



ADDENDUM TO THE CONTRACT

for the

JNU FIRE ALARM UPGRADE Contract No. BE21-159

ADDENDUM NO.: TWO

**CURRENT DEADLINE FOR BIDS:
March 9, 2021**

PREVIOUS ADDENDA: ONE

ISSUED BY: City and Borough of Juneau
ENGINEERING DEPARTMENT
155 South Seward Street
Juneau, Alaska 99801

DATE ADDENDUM ISSUED: March 3, 2021

The following items of the contract are modified as herein indicated. All other items remain the same. This addendum has been issued and is posted online. Please refer to the CBJ Engineering Contracts Division webpage at: <http://www.juneau.org/engineering-public-works>

INFORMATION ITEMS:

- The JIA FA Shops are attached as information, this document is not intended to represent a current as-built record of the existing fire detection and alarm system. This document is being furnished to assist the Bidder/Contractor in verifying the extent of the existing fire alarm system. 9 sheets dated 9/12/10.
- The Paging and Fire Alarm Shop Drawings as part of the north terminal project are attached as information, this document is being furnished to assist the Bidder/Contractor's coordination efforts with the fire alarm work that is to be completed as part of the Terminal Reconstruction project with Dawson Construction. Sheets FA-04 & FA-05.
- The Fire Alarm and PA System as part of the North Terminal Project are attached as information for coordination purposes. Sheets E-1B411, E-1B412, E-1B421, E-1B422, & E-902.

CLARIFICATIONS:

- Contract document sheet E4.8 Detail 2: New FACP & Mass Notification equipment location – Ventilation Duct wall space and optional Stair wall space are available spaces for contractor to install new FACP & Mass Notification equipment as they see fit.
- Contract document sheet E4.0 Project Notes: note 5. The New Terminal Fire Alarm System shall communicate with the existing FAA Tower Fire Alarm System – The FAA FACP is located on the fourth floor of the FAA tower. The make and model is Silent Knight SK-5208. Establish communication between the two FACP panels. Only General Alarm conditions shall be communicated both ways between the fire alarm systems. There are no areas of rescue/refuge.

- The existing Fire Alarm system is illustrated to identify the extent of the system for coordination purpose only. Field verify the location of devices.
- Existing luminaires, camera, PA speakers, and other miscellaneous devices are shown on the ceiling for coordination purposes only. Field verify the actual location of all existing devices as necessary to avoid conflicts with new installation of new voice evacuation speakers.
- The existing public address system is illustrated to identify the extent of the system for coordination purposes only. Field verify the location of devices.

QUESTIONS:

Question: *"There are three locations for fire alarm annunciators. At which of these locations do you want a microphone and audio control capabilities?"*

Response: Microphone with audio control capabilities to be located at the Fire Alarm Annunciator inside the maintenance room 262.

Question: *"Who will provide fire watch services? This is often better handled more flexibly by the customer's existing security staff, rather than a contractor hiring, and badging another employee just for occasional fire watch."*

Response: Contractor is responsible for fire watch services.

Question: *"The audio intelligibility and audibility of the two atriums is difficult to predict without an intelligibility modeling study. More/different speakers may be required, but for best quality for daily paging, is an intelligibility study requested?"*

Response: Intelligibility study is required per Specification section 284700-16 Mass Notification.

Question: *"There are several exists with no pull stations shown, shall these be added into the bid price (4 in the general bagwell area, for instance)?"*

Response: Yes

Question: *"Notification coverage is not shown or lacking in several areas, shall these be added into the bid price? (for instance, all the west of E4.5 – E4.6 shows strobes but no speakers). If 70Db is required, replacing most of these with speaker strobe combos is recommended."*

Response: Yes

Question: *"As the paging one-line drawn, there is "outside" zone in the paging system. The entire system broadcasts all messages. If these outdoor units are V-9010 speakers as shown, they are self-amplified speakers, which are incompatible with the drawn amplifier/etc. Further investigation is requested."*

Response: Existing Public Address system is shown on Sheet E4.10 single line diagram. Reference drawing sheet E4.9 Riser Diagram – New Fire Alarm System.

Question: *"Is an outside paging zone desired, that will broadcast relevant recorded messages, i.e., "no parking, keep moving" as opposed to inside flight boarding/arrival information?"*

Response: Yes. Reference drawing sheet E4.9 Riser Diagram – New Fire Alarm System.

- Question:** *"What fans/dampers are over 2000CFM, and need to be shut down, and where are they? Where are any magnetically held doors?"*
- Response:** AHU located inside the North Penthouse and East Penthouse. No, all access doors have panic bars.
- Question:** *"Section 284621.11 3.4 A and 3.7 A reference that pathways must be installed in EMT. During the site visit it was not that much of the installation is to take place in a cable tray. Can it be clarified where EMT will be required?"*
- Response:** Electrical pathways will be existing as they will be installed during the North Terminal Reconstruction project or are presently located in the existing east terminal. Some new fire alarm devices will be installed to comply with code that are not located on the contract drawings. The circuits for these new devices shall be routed in EMT pathways per spec section 284621.11, subsections 3.4(A) and 3.7(A). Speaker circuits may be routed on hooks and cable trays were located above suspended ceilings. See attached drawing - Fire Alarm as part of the North Terminal Project.
- Question:** *"If we are to utilize the cable tray for much of the installation, will J-hooks be acceptable for use above suspended ceilings?"*
- Response:** Electrical pathways will be existing as they will be installed during the North Terminal Reconstruction project or are presently located in the existing east terminal. Some new fire alarm devices will be installed to comply with code that are not located on the contract drawings. The circuits for these new devices shall be routed in EMT pathways per spec section 284621.11, subsections 3.4(A) and 3.7(A). Speaker circuits may be routed on hooks and cable trays were located above suspended ceilings.
- Question:** *"Section 284621.11 3.1 D states, "Prior to any demolition of existing system, test the complete system and identify any malfunctioning components." And Project note F on Sheet E4.0 also states that the existing fire alarm panel is to remain operational until the new FACP has been tested and accepted. It was discussed during the site visit that we will be able to remove portions of the existing fire alarm system and add it to the new FACP selectively in lieu of having two side by side fire alarm systems prior to demolishing any of the existing fire alarm devices. Please verify that the work can take place in this manner."*
- Response:** Removing the portions of the existing fire alarm system and adding new fire alarm components to new FACP is acceptable. Reference Contract Documents Drawing sheet E4.0 note 10.
- Question:** *"Section 284621.11 3.1 D states repair any part of the system that will be retained outside the project area. It was discussed during the site visit that compatibility issues, when integrating the work performed with the North terminal renovation, would fall onto the renovation contractor and not under this contract. Please verify."*
- Response:** It is contractor's responsibility to provide devices that ensure compatibility.
- Question:** *"Can an "existing" or "demolition" drawing be provided so that the overall scope of work can be determined. We will need to coordinate what areas require ceiling tiles to be replaced and/or walls patched when compared to the new installation for bidding purposes."*
- Response:** The existing fire alarm system is illustrated on the drawing.

- Question:** *"Project note on sheet E4.0 directs us to utilize existing phone lines for the new FACP. It was noted during the site walkthrough the existing dialer is tied to a cellular dialer. Can it be verified if there are active, wired phone lines currently at the FACP for repurposing?"*
- Response:** Provide (2EA) new telephone lines to the new FACP from the GCI demarcation in the electrical room directly east of HALL 214 on sheet E4.7. An acceptable alternative is to provide (2EA) new telephone lines from the ACS demarcation in the north terminal penthouse.
- Question:** *"Sheet E4.4 shows 4ea. Sprinkler tree. Are all sprinkler tree devices at this location or are there multiple location for dry and wet system devices to be installed?"*
- Response:** The existing locations for the Sprinkler trees are shown on contract documents drawing sheet E4.4.
- Question:** *"Have the mechanical devices (flow and pressure switches) been verified for operation?"*
- Response:** Airport maintains Fire Alarm systems as required. Contractor is obligated to field verify and provide a system to serve the entire terminal.
- Question:** *"Where are the 110 blocks for Alaska Airlines, Delta Airlines and CBJ interface located?"*
- Response:** Cross connect blocks will be existing as they will be installed during the North Terminal Reconstruction project located in the East Penthouse and North Penthouse communication room.
- Question:** *"I do not see any installations regarding air handling unit shutdown. Are there any AHU's with 2000 CFM or greater that will require shutdown, on site?"*
- Response:** AHU's are located in the North Penthouse and East Penthouse.
- Question:** *"Are there any connections to the BAS from the FACP?"*
- Response:** No
- Question:** *"It was noted during our walkthrough that the area that Alaska Seaplanes occupies will remain until potentially September. Will there need to be any fire alarm installations into this area for the duration of their stay?"*
- Response:** No
- Question:** *"We did not have access to the tower for the site visit. Can specific information be provided about the FAA tower FACP? We will need to verify inputs, outputs, model and make to coordinate the installation."*
- Response:** The FAA FACP is located on the fourth floor of the FAA tower. The make and model is Silent Knight SK-5208.
- Question:** *"Can a ceiling tile specification be provided for areas where the new installation will not cover the existing installations' penetrations?"*
- Response:** No. Replace damaged acoustic ceiling tiles with new matching ceiling tiles.
- Question:** *"Section 284621.11 3.7 B states that exposed EMT must be painted red enamel. During the site walk through, this did not sound desirable to the building owner. Can it*

be clarified what locations will required red EMT and where this is to be solid red EMT or a red spray paint mark at predetermined intervals will be acceptable?

Response: Reference Project Manual Item Nos. 1 and 2 in this Addendum.

Question: *"There are a number of grayed out device locations on the contract drawings that have no notes attached to them. For example: Sheet E4.1 – rooms 173,174,175,178, Stair 2 all have manual pull stations, strobes and horn strobes that are grayed out. Sheet E4.2 – rooms 112,131a,160,172,166,124,110 all have manual pull stations, strobes and horn strobes that are grayed out. These devices are found throughout the contract drawings, are these devices new enough and existing to remain?"*

Response: All the devices are shown as existing except where is shown with note new.

Question: *"Section 284700 2, 6) a, b, c, e and h and 2.7. This section is asking for desk top pop-up's text alerts to cellular phones, texts alerts to email, audio alerts to phones, and network alerts to IP connected devices. Are you asking for us to provide some sort of server or graphical user interface for this system? The one-line drawings shows a network connection. Is the intention for us to provide a TrueSite workstation to make all these interfaces possible?"*

Response: Reference Project Manual Item No. 3 in this Addendum.

Question: *"I really do not know how to perform 284700/2/e/7/m interface and relay messages from the National Weather Service. But I don't see how that is being done here or addressed how it is to be transmitted. Can that be expanded upon as far as design intent?"*

Response: Reference Project Manual Item No. 3 in this Addendum.

Question: *"284700/2/e/7/m Does the current airport have in place a radio tower to transmit WEA/SMS alerts to cell phones? Or is this to be included in proposal? Or are the alerts to be send via programmed users – staff using their own devices and having them preprogrammed? (iPad, cell phone, email, text) Is this function to be UL listed?"*

Response: Reference Project Manual Item No. 3 in this Addendum.

Question: *"284700/2/c is this function to operate wireless access to the FACU for control interface from the MNS to be UL listed? Typically, FACU's are not allowed to receive remote command functions off site or through a network and be UL listed. The MNS platform could receive wireless signals, page & use strobes but is this for multiple zones or a general page? Is this to be via WAPs located in the building?"*

Response: Reference Project Manual Item No. 3 in this Addendum.

Question: *"284621.11 2.6/A/1/a/1 one manufacture makes an addressable horn strobes (Simplex). Are NAC devices without addressable functions considered, provided they address/function per the zones?"*

Response: NAC devices without addressable functions that address/function per the zones are acceptable. Zone the notification devices only per the following: Zone 1 – First Floor, Zone 2 – Second Floor, Zone 3 – North Terminal, Zone 4 – Entry Sidewalk Canopy.

Question: *"Clarification of the Web interface, is there in place a network and or a server the system is connected to? What will the functions of network connection be? The riser*

diagram notes CBJ network, what information or capabilities will be performed? Users interface? Internet Access?"

Response: Reference Project Manual Item No. 3 in this Addendum.

Question: *"How many users will be connected to the network and be utilizing control of the fire alarm? Via wireless or network, will the Owner be providing workstations or listed items that will be supplied to apply this software and what are the characteristics of the operating systems?"*

Response: Reference Project Manual Item No. 3 in this Addendum.

Question: *"Multiple pages from users, is the intent to replace the users (Delta, & Alaska user interface)? What is acceptable for this paging, microphone, handset, radio? Please identify the one-line E4.9, CBJ connection? Microphone connection and location?"*

Response: Reference Project Manual Item No. 3 in this Addendum.

Question: *"There is a note on the drawings that the FACU must communicate with control tower FACU. What is the existing FACU at the tower? What level of communication is to be acceptable, alarm trouble and supervisory conditions, or point to point? Is there areas of rescue?"*

Response: The FAA FACP is located on the fourth floor of the FAA tower. The make and model is Silent Knight SK-5208. Establish a new connection between FAA Tower FACP and Terminal FACP. Only General Alarm conditions shall be communicated both ways between the fire alarm systems. There are no areas of rescue/refuge.

Question: *"Is there interface with an access control System?"*

Response: No

Question: *"Replace all the existing speakers with new FA/MN speaker and tie the PA headend to the new FA/MN system temporarily. Does the existing PA system have dry contact per zone so we can route the PA audio by zone on the right location? Is there a PA zone map of the airport so we can see how many paging zones there are? It also says this is temporary. What is the intention for long term PA interface? Simplex FA/MN systems are not designed to interface directly for multi zone paging for a phone system."*

Response: Reference Contract Documents Drawing sheet E4.10

Question: *"There are very little initiation devices (Smoke, heat, duct detectors, etc) on the drawings. Are there more devices than shown on these drawings? Are as-built drawings available of the fire alarm and PA system?"*

Response: The existing Fire Alarm system is illustrated in the Contract Documents. Please see attached JIA Fire Alarm Shop Drawings.

Question: *"On sheet E4.6 there is a square with an M in it what is this?"*

Response: Motion detection sensor for lighting, it is an existing device and no changes to it.

PROJECT MANUAL:

- Item No. 1 SECTION 284621.11 – ADDRESSABLE FIRE-ALARM SYSTEMS, 3.4 Pathways, Paragraph B
Delete and replace Paragraph B **with** the following:
“Junction and device boxes shall be painted red enamel.”
- Item No. 2 SECTION 284621.11 – ADDRESSABLE FIRE-ALARM SYSTEMS, 3.7 Pathways, Paragraph B
Delete and replace Paragraph B **with** the following:
“Junction and device boxes shall be painted red enamel.”
- Item No. 3 SECTION 284700 – MASS NOTIFICATION
Delete Section 284700 in its entirety and **replace with** the attached Section 284700.

By: 
Greg Smith,
Contract Administrator

Total number of pages contained within this Addendum: 38

SECTION 284700 - MASS NOTIFICATION

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. Mass notification system (MNS).
2. Autonomous control units (ACUs).
3. Prerecorded message devices.
4. Audio amplifiers.
5. Audible signaling devices.
6. Speaker-based notification appliances.
7. Overvoltage and surge protection.

- B. Related Requirements:

1. Section 284621.11 "Addressable Fire-Alarm Systems" for FACUs that interface with MNS equipment in this Section to create an EVACS.

1.3 DEFINITIONS

- A. ATP: Acceptance Test Procedure.

- B. Broadcast Media: Loudspeakers and other media that will carry the selected message to the selected audience.

- C. Control Unit: A system component that monitors inputs and controls outputs through various types of circuits.

