</p>	<p><b>2.4 STANDBY BATTERIES</b></p> <p>B. Provide sufficient battery (sealed lead-acid type) capacity to operate the entire system upon loss of power under maximum normal load for a minimum period of 24 hours with a minimum of 5 minutes of alarm operation at the end of this period.</p> <p>The system shall automatically transfer to the standby batteries upon power failure. Battery charging and recharging shall be automatic.</p>
<p><b>2.5 FIRE ALARM CONTROL PANEL (FACP)</b></p> <p>A. Solid state, microprocessor based, modular design, fully supervised. Steel enclosure in standard finish, with hinged, locking door. Integral</p>	<p><b>2.5 FIRE ALARM CONTROL PANEL (FACP)</b></p> <p>G. Solid state, microprocessor based, modular design, fully supervised. Steel enclosure in standard finish, with hinged, locking door. Integral</p>

<p>power supply, standby batteries, and battery charger.</p> <p>B. Provide power on LED, power failure LED, system trouble LED, system reset switch, alarm silence switch, trouble silence switch, manual evacuation switch, alarm acknowledge switch, trouble acknowledge switch, supervisory service acknowledge switch, lamp test button, tone alert, battery supervision LED, auxiliary relays, and other system indicators and controls necessary for processing alarm and signaling functions. Indicating lamps shall be LED type.</p> <p>C. Provide appropriate permanent identification labeling of control and indicating functions.</p> <p>D. Annunciation: Serial annunciator with back lit, alphanumeric, 80-character liquid crystal display indicating clear language information as to the type of alarm (device type), point status (alarm or trouble), number of alarms on the system, and a custom location label. Ability to scroll back through prior system actions.</p> <p>E. System shall utilize addressable type smoke detection with alarm verification, self-test feature, individual sensor automatic timed sensitivity adjustment, individual smoke sensor field adjustable sensitivity set from FACP, and automatic maintenance alarm feature.</p> <p>F. Provide at least one (1) spare loop for maintenance purposes.</p> <p>Networking Capable Panel (for FACP Interconnection) for integration with other building facilities, for future expansion or for addition of initiating and notification devices during fit-out.</p>	<p>power supply, standby batteries, and battery charger.</p> <p>H. Provide power on LED, power failure LED, system trouble LED, system reset switch, alarm silence switch, trouble silence switch, manual evacuation switch, alarm acknowledge switch, trouble acknowledge switch, supervisory service acknowledge switch, lamp test button, tone alert, battery supervision LED, auxiliary relays, and other system indicators and controls necessary for processing alarm and signaling functions. Indicating lamps shall be LED type.</p> <p>I. Provide appropriate permanent identification labeling of control and indicating functions.</p> <p>J. Annunciation: Serial annunciator with back lit, alphanumeric, 80-character liquid crystal display indicating clear language information as to the type of alarm (device type), point status (alarm or trouble), number of alarms on the system, and a custom location label. Ability to scroll back through prior system actions.</p> <p>K. System shall utilize addressable type smoke detection with alarm verification, self-test feature, individual sensor automatic timed sensitivity adjustment, individual smoke sensor field adjustable sensitivity set from FACP, and automatic maintenance alarm feature.</p> <p>L. Provide at least one (1) spare loop for maintenance purposes.</p> <p>Networking Capable Panel (for FACP Interconnection) for integration with other building facilities, for future expansion or for addition of initiating and notification devices during fit-out.</p>
<p>2.6 FIRE ALARM INITIATING DEVICES</p> <p>A. General:</p>	<p>2.6 FIRE ALARM INITIATING DEVICES</p> <p>G. General:</p>

