ADDENDUM NO. 1
November 8, 2022

PART 1 - GENERAL

1.1 PROJECT – H17-9618-CB-B

A. COASTAL CAROLINA UNIVERSITY

EAGLIN RESIDENCE HALL RENOVATION – TELECOMMUNICATIONS AND FIRE ALARM SYSTEM

1.2 ENGINEER

A. DWG Consulting Engineers, Inc.
1009 Anna Knapp Blvd, Mt. Pleasant, SC 29464
(843) 849-1141

1.3 RELATED DOCUMENTS

A. This Addendum consists of 27 page(s) including attachments.

B. To Prime Bidders of Record:

1. This addendum forms a part of the Contract Documents and modifies the original Project Manual and Drawings. Acknowledge receipt of this addendum on the Bid Form. Failure to do so may cause a bid to be rejected as unresponsive as outlined in the Instructions to Bidders.

PART 2 - ADDENDUM ITEMS

2.1 GENERAL

A. The pre-bid conference held November 4th was not mandatory.

B. The following changes/clarifications shall be made to the drawings. Revised drawings are attached.

1. A2.1, A2.2, A2.3
   a. Reflected Ceiling Plan Legend was revised.

2. E001
   a. Heat detector has been added to the systems symbol legend.

3. E002
   a. Note has been added to the Fire Alarm System General Notes to clarify sounder base operation.
   b. Note has been added to the Fire Alarm System General Notes for sprinkler tamper and flow switches.

4. E101
   a. Heat detector has been added to the Elevator shaft.
   b. Keynote 8 has been updated to clarify the number of duct smoke detectors.

5. E102
   a. Keynote 7 has been updated to clarify the number of duct smoke detectors.
   b. Keynote 8 has been added to note locations of NAC power expanders and amplifiers.

6. E103
   a. Keynote 6 has been updated to clarify the number of duct smoke detectors.
b. Keynote 7 has been added to note locations of NAC power expanders and amplifiers.

C. The following changes/clarifications shall be made to the Project Manual. Revised sheets are attached.

1. 283100 Fire Detection, Alarm, and Mass Notification
   a. Firelite FACP specification has been updated to Gamewell-FCI.
   b. Specification for self-restoring smoke detectors has been removed.

D. Questions:

1. Q: Firelite’s largest system is the MS9600UDLS and provides on 2 addressable loops that provide you with a maximum of 159 detectors on each. This design is requiring 367 plus the duct smoke detectors. With a completely sprinkled building, are all of these detectors required? Can you give us a count of how many duct smoke detectors are in the building?

   A: Yes, the smoke detectors shown are required. Regarding the duct smoke detectors, there are 2 on each floor, one for each AHU. Existing keynotes noting duct smoke detectors to be reconnected have been edited for clarity.

2. Q: If you are requiring the bedroom smoke detectors to provide a General Alarm from the fire alarm, the 520hz sounder bases going off with the Emergency Voice Evacuation is going to sound like a train wreck.

   A: This was not the intention. The fire alarm system general notes have been updated to clarify and highlight the separation between dorm room initiating devices and common space initiating devices.

3. Q: Are you expecting every bedroom to sound when its detector is in alarm? Is this to be a Supervisory or General Alarm input to the system?

   A: No, the intention is for the device within the space where smoke is detected to sound only. Refer to the fire alarm system general notes. Initiating and notification device operation is detailed therein.


   A: Self-restoring requirement has been removed from the spec.

5. Q: Are there any existing heat detectors that are to be replaced?

   A: Heat detector has been added to the elevator shaft.

6. Q: How many sprinkler points are to be included and what are their locations?

   A: The fire alarm system general notes have been edited to indicate that all existing flow and tamper switches shall be connected to the fire alarm system. The exact count for these devices is unknown.
7. Q: Have the requirements for the inclusion of or non requirement of a BDA system been addressed? Is a BDA required or currently installed?
   
   A: BDA system is not included in the project scope.

8. Q: What is the location of the Fire Alarm/Mass Notification Control?
   
   A: Fire alarm and voice evac control panels are located in the Main Electrical Room on the first floor.

9. Q: Space and power for Distributed Amplifiers & NAC Power Expanders will be required on floors 2 & 3. Where are these to be located? They will required smoke detectors as well.
   
   A: This has been key noted on E102 and E103.

10. Q: Is not an Area of Rescue System required? I see what you have identified as “Emergency Phones” on each floor but we have nothing to speak of the requirements for these or a part number.
    
    A: It is our understanding that these emergency phones are only to be provided with new cabling, in-line with the cabling upgrades throughout the building. The emergency phones are not part of the fire alarm system and this limited renovation scope is not enough to require the addition of an area of rescue system.

END OF ADDENDUM NO. 1
SECOND FLOOR REFLECTED PLAN

FINISH MATERIAL AND SPECIFICATION LIST

USG SHEETROCK BRAND 5/8" TYPE X GYPSUM BOARD OR APPROVED EQUAL.

MANUFACTURER STANDARD 2" WALL MOLDING.

15/16" EXPOSED FIRE RATED SYSTEM WITH ALUMINUM CAP. PROVIDE BASIS OF DESIGN OR APPROVED EQUAL: USG DONN DXLA24 INTERMEDIATE DUTY

5/8" METAL STUDS, 24 GAUGE, 24" ON CENTER SPACING FOR SOFFIT FRAMING AS OTHER SYSTEM DRAWINGS. PIPING SHALL BE CONCEALED WITHIN WALLS AND APPROVAL PRIOR TO INSTALLATION OF SYSTEM COMPONENTS OR CEILING GRID APPROVED BY ARCHITECT.

ASSUMED SEISMIC SITE CLASS IS D.

SEAL PENETRATION WITH FIRE RATED JOINT SEALANT.

IF ANY PENETRATIONS ARE MADE IN EXISTING FIRE RATED WALLS PROPERLY INDICATED.

PROVIDE NEW FIRE RATED ACOUSTICAL CEILING TILE SYSTEM IN AREA DRAWINGS FOR FULL SCOPE OF LIGHTING AND FIRE ALARM WORK.

LIGHT FIXTURES ARE SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL DRAWING FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.

ROUTING OF ALL PIPING WITH ARCHITECTURAL DRAWINGS AND DETAILS, AS WELL SEE FP DRAWINGS FOR FIRE PROTECTIONS SPRINKLER LAYOUT. COORDINATE PIPING.

ROOMS FINAL LIGHT FIXTURE LAYOUTS WITH EQUIPMENT, DUCTWORK AND MUST BE COORDINATED WITH ALL SUBCONTRACTORS DURING SUBMITTALS AND PREPARE COORDINATION DRAWINGS OF ALL SYSTEMS FOR REVIEW AND DRAWINGS, INCLUDING REFLECTED CEILING PLANS AND BUILDING SECTIONS.