1. Autonomous Control Unit (ACU): The primary control unit for an in-building mass notification system (MNS).
2. Emergency Communications Control Unit (ECCU): A system capable of sending mass notification messages to individual buildings, zones of buildings, individual outdoor loudspeaker arrays, or zones of outdoor loudspeaker arrays; or a building, multiple buildings, outside areas, or a combination of these.
3. Fire-alarm control unit (FACU).

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- D. Emergency Communications System (ECS): A system for the protection of life by indicating the existence of an emergency situation and communicating information necessary to facilitate an appropriate response and action.
 - 1. Emergency Voice/Alarm Communications System (EVACS): Dedicated manual or automatic facilities for originating and distributing voice instructions, as well as evacuation signals pertaining to an emergency, to the occupants of a building.
 - 2. Mass Notification System (MNS): A system used to provide information and instructions to people in buildings or other spaces using intelligible voice communications and other communication methods (in-building MNS); and could have the capability to provide real-time information to outdoor areas and to communicate with other notification systems provided for a campus.
- E. Local Operating Console (LOC): Equipment used by authorized personnel and emergency responders to activate and operate a mass notification system (MNS).
- F. NICET: National Institute for Certification in Engineering Technologies.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
 - 3. Power calculations.
 - 4. Battery capacity calculations with the following supporting information:
 - a. Supervisory power requirements for all equipment.
 - b. Alarm power requirements for all equipment.
 - c. Power supply rating.
 - d. Voltage drop calculations for wiring runs demonstrating worst-case condition.
 - e. Notification appliance circuit design.
- B. Shop Drawings: For MNS, prepared by qualified Installer.
 - 1. Include plans, elevations, sections, and mounting details.
 - 2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Detail fabrication and assembly of the following:
 - a. Control units.
 - 4. Include diagrams for power, signal, and control wiring.

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1.5 INFORMATIONAL SUBMITTALS

A. Certificates:

1. Seismic Performance Certificates: For FACU, accessories, and components, from manufacturer. Include the following information:
 - a. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - b. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - c. Detailed description of equipment anchorage devices on which certification is based and their installation requirements.
2. Buy American Compliance Certificates: For FACU, accessories, and components, from manufacturer. Include the following information:
 - a. Indicate project components comply with 00 4410 100% Buy American compliance.
 - b. Indicate project components comply with Type 3 or Type 4 waiver.

B. Test and Evaluation Reports:

1. Product Test Reports: For each amplifier and loudspeaker, for tests performed by manufacturer and witnessed by a qualified testing agency.

C. Source Quality-Control Submittals:

1. Source quality-control reports.

D. Field Quality-Control Submittals:

1. Field quality-control reports.

E. Qualification Statements: For Installer.

F. Sample warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For amplifiers and loudspeakers to include in emergency, operation, operation, and maintenance manuals.
- B. Computer-generated instruction card mounted behind a Lexan plastic or glass cover in a stainless steel or aluminum frame. Card must indicate those steps to be taken by an operator when a signal is received as well as functional operation of system under all conditions: normal, alarm, supervisory, and trouble.

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- C. Record Documentation: System documentation to Owner including, but not limited to, the following:
 - 1. System record Drawings and wiring details, including one set of full-size printed Drawings, and digital file with copies of record Drawings in PDF format and DXF format.
 - 2. Documentation of all component and wiring identification, including a copy of each equipment nameplate.
 - 3. System matrix showing interaction of all input signals with output commands.
 - 4. Documentation of system voltage, current, and resistance readings taken during installation, testing, and ATP phases of system installation.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Extra Stock Material: Furnish extra materials to Owner that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Loudspeakers: Quantity equal to five percent of quantity installed for each type indicated, but no fewer than one unit(s).
- B. Tools:
 - 1. Proprietary equipment and software required to implement future changes to MNS.
- C. Schedule of maintenance material items.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: ISO 9001 certified for products delivered.
- B. Installer Qualifications:
 - 1. Personnel must be trained and certified by manufacturer for installation of units required for this Project.
 - 2. Installation must be by personnel certified by NICET as fire-alarm Level III technician.
 - 3. Obtain certification by NRTL in accordance with NFPA 72.
 - 4. Licensed or certified by authorities having jurisdiction.

1.9 FIELD CONDITIONS

- A. Seismic Conditions: Unless otherwise indicated on Contract Documents, specified Work in this Section must withstand the seismic hazard design loads determined in accordance with ASCE/SEI 7 for installed elevation above or below grade.
 - 1. The term "withstand" means "unit must remain in place without separation of parts from unit when subjected to specified seismic hazard design loads and unit must be fully operational after seismic event.
 - 2. Component Importance Factor: 1.5.

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- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

1.10 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of MNS that fail(s) in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MASS NOTIFICATION SYSTEM (MNS)

- A. Source Limitations: Obtain MNS from single source or producer.
- B. Basis-of-Design Product: Subject to compliance with requirements, provide products manufactured by SimplexGrinnell or products that are equally compliance with requirements and approved by the Owner.
- C. Performance Criteria:
 - 1. Regulatory Requirements:
 - a. Listed and labeled by a NRTL in accordance with NFPA 70, Article 760; NFPA 72, Ch. 24; and UL 2572 and marked for intended location and application.
 - 2. General Characteristics:
 - a. ECS Classification: One-way, in-building EVACS.
 - b. Provide the following specified products with the MNS:
 - 1) ACU.
 - 2) Prerecorded message device.
 - 3) Audio amplifiers.
 - 4) Audible signaling devices.
 - 5) Speakers for voice notification.
 - 6) Visible signaling devices for hearing impaired.
 - 7) Overvoltage and surge protection.
 - c. ACU must monitor and control the notification appliance network and provide consoles for local operation. Authorized personnel must be able to use a console to initiate delivery of prerecorded voice messages, provide live voice messages and instructions, and initiate visual strobe and optional textual message notification appliances. ACU must override audible fire-alarm notification signals and voice

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messages based on the approved sequence of operation described in the risk analysis.

- d. MNS messaging system must be capable of the following:
 - 1) Communicating through use of wired networks for one- or two-way communications and control between a building or area and emergency personnel.
 - 2) Automatically distribute no fewer than 100 simultaneous and unique messages to appropriate notification appliances.
 - a) Alerts to visible appliances.
 - b) Audio alerts to phones.
 - c) Audio alerts to loudspeakers.
 - d) Audio alerts to existing wide-area or in-building ECS.
 - 3) Suppress contact information for other end users with messages or in message headers.
- e. Live announcements or prerecorded messages. Live messages must take precedence over prerecorded messages.
- f. Notification appliance network must consist of loudspeakers and visual notification devices located to provide intelligible instructions at all acoustically distinguishable spaces designated by designer to receive messages.
- g. Interface with FACU to use visual alarms of fire-alarm system.
- h. Give priority to MNS announcements over other audible announcements of the system including fire-alarm system in a normal or alarm state based on the approved risk analysis. When an emergency announcement other than fire is activated during a fire alarm, fire-alarm system functions must continue in an alarm state, except for output signals of fire-alarm audible and visual notification appliances.
- i. Comply with speech intelligibility requirements of NFPA 72.
- j. Capable of overriding local control of loudspeaker volume levels for emergency communications. Local controls must be permitted to adjust volume levels of non-emergency signals only, such as, but not limited to, background music and convenience paging.
- k. Capable of providing separate messages to one individual building or to multiple buildings at given time if MNS serves more than one building.
- l. Primary Power: Must be sized to supply not less than 125 percent of the total connected load in a worst-case condition.
 - 1) Devices Powered by 24 V dc:
 - a) Control units.
 - b) Notification appliances.
 - c) Trouble signals.
 - d) Supervisory signals.
 - e) Supervisory and digital alarm communicator transmitters.
- m. Secondary Power: Must be sized to supply not less than 125 percent of the total connected load in a worst-case condition.

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- 1) Batteries: Sealed lead calcium or Sealed, valve-regulated, recombinant lead acid.

2.2 AUTONOMOUS CONTROL UNITS (ACUs)

A. Performance Criteria:

1. Regulatory Requirements:

- a. Listed and labeled by a NRTL in accordance with NFPA 70, Article 760; NFPA 72, Ch. 24; and UL 2572 and marked for intended location and application.

2. General Characteristics:

- a. Fully enclosed in a lockable steel cabinet with access for testing, and maintenance from the front of enclosure.
- b. Solid-state, modular components, internally mounted and arranged for easy access for power, supervision, control, and logic for system.
- c. 120 V ac, 60 Hz power supply.
- d. An indicator for each message source must indicate which sources are available and which are selected.
- e. Indicators for broadcast media used to convey the selected message to selected audience must indicate which sources are available and which are selected.
- f. Capable of confirming receipt of a message. If message was not confirmed received, system must be capable of using other means of contact until receipt of confirmation or until a preset time has elapsed.
- g. Capable of automatically sending another message after receipt of a new information or messages.
- h. Operator Access Functions:
 - 1) Select prerecorded message for transmission.
 - 2) Select microphone for live broadcast.
 - 3) Initiate message broadcast.
 - 4) Terminate message broadcast.
- i. Supervisory Access Functions:
 - 1) Reset time and date.
 - 2) Enable or disable printouts, initiators, and event-initiated programs.
 - 3) Enable or disable individual message sources and broadcast media.
 - 4) Supervisory level functions must not require computer programming skills. MNS must record changes to program functions, to be maintained in ACU for a minimum of one year. ACU must maintain the ID of supervisor making the change.
- j. System Operator Level Access Functions:
 - 1) Clear supervisory trouble alarms.

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- 2) Revise prerecorded messages.
 - 3) Assign access rights to all levels.
 - 4) MNS must record changes at system operator level in ACU, to be maintained for a minimum of one year. ACU must maintain the ID of system operator making the change.
- k. Capable of no fewer than 500 users, with each user having its own log-in and password credentials and no fewer than four contact methods.
 - l. Capable of storing users in one or multiple groups and able to create a minimum of 10 groups.
 - m. Each panel must have supervisory functions for power failure, internal component failure, and operation.

2.3 PRERECORDED MESSAGE DEVICES

A. Description: Hardware that stores and outputs audible signals or messages.

B. Performance Criteria:

1. Regulatory Characteristics:

- a. Listed and labeled by a NRTL in accordance with NFPA 70, Article 760; NFPA 72, Ch. 24; and UL 2572 and marked for intended location and application.

2. General Characteristics:

- a. One-way, multichannel voice notification system incorporating no fewer than eight distinct sounds selectable by user for tone signaling and incorporating a voice module for delivery of prerecorded or live messages.
- b. Redundant microphones, preamplifiers, amplifiers, and tone generators provided in separate main and remote cabinets.
- c. Voice notification system must support facility-wide public address paging.
- d. Audible appliances must produce an initial message stating, "May I have your attention please?" followed by a voice message with instructions as defined by the risk analysis that is repeated until ACU is reset or silenced. If the intent is for building or floor evacuation, the standard temporal pattern complying with ASA S3.41 will follow the message.
- e. Automatic messages must be broadcast through loudspeakers throughout the building or facility, but not in stairs or elevators.
- f. When using microphones, live messages must be broadcast throughout a selected floor or floors or all call, including stairs and elevators.
- g. Loudspeakers must not be installed in near a microphone that will be used for live messaging.
- h. Live voice message must override automatic or recorded audible output through use of a microphone input at ACU or the remote cabinet.
- i. Number of alarm channels must be indicated for automatic, simultaneous transmission of different announcements to different zones or for manual transmission of announcements by use of the central-control microphone.

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- 1) Allow sending an evacuation signal to selected zones and, concurrently, allow voice paging to other zones selectively or in combination.
- 2) Programmable tone and message sequence selection.
- 3) Standard digitally recorded messages for "Evacuation" and "All Clear."

2.4 AUDIO AMPLIFIERS

A. Performance Criteria:

1. Regulatory Characteristics:

- a. Listed and labeled by a NRTL in accordance with NFPA 70, Article 760; NFPA 72, Ch. 24; and UL 1711 and marked for intended location and application.
- b. ISO 7240-16.

2. General Characteristics:

- a. Audio output must be selectable for line level. Minimum amplifier output must be 100 W rms.
- b. Capable of operating all loudspeakers at the same time.
- c. Loss of operating power, supervisory power, or other malfunction that could render the voice module inoperative must automatically cause the standard temporal tone pattern complying with ASA S3.41 to take over all functions assigned to failed unit in the event an alarm is activated.

2.5 AUDIBLE SIGNALING DEVICES

A. Description: Hardware for broadcast of live voice messages.

B. Performance Criteria:

1. Regulatory Characteristics:

- a. Listed and labeled by a NRTL in accordance with NFPA 70, Article 760; NFPA 72, Ch. 24; and UL 464 and marked for intended location and application.

2. General Characteristics:

- a. Handheld push-to-talk microphone must be supervised, and a key must be required to enable remote microphone use.
- b. Microprocessor must actively integrate circuitry, field wiring, and digital coding necessary for immediate and accurate rebroadcasting of stored voice data into appropriate amplifier input.

2.6 SPEAKER-BASED NOTIFICATION APPLIANCES

A. Description: Hardware for public alert/message output. Retain "Indoor Speakers for Voice Notification" Paragraph below if indoor voice notification is included in Project. Indicate locations of speakers on Drawings.

SECTION 284700 - MASS NOTIFICATION

B. Speakers for Voice Notification:

1. Performance Criteria:

a. Regulatory Characteristics:

- 1) Listed and labeled by a NRTL in accordance with NFPA 70, Article 760; NFPA 72, Ch. 24; and UL 1480 and marked for intended location and application.

2. General Characteristics:

- a. Construction: High-efficiency, sealed back; for maximum output at minimum power across a frequency range of 150 to 10 000 Hz.
- b. High-Range Units: Rated 2 to 15 W.
- c. Low-Range Units: Rated 1 to 2 W.
- d. Mounting: Surface and Flush as identified in the Drawings.
- e. Matching Transformers: Tap range matched to acoustical environment of loudspeaker location.

2.7 OVERVOLTAGE AND SURGE PROTECTION

A. Signaling Line Circuit Surge Protection:

1. Performance Criteria:

a. Regulatory Characteristics:

- 1) Listed and labeled by a NRTL in accordance with NFPA 70, Article 760; NFPA 72, Ch. 24; and UL 497B and marked for intended location and application.

b. General Characteristics:

- 1) Protected against surges induced on signaling line circuit located outdoors.
- 2) Protect cables and conductors that serve as communications links with surge protection devices installed at each end that comply with the following waveforms:
 - a) 10 by 1000-microsecond waveform with a peak of 1500 V and a peak current of 60 A.
 - b) 8 by 20-microsecond waveform with a peak of 1000 V and a peak current of 500 A. Protection must be provided at the equipment. Additional surge protectors, rated for application, must be installed on each circuit within 36 inch (900 mm) of the cable entrance to building.
- 3) Fuses must not be used for surge protection.

B. Sensor Wiring Surge Protection:

SECTION 284700 - MASS NOTIFICATION

1. Performance Criteria:
 - a. Regulatory Characteristics:
 - 1) Listed and labeled by a NRTL in accordance with NFPA 70, Article 760; NFPA 72, Ch. 24; and UL 497D and marked for intended location and application.
 - b. General Characteristics:
 - 1) Digital and analog inputs and outputs must be protected against surges induced by sensor wiring. Inputs and outputs must be tested with the following waveforms:
 - a) 10 by 1000-microsecond waveform with a peak of 1500 V and a peak current of 60 A.
 - b) 8 by 20-microsecond waveform with a peak of 1000 V and a peak current of 500 A.
 - 2) Fuses must not be used for surge protection.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with installation requirements in NFPA 70, NFPA 72, and NECA 1.
- B. Install remote amplification and control units in terminal cabinets. Power each remote amplification and control unit from a wiring riser specifically for that use or from a local emergency power panel located on the same floor as remote unit.
- C. Equipment Installation: Install MNS cabinets with seismic-rated anchors and mounting apparatus.
- D. Wiring Method: Install cables in raceways and cable trays except within consoles, cabinets, desks, and counters. Conceal raceway and cables except in unfinished spaces.
 1. Install plenum cable in environmental airspaces, including plenum ceilings and in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring is used.