<ol style="list-style-type: none"> <li>1. Intelligent Addressable type.</li> <li>2. Provide auxiliary relays where required to satisfy system operational requirements.</li> <li>3. Smoke detectors shall be intelligent addressable type.</li> </ol> <p>B. Manual Pull Stations:</p> <ol style="list-style-type: none"> <li>1. Furnish and install where indicated on plan.</li> <li>2. All manual pull station shall be single action non-coded break glass type.</li> <li>3. Manual station shall be constructed of Die Cast Metal or Lexan with clearly visible operating instructions.</li> <li>4. Station shall be suitable for surface mounting on matching back box.</li> <li>5. Pulling the alarm handle shall activate the toggle switch which shall cause the station in alarm position.</li> <li>6. Push button type manual station shall not be acceptable.</li> </ol> <p>C. Smoke and Heat Detectors:</p> <ol style="list-style-type: none"> <li>1. Photoelectric smoke detector (Addressable): <ol style="list-style-type: none"> <li>a. LED light source, silicon photodiode receiving element. Line filter and time delay circuitry to prevent transient false alarms.</li> <li>b. 360° smoke entry, locking tamper screw, pulsating on power LED indicator, UL 268.</li> <li>c. Adjustable obscuration/smoke detection levels.</li> <li>d. Provides maintenance identification alarm.</li> <li>e. Provides two LED function/working indication.</li> <li>f. The Detector shall have UL/FM/EN approval.</li> </ol> </li> <li>2. Photoelectric smoke detector (Conventional) <ol style="list-style-type: none"> <li>a. The detector shall be able to send detection signal to the</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>4. Intelligent Addressable type.</li> <li>5. Provide auxiliary relays where required to satisfy system operational requirements.</li> <li>6. Smoke detectors shall be intelligent addressable type.</li> </ol> <p>H. Manual Pull Stations:</p> <ol style="list-style-type: none"> <li>7. Furnish and install where indicated on plan.</li> <li>8. All manual pull station shall be single action non-coded break glass type.</li> <li>9. Manual station shall be constructed of Die Cast Metal or Lexan with clearly visible operating instructions.</li> <li>10. Station shall be suitable for surface mounting on matching back box.</li> <li>11. Pulling the alarm handle shall activate the toggle switch which shall cause the station in alarm position.</li> <li>12. Push button type manual station shall not be acceptable.</li> </ol> <p>I. Smoke and Heat Detectors:</p> <ol style="list-style-type: none"> <li>5. Photoelectric smoke detector (Addressable): <ol style="list-style-type: none"> <li>g. LED light source, silicon photodiode receiving element. Line filter and time delay circuitry to prevent transient false alarms.</li> <li>h. 360° smoke entry, locking tamper screw, pulsating on power LED indicator, UL 268.</li> <li>i. Adjustable obscuration/smoke detection levels.</li> <li>j. Provides maintenance identification alarm.</li> <li>k. Provides two LED function/working indication.</li> <li>l. The Detector shall have UL/FM/EN approval.</li> </ol> </li> <li>6. Photoelectric smoke detector (Conventional) <ol style="list-style-type: none"> <li>i. The detector shall be able to send detection signal to the</li> </ol> </li> </ol>
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<p>zone input module where this will give the zone address to FACP.</p> <ul style="list-style-type: none"> <li>b. This conventional optical smoke detector provides efficient reliable detection utilizing the light scatter sensing principle with rapid response to a fire signal.</li> <li>c. LED light source, silicon photodiode receiving element. Line filter and time delay circuitry to prevent transient false alarms.</li> <li>d. 360° smoke entry, locking tamper screw, pulsating on power LED indicator, UL 268.</li> <li>e. Adjustable obstruction/smoke detection levels.</li> <li>f. Provides maintenance identification alarm.</li> <li>g. Provides two LED function/working indication.</li> <li>h. The detector shall have UL/FM/EN approval.</li> </ul> <p>3. Heat detector:</p> <ul style="list-style-type: none"> <li>a. 135oF to 194oF Combination fixed temperature and rate of rise heat detector</li> <li>b. Locking tamper screw, UL 521.</li> <li>c. Provides maintenance identification alarm.</li> <li>d. Provides two LED function/working indication.</li> <li>e. The Detector shall have UL/FM/EN approval.</li> </ul> <p>4. Detector Base:</p> <ul style="list-style-type: none"> <li>a. All detector base shall fit into a common standard type base. Every base shall have a built-in option allowing mechanical locking of the detector head to prevent unauthorized removal or tampering.</li> </ul>	<p>zone input module where this will give the zone address to FACP.</p> <ul style="list-style-type: none"> <li>j. This conventional optical smoke detector provides efficient reliable detection utilizing the light scatter sensing principle with rapid response to a fire signal.</li> <li>k. LED light source, silicon photodiode receiving element. Line filter and time delay circuitry to prevent transient false alarms.</li> <li>l. 360° smoke entry, locking tamper screw, pulsating on power LED indicator, UL 268.</li> <li>m. Adjustable obstruction/smoke detection levels.</li> <li>n. Provides maintenance identification alarm.</li> <li>o. Provides two LED function/working indication.</li> <li>p. The detector shall have UL/FM/EN approval.</li> </ul> <p>7. Heat detector:</p> <ul style="list-style-type: none"> <li>f. 135oF to 194oF Combination fixed temperature and rate of rise heat detector</li> <li>g. Locking tamper screw, UL 521.</li> <li>h. Provides maintenance identification alarm.</li> <li>i. Provides two LED function/working indication.</li> <li>j. The Detector shall have UL/FM/EN approval.</li> </ul> <p>8. Detector Base:</p> <ul style="list-style-type: none"> <li>g. All detector base shall fit into a common standard type base. Every base shall have a built-in option allowing mechanical locking of the detector head to prevent unauthorized removal or tampering.</li> </ul>
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<ul style="list-style-type: none"> <li>b. Detector insertion and removal shall be by simple push-twist movement through the use of an extended tool by one person at the floor level with the detector mounting height up to 7 meter even with the mechanical locking device activated.</li> <li>c. The base shall be equipped with screw-less terminals capable of securely retaining wires up to 1.5 sq.mm. The base shall be suitable for use for both Class A &amp; Class B wiring.</li> <li>d. The standard base shall consist of a sealing plate to prevent dirt, dust, condensation or water from the conduit reaching the terminals or detector contact points.</li> <li>e. The standard base shall be supplied with a removable base cover to protect the contact area during installation stage and to allow checking and commissioning of the individual loops before insertion of the detectors. The dust cover shall be removable by an extended tool up to 7 meters from the floor level.</li> <li>f. Special base assemblies with sounders from the same manufacturer shall have minimum of 75dBA output.</li> </ul> <p>D. Device Monitoring Module</p> <ul style="list-style-type: none"> <li>1. The device monitoring module shall permit the use of conventional detecting devices including sprinkler flow switches and supervisory switches on the addressable system. The module can be mounted together in the fire alarm cabinet or be in the</li> </ul>	<ul style="list-style-type: none"> <li>h. Detector insertion and removal shall be by simple push-twist movement through the use of an extended tool by one person at the floor level with the detector mounting height up to 7 meter even with the mechanical locking device activated.</li> <li>i. The base shall be equipped with screw-less terminals capable of securely retaining wires up to 1.5 sq.mm. The base shall be suitable for use for both Class A &amp; Class B wiring.</li> <li>j. The standard base shall consist of a sealing plate to prevent dirt, dust, condensation or water from the conduit reaching the terminals or detector contact points.</li> <li>k. The standard base shall be supplied with a removable base cover to protect the contact area during installation stage and to allow checking and commissioning of the individual loops before insertion of the detectors. The dust cover shall be removable by an extended tool up to 7 meters from the floor level.</li> <li>l. Special base assemblies with sounders from the same manufacturer shall have minimum of 75dBA output.</li> </ul> <p>J. Device Monitoring Module</p> <ul style="list-style-type: none"> <li>2. The device monitoring module shall permit the use of conventional detecting devices including sprinkler flow switches and supervisory switches on the addressable system. The module can be mounted together in the fire alarm cabinet or be in the</li> </ul>
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<p>standard outlet boxes located near the device being monitored.</p> <p>E. Control Module</p> <ol style="list-style-type: none"> <li>1. Interfaces a controlled device to the addressable system, This enables the fire alarm panel to direct an instruction only to the intended device by addressing to its control module.</li> </ol> <p>F. ASPIRATING SMOKE DETECTOR (AIR SAMPLING DETECTOR)</p> <ol style="list-style-type: none"> <li>1. The aspirating smoke detector should have combination of dual-source optical smoke detection with advanced algorithms to detect a wide range of fires while maintaining enhanced immunity to nuisance particulates.</li> <li>2. The detector should be able to detect incipient fire conditions as early as 30 to 60 minutes before a fire actually starts for Early Warning Fire Detection and Very Early Warning Fire Detection.</li> <li>3. The detector should be connected to the SLC loop to communicate five levels of events for display and use in control-by-event system programming. Using the SLC connection, the system operator can also review real-time information on percent of alarm, drift compensation percent, and temperature. The system operator can also put the detector into service mode, or reset airflow baselines from the main FACP.</li> <li>4. Maximum air sample transport time from the farthest sampling port to the detector shall not exceed 120 seconds.</li> <li>5. Air-sampling detectors shall give a trouble signal if the airflow is outside the manufacturer's specified range.</li> <li>6. The sampling ports and in-line filter, if used, shall be kept clear in accordance with the</li> </ol>	<p>standard outlet boxes located near the device being monitored.</p> <p>K. Control Module</p> <ol style="list-style-type: none"> <li>2. Interfaces a controlled device to the addressable system, This enables the fire alarm panel to direct an instruction only to the intended device by addressing to its control module.</li> </ol> <p>L. ASPIRATING SMOKE DETECTOR (AIR SAMPLING DETECTOR)</p> <ol style="list-style-type: none"> <li>9. The aspirating smoke detector should have combination of dual-source optical smoke detection with advanced algorithms to detect a wide range of fires while maintaining enhanced immunity to nuisance particulates.</li> <li>10. The detector should be able to detect incipient fire conditions as early as 30 to 60 minutes before a fire actually starts for Early Warning Fire Detection and Very Early Warning Fire Detection.</li> <li>11. The detector should be connected to the SLC loop to communicate five levels of events for display and use in control-by-event system programming. Using the SLC connection, the system operator can also review real-time information on percent of alarm, drift compensation percent, and temperature. The system operator can also put the detector into service mode, or reset airflow baselines from the main FACP.</li> <li>12. Maximum air sample transport time from the farthest sampling port to the detector shall not exceed 120 seconds.</li> <li>13. Air-sampling detectors shall give a trouble signal if the airflow is outside the manufacturer's specified range.</li> <li>14. The sampling ports and in-line filter, if used, shall be kept clear in accordance with the</li> </ol>
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<p>manufacturer's published instructions.</p> <ol style="list-style-type: none"> <li>7. Air-sampling network piping and fittings shall be airtight and permanently fixed.</li> <li>8. Sampling system piping shall be conspicuously identified as "SMOKE DETECTOR SAMPLING TUBE — DO NOT DISTURB," as follows: <ol style="list-style-type: none"> <li>a. At changes in direction or branches of piping</li> <li>b. At each side of penetrations of walls, floors, or other barriers</li> <li>c. At intervals on piping that provide visibility within the space, but no greater than 20ft (6.1m)</li> </ol> </li> </ol> <p>A single device should detect as precise as 0.00046%/ft obscuration To 4%/ft obscuration and protects from 8,000 square feet (740 square meters) to large scale 21,500 square feet (2,000 square meters). The total pipe length should be at least 80 meters and should be able to expand up to 4,000 linear meters.</p>	<p>manufacturer's published instructions.</p> <ol style="list-style-type: none"> <li>15. Air-sampling network piping and fittings shall be airtight and permanently fixed.</li> <li>16. Sampling system piping shall be conspicuously identified as "SMOKE DETECTOR SAMPLING TUBE — DO NOT DISTURB," as follows: <ol style="list-style-type: none"> <li>d. At changes in direction or branches of piping</li> <li>e. At each side of penetrations of walls, floors, or other barriers</li> <li>f. At intervals on piping that provide visibility within the space, but no greater than 20ft (6.1m)</li> </ol> </li> </ol> <p>A single device should detect as precise as 0.00046%/ft obscuration To 4%/ft obscuration and protects from 8,000 square feet (740 square meters) to large scale 21,500 square feet (2,000 square meters). The total pipe length should be at least 80 meters and should be able to expand up to 4,000 linear meters.</p>
<p><b>2.7 FIRE ALARM NOTIFICATION APPLIANCE</b></p> <p><b>A. Speaker-Strobes</b></p> <ol style="list-style-type: none"> <li>1. Fire lights shall be a xenon-strobe type or equivalent. It shall be low-voltage (24VDC). <ol style="list-style-type: none"> <li>a. The maximum pulse duration shall be 2/10ths of one second (0.2 second with a maximum duty cycle of 40%). A pulse duration is defined as the time interval between initial and final points of 10% of maximum signal.</li> <li>b. The intensity shall be minimum of 75 candela.</li> <li>c. The flash rate shall be minimum of 1Hz and a maximum of 3Hz.</li> </ol> </li> </ol>	<p><b>2.7 FIRE ALARM NOTIFICATION APPLIANCE</b></p> <p><b>C. Speaker-Strobes</b></p> <ol style="list-style-type: none"> <li>4. Fire lights shall be a xenon-strobe type or equivalent. It shall be low-voltage (24VDC). <ol style="list-style-type: none"> <li>d. The maximum pulse duration shall be 2/10ths of one second (0.2 second with a maximum duty cycle of 40%). A pulse duration is defined as the time interval between initial and final points of 10% of maximum signal.</li> <li>e. The intensity shall be minimum of 75 candela.</li> <li>f. The flash rate shall be minimum of 1Hz and a maximum of 3Hz.</li> </ol> </li> </ol>