DUCTWORK, CONDUIT, EQUIPMENT, DEVICES, ETC. WITH ARCHITECTURAL PRIOR TO INSTALLATION. ANY MODIFICATIONS TO LOCATIONS MUST BE COORDINATED WITH ALL SUBCONTRACTORS DURING SUBMITTALS AND PLANS. INDICATED LOCATIONS OF ALL COMPONENTS ARE APPROXIMATE AND EQUIPMENTS, DEVICES, FIXTURES AND GRILLES WITH REFLECTED CEILING PLANS. GENERAL CONTRACTOR SHALL COORDINATE ALL CEILING MOUNTED WALL MOUNTED DEVICES.

SEE ELECTRICAL AND MECHANICAL DRAWINGS FOR FULL SCOPE OF CEILING AND CEILING ON BOTH SIDES OF FIRE RATED WALL.

INSTALL STENCILING ON EXISTING FIRE AND/OR SMOKE RATED WALLS ABOVE 803.799.0247.

- 2'x4' FLUORESCENT TROFFER,
- NEW FIRE RATED ACOUSTICAL PANEL CEILING
- EXISTING PARTITION WALL TO REMAIN
- 2 HOURS FIRE RATED WALL TO REMAIN
- NEW FIRE RATED ACCENTUAL PANEL COVERS
- LPX TO FLOOR/CEILING TRANSIT, IN ELECTRICAL WORK

GENERAL NOTES - REFLECTED CEILING PLAN

1. MATERIALS NOTED MUST BE APPLIED IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.
2. ALL LOCATIONS SHOWN ARE APPROXIMATE.  ALL OTHER LOCATIONS TO BE IN ACCORDANCE WITH SUBMISSIONS.
3. ALL REASONABLE EFFORTS WILL BE MADE TO COORDINATE WITH ALL SUBCONTRACTORS DURING SUBMITTALS AND MUST BE COORDINATED WITH ALL SUBCONTRACTORS DURING SUBMITTALS AND PLANS. INDICATED LOCATIONS OF ALL COMPONENTS ARE APPROXIMATE AND EQUIPMENTS, DEVICES, FIXTURES AND GRILLES IN REFLECTED CEILING PLANS. GENERAL CONTRACTOR SHALL COORDINATE ALL CEILING MOUNTED WALL MOUNTED DEVICES.

FINISHED WOOD OR METAL PARTITIONS, FLOORS, CEILINGS, AND WINDOWS TO BE APPLIED IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS.

BOUJEAUX 2115 MAIN STREET, SUITE 300 11/21/30

REV A2.2
A. 3
B. 5/8" METAL STUDS, 24 GAUGE, 24" ON CENTER SPACING FOR SOFFIT FRAMING
C. SEAL PENETRATION WITH FIRE RATED JOINT SEALANT.
D. INDICATED.
E. DRAWINGS FOR FULL SCOPE OF LIGHTING AND FIRE ALARM WORK.
F. ROOMS FINAL LIGHT FIXTURE LAYOUTS WITH EQUIPMENT, DUCTWORK AND PRIOR TO INSTALLATION. ANY MODIFICATIONS TO LOCATIONS INDICATED MUST BE COORDINATED WITH ALL SUBCONTRACTORS DURING SUBMITTALS AND PREPARE COORDINATION DRAWINGS OF ALL SYSTEMS FOR REVIEW AND GENERAL CONTRACTOR SHALL COORDINATE UTILITY SYSTEM PIPING, PRIOR TO INSTALLATION. ANY MODIFICATIONS TO LOCATIONS MUST BE EQUIPMENTS, DEVICES, FIXTURES AND GRILLES WITH REFLECTED CEILING GENERAL CONTRACTOR SHALL COORDINATE ALL CEILING MOUNTED WALL MOUNTED DEVICES.

SEE ELECTRICAL AND MECHANICAL DRAWINGS FOR FULL SCOPE OF CEILING AND CEILING ON BOTH SIDES OF FIRE RATED WALL.

NEW FIRE RATED ACOUSTICAL PANEL CEILING
EXISTING PARTITION WALL TO REMAIN

THIRD FLOOR REFLECTED CEILING PLAN
GENERAL EXISTING CONDITION NOTES

1. All electrical equipment removed shall remain the property of the owner, the contractor shall not dispose of any materials/data/instructions by the owner’s project engineers. All the electrical equipment removed shall be brought back to the owner or disposed of in accordance with the owner’s instructions.

2. Prior to rough-in, coordinate the location and mounting height of all wall mounted fixtures, receptacles, and other devices to be reviewed by the engineer.

3. Raceways shall be installed above ceilings and in other cavities where noted on plans.

4. Feeders conduits, branch circuits and cable tray routing shall comply with details on drawings and shall be coordinated with the work of other trades before and during construction. Feeders conduits and branch circuits shall be routed overhead.

5. A firestop system shall be used to seal all penetrations of electrical conduits and cables, as well as those created by newly installed conduits and sleeves.

6. Where installation requires cutting or drilling of the existing floor slab, the contractor shall not dispose of any materials until released by the owner’s project engineers.

7. The arrangement, grouping, and routing of branch circuits shall be provided at the time of the bid. Protective covers for electrical equipment shall be used where noted on plans.

8. The arrangement, grouping, and routing of branch circuits shall be provided at the time of the bid. Protective covers for electrical equipment shall be used where noted on plans.

9. The electrical service ground to the backboard shall be properly disposed of by the contractor.

10. All electrical equipment to be removed shall remain the property of the owner. The contractor shall not dispose of any materials/data/instructions by the owner’s project engineers. All the electrical equipment removed shall be brought back to the owner or disposed of in accordance with the owner’s instructions.

11. Coordination backboard (CBB) shall be 8'H X 3/4" D, sized to match plans, and plywood with standard NEMA bolt hole sizing that is no smaller than 6mm thick by 50mm wide by 1 foot standard. Coat backboard with a minimum of two coats of fire retardant paint.

12. All communications backboard (CBB) shall be 8'H X 3/4" D, sized to match plans, and plywood with standard NEMA bolt hole sizing that is no smaller than 6mm thick by 50mm wide by 1 foot standard. Coat backboard with a minimum of two coats of fire retardant paint.

13. The electrical service ground to the backboard shall be properly disposed of by the contractor.

14. All communications backboard (CBB) shall be 8'H X 3/4" D, sized to match plans, and plywood with standard NEMA bolt hole sizing that is no smaller than 6mm thick by 50mm wide by 1 foot standard. Coat backboard with a minimum of two coats of fire retardant paint.