SECTION 284700 - MASS NOTIFICATION

2. Conceal conductors and cables in accessible ceilings, walls, and floors where possible. Suspend cable not in a wireway or pathway a minimum of 8 inch (200 mm) above ceiling by cable supports not more than 60 inch (1500 mm) apart.
3. Do not install cable through structural members or in contact with pipes, ducts, or other potentially damaging items.
4. Secure and support cables at intervals not exceeding 30 inch (750 mm) and not more than 6 inch (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
5. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's written limitations on bending radii. Maintain separation of conductor types as recommended by manufacturer. Install lacing bars and distribution spools.
6. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
7. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamp use is prohibited.
8. Separation of Wires: Separate loudspeaker-microphone, line-level, loudspeaker-level, and power wiring runs. Install MNS wiring in separate raceways or, where exposed or in same enclosure, separate conductors at least 12 inch (300 mm) apart for loudspeaker-microphone wiring and adjacent parallel power and telephone wiring. Separate other intercommunication equipment conductors as recommended by equipment manufacturer.
9. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's written limitations on bending radii. Install lacing bars and distribution spools. Route conductors to allow accessibility to equipment for adjustment and maintenance.
10. Connections:
 - a. Make all terminations on numbered terminal strips in terminal cabinets or equipment enclosures. No splices or butt joints will be accepted.
 - b. Terminate all conductors; no cable must contain unterminated elements.
 - c. Crimp-on spade lugs must be used for terminations of stranded conductors to binder screw or stud terminals. Spade lugs must have upset legs and insulation sleeves sized for conductors.
11. Mount all devices and appliances to or in an approved electrical box.

- E. Install operating instruction placard on the frame in location acceptable to Architect and observable from ACU.

3.3 GROUNDING

- A. Ground cable shields and equipment to eliminate shock hazard and to minimize ground loops, common-mode returns, noise pickup, cross talk, and other impairments.
- B. Signal Ground Terminal: Locate at main equipment cabinet. Connect to instrument ground system and isolate from power system and equipment grounding.

SECTION 284700 - MASS NOTIFICATION

3.4 IDENTIFICATION

- A. Color-code conductors and apply wire and cable marking tape to designate wires and cables so they identify media in coordination with system wiring diagrams.
- B. Permanently label or mark each conductor at both ends with permanent alphanumeric wire markers.
- C. Install framed instructions in a location visible from mass notification control unit.

3.5 FIELD QUALITY CONTROL

- A. Prepare a written ATP for testing MNS components and installation in accordance with NFPA 72 and this Section. Demonstrate specified function of system and verify the correct operation of all system components, circuits, and programming.
 - 1. Prepare a complete listing of device labels for alphanumeric annunciator displays prior to ATP.
- B. Field tests must be witnessed by Architect and authorities having jurisdiction.
- C. Testing Adminstrant:
 - 1. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
- D. Tests and Inspections:
 - 1. Take resistance, current, and voltage readings as work progresses.
 - 2. Signal Ground Test: Measure and report ground resistance at public address equipment signal ground.
 - 3. Verify that wiring for each device is terminated at properly identified terminals.
 - 4. Test wiring runs for continuity, short circuits, and grounds before system is energized.
 - 5. All test equipment, instruments, tools, and labor required to conduct system tests must be made available by installing Contractor. The following equipment must be a minimum for conducting tests:
 - a. Ladders and scaffolds as required to access all installed equipment.
 - b. Multi-meter for reading voltage, current, and resistance.
 - c. Two-way radios and flashlights.
 - d. Decibel meter.
 - e. In addition to testing specified to be performed by installing Contractor, installation must be subject to test by Owner and Construction Manager.
 - 6. Schedule tests with no fewer than seven days' advance notice of test performance.
 - 7. After installing MNS and after electrical circuitry has been energized, test for compliance with requirements.
 - 8. Perform tests in all zones and rooms.

SECTION 284700 - MASS NOTIFICATION

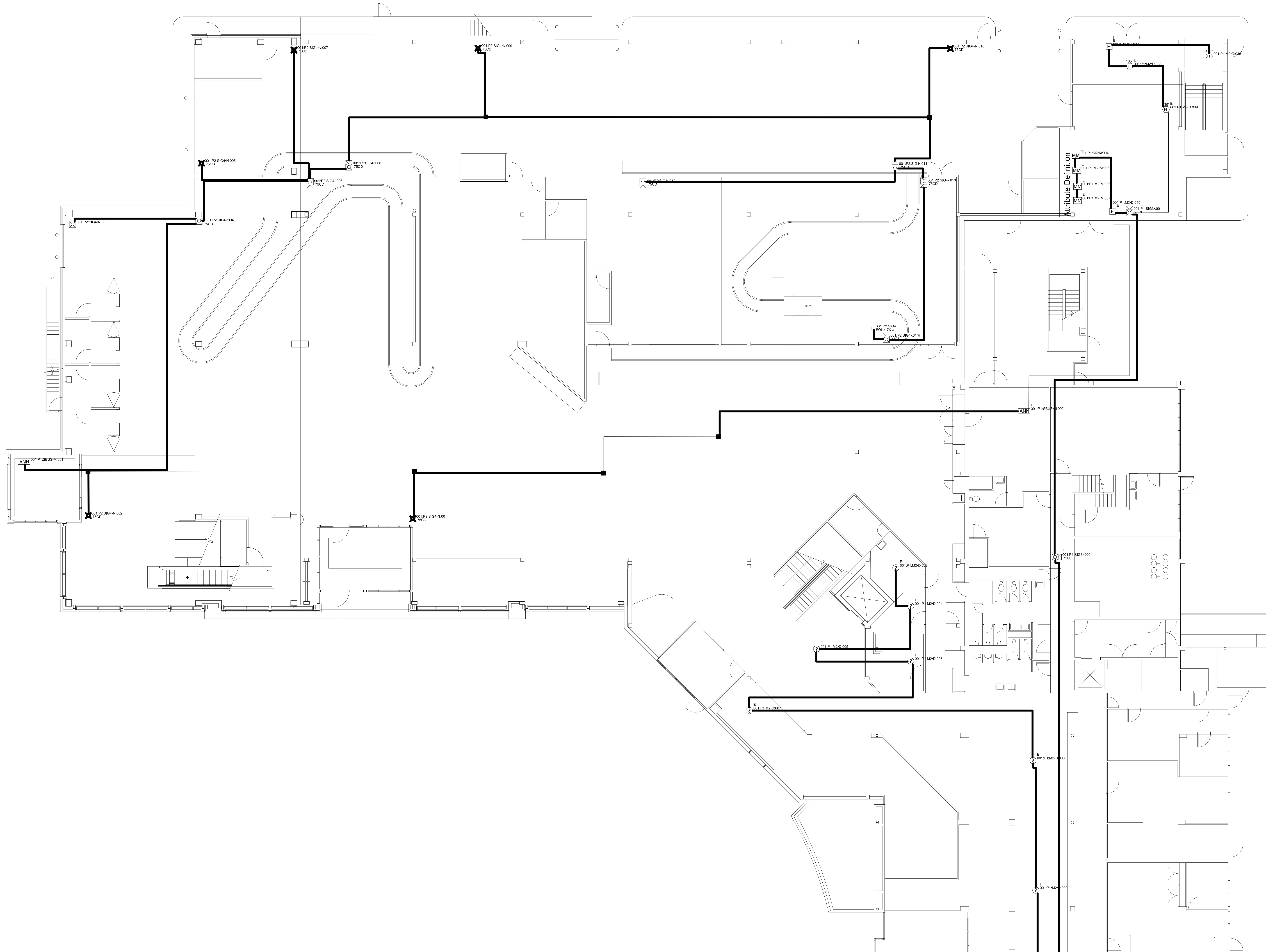
9. Perform indoor sound tests in a single test location in rooms less than 20-by-20 ft. (6-by-6 m). Tests must be made on a 20-by-20 ft. (6-by-6 m) grid for larger rooms.
 10. Sound level measurements must be taken at a worst-case location within each room or grid, not near loudspeakers.
 11. Operational Test: Perform tests that include originating messages at microphone outlets, prerecorded messages, and other inputs. Verify proper routing and volume levels and that system is free of noise and distortion.
 12. Signal-to-Noise Ratio Test: Measure signal-to-noise ratio of complete system at normal gain settings as follows:
 - a. Disconnect microphone at connector or jack closest to it and replace it in the circuit with a signal generator using a 1000 Hz signal. Measure signal-to-noise ratio.
 - b. Repeat test for each separately controlled zone of loudspeakers.
 - c. Minimum acceptance ratio is 50 dB.
 13. Distortion Test: Measure distortion at normal gain settings and rated power. Feed signals at frequencies of 50, 200, 400, 1000, 3000, 8000, and 12 000 Hz into each preamplifier channel. For each frequency, measure distortion in the paging and all-call amplifier outputs. Maximum acceptable distortion at any frequency is 3 percent total harmonics.
 14. Intelligibility Test: Test for intelligibility in accordance with NFPA 72.
 15. Power Output Test: Measure electrical power output of each power amplifier at normal gain settings of 50, 1000, and 12 000 Hz. Maximum variation in power output at these frequencies must not exceed plus or minus 1 dB. Outdoor sound levels where personnel may be present must not exceed 120 dB(A-weighted) when measured on the A-scale of a standard sound level meter at slow response. Sound levels must not exceed 85 dB(A-weighted) at local microphone of MNS under the same conditions.
 16. System notification appliances must be demonstrated as follows:
 - a. Audibility and visibility at required levels.
 - b. Messages are intelligible in all areas.
 17. System indications must be demonstrated as follows:
 - a. Correct message display at MNS ACU for each alarm input.
 - b. Correct message display at remote panels and annunciators for each alarm input.
 - c. Correct history logging for all system activity.
 18. System off-site reporting functions must be demonstrated as follows:
 - a. Correct zone transmitted for each alarm input.
 - b. Trouble signals received.
- E. MNS will be considered defective if it does not pass tests and inspections.
- F. Prepare test and inspection reports.

SECTION 284700 - MASS NOTIFICATION

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units.
 - 1. Train a minimum of four employees of Owner.
 - 2. Conduct training on installed equipment after acceptance testing.
 - 3. Train on system operation, including manual control of output functions from ACU.
 - 4. Train on testing of system, including logging of system tests, field test of devices, and response to common troubles.
 - 5. Total training requirement must be a minimum of five hours but must be sufficient to cover all items specified.
- B. Upgrade Service: At Substantial Completion, update software to latest version at no cost to Owner. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software must include operating system and new or revised licenses for using software.
 - 1. Upgrade Notice: No fewer than 30 days to allow Owner to schedule and access the system and to upgrade computer equipment if necessary.

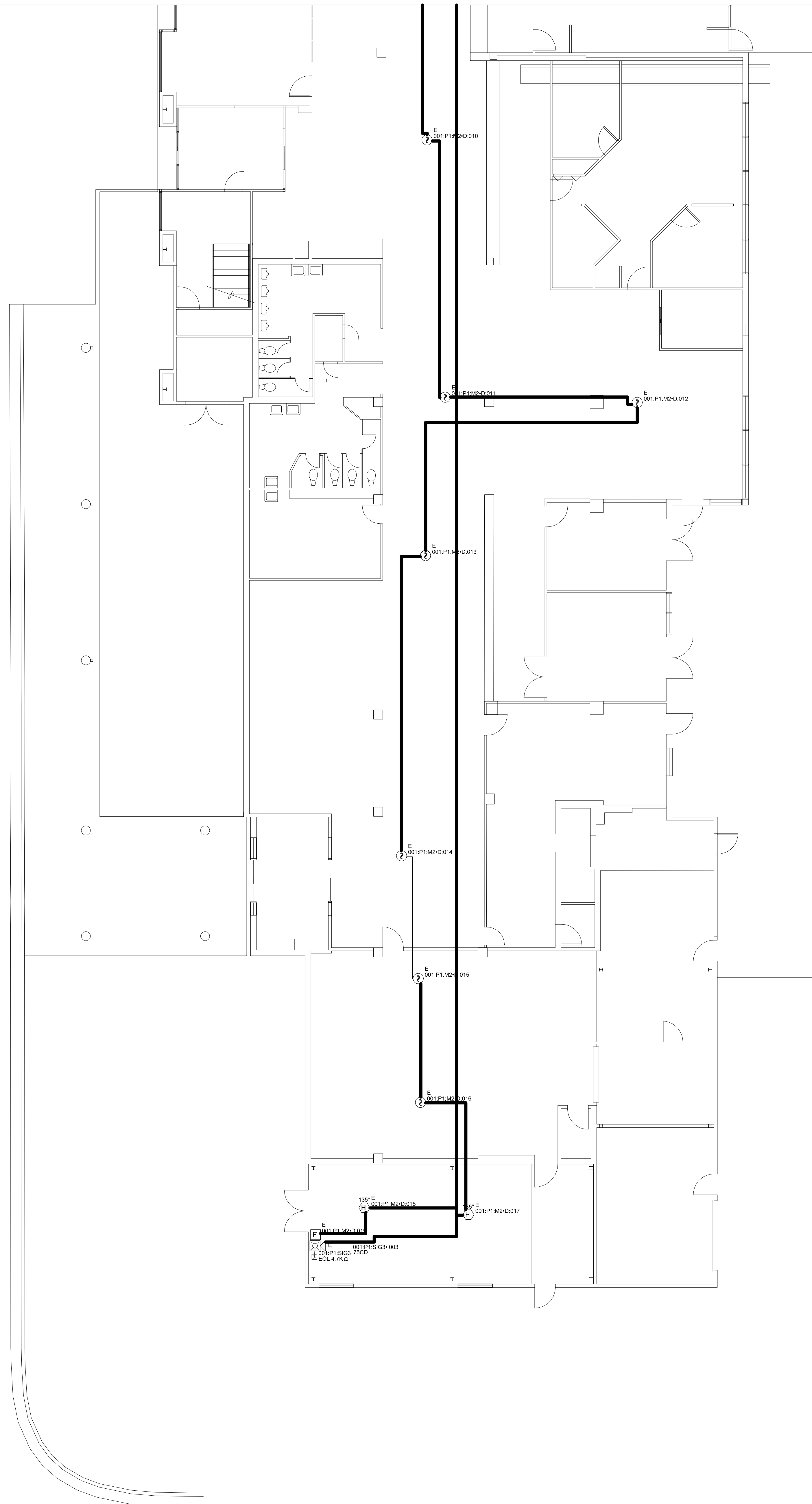
END OF SECTION 284700



Juneau International Airport
1873 Shell Simmons Drive
Juneau, Alaska 99801
Fire Alarm 1st Floor Area A

DRAWN:
Daniel Conte
CHECKED:
9/12/10
DATE:
9/12/10
SCALE:
1/8"=1'0"
JOB NUMBER:
1025

AccuCAD Services
494 S. Atlantic Ave.
Cocoa Beach, Florida 32931
Office 321-613-2711
Cellular 321-576-8279



Juneau International Airport
1873 Shell Simmons Drive
Juneau, Alaska 99801
Fire Alarm 1st Floor Area B

AccuCAD Services
494 S. Atlantic Ave.
Cocoa Beach, Florida 32931

Phone 321-613-2711
Cellular 321-576-8279

DRAWN: Daniel Conte
CHECKED: 9/12/10
DATE: 9/12/10
SCALE: 1/8"=1'0"
JOB NUMBER: 1025