<ul style="list-style-type: none"> <li>2. The color shall be clear or nominal white (i.e. unfiltered or clear filtered white light).</li> <li>3. Electric, utilizing solid state electronic technology operating on a nominal 24 VDC, with a nominal rating of 82 dBA at 3m.</li> </ul> <p>B. Annunciator Panel- Back Lit Graphic Type</p> <ul style="list-style-type: none"> <li>1. Graphic annunciator showing the site plan, and access way shall be provided and installed in FCC room and every Elevator lobby in each floor.</li> <li>2. Indicating Lamps</li> </ul> <p>Provide supervised light emitting diodes (LED's) for indication.</p>	<ul style="list-style-type: none"> <li>5. The color shall be clear or nominal white (i.e. unfiltered or clear filtered white light).</li> <li>6. Electric, utilizing solid state electronic technology operating on a nominal 24 VDC, with a nominal rating of 82 dBA at 3m.</li> </ul> <p>D. Annunciator Panel- Back Lit Graphic Type</p> <ul style="list-style-type: none"> <li>3. Graphic annunciator showing the site plan, and access way shall be provided and installed in FCC room and every Elevator lobby in each floor.</li> <li>4. Indicating Lamps</li> </ul> <p>Provide supervised light emitting diodes (LED's) for indication.</p>
<p>2.8 FIREFIGHTER'S TELEPHONE SYSTEM (FTS)</p> <ul style="list-style-type: none"> <li>A. Solid state, microprocessor based, modular design, fully supervised. Steel enclosure in standard finish, with hinged, locking door. Integral power supply, standby batteries, and battery charger. Wall mount in FCC Room.</li> <li>B. Two-way voice communication between the FCC Room firefighter's phone jacks and emergency telephones. Selective zone paging to all or any combination of telephone zones. Provide sound powered type system where required by the Fire Department, otherwise, provide electrical type system.</li> <li>C. Each telephone zone shall have a manual selection switch, red LED to indicate active zone, and yellow LED to indicate speaker zone trouble.</li> <li>D. Acknowledge switch, system trouble, reset, and lamp test switch.</li> <li>E. Red telephone handset.</li> <li>F. Provide a remote handset in a lockable recessed cabinet.</li> <li>G. Auxiliary Devices:</li> </ul>	<p>2.8 FIREFIGHTER'S TELEPHONE SYSTEM (FTS)</p> <ul style="list-style-type: none"> <li>H. Solid state, microprocessor based, modular design, fully supervised. Steel enclosure in standard finish, with hinged, locking door. Integral power supply, standby batteries, and battery charger. Wall mount in FCC Room.</li> <li>I. Two-way voice communication between the FCC Room firefighter's phone jacks and emergency telephones. Selective zone paging to all or any combination of telephone zones. Provide sound powered type system where required by the Fire Department, otherwise, provide electrical type system.</li> <li>J. Each telephone zone shall have a manual selection switch, red LED to indicate active zone, and yellow LED to indicate speaker zone trouble.</li> <li>K. Acknowledge switch, system trouble, reset, and lamp test switch.</li> <li>L. Red telephone handset.</li> <li>M. Provide a remote handset in a lockable recessed cabinet.</li> <li>N. Auxiliary Devices:</li> </ul>