15. Any place thereon. Coat backboard with a minimum of two coats of fire retardant paint.

16. The electrical service ground to the backboard shall be properly disposed of by the contractor.

17. All communications backboard (CBB) shall be 8'H X 3/4" D, sized to match plans, and plywood with standard NEMA bolt hole sizing that is no smaller than 6mm thick by 50mm wide by 1 foot standard. Coat backboard with a minimum of two coats of fire retardant paint.

18. The electrical service ground to the backboard shall be properly disposed of by the contractor.

19. A firestop system shall be used to seal all penetrations of electrical conduits and cables, as well as those created by newly installed conduits and sleeves.

20. Where installation requires cutting or drilling of the existing floor slab, the contractor shall not dispose of any materials until released by the owner’s project engineers.

21. All electrical equipment to be removed shall remain the property of the owner. The contractor shall not dispose of any materials/data/instructions by the owner’s project engineers. All the electrical equipment removed shall be brought back to the owner or disposed of in accordance with the owner’s instructions.

22. Coordination backboard (CBB) shall be 8'H X 3/4" D, sized to match plans, and plywood with standard NEMA bolt hole sizing that is no smaller than 6mm thick by 50mm wide by 1 foot standard. Coat backboard with a minimum of two coats of fire retardant paint.

23. All communications backboard (CBB) shall be 8'H X 3/4" D, sized to match plans, and plywood with standard NEMA bolt hole sizing that is no smaller than 6mm thick by 50mm wide by 1 foot standard. Coat backboard with a minimum of two coats of fire retardant paint.

24. The electrical service ground to the backboard shall be properly disposed of by the contractor.

25. All communications backboard (CBB) shall be 8'H X 3/4" D, sized to match plans, and plywood with standard NEMA bolt hole sizing that is no smaller than 6mm thick by 50mm wide by 1 foot standard. Coat backboard with a minimum of two coats of fire retardant paint.

26. The electrical service ground to the backboard shall be properly disposed of by the contractor.

27. A firestop system shall be used to seal all penetrations of electrical conduits and cables, as well as those created by newly installed conduits and sleeves.

28. Where installation requires cutting or drilling of the existing floor slab, the contractor shall not dispose of any materials until released by the owner’s project engineers.
PARTIAL FIRE ALARM AND MASS NOTIFICATION RISER

- MOUNT 80" ABOVE FINISHED FLOOR WHERE POSSIBLE.
- WHERE CEILING HEIGHTS DO NOT ALLOW THIS.

- DEVICES SHOWN WITHIN 48" OF EACH OTHER ON ALL ELECTRICAL PLANS SHALL BE ALIGNED PER THIS SPECIFICATION.

- PROVIDE ALL REQUIRED PROGRAMMING, SOFTWARE, AND HARDWARE.

- PROVIDE ANTENNAS WITH LIGHTNING ARRESTORS AND CONNECT TO LOCAL I.T. ROOM.

- PROVIDE TWO BLUE CAT 6 HORIZONTAL CABLES IN 3/4" CONDUIT TO PATCH PANEL IN EXISTING I.T. ROOM.

- MASS NOTIFICATION EQUIPMENT SHALL BE RED AND LOCKED ON.

- supports are required, shall be designed on a risk basis, coordinated with structure, allowing 30% for interaction between structure and equipment. The equipment shall not be placed on or be supported by any structural component unless designed as part of the structural system. Component detail and installation shall be reviewed and approved.

- FLOOR MOUNTED RESTRAINT ALL RESTRAINT ALL

- CABLE TRAY/BUS DUCT ASSOCIATED DUCTWORK, PIPING AND CONDUIT.

- COMPONENT CERTIFICATION MUST BE SUPPLIED BY THE EQUIPMENT MANUFACTURER AT TIME OF SUBMITTAL FOR REVIEW BY THE ENGINEER OF RECORD.

- USE THE TABLE BELOW TO DETERMINE SEISMIC RESTRAINT REQUIREMENTS FOR EACH COMPONENT.

<table>
<thead>
<tr>
<th>LUMENS COLOR TEMP. LOAD VOLTS</th>
<th>ELECTRICAL SYSTEMS</th>
<th>PER IBC-2018/ASCE 7-10</th>
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</thead>
</table>

- WIRE SIZING CHART

- ELECTRICAL CODES AND STANDARDS

- NOTES:

- FIRE ALARM SYSTEM.

- MASS NOTIFICATION.

- EVACUATION AND MASS NOTIFICATION.

- ALARMS.

- NOT TO SCALE.
KEYED NOTES

1. PROVIDE DATA DROP IN EXISTING CMU CONTROL PANELS, PRECISE LOCATION OF PANEL: 2LKA.
2. PROVIDE ONE MINS. LI RECEPTACLE MOUNTED ON FRONT SIDE OF WALL BOX IN 2-307. PROVIDE NEW 20-Amp DUAL CIRCUIT BREAKER. PROVIDE NEW 14-30 RECEPTACLE MOUNTED ON BACK SIDE OF WALL BOX.
3. PROVIDE NEW 20-Amp DUAL CIRCUIT BREAKER.
4. PROVIDE NEW 20-Amp DUAL CIRCUIT BREAKER IN 2-307.
5. ELECTRICAL ROOM 1-4, LOCATION OF PANEL: 2LKA.
6. PROVIDE TWO POWER OUTLET BOXES AND ULTRASONIC SENSORS IN EXISTING ELECTRICAL ROOMS. PROVIDE POWER AS REQUIRED.

GENERAL NOTES

1. PROVIDE TEST AND CERTIFY FIRE ALARM SYSTEM AT CONCLUSION.
2. PROVIDE NEW SOUNDER BASES FOR SMOKE DETECTORS. PROVIDE NEW FIRE ALARM SYSTEM CONDUIT. PROVIDE NEW FIRE ALARM SYSTEM WIRING. PROVIDE NEW SOUNDER BASES. PROVIDE NEW FIRE ALARM SYSTEM DISTRIBUTION PANEL.
3. PROVIDE DATA DROPS IN EXISTING CMI CONTROL PANELS. PROVIDE ULTRASONIC SENSORS IN EXISTING ELECTRICAL ROOMS. PROVIDE NEW SOUNDER BASES. PROVIDE NEW FIRE ALARM SYSTEM DISTRIBUTION PANEL.
4. PROVIDE 520 HZ TONE AND SHALL BE LOCATED AT LEAST 15 FEET FROM EXISTING SOUNDER BASES.
5. PROVIDE ONE NEMA L5-15 RECEPTACLE MOUNTED ON FRONT SIDE OF EACH RACK IN EACH IDF. 2-#10, #10G IN 3/4" CONDUIT FROM EXISTING SQUARE D NQOD PANELBOARD. PROVIDE 520 HZ TONE AND SHALL BE LOCATED AT LEAST 15 FEET FROM EXISTING SOUNDER BASES.