The floor plan shows the layout of the 1st floor. It includes a large central hall, a staircase on the left, and several smaller rooms and corridors. The plan is labeled with various codes and dimensions. Key areas include:

- 001-P1-M2-D-024
- 001-P1-M2-D-025
- 001-P1-M2-D-023
- 001-P1-M2-D-022
- 001-P1-M2-D-021
- 001-P1-M2-D-020
- 001-P1-M2-M-002
- 001-P1-SK2-D-007
- 001-P1-SK2-D-008
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- 001-P1-SK2-D-010
- 001-P1-SK2-D-011
- 001-P1-SK2-D-012
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- 001-P1-SK2-D-100

Fire Alarm 2nd Floor Area B

Cocoa Beach, Florida 32931

Cellular 321-576-8279

DRAWN: Daniel Conte
CHECKED: 9/12/10
DATE: 9/12/10
SCALE: 1/8"=1'0"
JOB NUMBER: 1025

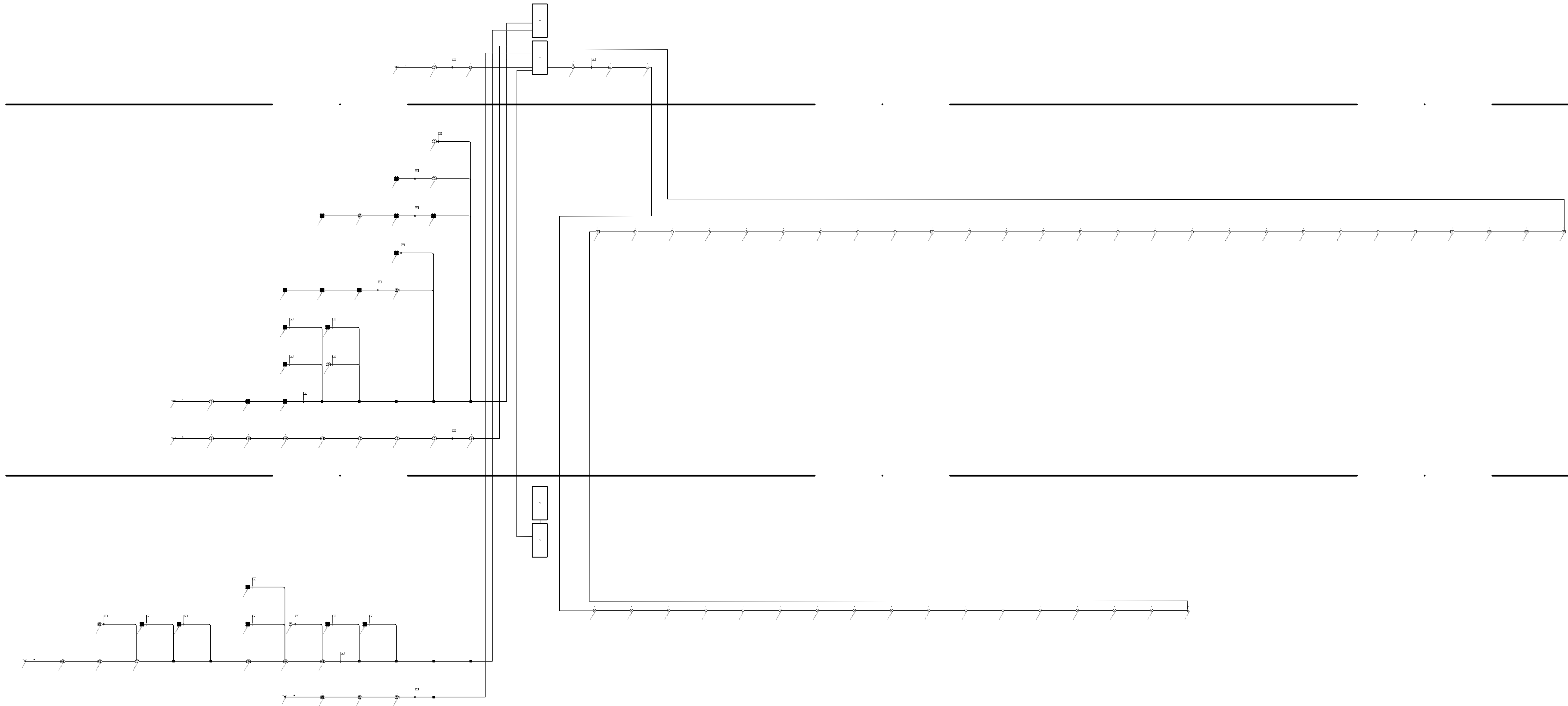
3 OF 5 SHEETS



Fire Alarm Penthouse

Cocoa Beach, Florida 32931

3 OF 5 SHEETS



AccuCAD Services
494 S. Atlantic Ave.
Cocoa Beach, Florida 32931

Phone 321-613-2711
Cellular 321-576-8279

Juneau International Airport
1873 Shell Simmons Drive
Juneau, Alaska 99801

Fire Alarm Riser Plan

DRAWN:
Daniel Conte

CHECKED:
9/12/10

DATE:
9/12/10

SCALE:
NTS

JOB NUMBER:
1025

Circuit Calculations Panel: P1 Card: 00 Circuit:M2							Circuit Calculations Panel: P1 Card: 00 Circuit:SBUS						
CircuitName: M2 Circuit Type: Signaling line/Addressable Terminal Voltage: 24V:DC Amperage: 1.0000A Cable: Power, Limited, Addressable system data grade #16 Calculations based on Running Total Length. Design Criteria: Ambient temperature: 167°F Max. operating voltage drop: 35% Job number: 1 Job name: Drawing2							CircuitName: SBUS Circuit Type: Serial/S-BUS Terminal Voltage: 20.2V:DC Amperage: 1.0000A Cable: Power, Limited, Multiple Conductor #18 Calculations based on Running Total Length. Design Criteria: Ambient temperature: 167°F Max. operating voltage drop: 35% Job number: 1 Job name: Drawing2						
Device	Part No	Appliance Desc	Distance	Current	Voltage	Voltage Drop	Device	Part No	Appliance Desc	Distance	Current	Voltage	Voltage Drop
	5820 XL	Panel			24V			5820 XL	Panel				
D:001		Appliance missing from database: ItemCode=332600004, ItemSize=1	22'-0	0.0300mA	23.9946V	(0.0054V)	M:001	5860R	5860R Remote Annunciator	215'-0	0.0200mA		
M:001	SD500-ARM	SD500-ARM Addressable Relay Module	5'-0	0.5500mA	23.9934V	(0.0012V)	----						
D:002	SD500-PS	SD500-PS Addressable Pull-Station	19'-0	0.5500mA	23.9888V	(0.0046V)	M:002	5860R	5860R Remote Annunciator	83'-0	0.0200mA		
D:003	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	293'-0	0.5500mA	23.92V	(0.0688V)							
D:004	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	12'-0	0.5500mA	23.9173V	(0.0027V)							
D:005	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	34'-0	0.5500mA	23.9097V	(0.0076V)							
D:006	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	26'-0	0.5500mA	23.904V	(0.0057V)							
D:007	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	53'-0	0.5500mA	23.8928V	(0.0113V)							
D:008	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	84'-0	0.5500mA	23.8754V	(0.0174V)							
D:009	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	32'-0	0.5500mA	23.8689V	(0.0064V)							
D:010	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	30'-0	0.5500mA	23.8631V	(0.0059V)							
D:011	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	43'-0	0.5500mA	23.8549V	(0.0082V)							
D:012	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	31'-0	0.5500mA	23.8492V	(0.0057V)							
D:013	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	56'-0	0.5500mA	23.8392V	(0.01V)							
D:014	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	50'-0	0.5500mA	23.8305V	(0.0087V)							
D:015	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	21'-0	0.5500mA	23.827V	(0.0035V)							
D:016	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	19'-0	0.5500mA	23.8239V	(0.0031V)							
D:017	SD505-AHS	Model SD505-AHS Addressable Heat Detector	24'-0	0.5500mA	23.8202V	(0.0038V)							
D:018	SD505-AHS	Model SD505-AHS Addressable Heat Detector	17'-0	0.5500mA	23.8176V	(0.0026V)							
D:019	SD500-PS	SD500-PS Addressable Pull-Station	11'-0	0.5500mA	23.816V	(0.0016V)							
M:002	SD500-MIM	Mini Module	33'-0	0.5500mA	23.8114V	(0.0046V)							
D:020	SD-505-ADHR	SD-505-ADHR Duct Detector Housing with Relay	10'-0	0.0000mA	23.8101V	(0.0013V)							
D:021	SD-505-ADHR	SD-505-ADHR Duct Detector Housing with Relay	9'-0	0.0000mA	23.8088V	(0.0012V)							
D:022	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	25'-0	0.5500mA	23.8055V	(0.0034V)							
D:023	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	23'-0	0.5500mA	23.8025V	(0.003V)							
D:024	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	41'-0	0.5500mA	23.7975V	(0.005V)							
D:025	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	42'-0	0.5500mA	23.7926V	(0.0049V)							
D:026	SD505-AHS	Model SD505-AHS Addressable Heat Detector	33'-0	0.5500mA	23.7889V	(0.0037V)							
D:027	SD505-AHS	Model SD505-AHS Addressable Heat Detector	29'-0	0.5500mA	23.7858V	(0.0031V)							
M:003	SD500-MIM	Mini Module	30'-0	0.5500mA	23.7828V	(0.003V)							
D:028	SD500-PS	SD500-PS Addressable Pull-Station	47'-0	0.5500mA	23.7783V	(0.0045V)							
D:029	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	62'-0	0.5500mA	23.7728V	(0.0055V)							
D:030	SD500-PS	SD500-PS Addressable Pull-Station	33'-0	0.5500mA	23.77V	(0.0028V)							
D:031	SD500-PS	SD500-PS Addressable Pull-Station	27'-0	0.5500mA	23.7679V	(0.0021V)							
D:032	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	28'-0	0.5500mA	23.7659V	(0.002V)							
D:033	SD505-AHS	Model SD505-AHS Addressable Heat Detector	62'-0	0.5500mA	23.7617V	(0.0042V)							
D:034	SD505-AHS	Model SD505-AHS Addressable Heat Detector	35'-0	0.5500mA	23.7596V	(0.0022V)							
D:035	SD505 APS	Model SD505-APS Addressable Photoelectric Type Smoke Detector	53'-0	0.5500mA	23.7566V	(0.003V)							
D:036	SD505-AHS	Model SD505-AHS Addressable Heat Detector	44'-0	0.5500mA	23.7544V	(0.0022V)							
D:037	SD500-PS	SD500-PS Addressable Pull-Station	27'-0	0.5500mA	23.7532V	(0.0012V)							
D:038	SD505-AHS	Model SD505-AHS Addressable Heat Detector	10'-0	0.5500mA	23.7528V	(0.0004V)							
D:039	SD505-AHS	Model SD505-AHS Addressable Heat Detector	19'-0	0.5500mA	23.7521V	(0.0006V)							
D:040	SD500-PS	SD500-PS Addressable Pull-Station	39'-0	0.5500mA	23.7511V	(0.0011V)							
M:004	SD500-MIM	Mini Module	22'-0	0.5500mA	23.7506V	(0.0005V)							
M:005	SD500-MIM	Mini Module	3'-0	0.5500mA	23.7505V	(0.0001V)							
M:006	SD500-MIM	Mini Module	3'-0	0.5500mA	23.7505V	(0V)							
M:007	SD500-MIM	Mini Module	2'-0	0.5500mA	23.7505V	(0V)							
			1673'-0	24.2300mA									
Total Current: 24.2300mA (Total VDrop Percent:1.04%) Total Voltage Drop : 0.2495V													

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494 S. Atlantic Ave.
Cocoa Beach, Florida 32931

Phone 321-613-2711
Cellular 321-576-8279

Juneau International Airport
1873 Shell Simmons Drive
Juneau, Alaska 99801

Fire Alarm Data Calculations

DRAWN:
Daniel Conte

CHECKED:
9/12/10

DATE:
9/12/10

SCALE:
1/8"=1'0"

JOB NUMBER:
1025

Circuit Calculations Panel: P2 Card: 01 Circuit:SIG4						
CircuitName: SIG4 Circuit Type: Notification Terminal Voltage: 24V:DC Amperage: 3.0000A Cable: Power, Limited, Multiple Conductor #14 Calculations based on Running Total Length. Design Criteria: Ambient temperature: 167°F Max. operating voltage drop: 35% Job number: 1 Job name: Drawing2						
Device	Part No	Appliance Desc	Distance	Current	Voltage	Voltage Drop
	5495	Panel			24V	
N:001	GES3-24WR	Strobe, 75CD	126'-0	80.0000mA	22.9839V	(1.0161V)
N:002	GES3-24WR	Strobe, 75CD	105'-0	80.0000mA	22.1907V	(0.7932V)
:004	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	101'-0	108.0000mA	21.4793V	(0.7114V)
N:003	GE3 24	Horn	33'-0	28.0000mA	21.2696V	(0.2097V)
:006	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	70'-0	108.0000mA	20.8373V	(0.4323V)
N:005	GES3-24WR	Strobe, 75CD	31'-0	80.0000mA	20.6672V	(0.1701V)
N:007	GES3-24WR	Strobe, 75CD	67'-0	80.0000mA	20.3338V	(0.3334V)
:008	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	48'-0	108.0000mA	20.1195V	(0.2144V)
N:009	GES3-24WR	Strobe, 75CD	66'-0	80.0000mA	19.8702V	(0.2493V)
N:010	GES3-24WR	Strobe, 75CD	154'-0	80.0000mA	19.3671V	(0.5031V)
:011	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	43'-0	108.0000mA	19.2486V	(0.1185V)
:012	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	67'-0	108.0000mA	19.1101V	(0.1385V)
:013	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	76'-0	108.0000mA	19.0054V	(0.1047V)
:014	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	49'-0	108.0000mA	18.9716V	(0.0338V)
A:-01	R1	4.7 K End of Line Resistor	5'-0	0.0000mA	18.9716V	(0V)
			1041'-0	1264.0000mA		
Total Current: 1264.0000mA (Total VDrop Percent:20.95%) Total Voltage Drop : 5.0284V						
Circuit Calculations Panel: P2 Card: 01 Circuit:SIG5						
CircuitName: SIG5 Circuit Type: Notification Terminal Voltage: 24V:DC Amperage: 3.0000A Cable: Power, Limited, Multiple Conductor #14 Calculations based on Running Total Length. Design Criteria: Ambient temperature: 167°F Max. operating voltage drop: 35% Job number: 1 Job name: Drawing2						
Device	Part No	Appliance Desc	Distance	Current	Voltage	Voltage Drop
	5495	Panel			24V	
N:004	GES3-24WR	Strobe, 75CD	59'-0	80.0000mA	23.202V	(0.798V)
N:005	GES3-24WR	Strobe, 75CD	29'-0	80.0000mA	22.8245V	(0.3774V)
:006	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	19'-0	180.0000mA	22.587V	(0.2376V)
N:007	GES3-24WR	Strobe, 75CD	32'-0	80.0000mA	22.2236V	(0.3634V)
:001	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	114'-0	180.0000mA	20.9871V	(1.2364V)
N:002	GES3-24WR	Strobe, 75CD	55'-0	80.0000mA	20.4537V	(0.5334V)
:003	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	84'-0	180.0000mA	19.682V	(0.7717V)
:008	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	57'-0	180.0000mA	19.2238V	(0.4582V)
N:009	GES3-24WR	Strobe, 75CD	8'-0	80.0000mA	19.1687V	(0.0551V)
N:010	GES3-24WR	Strobe, 75CD	15'-0	80.0000mA	19.073V	(0.0957V)
N:011	GES3-24WR	Strobe, 75CD	15'-0	80.0000mA	18.9849V	(0.088V)
N:012	GES3-24WR	Strobe, 75CD	99'-0	80.0000mA	18.4544V	(0.5306V)
:013	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	176'-0	180.0000mA	17.601V	(0.8534V)
N:014	GES3-24WR	Strobe, 75CD	16'-0	80.0000mA	17.5418V	(0.0592V)
N:016	GES3-24WR	Strobe, 75CD	56'-0	80.0000mA	17.3631V	(0.1786V)
N:015	GES3-24WR	Strobe, 75CD	37'-0	80.0000mA	17.264V	(0.0991V)
N:017	GES3-24WR	Strobe, 75CD	24'-0	80.0000mA	17.2119V	(0.0521V)
N:018	GES3-24WR	Strobe, 75CD	21'-0	80.0000mA	17.1771V	(0.0348V)
:019	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	16'-0	180.0000mA	17.1587V	(0.0184V)
A:-01	R1	4.7K End of Line Resistor	3'-0	0.0000mA	17.1587V	(0V)
			935'-0	2120.0000mA		
Total Current: 2120.0000mA (Total VDrop Percent:28.51%) Total Voltage Drop : 6.8413V						