<ol style="list-style-type: none"> <li>1. Firefighter's phone jack: Recessed wall mounted telephone jack, stainless steel faceplate engraved FIRE EMERGENCY PHONE.</li> <li>2. Emergency telephone: Recessed wall mounted cabinet, hinged locking door engraved LOCAL FIRE EMERGENCY PHONE, permanent handset with armored cable, and bread red glass.</li> <li>3. Telephone handset cabinet: Surface mounted cabinet in FCR. Provide plug in type phones with coil cord and jack, quantity as required by the Fire Department.</li> </ol> <p>Provide a dedicated telephone outlet with a direct line for fireman connection.</p>	<ol style="list-style-type: none"> <li>4. Firefighter's phone jack: Recessed wall mounted telephone jack, stainless steel faceplate engraved FIRE EMERGENCY PHONE.</li> <li>5. Emergency telephone: Recessed wall mounted cabinet, hinged locking door engraved LOCAL FIRE EMERGENCY PHONE, permanent handset with armored cable, and bread red glass.</li> <li>6. Telephone handset cabinet: Surface mounted cabinet in FCR. Provide plug in type phones with coil cord and jack, quantity as required by the Fire Department.</li> </ol> <p>Provide a dedicated telephone outlet with a direct line for fireman connection.</p>
<p>2.9 EMERGENCY VOICE EVACUATION PANEL (EVAC)</p> <ol style="list-style-type: none"> <li>A. A fully automatic combination voice communication and fire fighters' intercom system which provides automatic and alarm signaling per the NFPA 72.</li> <li>B. One or two-way communications system for relocation/evacuation of building personnel and assisting fire-fighting efforts in controlling smoke and fire.</li> <li>C. "ALL-CALL" tone and Voice Signaling.</li> <li>D. Selective Tone and Voice Signaling with Redundant tone generators.</li> <li>E. Module removal supervision</li> <li>F. Service Diagnostic Center.</li> <li>G. "ALARM/RESOUND/RESTORE" Feature</li> <li>H. Short Circuit Speaker Disconnect</li> <li>I. "On/Normal/Off" Auxiliary controls</li> <li>J. Local annunciation with Time-out of selective alarm signal to general alarm "ALL CALL"</li> </ol> <p>Fully integratable with any Public Address system.</p>	<p>2.9 EMERGENCY VOICE EVACUATION PANEL (EVAC)</p> <ol style="list-style-type: none"> <li>K. A fully automatic combination voice communication and fire fighters' intercom system which provides automatic and alarm signaling per the NFPA 72.</li> <li>L. One or two-way communications system for relocation/evacuation of building personnel and assisting fire-fighting efforts in controlling smoke and fire.</li> <li>M. "ALL-CALL" tone and Voice Signaling.</li> <li>N. Selective Tone and Voice Signaling with Redundant tone generators.</li> <li>O. Module removal supervision</li> <li>P. Service Diagnostic Center.</li> <li>Q. "ALARM/RESOUND/RESTORE" Feature</li> <li>R. Short Circuit Speaker Disconnect</li> <li>S. "On/Normal/Off" Auxiliary controls</li> <li>T. Local annunciation with Time-out of selective alarm signal to general alarm "ALL CALL"</li> </ol> <p>Fully integratable with any Public Address system.</p>

<p><b>2.10 CABLES</b></p> <ul style="list-style-type: none"> <li>A. Refer to Wires and Cables Specifications for approved brand of cables.</li> <li>B. Cabling between UPS point to the controllers/devices shall be in the scope of the Vendor. All PVC insulated copper, multi strand, FRLS, Twisted Pair, Shielded cables shall be 650V grades and shall generally conform to IS –1554 – 1988 and meet the signal cabling requirement of the system manufacturer</li> </ul> <p>The strands of cable shall not be cut to accommodate &amp; connect the terminals. Terminals shall have sufficient cross-sectional area to take in all the strands. Cables shall be laid by skilled and experienced workmen. Great care shall be taken while laying cables to avoid kinks. At all changes in directions (vertical &amp; horizontal planes) the cables shall be bent smooth with a radius as recommended by the manufacturers.</p>	<p><b>2.10 CABLES</b></p> <ul style="list-style-type: none"> <li>C. Refer to Wires and Cables Specifications for approved brand of cables.</li> <li>D. Cabling between UPS point to the controllers/devices shall be in the scope of the Vendor. All PVC insulated copper, multi strand, FRLS, Twisted Pair, Shielded cables shall be 650V grades and shall generally conform to IS –1554 – 1988 and meet the signal cabling requirement of the system manufacturer</li> </ul> <p>The strands of cable shall not be cut to accommodate &amp; connect the terminals. Terminals shall have sufficient cross-sectional area to take in all the strands. Cables shall be laid by skilled and experienced workmen. Great care shall be taken while laying cables to avoid kinks. At all changes in directions (vertical &amp; horizontal planes) the cables shall be bent smooth with a radius as recommended by the manufacturers.</p>
<p><b>2.11 SHORT CIRCUIT ISOLATOR</b></p> <ul style="list-style-type: none"> <li>A. This unit shall be placed on the loop preferably after every 20 devices and shall be able to isolate electrical short circuit in the wiring. All the other detectors shall remain functional because of the Class A wiring of the loop</li> <li>B. Isolator modules/Base shall be provided to automatically isolate wire-to-wire short circuits on an SLC Class A or Class B branch. The isolator module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC loop segment or branch. At least one isolator module shall be provided for each floor or protected zone of the building.</li> </ul>	<p><b>2.11 SHORT CIRCUIT ISOLATOR</b></p> <ul style="list-style-type: none"> <li>D. This unit shall be placed on the loop preferably after every 20 devices and shall be able to isolate electrical short circuit in the wiring. All the other detectors shall remain functional because of the Class A wiring of the loop</li> <li>E. Isolator modules/Base shall be provided to automatically isolate wire-to-wire short circuits on an SLC Class A or Class B branch. The isolator module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC loop segment or branch. At least one isolator module shall be provided for each floor or protected zone of the building.</li> </ul>

<p>C. If a wire-to-wire short occurs, the isolator module / Base shall automatically open circuit (disconnect) the SLC. When the short circuit condition is corrected, the isolator module shall automatically reconnect the isolated section. The isolator module / Base shall not require any address-setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an isolator module after its normal operation.</p> <p>It shall provide a single LED that shall flash to indicate that the isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated. The Isolator shall have UL approval.</p>	<p>F. If a wire-to-wire short occurs, the isolator module / Base shall automatically open circuit (disconnect) the SLC. When the short circuit condition is corrected, the isolator module shall automatically reconnect the isolated section. The isolator module / Base shall not require any address-setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an isolator module after its normal operation.</p> <p>It shall provide a single LED that shall flash to indicate that the isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated. The Isolator shall have UL approval.</p>
<p>2.12 OPERATOR WORKSTATION</p> <p>The network reporting terminal shall be a high-performance desktop computer with printer located in the Security Office at the ground floor.</p> <p>The system shall be capable of supporting simultaneous operator workstation connections using A TCP/IP local area network (LAN) subject to hardware capacity on the server computer.</p> <p>The high-performance desktop computer shall consist of the following as minimum requirements:</p> <ul style="list-style-type: none"> <li>- Intel Corei53.0 GHz Processor or higher</li> <li>- 4 GB DDR2 RAM</li> <li>- 1GB VRAM (Video Adaptor Card)</li> <li>- 1TB HDD</li> <li>- Keyboard; mouse and CD Rom Drive</li> <li>- Latest Windows Operating System and Fire Alarm System Software.</li> </ul> <p>21' Color LCD Monitor</p>	<p>2.12 OPERATOR WORKSTATION</p> <p>The network reporting terminal shall be a high-performance desktop computer with printer located in the Security Office at the ground floor.</p> <p>The system shall be capable of supporting simultaneous operator workstation connections using A TCP/IP local area network (LAN) subject to hardware capacity on the server computer.</p> <p>The high-performance desktop computer shall consist of the following as minimum requirements:</p> <ul style="list-style-type: none"> <li>- Intel Corei53.0 GHz Processor or higher</li> <li>- 4 GB DDR2 RAM</li> <li>- 1GB VRAM (Video Adaptor Card)</li> <li>- 1TB HDD</li> <li>- Keyboard; mouse and CD Rom Drive</li> <li>- Latest Windows Operating System and Fire Alarm System Software.</li> </ul> <p>21' Color LCD Monitor</p>