LIGHTING

1. PROVIDE NEW CONCEPT LIGHTING FOR EXISTING BREEZEWAY. PROVIDE LIGHTING TO 100 CHANTICLEER DR EAGLIN RESIDENCE HALL RENOVATION - TELECOMMUNICATIONS AND FIRE ALARM SYSTEM UNIVERSITY OF SOUTH CAROLINA CONWAY, SOUTH CAROLINA 29528 PLAN WEST IT ROOM - IDF 2-1 PLAN NORTH IT ROOM - IDF 2-3 PLAN EAST IT ROOM - IDF 2-2 KEYED NOTES PROVIDE DATA DROP IN EXISTING CMU CONTROL PANELS, PRECISE LOCATION OF PANEL: 2LKA. PROVIDE ONE MINS. LI RECEPTACLE MOUNTED ON FRONT SIDE OF WALL BOX IN 2-307. PROVIDE NEW 20-Amp DUAL CIRCUIT BREAKER. PROVIDE NEW 14-30 RECEPTACLE MOUNTED ON BACK SIDE OF WALL BOX. PROVIDE NEW 20-Amp DUAL CIRCUIT BREAKER. PROVIDE NEW 20-Amp DUAL CIRCUIT BREAKER IN 2-307. ELECTRICAL ROOM 1-4, LOCATION OF PANEL: 2LKA. PROVIDE TWO POWER OUTLET BOXES AND ULTRASONIC SENSORS IN EXISTING ELECTRICAL ROOMS. PROVIDE POWER AS REQUIRED. PROVIDE TEST AND CERTIFY FIRE ALARM SYSTEM AT CONCLUSION. PROVIDE NEW SOUNDER BASES FOR SMOKE DETECTORS. PROVIDE NEW FIRE ALARM SYSTEM CONDUIT. PROVIDE NEW FIRE ALARM SYSTEM WIRING. PROVIDE NEW SOUNDER BASES. PROVIDE NEW FIRE ALARM SYSTEM DISTRIBUTION PANEL. PROVIDE DATA DROPS IN EXISTING CMI CONTROL PANELS. PROVIDE ULTRASONIC SENSORS IN EXISTING ELECTRICAL ROOMS. PROVIDE NEW SOUNDER BASES. PROVIDE NEW FIRE ALARM SYSTEM DISTRIBUTION PANEL. PROVIDE 520 HZ TONE AND SHALL BE LOCATED AT LEAST 15 FEET FROM EXISTING SOUNDER BASES. PROVIDE ONE NEMA L5-15 RECEPTACLE MOUNTED ON FRONT SIDE OF EACH RACK IN EACH IDF. 2-#10, #10G IN 3/4" CONDUIT FROM EXISTING SQUARE D NQOD PANELBOARD. PROVIDE 520 HZ TONE AND SHALL BE LOCATED AT LEAST 15 FEET FROM EXISTING SOUNDER BASES. PROVIDE NEW CONCEPT LIGHTING FOR EXISTING BREEZEWAY. PROVIDE LIGHTING TO 100 CHANTICLEER DR EAGLIN RESIDENCE HALL RENOVATION - TELECOMMUNICATIONS AND FIRE ALARM SYSTEM UNIVERSITY OF SOUTH CAROLINA CONWAY, SOUTH CAROLINA 29528 PLAN WEST IT ROOM - IDF 2-1 PLAN NORTH IT ROOM - IDF 2-3 PLAN EAST IT ROOM - IDF 2-2 PROVIDE DATA DROP IN EXISTING CMU CONTROL PANELS, PRECISE LOCATION OF PANEL: 2LKA. PROVIDE ONE MINS. LI RECEPTACLE MOUNTED ON FRONT SIDE OF WALL BOX IN 2-307. PROVIDE NEW 20-Amp DUAL CIRCUIT BREAKER. PROVIDE NEW 14-30 RECEPTACLE MOUNTED ON BACK SIDE OF WALL BOX. PROVIDE NEW 20-Amp DUAL CIRCUIT BREAKER. PROVIDE NEW 20-Amp DUAL CIRCUIT BREAKER IN 2-307. ELECTRICAL ROOM 1-4, LOCATION OF PANEL: 2LKA. PROVIDE TWO POWER OUTLET BOXES AND ULTRASONIC SENSORS IN EXISTING ELECTRICAL ROOMS. PROVIDE POWER AS REQUIRED. PROVIDE TEST AND CERTIFY FIRE ALARM SYSTEM AT CONCLUSION. PROVIDE NEW SOUNDER BASES FOR SMOKE DETECTORS. PROVIDE NEW FIRE ALARM SYSTEM CONDUIT. PROVIDE NEW FIRE ALARM SYSTEM WIRING. PROVIDE NEW SOUNDER BASES. PROVIDE NEW FIRE ALARM SYSTEM DISTRIBUTION PANEL. PROVIDE DATA DROPS IN EXISTING CMI CONTROL PANELS. PROVIDE ULTRASONIC SENSORS IN EXISTING ELECTRICAL ROOMS. PROVIDE NEW SOUNDER BASES. PROVIDE NEW FIRE ALARM SYSTEM DISTRIBUTION PANEL. PROVIDE 520 HZ TONE AND SHALL BE LOCATED AT LEAST 15 FEET FROM EXISTING SOUNDER BASES. PROVIDE ONE NEMA L5-15 RECEPTACLE MOUNTED ON FRONT SIDE OF EACH RACK IN EACH IDF. 2-#10, #10G IN 3/4" CONDUIT FROM EXISTING SQUARE D NQOD PANELBOARD. PROVIDE 520 HZ TONE AND SHALL BE LOCATED AT LEAST 15 FEET FROM EXISTING SOUNDER BASES. PROVIDE NEW CONCEPT LIGHTING FOR EXISTING BREEZEWAY. PROVIDE LIGHTING TO 100 CHANTICLEER DR EAGLIN RESIDENCE HALL RENOVATION - TELECOMMUNICATIONS AND FIRE ALARM SYSTEM UNIVERSITY OF SOUTH CAROLINA CONWAY, SOUTH CAROLINA 29528 PLAN WEST IT ROOM - IDF 2-1 PROVIDE DATA DROP IN EXISTING CMU CONTROL PANELS, PRECISE LOCATION OF PANEL: 2LKA. PROVIDE ONE MINS. LI RECEPTACLE MOUNTED ON FRONT SIDE OF WALL BOX IN 2-307. PROVIDE NEW 20-Amp DUAL CIRCUIT BREAKER. PROVIDE NEW 14-30 RECEPTACLE MOUNTED ON BACK SIDE OF WALL BOX. PROVIDE NEW 20-Amp DUAL CIRCUIT BREAKER. PROVIDE NEW 20-Amp DUAL CIRCUIT BREAKER IN 2-307. ELECTRICAL ROOM 1-4, LOCATION OF PANEL: 2LKA. PROVIDE TWO POWER OUTLET BOXES AND ULTRASONIC SENSORS IN EXISTING ELECTRICAL ROOMS. PROVIDE POWER AS REQUIRED. PROVIDE TEST AND CERTIFY FIRE ALARM SYSTEM AT CONCLUSION. PROVIDE NEW SOUNDER BASES FOR SMOKE DETECTORS. PROVIDE NEW FIRE ALARM SYSTEM CONDUIT. PROVIDE NEW FIRE ALARM SYSTEM WIRING. PROVIDE NEW SOUNDER BASES. PROVIDE NEW FIRE ALARM SYSTEM DISTRIBUTION PANEL. PROVIDE DATA DROPS IN EXISTING CMI CONTROL PANELS. PROVIDE ULTRASONIC SENSORS IN EXISTING ELECTRICAL ROOMS. PROVIDE NEW SOUNDER BASES. PROVIDE NEW FIRE ALARM SYSTEM DISTRIBUTION PANEL. PROVIDE 520 HZ TONE AND SHALL BE LOCATED AT LEAST 15 FEET FROM EXISTING SOUNDER BASES. PROVIDE ONE NEMA L5-15 RECEPTACLE MOUNTED ON FRONT SIDE OF EACH RACK IN EACH IDF. 2-#10, #10G IN 3/4" CONDUIT FROM EXISTING SQUARE D NQOD PANELBOARD. PROVIDE 520 HZ TONE AND SHALL BE LOCATED AT LEAST 15 FEET FROM EXISTING SOUNDER BASES. PROVIDE NEW CONCEPT LIGHTING FOR EXISTING BREEZEWAY. PROVIDE LIGHTING TO 100 CHANTICLEER DR EAGLIN RESIDENCE HALL RENOVATION - TELECOMMUNICATIONS AND FIRE ALARM SYSTEM UNIVERSITY OF SOUTH CAROLINA CONWAY, SOUTH CAROLINA 29528 PL
GENERAL NOTES