Circuit Calculations Panel: P1 Card: 00 Circuit:SIG1						
CircuitName: SIG1 Circuit Type: Notification Terminal Voltage: 24V:DC Amperage: 1.0000A Cable: Power, Limited, Multiple Conductor #14 Calculations based on Running Total Length. Design Criteria: Ambient temperature: 167°F Max. operating voltage drop: 35% Job number: 1 Job name: Drawing2						
Device	Part No	Appliance Desc	Distance	Current	Voltage	Voltage Drop
	5820 XL	Panel			24V	
N:001	GE3 24	Horn	30'-0	28.0000mA	23.9602V	(0.0398V)
:002	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	44'-0	180.0000mA	23.9097V	(0.0505V)
A:-01	R1	4.7K End of Line Resistor	5'-0	0.0000mA	23.9097V	(0V)
			79'-0	208.0000mA		
Total Current: 208.0000mA (Total VDrop Percent:0.38%) Total Voltage Drop : 0.0903V						
Circuit Calculations Panel: P1 Card: 00 Circuit:SIG2						
CircuitName: SIG2 Circuit Type: Notification Terminal Voltage: 24V:DC Amperage: 1.0000A Cable: Power, Limited, Multiple Conductor #14 Calculations based on Running Total Length. Design Criteria: Ambient temperature: 167°F Max. operating voltage drop: 35% Job number: 1 Job name: Drawing2						
Device	Part No	Appliance Desc	Distance	Current	Voltage	Voltage Drop
	5820 XL	Panel			24V	
:001	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	22'-0	108.0000mA	23.8787V	(0.1213V)
:002	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	32'-0	108.0000mA	23.7244V	(0.1543V)
:003	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	104'-0	108.0000mA	23.2944V	(0.43V)
:004	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	96'-0	108.0000mA	22.9637V	(0.3307V)
:005	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	79'-0	108.0000mA	22.7459V	(0.2177V)
:006	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	36'-0	108.0000mA	22.6715V	(0.0744V)
:007	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	91'-0	108.0000mA	22.5461V	(0.1254V)
:008	GEC3-24WR	GEC3 Multi-Candela Horn/Strobe, 75CD	15'-0	108.0000mA	22.5358V	(0.0103V)
A:-01	R1	4.7K End of Line Resistor	2'-0	0.0000mA	22.5358V	(0V)
			477'-0	864.0000mA		
Total Current: 864.0000mA (Total VDrop Percent:6.10%) Total Voltage Drop : 1.4642V						
Circuit Calculations Panel: P1 Card: 00 Circuit:SIG3						
CircuitName: SIG3 Circuit Type: Notification Terminal Voltage: 24V:DC Amperage: 1.0000A Cable: Power, Limited, Multiple Conductor #14 Calculations based on Running Total Length. Design Criteria: Ambient temperature: 167°F Max. operating voltage drop: 35% Job number: 1 Job name: Drawing2						
Device	Part No	Appliance Desc	Distance	Current	Voltage	Voltage Drop
	5820 XL	Panel			24V	
M:002	5495	5495 NAC Power Extender Pane	2'-0	350.0000mA	23.9955V	(0.0045V)
			2'-0	350.0000mA		
Total Current: 350.0000mA (Total VDrop Percent:0.02%) Total Voltage Drop : 0.0045V						

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494 S. Atlantic Ave.
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Juneau International Airport
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Fire Alarm Data Calculations

DRAWN:
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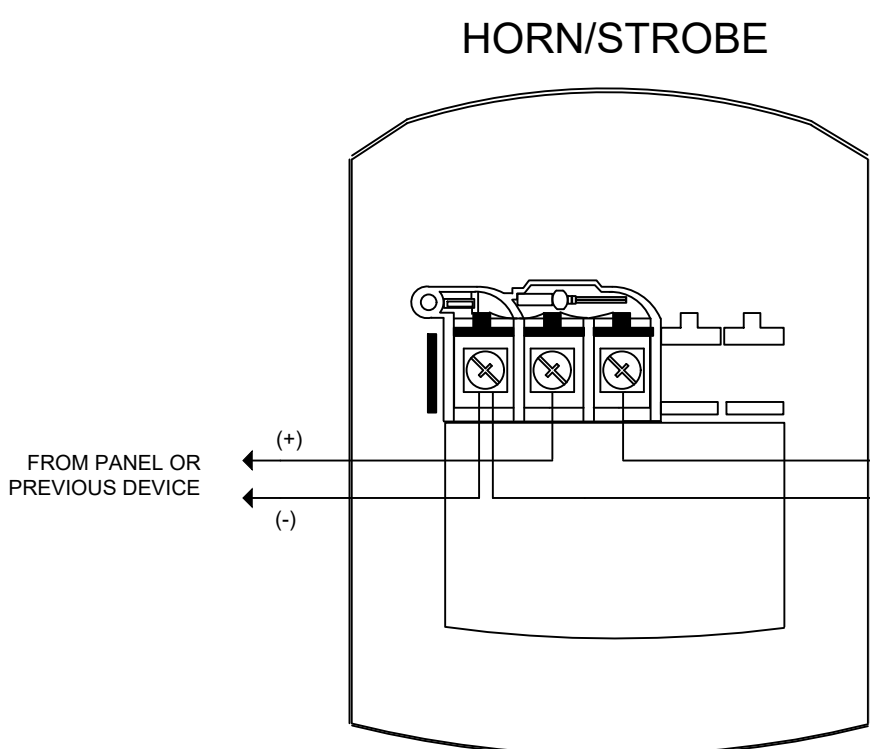
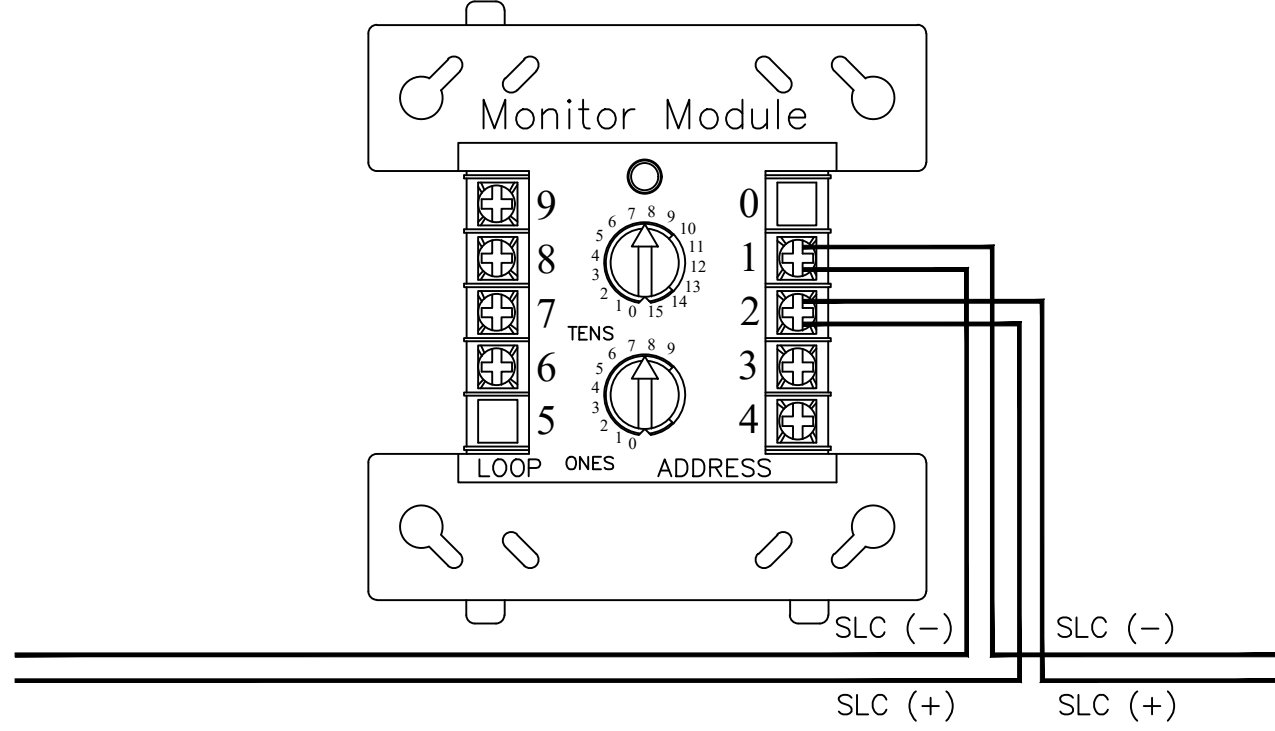
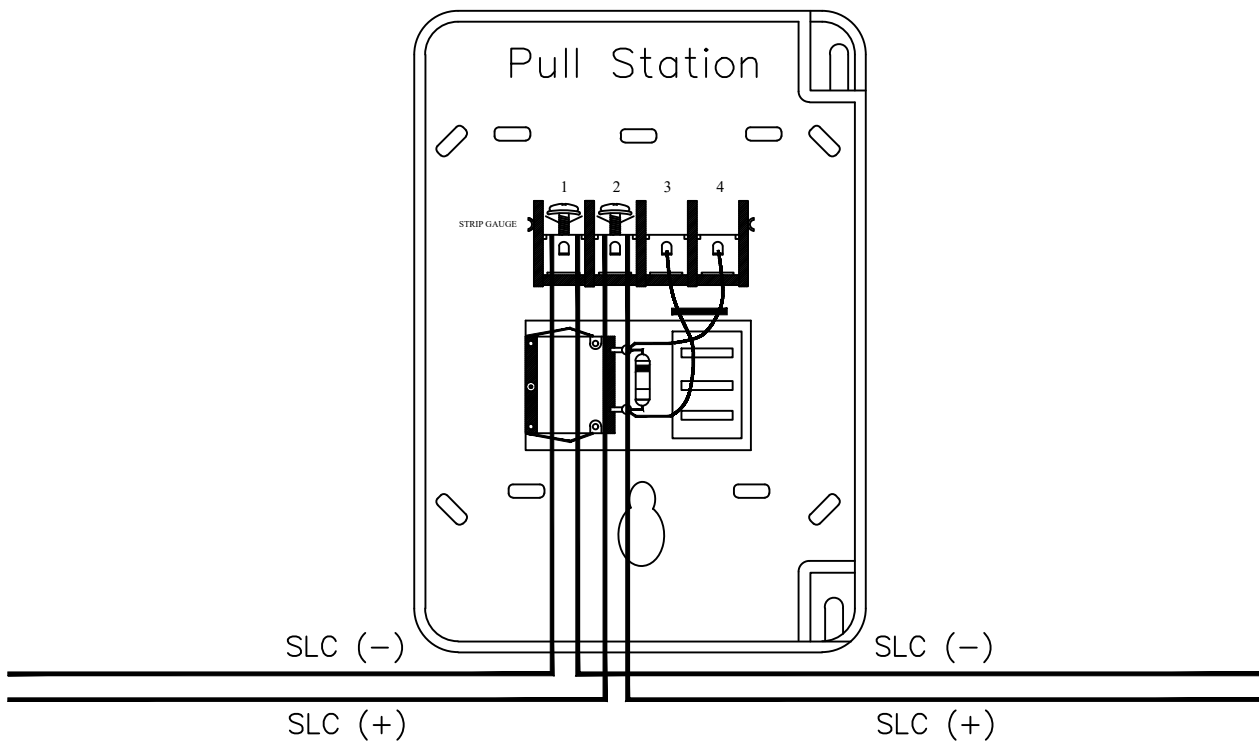
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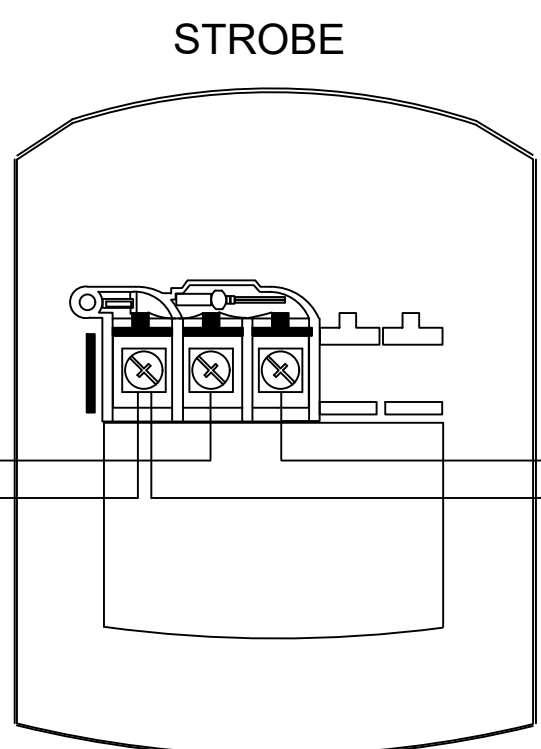
JOB NUMBER:
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FIRE ALARM SYSTEM
INPUT/OUTPUT MATRIX