<p>2.12 BATTERY AND CHARGER</p> <p>A. Battery: Sealed Lead-Acid type, 24 volt nominal with sufficient capacity to power the fire alarm system for not less than twenty four (24) hours upon a normal AC power failure.</p> <p>B. Charger: Automatic with constant potential charger maintaining the battery fully charged under all service conditions. Charger will operate at 230 volt, 60 Hz source.</p>	<p>2.12 BATTERY AND CHARGER</p> <p>C. Battery: Sealed Lead-Acid type, 24 volt nominal with sufficient capacity to power the fire alarm system for not less than twenty four (24) hours upon a normal AC power failure.</p> <p>D. Charger: Automatic with constant potential charger maintaining the battery fully charged under all service conditions. Charger will operate at 230 volt, 60 Hz source.</p>
<p>2.14 SYSTEM SOFTWARE</p> <p>A. Automatic detector addressing and status indication.</p> <p>B. Secure signal transmission on unshielded cables.</p> <p>C. Intelligence distributed across the detectors and the fire control panel.</p> <p>D. Drag &amp; drop graphics and GUI interface.</p> <p>E. Graphic screens are created with a built-in drawing utility of the protected area and are linked to fire alarm devices.</p> <p>F. Should a device got to alarm, the appropriate graphic floor plan is displayed along with operator instructions.</p> <p>G. History manager which tracks and stores events.</p> <p>H. Must be able to control and monitor the system.</p> <p>Must be able to connect to other networks using TCP/IP Local Area Network (LAN)</p>	<p>2.14 SYSTEM SOFTWARE</p> <p>I. Automatic detector addressing and status indication.</p> <p>J. Secure signal transmission on unshielded cables.</p> <p>K. Intelligence distributed across the detectors and the fire control panel.</p> <p>L. Drag &amp; drop graphics and GUI interface.</p> <p>M. Graphic screens are created with a built-in drawing utility of the protected area and are linked to fire alarm devices.</p> <p>N. Should a device got to alarm, the appropriate graphic floor plan is displayed along with operator instructions.</p> <p>O. History manager which tracks and stores events.</p> <p>P. Must be able to control and monitor the system.</p> <p>Must be able to connect to other networks using TCP/IP Local Area Network (LAN)</p>
<p>2.15 SPECIAL DETECTION SYSTEM AND DEVICES</p> <p>Where specified, special detection system, addressable and non-addressable type, such as beam detectors, linear detector, aspirating smoke detection system, gas detector, etc. shall be used. The detection system shall be of a type approved by Bureau of Fire</p>	<p>2.15 SPECIAL DETECTION SYSTEM AND DEVICES</p> <p>Where specified, special detection system, addressable and non-addressable type, such as beam detectors, linear detector, aspirating smoke detection system, gas detector, etc. shall be used. The detection system shall be of a type approved by Bureau of Fire</p>

<p>Department/Authorities Having Jurisdiction and shall be suitable for a particular application, environmental condition and hazard. The Contractor shall submit detailed equipment catalogue, description, technical data and test certificate for approval. The Contractor shall submit information proving the suitability of the special detection system and devices for a particular application and hazard for approval. Where detection system is required in open-air/outdoor applications, the Contractor shall use and submit suitable detection system approved by Bureau of Fire Department/Authorities Having Jurisdiction for approval. Special detection system shall also be used where necessary to avoid unwanted alarm.</p>	<p>Department/Authorities Having Jurisdiction and shall be suitable for a particular application, environmental condition and hazard. The Contractor shall submit detailed equipment catalogue, description, technical data and test certificate for approval. The Contractor shall submit information proving the suitability of the special detection system and devices for a particular application and hazard for approval. Where detection system is required in open-air/outdoor applications, the Contractor shall use and submit suitable detection system approved by Bureau of Fire Department/Authorities Having Jurisdiction for approval. Special detection system shall also be used where necessary to avoid unwanted alarm.</p>
<p><u>PART III: EXECUTION</u></p>	<p><u>PART III: EXECUTION</u></p>
<p>3.1 GENERAL</p> <ul style="list-style-type: none"> <li>A. All equipment shall be installed and connected in accordance with the manufacturer's recommendations. Following the required specifications indicated here.</li> <li>B. Wiring shall be color coded, and in accordance with the manufacturer's recommendations and Fire Department requirements. Install wiring in an independent, dedicated metallic raceway system.</li> <li>C. Connections to devices installed in accessible tile ceilings shall be in flexible conduit. Device back boxes shall be securely attached to framing members.</li> <li>D. Provide wireways above and/or below equipment cabinets to accommodate large concentrations of wiring. Conductors within equipment cabinets shall be carefully formed and harnessed.</li> <li>E. Connect equipment to emergency power system.</li> <li>F. Furnish a fire alarm speaker and a firefighter's plug in jack for each</li> </ul>	<p>3.1 GENERAL</p> <ul style="list-style-type: none"> <li>I. All equipment shall be installed and connected in accordance with the manufacturer's recommendations. Following the required specifications indicated here.</li> <li>J. Wiring shall be color coded, and in accordance with the manufacturer's recommendations and Fire Department requirements. Install wiring in an independent, dedicated metallic raceway system.</li> <li>K. Connections to devices installed in accessible tile ceilings shall be in flexible conduit. Device back boxes shall be securely attached to framing members.</li> <li>L. Provide wireways above and/or below equipment cabinets to accommodate large concentrations of wiring. Conductors within equipment cabinets shall be carefully formed and harnessed.</li> <li>M. Connect equipment to emergency power system.</li> <li>N. Furnish a fire alarm speaker and a firefighter's plug in jack for each</li> </ul>

<p>elevator. Coordinate installation with elevator equipment supplier.</p> <p>G. FCIP and smoke control sequence wiring shall be dedicated and independent from other systems.</p> <p>H. Provide a 25 mm empty conduit from the FACP to the nearest telecom terminal backboard.</p> <p>Speaker circuits on individual floor are to be wired in alternate pattern e.g. ‘a’-‘b’-‘a’-‘b’-‘a’.</p>	<p>elevator. Coordinate installation with elevator equipment supplier.</p> <p>O. FCIP and smoke control sequence wiring shall be dedicated and independent from other systems.</p> <p>P. Provide a 25 mm empty conduit from the FACP to the nearest telecom terminal backboard.</p> <p>Speaker circuits on individual floor are to be wired in alternate pattern e.g. ‘a’-‘b’-‘a’-‘b’-‘a’.</p>
<p>3.2 TESTING AND COMMISSIONING</p> <p>A. Provide the service of a competent factory-trained engineer or technical authorized by the manufacturer of the fire detection and alarm system equipment to technically supervise and participate during all of the adjustments and tests for the system. Make all adjustments and tests in the presence of the Project Manager.</p> <p>B. When the system has been completed, and prior to the final inspection, furnish testing equipment and perform the following tests in the presence of the Engineer and the Local authority having jurisdiction.</p> <ol style="list-style-type: none"> <li>1. Check installation, supervision and operation to ascertain that they will function as specified.</li> <li>2. When any defects are detected, make repairs or install replacement components, and repeat the test.</li> </ol> <p>At the final inspection, a factory-trained representative of the manufacturer of the major equipment shall perform the required test. In addition, the representative shall demonstrate that the systems function properly in every respect. The demonstration shall be made in the presence of the Owner’s Representative, Project Manager, Consultant and the local authority having jurisdiction.</p>	<p>3.2 TESTING AND COMMISSIONING</p> <p>C. Provide the service of a competent factory-trained engineer or technical authorized by the manufacturer of the fire detection and alarm system equipment to technically supervise and participate during all of the adjustments and tests for the system. Make all adjustments and tests in the presence of the Project Manager.</p> <p>D. When the system has been completed, and prior to the final inspection, furnish testing equipment and perform the following tests in the presence of the Engineer and the Local authority having jurisdiction.</p> <ol style="list-style-type: none"> <li>3. Check installation, supervision and operation to ascertain that they will function as specified.</li> <li>4. When any defects are detected, make repairs or install replacement components, and repeat the test.</li> </ol> <p>At the final inspection, a factory-trained representative of the manufacturer of the major equipment shall perform the required test. In addition, the representative shall demonstrate that the systems function properly in every respect. The demonstration shall be made in the presence of the Owner’s Representative, Project Manager, Consultant and the local authority having jurisdiction.</p>



### 3.3 ADDRESSABLE FIRE ALARM TESTING

The correctness of cabling with continuity as per the approved shop drawings. System design & configuration check, Access Control & P.A System integration test

#### A. PHOTOELECTRIC SMOKE DETECTOR

The testing shall be carried out for each loop / zone, initially one detector in a zone and subsequently 2 or more are disassociated detectors in each zone with time lapse between the detectors to test for Alarm Priority, Alarm Queuing and Call Logging.