1. ALL FLOOR AND CEILING PERFORATIONS SHALL BE TAILED WITH FIRE-RATED MATERIALS OR WITH IRRIGATED PROTECTION TO PROHIBIT THE PROPAGATION OF FUMES AND COMpletely BURNED AND PREPARED TO HANDLE EXISTING CONDITIONS.

2. ALL ELECTRICAL SOCKETS AND OUTLETS SHALL BE SUPPLIED WITH POWER DISTRIBUTION PANELS AND CIRCUIT BREAKERS.

3. PROVIDE ONE NEMA L5-15 RECEPTACLE MOUNTED ON FRONT OF EACH ROOM FOR GENERAL USE. PROVIDE ONE NEMA L5-15 RECEPTACLE MOUNTED ON FRONT OF EACH ROOM FOR GENERAL USE.

4. PROVIDE ONE NEMA L5-15 RECEPTACLE MOUNTED ON FRONT OF EACH ROOM FOR GENERAL USE. PROVIDE ONE NEMA L5-15 RECEPTACLE MOUNTED ON FRONT OF EACH ROOM FOR GENERAL USE.

5. PROVIDE SOUNDER BASES FOR SMOKE DETECTORS SHALL BE COORDINATED WITH CCU IT.

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10. PROVIDE SOUNDER BASES FOR SMOKE DETECTORS SHALL BE COORDINATED WITH CCU IT.
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Fire-alarm control unit.
3. System smoke detectors.
6. Device guards.
8. Addressable interface device.
12. Network communications.

1.3 DEFINITIONS

A. EMT: Electrical Metallic Tubing.
B. FACP: Fire Alarm Control Panel.
C. HLI: High Level Interface.
E. PC: Personal computer.

1.4 ACTION SUBMITTALS

A. See submittals section 260510 Electrical Submittals.
1.5 QUALITY ASSURANCE

A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.

B. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm Level III technician.

C. NFPA Certification: Obtain certification according to NFPA 72 by a UL-listed alarm company.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:
   1. Do not proceed with interruption of fire-alarm service without Owner's written permission.
   2. Provide a fire watch whenever the building fire alarm system is impaired.

B. Use of Devices during Construction: Protect devices during construction unless devices are placed in service to protect the facility during construction.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace fire-alarm system equipment and components that fail in materials or workmanship within one year of substantial completion.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Source Limitations for Fire-Alarm and Mass Notification System and Components: Components shall be compatible with, and operate as an extension of, existing campus system. Provide system manufacturer's certification that all components provided have been tested as, and will operate as, a system.

B. The fire alarm system shall be a non-coded, UL-certified addressable fire alarm system, with voice evacuation/mass notification annunciation system.

C. All components provided shall be UL listed for use with the fire alarm voice evacuation/mass notification annunciation system.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

A. Fire-alarm signal initiation shall be by one or more of the following devices and systems:
2. Heat detectors.
3. Smoke detectors.
4. Duct smoke detectors.
5. Automatic sprinkler system water flow.
6. Fire-extinguishing system operation.

B. Fire-alarm signal shall initiate the following actions:

1. Continuously operate alarm notification appliances, including voice evacuation notices.
2. Identify alarm and specific initiating device at fire-alarm control unit, connected network control panels, and remote annunciators.
3. Transmit an alarm signal to the remote alarm receiving station at the CCU Department of Public Safety Dispatch Center.
4. Activate voice/alarm communication system.
5. Switch heating, ventilating, and air-conditioning equipment controls to fire-alarm mode.
6. Recall elevators to primary or alternate recall floors.
7. Record events in the system memory.
8. Indicate device in alarm on the remote annunciator.
10. Close fire smoke dampers.

C. Supervisory signal initiation shall be by one or more of the following devices and actions:

1. Valve supervisory switch.
2. Elevator shunt-trip supervision.
3. Loss of communication with any panel on the network.
4. User disabling of zones or individual devices.

D. System trouble signal initiation shall be by one or more of the following devices and actions:

1. Open circuits, shorts, and grounds in designated circuits.
2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
3. Loss of communication with any addressable sensor, input module, relay, control module, remote annunciator, printer interface, or Ethernet module.
4. Loss of primary power at fire-alarm control unit.
5. Ground or a single break in internal circuits of fire-alarm control unit.
6. Abnormal ac voltage at fire-alarm control unit.
7. Break in standby battery circuitry.
8. Failure of battery charging.
9. Abnormal position of any switch at fire-alarm control unit or annunciator.