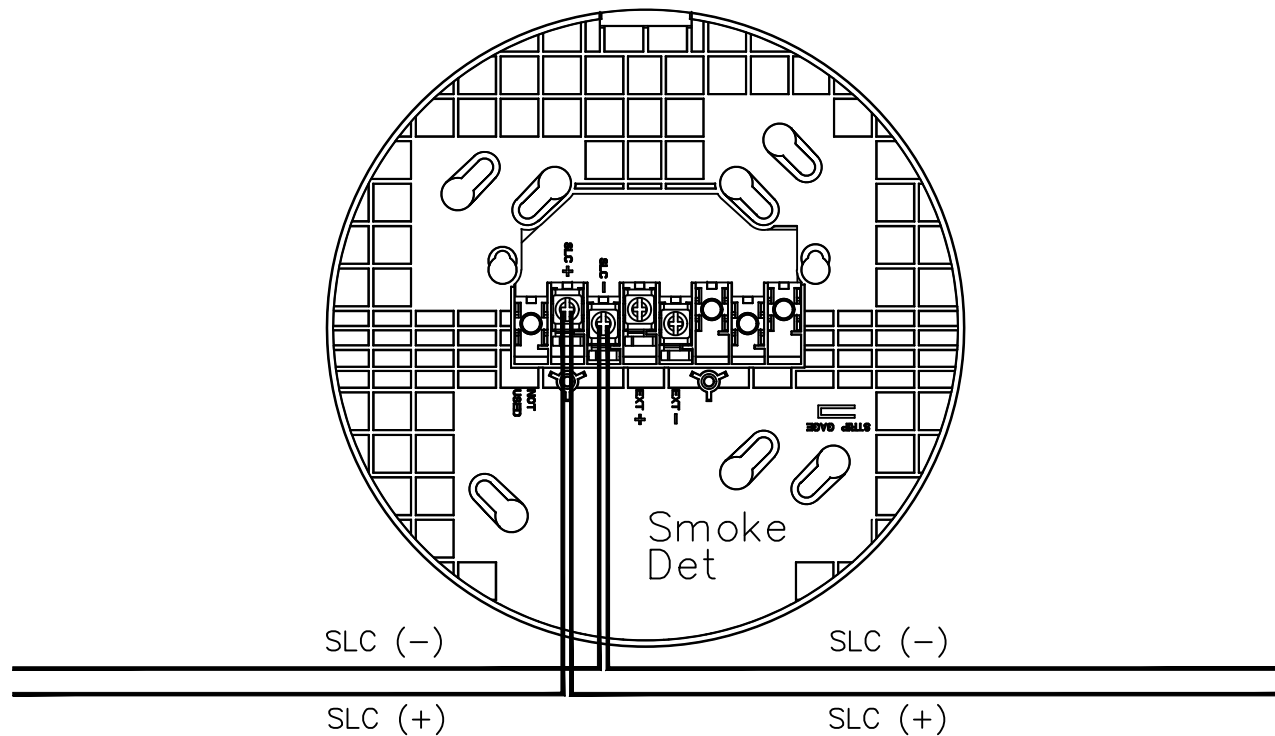
SYSTEM INPUTS	SYSTEM OUTPUTS																							
	FACP ANNUNCIATION								NOTIFICATION								REQUIRED FIRE SAFETY CONTROL							
1	FIRE ALARM SYSTEM AC POWER FAILURE																							
2	FIRE ALARM SYSTEM LOW BATTERY																							
3	OPEN CIRCUIT																							
4	GROUND FAULT																							
5	NOTIFICATION APPLIANCE CIRCUIT SHORT																							
6	BUILDING MANUAL PULL STATIONS																							
7	AREA SMOKE DETECTORS																							
8	SPRINKLER TAMPER SWITCH																							
9	SPRINKLER WATER FLOW IN BUILDING																							
10	SPRINKLER PRESSURE SWITCH																							



* 4" Square 2-1/8" Deep Backbox
or Double, Single Gang Box or Ring
Required by Others

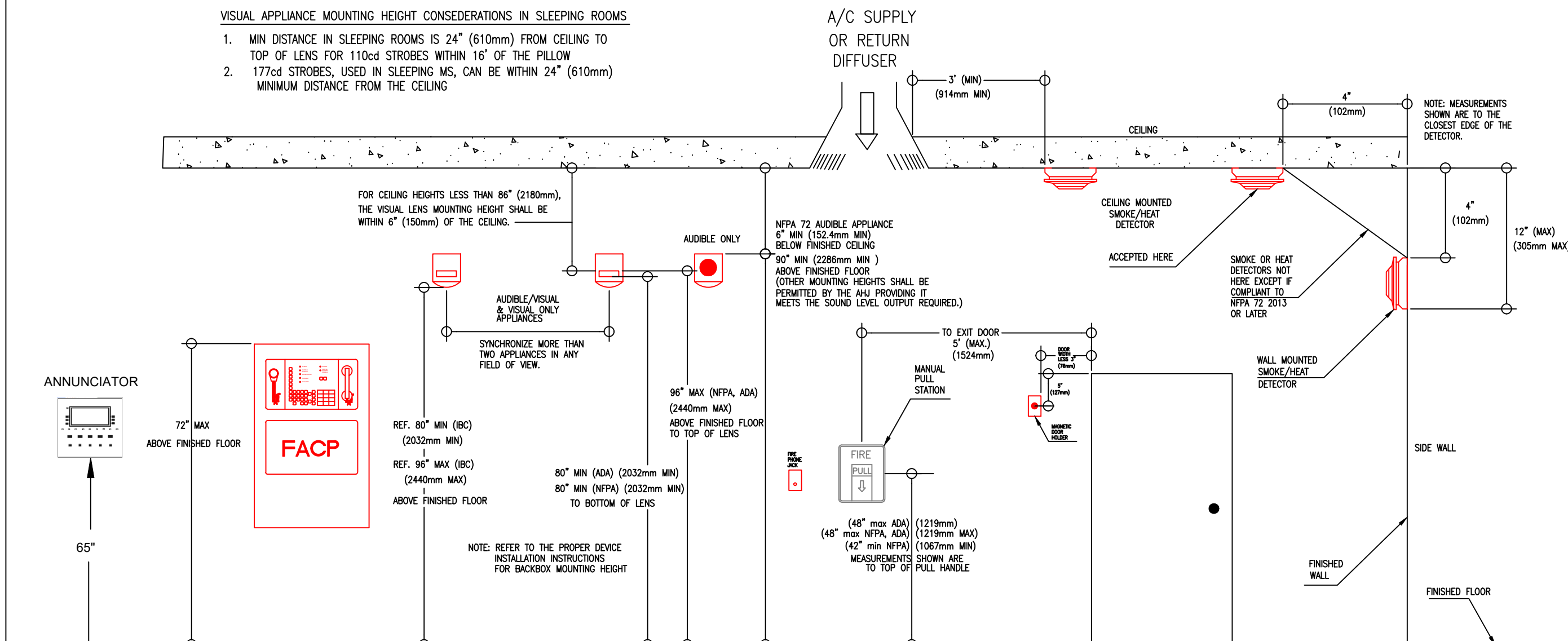


* 4" Square 2-1/8" Deep Backbox
or Double, Single Gang Box or Ring
Required by Others



VISUAL APPLIANCE MOUNTING HEIGHT CONSIDERATIONS IN SLEEPING ROOMS

- MIN DISTANCE IN SLEEPING ROOMS IS 24" (610mm) FROM CEILING TO TOP OF LENS FOR 1100cd STROBES WITHIN 16" OF THE FLOOR
- 177cd STROBES, USED IN SLEEPING WS, CAN BE WITHIN 24" (610mm) MINIMUM DISTANCE FROM THE CEILING



5895XL NAC Panel	
Total Used Current: (All Circuits)	3.5940A

Point-To-Point Voltage Drop Calculation for Circuit N1						
Starting Calculation Voltage: 20.4000v Minimum Operational Voltage: 16.0000v Total Circuit Current: 1.1650A Total Distance: 322.705' Voltage Drop: 1.3392v End Of Line Voltage: 19.0608v Percent Drop: 6.56 % Wire GA=#14 AWG Distance measured using drawn segment lengths with 10.00 % additional length calculated						
Device Label	Part No.	Description	Device Current	Distance From Previous Device	Voltage At Device	Voltage Drop From Source
N1.01	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	31.9080'	20.1718v	0.2282v
N1.02	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	7.8117'	20.1179v	0.2821v
N1.03	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 15cd	0.0980A	5.5591'	20.0810v	0.3190v
N1.04	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	23.2474'	19.9407v	0.4593v
N1.05	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 75cd	0.1720A	42.9596'	19.6925v	0.7075v
N1.06	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	46.6641'	19.4721v	0.9279v
N1.07	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 15cd	0.0980A	3.6606'	19.4558v	0.9442v
N1.08	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	28.9426'	19.3440v	1.0560v
N1.09	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 75cd	0.1720A	31.7741'	19.2295v	1.1705v
N1.10	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 30cd	0.1140A	37.0390'	19.1351v	1.2649v
N1.11	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 110cd	0.2170A	31.5915'	19.0767v	1.3233v
N1.12	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	30.3011'	19.0611v	1.3389v
N1.13 EOL 4.7k	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	1.2464'	19.0608v	1.3392v

Point-To-Point Voltage Drop Calculation for Circuit N2						
Starting Calculation Voltage: 20.4000v Minimum Operational Voltage: 16.0000v Total Circuit Current: 0.8460A Total Distance: 276.7261' Voltage Drop: 0.8415v End Of Line Voltage: 19.5585v Percent Drop: 4.13 % Wire GA=#14 AWG Distance measured using drawn segment lengths with 10.00 % additional length calculated						
Device Label	Part No.	Description	Device Current	Distance From Previous Device	Voltage At Device	Voltage Drop From Source
N2.01	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	16.3050'	20.3153v	0.0847v
N2.02	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 110cd	0.2170A	21.5720'	20.2088v	0.1912v
N2.03	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	120.4321'	19.7748v	0.6252v
N2.04	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 30cd	0.1140A	0.6746'	19.7725v	0.6275v
N2.05	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 75cd	0.1720A	36.6609'	19.6755v	0.7245v
N2.06	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	34.7284'	19.6203v	0.7797v
N2.07 EOL 4.7k	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 110cd	0.2170A	46.3530'	19.5585v	0.8415v

Point-To-Point Voltage Drop Calculation for Circuit N3						
Starting Calculation Voltage: 20.4000v Minimum Operational Voltage: 16.0000v Total Circuit Current: 1.0740A Total Distance: 671.4343' Voltage Drop: 3.5501v End Of Line Voltage: 16.8499v Percent Drop: 17.40 % Wire GA=#14 AWG Distance measured using drawn segment lengths with 10.00 % additional length calculated						
Device Label	Part No.	Description	Device Current	Distance From Previous Device	Voltage At Device	Voltage Drop From Source
N3.01	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	402.3009'	17.7471v	2.6529v
N3.02	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 15cd	0.0980A	5.6047'	17.7116v	2.6884v
N3.03	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 60cd	0.0970A	59.0859'	17.3727v	3.0273v
N3.04	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 60cd	0.0970A	28.9113'	17.2241v	3.1759v
N3.05	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 60cd	0.0970A	12.1175'	17.1691v	3.2309v
N3.06	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 15cd	0.0980A	30.7995'	17.0475v	3.3525v
N3.07	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 60cd	0.0970A	15.5468'	16.9955v	3.4045v
N3.08	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 60cd	0.0970A	9.9017'	16.9682v	3.4318v
N3.09	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 60cd	0.0970A	11.0478'	16.9444v	3.4556v
N3.10	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	8.1797'	16.9317v	3.4683v
N3.11	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 30cd	0.1140A	41.1620'	16.8781v	3.5219v
N3.12 EOL 4.7k	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 15cd	0.0980A	46.7765'	16.8499v	3.5501v

Point-To-Point Voltage Drop Calculation for Circuit N4						
Starting Calculation Voltage: 20.4000v Minimum Operational Voltage: 16.0000v Total Circuit Current: 0.5090A Total Distance: 516.8422' Voltage Drop: 1.4687v End Of Line Voltage: 18.9313v Percent Drop: 7.19 % Wire GA=#14 AWG Distance measured using drawn segment lengths with 10.00 % additional length calculated						
Device Label	Part No.	Description	Device Current	Distance From Previous Device	Voltage At Device	Voltage Drop From Source
N4.01	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 30cd	0.0580A	408.4456'	19.1235v	1.2765v
N4.02	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 30cd	0.0580A	33.3096'	19.0313v	1.3687v
N4.03	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 15cd	0.0980A	14.1842'	18.9970v	1.4030v
N4.04	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 30cd	0.0580A	26.3135'	18.9494v	1.4506v
N4.05	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 60cd	0.1530A	2.5076'	18.9457v	1.4543v
N4.06	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	16.1652'	18.9374v	1.4626v
N4.07 EOL 4.7k	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cd	0.0420A	15.9165'	18.9333v	1.4667v

REVISION	DATE	APPROVED

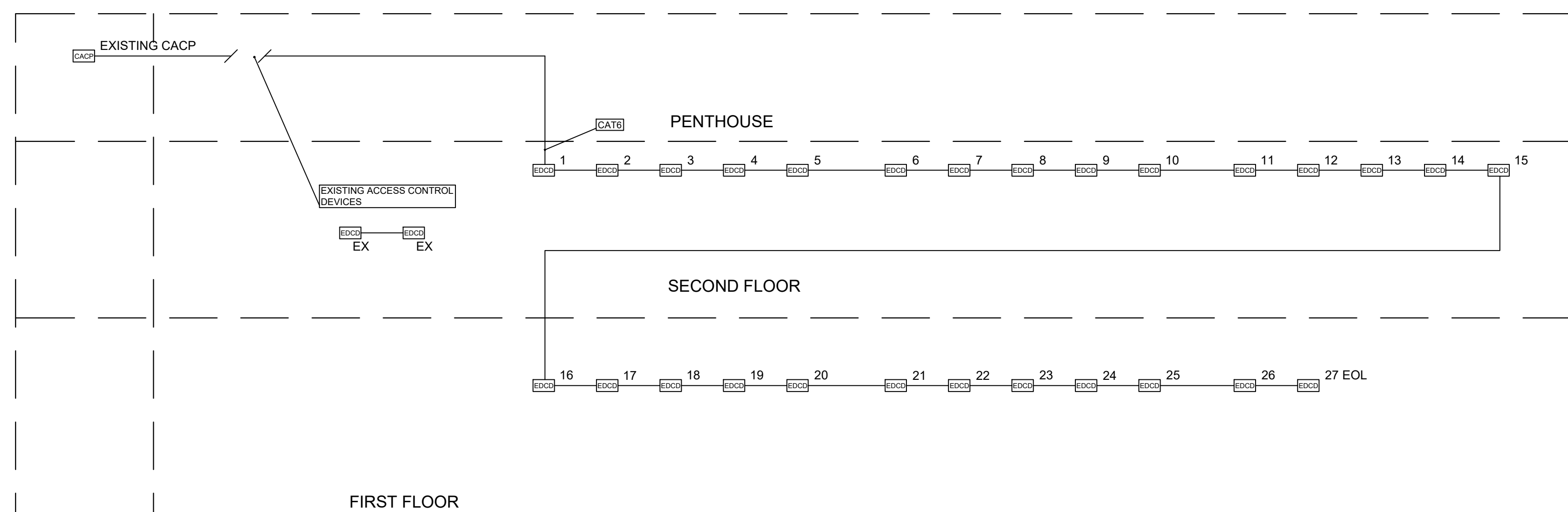
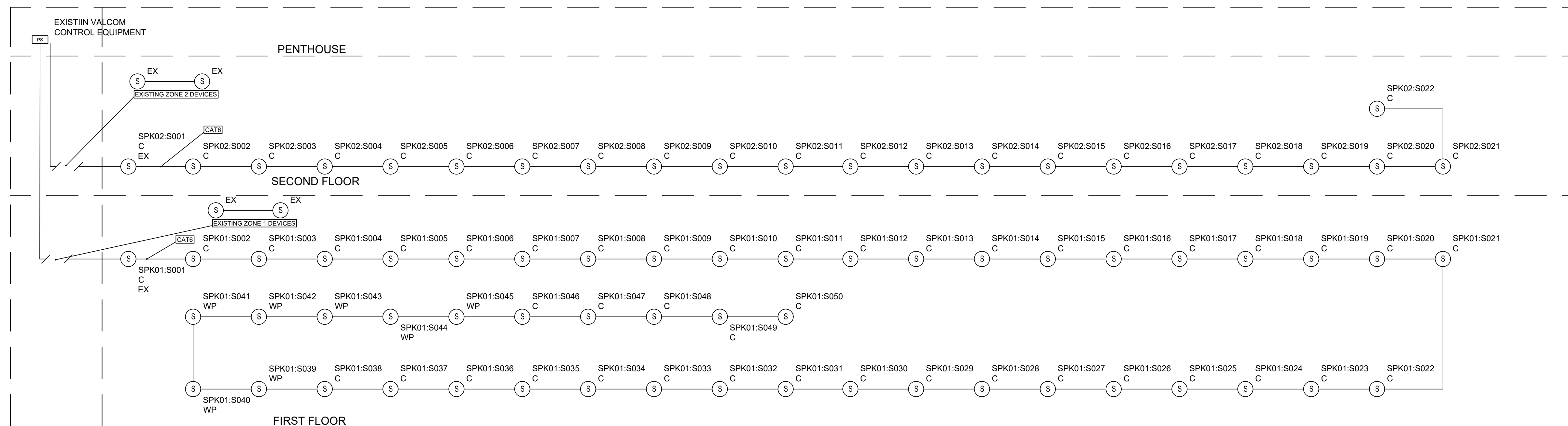
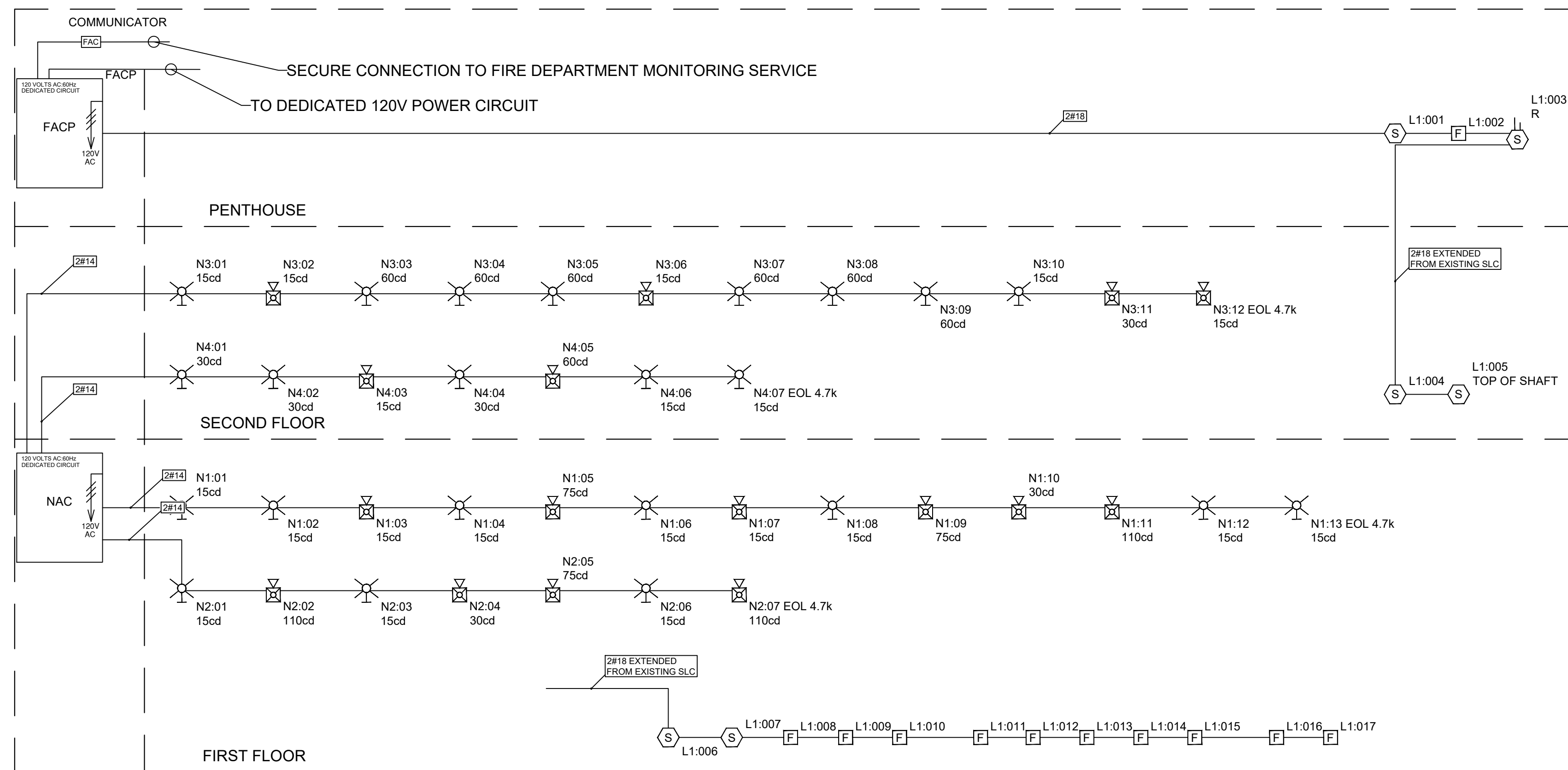
DESIGN	DATE	APPROVED


