An identified detector will be subjected to smoke aspiration from burning paper/cigarette puffs, rubber and other materials which give dense smoke held at 0.3 M distance from the detector. The FACP should indicate increased analogue output for that address and after the programmed delay time, a fire alarm signal shall be indicated. This delay shall be utilized for alarm verification.

The same test shall be carried out for two detectors in the same Loop but in different rooms. The FACP shall indicate Pre-Alarm higher analogue levels for both detectors in its display with separate identification for both fires. One of the detectors in question be subjected to higher and longer levels of smoke aspiration. The FACP should give priority alarm for this address. The printout shall indicate individual addresses of the detectors with achieved analogue values and the time of event. This test shall be carried out for different Loops as well as for 2 Loops simultaneously. One detector of each type will be disconnected and subjected to slow dust build – up by

### 3.3 ADDRESSABLE FIRE ALARM TESTING

The correctness of cabling with continuity as per the approved shop drawings. System design & configuration check, Access Control & P.A System integration test

#### D. PHOTOELECTRIC SMOKE DETECTOR

The testing shall be carried out for each loop / zone, initially one detector in a zone and subsequently 2 or more are disassociated detectors in each zone with time lapse between the detectors to test for Alarm Priority, Alarm Queuing and Call Logging.

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<p>means as desired by the Bidder and again connected in the circuit. The FACP shall indicate the changed ambient levels and automatically adjust the analogue values for the same. These Detectors shall then be replaced by new Detectors of identical type and the FACP shall then be programmed accordingly and checked. The Bidder will take custody of the removed detectors without additional cost to the Owner.</p> <p><b>B. MANUAL PULL STATION</b> Manual Pull Station in each area is opened &amp; tested for its alarm. Every manual call point will be actuated in every zone in all locations to check for the alarm response.</p> <p>One half of the testing shall be made on a stand by battery power.</p> <p><b>C. LOOP</b> Any part of the Loop shall be short circuited. The FACP shall indicate the communication failure of all the devices connected in the short circuited segment. After the short circuit is corrected, the Fault Isolator shall return to its normal status automatically, this being reflected in the FACP. The Loop shall then be in normal operation again. Any part of the Loop shall be de wired and tested as given above.</p> <p>Any other test that is required for checking the quality &amp; performance of the system and all other tests as required by the client at the time of handing over.</p>	<p>means as desired by the Bidder and again connected in the circuit. The FACP shall indicate the changed ambient levels and automatically adjust the analogue values for the same. These Detectors shall then be replaced by new Detectors of identical type and the FACP shall then be programmed accordingly and checked. The Bidder will take custody of the removed detectors without additional cost to the Owner.</p> <p><b>E. MANUAL PULL STATION</b> Manual Pull Station in each area is opened &amp; tested for its alarm. Every manual call point will be actuated in every zone in all locations to check for the alarm response.</p> <p>One half of the testing shall be made on a stand by battery power.</p> <p><b>F. LOOP</b> Any part of the Loop shall be short circuited. The FACP shall indicate the communication failure of all the devices connected in the short circuited segment. After the short circuit is corrected, the Fault Isolator shall return to its normal status automatically, this being reflected in the FACP. The Loop shall then be in normal operation again. Any part of the Loop shall be de wired and tested as given above.</p> <p>Any other test that is required for checking the quality &amp; performance of the system and all other tests as required by the client at the time of handing over.</p>
<p>=</p>	<p><b>SUPPLY, DELIVERY, INSTALLATION AND INTEGRATION OF ADDITIONAL AUTOMATIC FIRE SUPPRESSION SPLINKLER SYSTEM</b></p>

	<p>The work includes providing new fire protection systems for the proposed building. The equipment, material installations, workmanship, inspection and testing shall be in strict accordance with the required advisory provisions of National Fire Protection Association Standards, Fire Code of the Philippines and National Building Code, except as modified herein.</p> <p>The work includes the following:</p> <ul style="list-style-type: none"> <li>A. Installation and Integration of Automatic FIRE Sprinkler and Standpipe System - Piping.</li> <li>B. Painting of pipe work and equipment.</li> <li>C. Testing and commissioning.</li> <li>D. Provision of operating instructions and maintenance manuals.</li> <li>E. Training of the building's maintenance staff for proper operation of the entire system.</li> </ul> <p>The contractor shall be responsible for coordinating his work with the various trades as necessary to avoid conflicts and to insure the installation of all work within the available space. Requirement for portable fire extinguisher shall comply with the local fire department policy.</p>
=	<u>PART I. GENERAL</u>
-	<p>1.1 SCOPE OF WORK</p> <p>This section includes labor, materials, skills and related services necessary to furnish and install the Automatic Fire Suppression</p>

	<p>Sprinkler System, materials and related work specified in this Section and shall be coordinated with the applicable provisions of the Contract Documents.</p>
-	<p><b>1.2 SUBMITTALS</b></p> <p>1.2.1 General: All submittals for approval as indicated herein shall be in accordance to the provisions under General Conditions of the Contract Documents.</p> <p>1.2.2 Provide submittal data for the following:</p> <p>A. Manufacturer’s Instruction, product technical data, certificates for quality control and Operators.</p> <p>B. Each type of pipe hanger, channel support system component, and thermal-hanged shield insert to be used.</p> <p>Shop Drawings: Signed and sealed by a qualified professional engineer for multiple piping supports and trapeze hangers which exceed prescriptive requirements. Provide point loads of for each designed hanger or support.</p>
-	<p><b>REFERENCES</b></p> <p>Comply with the provisions under General Conditions of the Contract Documents and Manufacturer’s</p>

	<p>instructions. Reference the following standards as applicable:</p> <p>1.3.1 NFPA 20 – Standard for the Installation of Pumps for Fire Protection.</p> <p>1.3.2 Fire Safety Enforcement Manual 2012 Ed.</p> <p>1.3.3 R.A. 9514 – Fire Code of the Philippines 2008.</p>
-	<p><b>QUALITY ASSURANCE</b></p> <p>1.4.1 Comply with quality assurance requirements under General Conditions of the Contract Documents and Manufacturer’s instructions.</p> <p>1.4.2 Qualify processes and installers according to ASME standards for the design and preparation of shop drawings and calculations for each multiple pipe hangers and support for piping and equipment systems.</p>
-	<p><b><u>PART II: PRODUCTS</u></b></p> <p><i>(Outline Specifications issued by Arce-Bailon-Arce Architects)</i></p>
=	<p>2.1. Wet-Pipe Sprinkler System.</p> <p>2.1.1. Automatic Sprinkler and Standpipes System – Piping</p> <p>Pipelines shall be Black Iron, Seamless Schedule 40, confirming to ASTM A120/A53 with screw fittings made of</p>

malleable iron conforming to ANSI B16.3 with joints in accordance to ANSI B2.1 complete with fittings, hanger, brackets and accessories. Sprinkler piping that is exposed to the weather or used in a corrosive atmosphere shall be coated with protective coating.