E. System Supervisory Signal Actions:

1. Initiate notification appliances.
2. Identify specific device initiating the event at fire-alarm control unit, connected network control panels, and remote annunciators.
3. After a time delay of 200 seconds, transmit a trouble or supervisory signal to the remote alarm receiving station.
4. Transmit system status to building management system.
5. Display system status on graphic annunciator.

2.3 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Fire-alarm control unit and raceways shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2.4 FIRE-ALARM CONTROL UNIT

A. Provide a Gamewell-FCI or similar non-proprietary Fire Alarm System with a Sircom Voice Evacuation/Mass Notification System. Provide a compatible IPC communicator connected to the CCU Department of Public Safety Dispatch Center’s ALERiTY System.

Provide a wireless IP based radio and antenna system to receive and transmit mass notification alerts. Connect this radio to an antenna system and to the IPC communicator. This system shall be connected to the CCU Department of Public Safety Dispatch Center’s ALERiTY System and shall have the following minimum components.

1. Omnidirectional antenna on from installed within 90’ of the wireless IP radio and within direct line of sight with the MNS antenna. Coordinate this antenna location in the field with the engineer and the CCU fire marshal. Antenna shall be braced to withstand 130 mph winds with a 1.3 gust factor.

2. Provide a surge protector on the antenna cable and bond the antenna with the building lightning protection system.

B. General Requirements for Fire-Alarm Control Unit:

1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864.

   a. System software and programs shall be held in nonvolatile flash, electrically erasable, programmable, read-only memory, retaining the information through failure of primary and secondary power supplies.

   b. Include a real-time clock for time annotation of events on the event recorder and printer.

   c. Provide communication between the FACP and remote circuit interface panels, annunciators, and displays.

   d. The FACP shall be listed for connection to a central-station signaling system service.

   e. Provide nonvolatile memory for system database, logic, and operating system and event history. The system shall require no manual input to initialize in the event of a complete power down condition. The FACP shall provide a minimum 500-event history log.
f. Provide UL listed interface unit capable of displaying text messages from voice evacuation/mass notification captioning system.

2. Addressable Initiation Device Circuits: The FACP shall indicate which communication zones have been silenced and shall provide selective silencing of alarm notification appliance by building communication zone.

3. Addressable Control Circuits for Operation of Notification Appliances and Mechanical Equipment: The FACP shall be listed for releasing service.

C. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

1. Annunciator and Display: Liquid-crystal type, 80 characters, minimum.
2. Keypad: Arranged to permit entry and execution of programming, display, and control commands.

D. Initiating-Device, Notification-Appliance, and Signaling-Line Circuits:

1. Pathway Class Designations: NFPA 72, Class B.

E. Notification-Appliance Circuit:

1. Audible appliances shall sound in a three-pulse temporal pattern, as defined in NFPA 72.
2. Visual alarm appliances shall flash in synchronization where multiple appliances are in the same field of view, as defined in NFPA 72.

F. Elevator Recall:

1. Elevator recall shall be initiated only by one of the following alarm-initiating devices:
   a. Elevator lobby detectors except the lobby detector on the designated floor.
   b. Smoke detector in elevator machine room.
   c. Smoke detectors in elevator hoistway.
2. Elevator controller shall be programmed to move the cars to the alternate recall floor if lobby detectors located on the designated recall floors are activated.
3. Heat Detectors in the elevator shaft and elevator machine room shall shut down the elevator via shunt trip circuit breaker. Provide a time delay to allow the elevator to reach the elevator recall floor and open doors.

G. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to CCU’s remote central alarm station.

H. Voice/Alarm Signaling Service:

1. Amplifiers shall comply with UL 1711.
   a. Programmable tone and message sequence selection.
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b. Programmed with CCU’s standard pre-recorded messages for fire alarm and mass notification.

c. Generate tones to be sequenced with audio messages of type recommended by NFPA 72 and that are compatible with tone patterns of notification-appliance circuits of fire-alarm control unit.

I. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, supervisory signals, supervisory and digital alarm communicator transmitters and digital alarm radio transmitters shall be powered by 24-V dc source.

1. Alarm current draw of entire fire-alarm and mass notification system shall not exceed 80 percent of the power-supply module rating.

J. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.

1. Batteries: Sealed lead-acid or nickel cadmium.

K. Battery Booster Panel and Amplifier Booster Panel: Provide one battery booster panel and one amplifier booster panel, at minimum, on every floor. Provide 25% spare capacity in the amplifier booster panel and the battery booster panel. Calculations shall assume that the speakers are at their maximum tap settings and strobes are at their designed candela level.

L. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

2.5 MANUAL FIRE-ALARM BOXES

A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box. Basis of Design is Firelite BG-12LX keyed common to fire alarm panel.

1. Double-action mechanism requiring two actions to initiate an alarm, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.

2. Station Reset: Key switch.

2.6 SYSTEM SMOKE DETECTORS

A. General Requirements for System Smoke Detectors and 520 Hz Sounder Base System Smoke Detectors:

1. Comply with UL 268; operating at 24-V dc, nominal.

2. Detectors shall be two-wire type.
3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.

5. Integral Visual-Indicating Light: LED type, indicating detector has operated and power-on status.

B. Duct Smoke Detectors: Photoelectric type complying with UL 268A.

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system.

2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
   a. Primary status.
   b. Device type.
   c. Present average value.
   d. Present sensitivity selected.
   e. Sensor range (normal, dirty, etc.).

3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector for smoke detection in HVAC system ducts.

4. Each sensor shall have multiple levels of detection sensitivity.

5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.


7. Test and reset keys shall be provided for all duct mounted smoke detectors. Install the test and reset units 48” AFF and label unit or damper served.

2.7 HEAT DETECTORS

A. General Requirements for Heat Detectors: Comply with UL 521.

1. Temperature sensors shall test for and communicate the sensitivity range of the device.

B. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 deg F (57 deg C) or a rate of rise that exceeds 15 deg F (8 deg C) per minute unless otherwise indicated.

1. Mounting: Twist-lock base interchangeable with smoke-detector bases.

2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

2.8 NOTIFICATION APPLIANCES

A. General Requirements for Notification Appliances: Any location that requires a strobe for the alarm notification shall be installed as a combination speaker strobe device.
B. General Requirements for Notification Appliances: Individually address, connected to notification-appliance signal circuits, zoned as indicated, equipped for mounting as indicated, and with screw terminals for system connections.

1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated, and with screw terminals for system connections.

C. Visible Notification Appliances: Xenon strobe lights complying with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "ALERT" is engraved in minimum 1-inch high letters on the lens.