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Project Number:	
Drawn by:	AC
Approved By:	JS




JUNEAU ALARM P.O. BOX 34391 JUNEAU, AK 99803 907-205-1112 JIM SULLIVAN 97-064

JUNEAU INTERNATIONAL AIRPORT TERMINAL RENOVATIONS JUNEAU, ALASKA DETAILS, ELEVATIONS AND CALCS

SHEET REFERENCE NUMBER: FA-04
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58953XL NAC PANEL BATTERY CALCULATION								
SECONDARY POWER SOURCE REQUIREMENTS								
					STANDBY CURRENT (AMPS)		SECONDARY ALARM CURRENT (AMPS)	
PANEL COMPONENTS		QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
		1	5895XL MAIN BOARD	Intelligent Remote Power Supply Main Board	1 x 0.04	= 0.04	1 x 0.16	= 0.16
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
N1		2	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 15cdd	2 x 0.00	= 0.00	2 x 0.098	= 0.196
		1	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 30cdd	1 x 0.00	= 0.00	1 x 0.114	= 0.114
		2	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 75cdd	2 x 0.00	= 0.00	2 x 0.172	= 0.344
		1	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 110cdd	1 x 0.00	= 0.00	1 x 0.217	= 0.217
		7	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cdd	7 x 0.00	= 0.00	7 x 0.042	= 0.294
N2		1	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 30cdd	1 x 0.00	= 0.00	1 x 0.114	= 0.114
		1	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 75cdd	1 x 0.00	= 0.00	1 x 0.172	= 0.172
		2	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 110cdd	2 x 0.00	= 0.00	2 x 0.217	= 0.434
		3	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cdd	3 x 0.00	= 0.00	3 x 0.042	= 0.126
N3		3	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 15cdd	3 x 0.00	= 0.00	3 x 0.098	= 0.294
		1	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 30cdd	1 x 0.00	= 0.00	1 x 0.114	= 0.114
		2	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cdd	2 x 0.00	= 0.00	2 x 0.042	= 0.084
		6	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 60cdd	6 x 0.00	= 0.00	6 x 0.097	= 0.582
		1	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 15cdd	1 x 0.00	= 0.00	1 x 0.098	= 0.098
N4		1	GEC3-24WR	Selectable Candela, Low Profile Evacuation Horn/Strobe, Red 60cdd	1 x 0.00	= 0.00	1 x 0.153	= 0.153
		2	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 15cdd	2 x 0.00	= 0.00	2 x 0.042	= 0.084
		3	GES3-24WR	Selectable Candela, Low Profile Evacuation Strobe, Red 30cdd	3 x 0.00	= 0.00	3 x 0.058	= 0.174
					TOTAL STANDBY (A)	0.04	TOTAL ALARM (A)	3.754
					REQUIRED STANDBY TIME = 24.00 HOURS			
					REQUIRED ALARM TIME = 5 MINUTES			
SECONDARY STANDBY LOAD				0.04	x 24.00	= 0.96 AH		
SECONDARY ALARM LOAD				3.754	x 0.0833	= 0.3126 AH		
STANDBY AND ALARM LOAD SUBTOTAL						1.2726 AH x 1.20		
DERATING FACTOR								
SECONDARY LOAD REQUIREMENTS (AMP HOURS)						1.5274 AH		
PROVIDE (2) 12V 7AH BATTERIES @ 24VDC								

PANEL FACP 5820XL-EVS BATTERY CALCULATION								
SECONDARY POWER SOURCE REQUIREMENTS								
					STANDBY CURRENT (AMPS)		SECONDARY ALARM CURRENT (AMPS)	
PANEL COMPONENTS		QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
		1	S820XL-EVS MAIN BOARD	FIRE ALARM CONTROL PANEL MAIN BOARD SD PROTOCOL	1 x 0.17	= 0.17	1 x 0.365	= 0.365
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
FACP:L1		11	SD500-PSDA	ADDRESSABLE DOUBLE ACTION MANUAL PULL STATION	11 x 0.00055	= 0.00605	11 x 0.00055	= 0.00605
		5	SD505-APS	ADDRESSABLE PHOTOELECTRIC SMOKE DETECTOR	5 x 0.00055	= 0.00275	5 x 0.00055	= 0.00275
	 R	1	SD505-DUCTR	ADDRESSABLE DUCT SMOKE DETECTOR	1 x 0.02	= 0.02	1 x 0.062	= 0.062
					TOTAL STANDBY (A)	0.1988	TOTAL ALARM (A)	0.4358
						REQUIRED STANDBY TIME = 24.00 HOURS		
						REQUIRED ALARM TIME = 5 MINUTES		
SECONDARY STANDBY LOAD				0.1988	x 24.00	= 4.7712 AH		
SECONDARY ALARM LOAD				0.4358	x 0.0833	= 0.3636 AH		
STANDBY AND ALARM LOAD SUBTOTAL						4.8075 AH		
DERATING FACTOR						x 1.20		
SECONDARY LOAD REQUIREMENTS (AMP HOURS)						5.769 AH		
PROVIDE (2) 12V 7AH BATTERIES @ 24VDC								

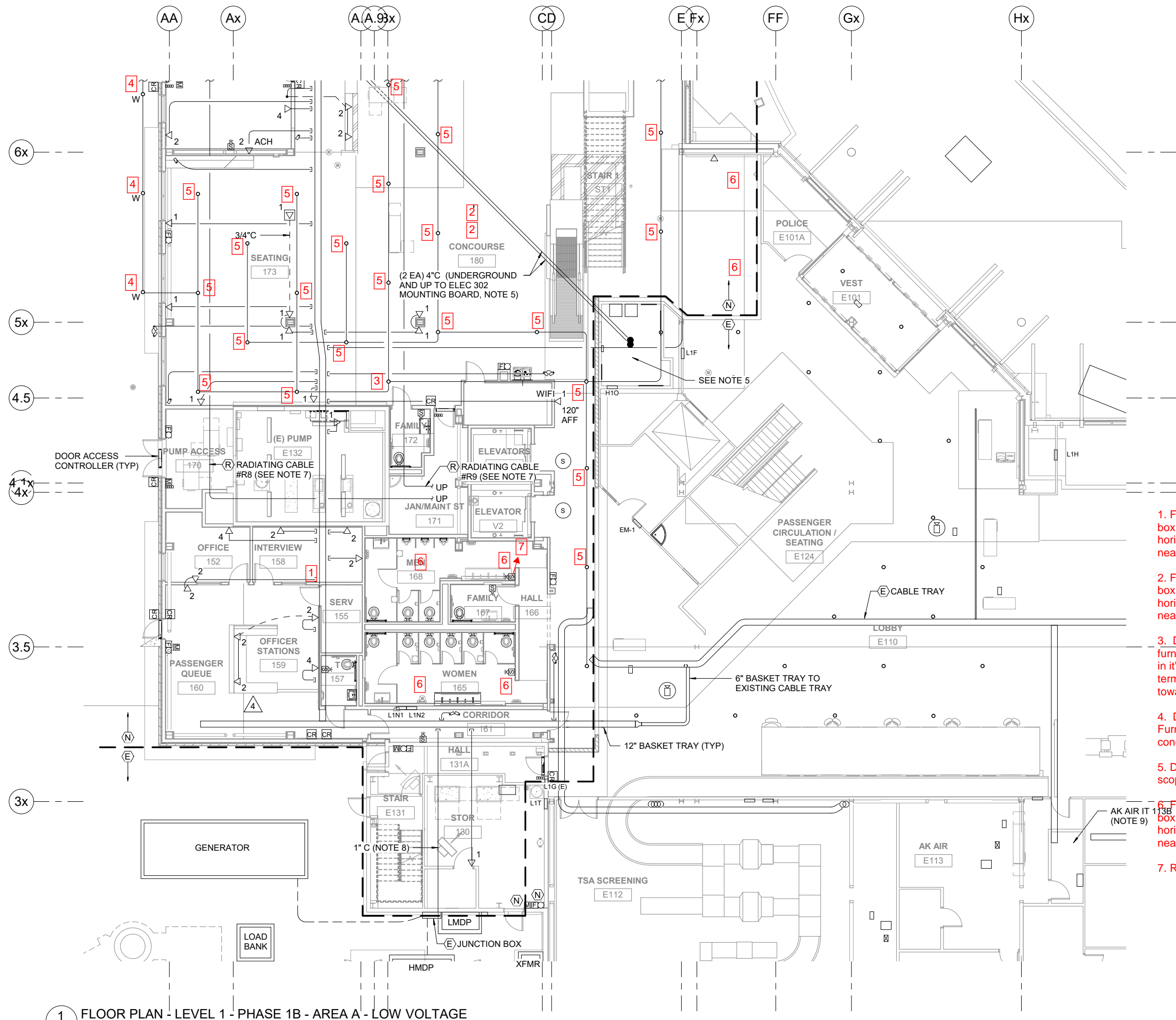
[illegible]

Designed by:	JS	Date:	10/13/2020
Drawn by:	AC	Scale:	NTS
Approved By:	JS	Project Number:	Drawing Code:

JUNEAU ALARM
P.O. BOX 34391
JUNEAU, AK 99803
907-209-1112
TIM SULLIVAN 97-064

JUNEAU INTERNATIONAL AIRPORT TERMINAL RENOVATIONS

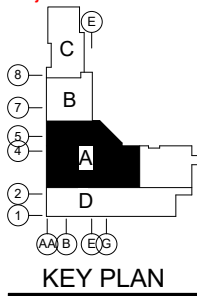
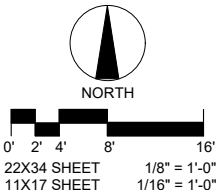
SHEET
REFERENCE
NUMBER:
FA-05



NOTES:

1. RUN CONDUITS TO CABLE TRAY FROM DATA DEVICE BOXES, UON. PROVIDE GROUNDING HUBS ON NEW CONDUITS BONDED TO CABLE TRAY GROUNDING SYSTEM. CONDUITS SHALL BE:
 - 3/4" C THREE CABLES, MAX
 - 1" C SIX CABLES, MAX
 - 1-1/4" C NINE CABLES, MAX
 - 1-1/2" C TWELVE CABLES, MAX
 - 2" C TWENTY ONE CABLES, MAX
2. PROVIDE CAT6 CABLES FOR NEW DATA PORTS AS INDICATED, CIRCUITED TO PATCH PANELS. PROVIDE (1 EA) NEW CAT 6 PATCH CORD PER NEW DATA PORT.
3. PROVIDE NEW CAT6 CABLES FOR NEW DATA PORTS AS INDICATED FOR ROOMS 152, 158, AND 159. CIRCUITED TO SERV 155. PROVIDE (1 EA) NEW CAT6 PATCH CORD PER NEW DATA PORT.
4. PROVIDE A 3/4" C FROM EACH NEW CAMERA TO THE CABLE TRAY. PROVIDE (1 EA) CAT6 CABLE CIRCUITED FROM EACH CAMERA TO PATCH PANELS IN ELEC 302. PROVIDE (1 EA) NEW CAT6 PATCH CORD PER NEW CAMERA. CAMERAS SHALL BE OWNER FURNISHED AND INSTALLED.
5. PROVIDE (2 EA) 4" C FROM EXISTING FIRST FLOOR COMM ROOM TO NEW NORTH TERMINAL PENTHOUSE MOUNTING BOARD, SEE SHEET E-1B231. CONNECT (1 EA) OF THE EXISTING UNDERGROUND SPARE CONDUIT TO ALLOW NEW UTILITY CABLE INSTALLATION BY ACS.
6. INSTALL PUBLIC ADDRESS CABLES ON HOOKS SUPPORTED FROM STRUCTURAL CEILING, IN RACEWAY, OR IN CABLE TRAY. PROVIDE GROUNDING HUBS ON NEW CONDUITS BONDED TO CABLE TRAY.
7. REINSTALL RADIATING CABLES R8 AND R9.
8. PROVIDE CABLES FROM THE EXISTING GENERATOR TO THE GENERATOR ANNUNCIATOR IN MAINTENANCE 262. PROVIDE CAT6 CABLE FROM GENERATOR TO NETWORK RACK IN ELEC 302. INSTALL OWNER-FURNISHED ANNUNCIATOR IN MAINTENANCE 262.
9. PROVIDE (1 EA) T1 TELECOM UTILITY CABLE FROM THE ACS DEMARK IN ELEC 302 TO AK AIR IT 113B. COORDINATE CABLE TYPE WITH ACS. COORDINATE WITH ALASKA AIRLINES. SEE E-1B231.