#### 2.1.2. Sprinkler Heads

Shall be automatic standard 15mm dia. Orifice, solder fillet type or valve type, upright, pendent or sidewall heads. Pendent heads shall be provided with aluminum escutcheon or approved equivalent to fit into ceiling boards or ceiling runners. Flush or concealed type pendent units shall be accepted as substitute. Heads shall be UL Inc. approved, of one brand all throughout and shall be standard product of a reputable manufacturer. Submit product catalog and shop drawings for Architect's approval.

#### 2.1.3. Fire Hose Cabinet

Shall be full flush mounting door with anodized cal-colored aluminum for all glass plate, frame and box No. 14 gauge steel with interior and red exterior baked enamel finishes over primer. Hose shall be 40mm diameter, 30.0 double jacket, rubber lined with nozzle of combination fog and solid stream, 40mm diameters, chrome plated and semi-automatic chrome plated rack. Angle-type pressure reducing valve shall be UL

	<p>Xlisted or FM approved. Submit product catalog and shop drawings for Architect's approval.</p> <p>2.1.4. Fire Department Connection (Inlet)</p> <p>Shall be three-way inlet connections, 65mm x 65mm x 150mm, UL listed or FM approved, vertical cast brass with plug spring check snoots, complete with plugs and chain and cast brass escutcheon lettered "Wet Standpipe" / "AFSS Standpipe" threads to suit integrated Metropolitan Fire Department specifications.</p> <p>2.1.5. Wall Hydrants (Fire Hose Valves)</p> <p>Shall be single outlet type wall mounted with chain connected caps and plugs in polished brass finish. Threads and type of connection shall match Integrated Metropolitan Fire Department, UL listed or FM approved.</p> <p>2.1.6. Roof Manifold (Outlet)</p> <p>Shall be twin angle outlet connections, with chain secured caps or plugs size, 65mm x 65mm x 150mm UL listed or FM approved in polished brass finish. Outlet shall have chain connected caps or plugs. Thread and type of connection to match Integrated Metropolitan Fire Department requirements.</p> <p>2.1.7. Portable Fire Extinguishers</p> <p>2.1.7.1. Dry Chemical Fire Extinguishers</p>
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	<p>Shall be tri-class dry chemical or multi-purpose (primarily monoammonium phosphate) or equivalent which is non-toxic agent which extinguishes flames in seconds and inhibits reflash. It shall be effective against Class A, B, and C fires. Contents shall be 10lbs (4.5kg), the unit shall be mounted inside the fire hose cabinet or thru the fire hose cabinet.</p> <p>2.1.7.2. Halotron 1 (HCFC – 123): Clean Agent Portable Fire Extinguishing System and other Portable Extinguishers</p> <p>Shall be in accordance with NFPA10, UL listed and FM approved shall be provided for fire suppression for transformer room, MDF room, Loft motor room, Electrical room using portable or wheeled type fire extinguishers in compliance with DENR clean air act requirements.</p> <ul style="list-style-type: none"> <li>• Use 10lbs (4.5kg) Portable Fire Extinguisher for Electrical Room, Pump Room, and Mechanical Room</li> <li>• For Transformer Room, LVSG and Gen Set Room, provide a minimum of 50lbs capacity, wheeled type HALOTRON-1 Clean Agent or 125lbs Dry Chemical Purple KULC Class 240 to 3000:c Wheeled type.</li> <li>• AFFF-AER-O FOAM, 2.5.gal (9.46 liters) for Diesel Storage Fuel Room or Gen Set Room.</li> </ul>
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	<p>2.1.8. Escutcheon Plates</p> <p>Shall be split hinge metal plates for piping entering walls, floors, and ceilings in exposed spaces. Provide paint finish on metal plates in unfinished spaces.</p> <p><i>Note: For fittings, valves, sway braces, hanger and supports; pipe sleeves, alarm check valves, alarm and supervisory system, floor control valves and water flow switches or detectors refer to Technical Specification 211300 "Fire Suppression Sprinkler System" for further Information.</i></p>
<p><u>GENERAL REQUIREMENTS:</u></p>	<p><u>GENERAL REQUIREMENTS:</u></p>
<p>A. Project Schedule/Timeline</p> <p>The contractor shall finish and turn-over the project within one hundred twenty (120) calendar days upon receipt of Notice to Proceed. Schedule of work shall be properly coordinated to the PSHS-MC's Authorized Representative.</p> <p>The contractor shall submit a project schedule that will show the timetable of the project in the form of Gantt chart.</p> <p>B. Safety Officer</p> <p>A DOLE accredited safety officer/practitioner should be present on site</p> <p>C. Workmen</p> <p>The contractor shall execute all works in a skillful and workmanlike manner and shall engage qualified workmen with equivalent experience required in the installation works.</p>	<p>Q. Project Schedule/Timeline</p> <p>The contractor shall finish and turn-over the project within one hundred twenty (120) calendar days upon receipt of Notice to Proceed. Schedule of work shall be properly coordinated to the PSHS-MC's Authorized Representative.</p> <p>The contractor shall submit a project schedule that will show the timetable of the project in the form of Gantt chart.</p> <p>R. Safety Officer</p> <p>A DOLE accredited safety officer/practitioner should be present on site</p> <p>S. Workmen</p> <p>The contractor shall execute all works in a skillful and workmanlike manner and shall engage qualified workmen with equivalent experience required in the installation works.</p>

<p>D. Temporary Facilities</p> <p>Location of temporary storage shall be within the Administration Building premises which will be identified by the PSHS-MC prior to the mobilization.</p> <p>The contractor shall provide sub-meter for the temporary power supply, tapping point will be provide by PSHS-MC.</p> <p>The contractor shall pay the corresponding energy consumption upon completion of the project.</p> <p>E. Security and safety protections</p> <p>The contractor shall provide warning signs, sufficient lighting, fire extinguishers and personal protective equipment.</p> <p>F. Wires and conduits</p> <p>Use thick PVC conduit for pipes and fittings and shielded twisted cable TF type for wires. Refer to the approved drawings for the sizes and color.</p> <p>G. As-Built Plans</p> <p>The contractor shall submit five (5) sets as-built plan using one (1) set 20" x 30" tracing paper and four (4) sets blue print signed and sealed by Professional Electronics Engineer and Professional Mechanical Engineer respectively.</p> <p>H. Operation and Maintenance Manual</p> <p>The contractor shall submit three (3) sets of operation and maintenance manual within fifteen (15) calendar days after the completion of the project. The manual shall have: table of contents, troubleshooting flowchart for all kinds of possible</p>	<p>T. Temporary Facilities</p> <p>Location of temporary storage shall be within the Administration Building premises which will be identified by the PSHS-MC prior to the mobilization.</p> <p>The contractor shall provide sub-meter for the temporary power supply, tapping point will be provide by PSHS-MC.</p> <p>The contractor shall pay the corresponding energy consumption upon completion of the project.</p> <p>U. Security and safety protections</p> <p>The contractor shall provide warning signs, sufficient lighting, fire extinguishers and personal protective equipment.</p> <p>V. Wires and conduits</p> <p>Use thick PVC conduit for pipes and fittings and shielded twisted cable TF type for wires. Refer to the approved drawings for the sizes and color.</p> <p>W. As-Built Plans</p> <p>The contractor shall submit five (5) sets as-built plan using one (1) set 20" x 30" tracing paper and four (4) sets blue print signed and sealed by Professional Electronics Engineer and Professional Mechanical Engineer respectively.</p> <p>X. Operation and Maintenance Manual</p> <p>The contractor shall submit three (3) sets of operation and maintenance manual within fifteen (15) calendar days after the completion of the project. The manual shall have: table of contents, troubleshooting flowchart for all kinds of possible</p>
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trouble, fault diagnostics and basic repair of defective components.