1. Rated Light Output:
   a. 15/30/75/110 cd, selectable in the field.
2. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
3. Flashing shall be in a temporal pattern, synchronized with other units.
6. Provide voltage drop calculations that show 1.5dB or less power loss on the speaker circuits.

D. Voice/Tone Notification Appliances:

1. Comply with UL 1480.
2. Speakers for Voice Notification: Locate speakers for voice notification to provide the intelligibility requirements of the "Notification Appliances" and "Emergency Communications Systems" chapters in NFPA 72.
3. High-Range Units: Rated 2 to 15 W.
4. Low-Range Units: Rated 1 to 2 W.
7. Matching Transformers: Tap range matched to acoustical environment of speaker location.
8. Speakers shall have field selectable taps to adjust volume.
9. Provide voltage drop calculations that show 1.5db or less power loss on the speaker circuits.

2.9 REMOTE ANNUNCIATOR

A. Description: Annunciator functions shall match those of fire-alarm control unit for alarm, supervisory, and trouble indications. Manual switching functions shall match those of fire-alarm control unit, including acknowledging, silencing, resetting, and testing.

1. Mounting: Recessed cabinet with locked enclosure and viewing window, NEMA 250, Type 1. Cabinet shall have manufacturer’s standard light gray finish, or, pending approval of CCU’s Fire Marshal may be painted to match the surrounding wall finish color. Coordinate exact mounting location and cabinet color with CCU Fire Marshal prior to installation.
2. The remote microphone station shall be installed in a NEMA 250, Type 1. Cabinet shall have manufacturer’s standard light gray finish, or, pending approval of CCU’s Fire Marshal may be painted to match the surrounding wall finish color. Coordinate exact mounting location and cabinet color with CCU Fire Marshal prior to installation.

3. Turnover six (6) keys to Owner at Substantial Completion. These encloses shall be keyed to the campus best key system.

B. Display Type and Functional Performance: Alphanumeric display and LED indicating lights shall match those of fire-alarm control unit. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.

2.10 ADDRESSABLE INTERFACE DEVICE

A. General:

1. Include address-setting means on the module.
2. Store an internal identifying code for control panel use to identify the module type.
3. Listed for controlling HVAC fan motor controllers.

B. Monitor Module: Microelectronic module providing a system address for alarm-initiating devices for wired applications with normally open contacts.

C. Integral Relay: Capable of providing a direct signal to elevator controller to initiate elevator recall or to circuit-breaker shunt trip for power shutdown.

1. Allow the control panel to switch the relay contacts on command.
2. Have a minimum of two normally open and two normally closed contacts available for field wiring.

D. Control Module:

1. Operate notification devices.
2. Operate solenoids for use in sprinkler service.

2.11 DIGITAL ALARM COMMUNICATOR TRANSMITTER – FIRE ALARM SYSTEM

A. Digital alarm communicator transmitter shall be compatible with the existing remote CCU central station and shall comply with UL 632.

B. Functional Performance: Unit shall receive an alarm, supervisory, or trouble signal from fire-alarm control unit and automatically capture two telephone line(s) and dial a preset number for CCU’s existing remote central receiving station at the CCU Department of Public Safety Dispatch Center. When contact is made with central station(s), signals shall be transmitted. If service on either line is interrupted for longer than 45 seconds, transmitter shall initiate a local trouble signal and transmit the signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. Transmitter shall automatically report telephone service restoration to the central station. If service is lost on both telephone lines, transmitter shall initiate the local trouble signal.
C. Local functions and display at the digital alarm communicator transmitter shall include the following:

1. Verification that both telephone lines are available.
2. Programming device.
3. LED display.
5. Communications failure with the central station or fire-alarm control unit.

D. Digital data transmission shall include the following:

1. Address of the alarm-initiating device.
2. Address of the supervisory signal.
3. Address of the trouble-initiating device.
4. Loss of ac supply.
5. Loss of power.
6. Low battery.
7. Abnormal test signal.

E. Secondary Power: Integral rechargeable battery and automatic charger.

F. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.

2.12 VOICE EVACUATION AND MASS NOTIFICATION PANEL

A. Voice evacuation and mass notification panel shall be UL listed and comply with NFPA 72 and UL 2572 for message broadcasting.

B. Functional Performance: The operation of any automatic fire detector, initiation device, sprinkler water flow device or manual fire alarm pull station shall automatically sound an alert tone followed by voice instructions for general building evacuation. The signal shall broadcast throughout the building to all paging zones from the voice evacuation and mass notification panel until the fire alarm control panel is reset, or until the fire emergency personnel interrupt the broadcast with a manual page. On reset the system shall automatically return to normal operating condition. The system shall be configured to allow paging over the Public Address (PA) speakers and fire alarm system notification appliances. The manual live page shall be provided via a remote microphone station located adjacent to the remote fire alarm annunciator panel. The interconnection to the PA system shall be via a Waves Over IP Communicator (IPC 8000).

C. Normal Power Input: 120-V ac.

D. Secondary Power: This system shall be provided with sufficient battery capacity to operate the entire system upon loss of normal AC power in a normal supervisory mode for a period of 24 hours with 15 minutes of alarm operation at the end of this period. The system shall automatically transfer to battery standby upon power failure. All battery charging and recharging operations shall be automatic.
### 2.13 IPC COMMUNICATOR – MASS NOTIFICATION SYSTEM

**A.** Description: Manufacturer's standard commercial product; factory assembled, wired, and tested; ready for installation and operation.

1. **Packaging:** A single, modular, NEMA 250, Type 1 metal enclosure with a tamper-resistant flush tumbler lock.
2. **Normal Power Input:** 120-V ac.
3. **Secondary Power:** Integral-sealed, rechargeable, 12-V battery and charger. Comply with NFPA 72 requirements for battery capacity; submit calculations.
4. **Alarm Interface Devices:** Circuit boards, modules, and other auxiliary devices, integral to the transmitter, matching fire-alarm and other system outputs to message-generating inputs of the transmitter that produce required message transmissions.

**B.** Functional Performance: The IP communicator shall receive a signal from CCU’s ALERiTY mass notification system via Ethernet network connection and transmit audible and visual messages to the building’s Fire Alarm System Notification devices via the Voice Evacuation and Mass Notification Panel (VECP). Transmitted messages shall include CCU’s standard eight (8) pre-recorded messages. The message priority shall be as follows:

1. The in-building mass notification system is allowed to override a fire alarm evacuation notification for the brief time that the mass notification signal is broadcast. Once the mass notification signal is complete the fire alarm signal will continue.
2. The mass notification system will only be used when there is an imminent threat to life and safety.
3. If at any time a first responder needs to communicate with the building occupants the local microphone in the building will override all fire alarm and mass notification signals. Once the local microphone is no longer in use, the building fire alarm and/or mass notification system will continue to alarm.
4. If the building uses the mass notification system for paging, music, non-mass notification signals these signals shall not override any fire alarm, mass notification or local microphone signal.

### 2.14 NETWORK COMMUNICATIONS

**A.** Provide network communications for the voice evacuation and mass notification system according to the manufacturer's written requirements.

**B.** Provide network communications pathway per manufacturer's written requirements and requirements in NFPA 72 and NFPA 70.

**C.** Provide integration gateway using BACnet or Modbus for connection to building automation system.

### 2.15 DEVICE GUARDS

**A.** Description: Welded wire mesh of size and shape for the manual station, smoke detector, gong, or other device requiring protection.

1. Factory fabricated and furnished by device manufacturer.
3.1 EXAMINATION

A. Examine areas and conditions for compliance with requirements for ventilation, temperature, humidity, and other conditions affecting performance of the Work.

1. Verify that manufacturer's written instructions for environmental conditions have been permanently established in spaces where equipment and wiring are installed, before installation begins.

B. Examine roughing-in for electrical connections to verify actual locations of connections before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EQUIPMENT INSTALLATION

A. Comply with NFPA 72 and requirements of authorities having jurisdiction for installation and testing of fire-alarm equipment. Install all electrical wiring to comply with requirements in NFPA 70 including, but not limited to, Article 760, "Fire Alarm Systems."

1. Devices placed in service before all other trades have completed cleanup shall be replaced.
2. Devices installed but not yet placed in service shall be protected from construction dust, debris, dirt, moisture, and damage according to manufacturer's written storage instructions.

B. Equipment Mounting:

1. Comply with requirements for seismic-restraint devices specified in Section 260548 "Vibration and Seismic Controls for Electrical Systems."

C. Install wall-mounted equipment, with tops of cabinets not more than 78 inches above the finished floor.

1. Comply with requirements for seismic-restraint devices specified in Section 260548 "Vibration and Seismic Controls for Electrical Systems."

D. Install a cover on each smoke detector that is not placed in service during construction. Cover shall remain in place except during system testing. Remove cover prior to system turnover.

E. Duct Smoke Detectors: Comply with NFPA 72 and IMC. Install sampling tubes so they extend the full width of duct. Tubes more than 36 inches long shall be supported at both ends.
FIRE DETECTION AND ALARM

F. Elevator Shafts: Coordinate temperature rating and location with sprinkler rating and location.

G. Remote Status and Alarm Indicators: Install in a visible location near each smoke detector, sprinkler water-flow switch, and valve-tamper switch that is not readily visible from normal viewing position.

H. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille. Install all devices at the same height unless otherwise indicated.

I. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling. Install all devices at the same height unless otherwise indicated.

J. Device Location-Indicating Lights: Locate in public space near the device they monitor.

K. Program the mass notification and voice evacuation panel with CCU’s standard 8 pre-recorded messages.

L. All circuit breakers supplying power to the fire alarm voice evacuation and mass notification annunciation system shall be painted red and locked in the on position.

M. Provide TVSS surge protection for the incoming power and for all devices that leave the building (AHU interfaces, antennas, duct mounted smoke detectors, exterior strobes/horns).

N. All circuits that provide power to the fire alarm and mass notification system shall be painted red and locked in the on position.

3.3 PATHWAYS

A. All cabling shall be installed in EMT conduit.

B. The conduit system shall be painted red enamel, or be red anodized conduit, or shall have red covered junction boxes. In areas with exposed conduit in finished spaces, pending approval of the CCU Fire Marshal, the conduit and junction boxes can be painted to match the exposed ceiling spaces if the junction boxes are labeled “Fire Alarm.”

3.4 CONNECTIONS

A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Section 087100 "Door Hardware." Connect hardware and devices to fire-alarm system.

B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 36 inches (910 mm) from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.
1. Smoke dampers in air ducts of designated HVAC duct systems.
2. Electronically locked doors and access gates.
3. Alarm-initiating connection to elevator recall system and components.
4. Alarm-initiating connection to activate emergency shutoffs for gas and fuel supplies.
5. Supervisory connections at valve supervisory switches.
7. Data communication circuits for connection to building management system.
8. Data communication circuits for connection to mass notification system.
9. Supervisory connections at fire-pump power failure including a dead-phase or phase-reversal condition.
10. Supervisory connections at fire-pump engine control panel.

3.5 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

B. Install framed instructions in a location visible from fire-alarm control unit.

C. Provide embossed adhesive tape with 3/16 inch letters for identification of fire alarm notification and activation devices. Label shall include loop and device number.

3.6 GROUNDING

A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

B. Ground shielded cables at the control panel location only. Insulate shield at device location.

3.7 FIELD QUALITY CONTROL

A. Field tests shall be witnessed by authorities having jurisdiction.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

C. Perform tests and inspections.

D. Perform the following tests and inspections:

1. Visual Inspection: Conduct visual inspection prior to testing.
   a. Inspection shall be based on completed record Drawings and system documentation that is required by the "Completion Documents, Preparation" table in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
   b. Comply with the "Visual Inspection Frequencies" table in the "Inspection" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.

3. Audible Appliance Testing:
   a. The fire alarm contractor shall work with an independent testing agency to conduct a STI/STIPA test per NFPA 72-2013 Annex D. The testing shall be a quantitative test that uses a signal generator and a testing device that provides a speech intelligibility score for each Acoustically Distinguishable Space (ADS).
   b. Submit a testing plan identifying the proposed ADS’s to the Architect/Engineer and CCU Fire Marshal on a marked up floor plan for review and approval prior to testing.
   c. Perform a pre-test of the system during construction and prior to substantial completion. This test will be an unoccupied test. Adjust speaker taps to improve intelligibility and audibility of the system prior to completing the pre-test.
   d. Perform a final test of the system post construction completion and during normal building occupied hours.
   e. Submit all test reports to the Architect/Engineer and CCU Fire Marshal.

4. Test visible appliances for the public operating mode according to manufacturer's written instructions.

5. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" section of the "Fundamentals" chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

E. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.

F. Fire-alarm system will be considered defective if it does not pass tests and inspections.

G. Prepare test and inspection reports.

H. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.

I. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.8 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

1. Include visual inspections according to the "Visual Inspection Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
3.9 SOFTWARE SERVICE AGREEMENT

A. Comply with UL 864.

B. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.

C. Upgrade Service: At Substantial Completion, update software to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system and new or revised licenses for using software.

1. Upgrade Notice: At least 30 days to allow Owner to schedule access to system and to upgrade computer equipment if necessary.

3.10 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

1. Training Duration: Four (4) hours, minimum.

2. Schedule training with the Owner at least seven (7) days in advance.

END OF SECTION 283111