I. Posted Operating Instructions:

Furnish approved operating instructions for each system and principal item of equipment as specified in each individual section for the use of the operation and maintenance personnel. The operating instructions shall include wiring diagrams, control diagrams, and control sequence for each principal item of equipment. Operating instructions shall be printed or engraved, and shall be framed under glass or in approved laminated plastic and posted where directed.

Operating instructions shall be attached to or posted adjacent to each principal item of equipment and include directions for start-up, proper adjustment, operating lubrication, shutdown, safety precautions, procedures in the event of equipment failure, and other areas as recommended by the manufacturer of each item of equipment.

J. Standards Products/Service Availability:

- Materials and equipment shall be standard products of a manufacturer regularly engaged in the manufacture of such products, which are of similar material, design and workmanship. The standard products shall have been in satisfactory commercial or industrial use for two (2) years prior to bid opening.
- Service support: the equipment items shall be supported by service organizations. The contractor shall submit a certified

trouble, fault diagnostics and basic repair of defective components.

Y. Posted Operating Instructions:

Furnish approved operating instructions for each system and principal item of equipment as specified in each individual section for the use of the operation and maintenance personnel. The operating instructions shall include wiring diagrams, control diagrams, and control sequence for each principal item of equipment. Operating instructions shall be printed or engraved, and shall be framed under glass or in approved laminated plastic and posted where directed.

Operating instructions shall be attached to or posted adjacent to each principal item of equipment and include directions for start-up, proper adjustment, operating lubrication, shutdown, safety precautions, procedures in the event of equipment failure, and other areas as recommended by the manufacturer of each item of equipment.

Z. Standards Products/Service Availability:

- Materials and equipment shall be standard products of a manufacturer regularly engaged in the manufacture of such products, which are of similar material, design and workmanship. The standard products shall have been in satisfactory commercial or industrial use for two (2) years prior to bid opening.
- Service support: the equipment items shall be supported by service organizations. The contractor shall submit a certified

<p>list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. These service organizations shall be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.</p> <ul style="list-style-type: none"> <li>○ Manufacturer's nameplate: each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.</li> </ul> <p>K. Training</p> <p>The contractor shall conduct training on the detailed operation, maintenance and troubleshooting of the FDAS and Fire Pumps.</p> <p>Contractor shall provide printed training materials (maximum of 10 copies).</p> <p>L. Testing and Commissioning</p> <p>The contractor shall perform among others, the following:</p> <ul style="list-style-type: none"> <li>• Testing of all smoke detectors, heat detectors, manual pull stations and alarm bells.</li> <li>• Line to ground testing of the system</li> <li>• Actual testing of back-up batteries</li> </ul>	<p>list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. These service organizations shall be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.</p> <ul style="list-style-type: none"> <li>○ Manufacturer's nameplate: each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.</li> </ul> <p>AA. Training</p> <p>The contractor shall conduct training on the detailed operation, maintenance and troubleshooting of the FDAS and Fire Pumps.</p> <p>Contractor shall provide printed training materials (maximum of 10 copies).</p> <p>BB. Testing and Commissioning</p> <p>The contractor shall perform among others, the following:</p> <ul style="list-style-type: none"> <li>• Testing of all smoke detectors, heat detectors, manual pull stations and alarm bells.</li> <li>• Line to ground testing of the system</li> <li>• Actual testing of back-up batteries</li> </ul>
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- Actual testing and simulation of the system such as, smoke test in smoke detectors, etc.

M. Acceptance Of The Work:

The authorized PSHS-MC Representatives shall witness the formal test and approve all systems before they are accepted by the Head Of Procuring Entity.

N. Work done by others:

- All building works including beams, floor and wall penetrations for pipework, etc. The contractor shall be responsible for setting out penetrations to insure conformity with installation requirements.
- Provision of flashing upstands (concrete) for pipework penetrations through floor slabs and roof. The contractor shall provide all necessary flashing collars.
- Provision of concrete base and foundation for equipment except otherwise indicated. The sub-contractor shall submit shop drawings prior to implementation of the bases and foundations.
- All power supply up to the equipment control panels.

O. WARRANTY

All equipment and installation shall be guaranteed for two (2) years from the date of acceptance against failure of components resulting from normal use or factory defects. Any parts of the system or equipment that becomes defective during the term of the guarantee shall be repaired or replaced by the contractor at his own expense.

- Actual testing and simulation of the system such as, smoke test in smoke detectors, etc.

CC. Acceptance Of The Work:

The authorized PSHS-MC Representatives shall witness the formal test and approve all systems before they are accepted by the Head Of Procuring Entity.

DD. Work done by others:

- All building works including beams, floor and wall penetrations for pipework, etc. The contractor shall be responsible for setting out penetrations to insure conformity with installation requirements.
- Provision of flashing upstands (concrete) for pipework penetrations through floor slabs and roof. The contractor shall provide all necessary flashing collars.
- Provision of concrete base and foundation for equipment except otherwise indicated. The sub-contractor shall submit shop drawings prior to implementation of the bases and foundations.
- All power supply up to the equipment control panels.

EE.WARRANTY

All equipment and installation shall be guaranteed for two (2) years from the date of acceptance against failure of components resulting from normal use or factory defects. Any parts of the system or equipment that becomes defective during the term of the guarantee shall be repaired or replaced by the contractor at his own expense.

<p>P. Other Provisions</p> <ul style="list-style-type: none"> <li>• The contractor shall submit the list of its personnel that will be assigned to the project</li> <li>• The contractor shall provide uniforms to its workers assigned to the project</li> <li>• The contractor shall provide all tools and materials that will be needed to perform the required installations works including the scaffolding and/or platform to work in elevated areas</li> <li>• The contractor shall replace or restore to its original condition any part of the building or equipment and other properties of PSHS-MC that may be damaged due to poor workmanship</li> </ul> <p>It is the contractor's responsibility to verify actual site conditions prior to the submission of their bids</p>	<p>FF. Other Provisions</p> <ul style="list-style-type: none"> <li>• The contractor shall submit the list of its personnel that will be assigned to the project</li> <li>• The contractor shall provide uniforms to its workers assigned to the project</li> <li>• The contractor shall provide all tools and materials that will be needed to perform the required installations works including the scaffolding and/or platform to work in elevated areas</li> <li>• The contractor shall replace or restore to its original condition any part of the building or equipment and other properties of PSHS-MC that may be damaged due to poor workmanship</li> </ul> <p>It is the contractor's responsibility to verify actual site conditions prior to the submission of their bids</p>
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This Supplemental Bid Bulletin No. 1 shall form part of the Bidding Documents. Any provision in the Bidding Documents inconsistent herewith is hereby amended, modified and superseded accordingly.

For guidance and information of all concerned.

Very truly yours,



JENNIFER C. BERMUDEZ  
BAC Chairperson – for Goods and Services