1. Furnish and install a wall mounted four square electrical box flush to the sheet-rock with a 3/4" conduit that terminates horizontally in an accessible ceiling oriented towards the nearest cable tray. Box to be 7" AFF.
2. Furnish and install a soffit mounted four square electrical box flush to the sheet-rock with a 3/4" conduit that terminates horizontally in an accessible ceiling oriented towards the nearest cable tray. Box to be centered vertically on the soffit.
3. Delete PA speaker from the project scope. In its place, furnish and install a ceiling mounted four square electrical box in its place flush to the sheet-rock with a 3/4" conduit that terminates horizontally in an accessible ceiling oriented towards the nearest cable tray.
4. Delete exterior PA speaker from the project scope. Furnish and install an exterior junction box and retain the PA conduit network to access an interior cable tray.
5. Delete PA speaker, wiring and electrical box from project scope.
6. Furnish and install a ceiling mounted four square electrical box flush to the sheet-rock with a 3/4" conduit that terminates horizontally in an accessible ceiling oriented towards the nearest cable tray.
7. Relocate wall mounted strobe to adjacent wall.



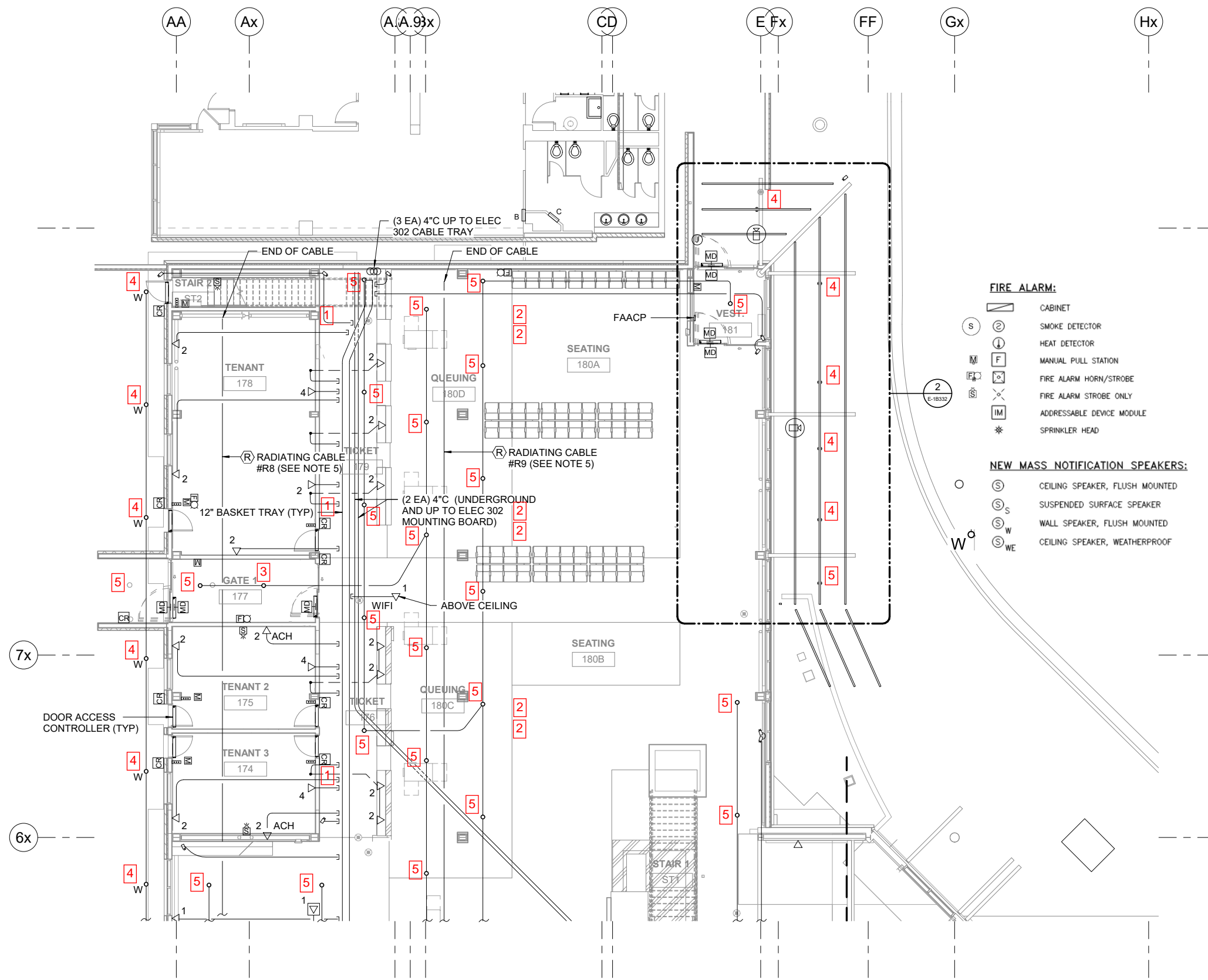
1 FLOOR PLAN - LEVEL 1 - PHASE 1B - AREA A - LOW VOLTAGE
E-1B411 1/8" = 1'-0"

REVIEWED BY:
JOB NO. 2018006
PROJ. MGR/Designer
DRAWN BY/Author
DATE: 1-24-2020
REVISIONS:
4
ADDENDUM FOUR

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JNU Terminal Reconstruction
BE20-020
JUNEAU, ALASKA
File 1382.80
FLOOR PLAN - LEVEL 1 - AREA A -
PHASE 1B - LOW VOLTAGE

CONFORMED DOCUMENTS
SHEET NO.
E-1B411

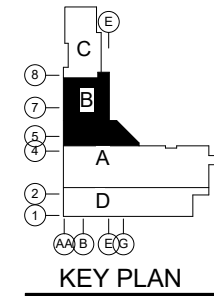
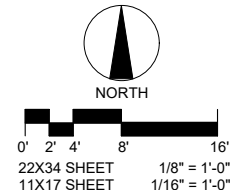


- NOTES:
1. RUN CONDUITS TO CABLE TRAY FROM DATA DEVICE BOXES, UON. PROVIDE GROUNDING HUBS ON NEW CONDUITS BONDED TO CABLE TRAY GROUNDING SYSTEM. CONDUITS SHALL BE:
 - 3/4" C THREE CABLES, MAX
 - 1" C SIX CABLES, MAX
 - 1-1/4" C NINE CABLES, MAX
 - 1-1/2" C TWELVE CABLES, MAX
 - 2" C TWENTY ONE CABLES, MAX
 2. PROVIDE CAT6 CABLES FOR NEW DATA PORTS AS INDICATED, CIRCUITED TO PATCH PANELS. PROVIDE (1 EA) NEW CAT 6 PATCH CORD PER NEW DATA PORT.
 3. PROVIDE A 3/4" C FROM EACH NEW CAMERA TO THE CABLE TRAY. PROVIDE (1 EA) CAT6 CABLE CIRCUITED FROM EACH CAMERA TO PATCH PANELS IN ELEC 302. PROVIDE (1 EA) NEW CAT6 PATCH CORD PER NEW CAMERA. CAMERAS SHALL BE OWNER FURNISHED AND INSTALLED.
 4. INSTALL PUBLIC ADDRESS CABLES ON HOOKS SUPPORTED FROM STRUCTURAL CEILING, IN RACEWAY, OR IN CABLE TRAY. PROVIDE GROUNDING HUBS ON NEW CONDUITS BONDED TO CABLE TRAY.
 5. REINSTALL RADIATING CABLES R8 AND R9.

- FIRE ALARM:**
- CABINET
 - Ⓢ SMOKE DETECTOR
 - Ⓡ HEAT DETECTOR
 - Ⓜ F MANUAL PULL STATION
 - Ⓢ H FIRE ALARM HORN/STROBE
 - Ⓢ S FIRE ALARM STROBE ONLY
 - Ⓜ IM ADDRESSABLE DEVICE MODULE
 - Ⓢ * SPRINKLER HEAD
- NEW MASS NOTIFICATION SPEAKERS:**
- Ⓢ CEILING SPEAKER, FLUSH MOUNTED
 - Ⓢ S SUSPENDED SURFACE SPEAKER
 - Ⓢ W WALL SPEAKER, FLUSH MOUNTED
 - Ⓢ WE CEILING SPEAKER, WEATHERPROOF

1. Furnish and install a wall mounted four square electrical box flush to the sheet-rock with a 3/4" conduit that terminates horizontally in an accessible ceiling oriented towards the nearest cable tray. Box to be 7' AFF.
2. Furnish and install a soffit mounted four square electrical box flush to the sheet-rock with a 3/4" conduit that terminates horizontally in an accessible ceiling oriented towards the nearest cable tray. Box to be centered vertically on the soffit.
3. Delete PA speaker from the project scope. In its place, furnish and install a ceiling mounted four square electrical box in its place flush to the sheet-rock with a 3/4" conduit that terminates horizontally in an accessible ceiling oriented towards the nearest cable tray.
4. Delete exterior PA speaker from the project scope. Furnish and install an exterior junction box and retain the PA conduit network to access an interior cable tray.
5. Delete PA speaker, wiring and electrical box from project scope.

1 FLOOR PLAN - LEVEL 1 - PHASE 1B - AREA B - LOW VOLTAGE
E-1B412 1/8" = 1'-0"



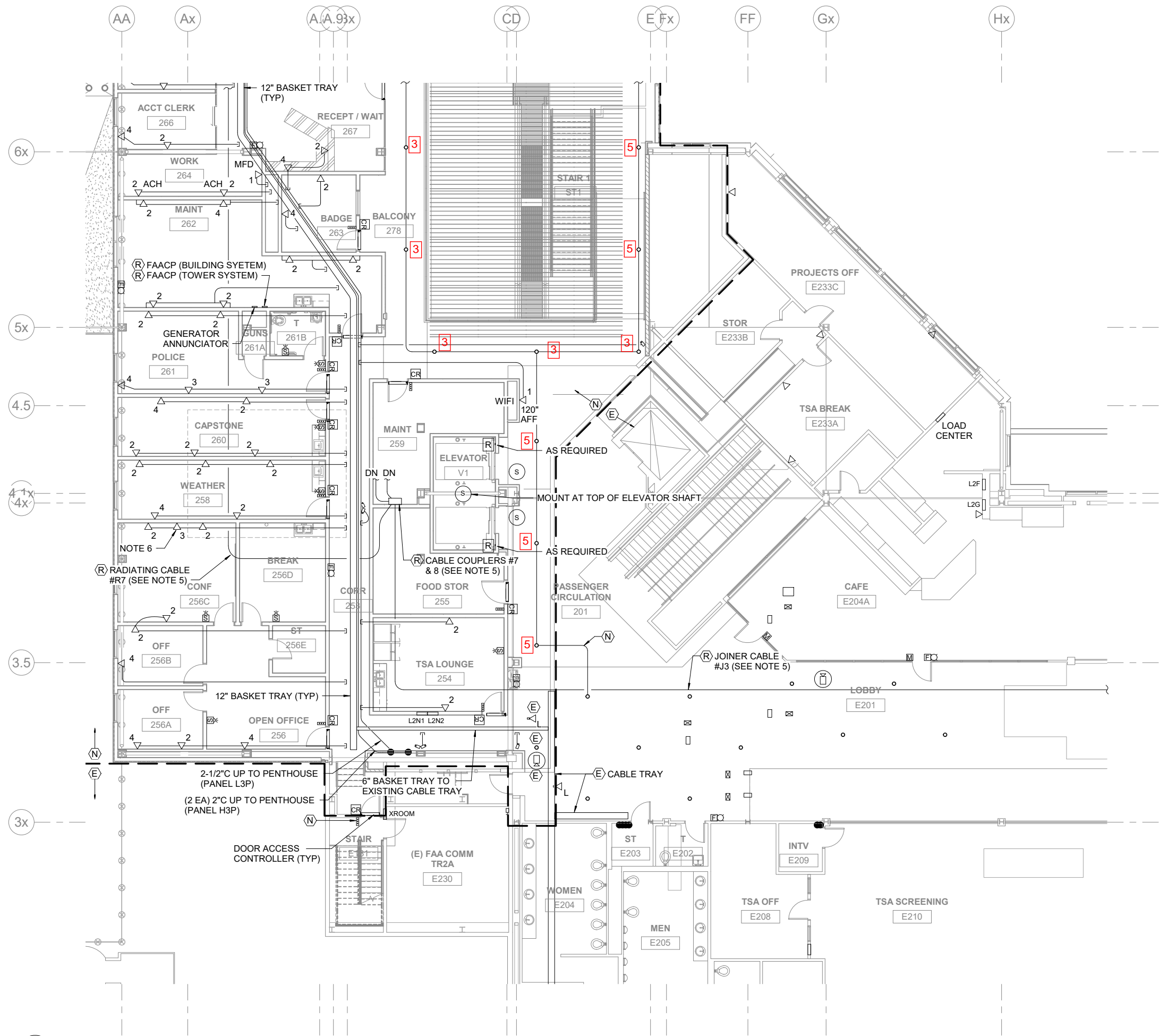
REVIEWED BY:
JOB NO. 2018006
PROJ. MGR/Designer
DRAWN BY/Author
DATE: 1-24-2020
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JNU Terminal Reconstruction
BE20-020
JUNEAU, ALASKA
FLOOR PLAN - LEVEL 1 - AREA B -
PHASE 1B - LOW VOLTAGE
File 1382.80

SHEET NO.
E-1B412

CONFORMED DOCUMENTS



NOTES:

1. RUN CONDUITS TO CABLE TRAY FROM DATA DEVICE BOXES, UON. PROVIDE GROUNDING HUBS ON NEW CONDUITS BONDED TO CABLE TRAY GROUNDING SYSTEM. CONDUITS SHALL BE:
 - 3/4"C THREE CABLES, MAX
 - 1"C SIX CABLES, MAX
 - 1-1/4"C NINE CABLES, MAX
 - 1-1/2"C TWELVE CABLES, MAX
 - 2"C TWENTY ONE CABLES, MAX
2. PROVIDE CAT6 CABLES FOR NEW DATA PORTS AS INDICATED, CIRCUITED TO PATCH PANELS. PROVIDE (1 EA) NEW CAT 6 PATCH CORD PER NEW DATA PORT.
3. PROVIDE A 3/4"C FROM EACH NEW CAMERA TO THE CABLE TRAY. PROVIDE (1 EA) CAT6 CABLE CIRCUITED FROM EACH CAMERA TO PATCH PANELS IN ELEC 302. PROVIDE (1 EA) NEW CAT6 PATCH CORD PER NEW CAMERA. CAMERAS SHALL BE OWNER FURNISHED AND INSTALLED.
4. INSTALL PUBLIC ADDRESS CABLES ON HOOKS SUPPORTED FROM STRUCTURAL CEILING, IN RACEWAY, OR IN CABLE TRAY. PROVIDE GROUNDING HUBS ON NEW CONDUITS BONDED TO CABLE TRAY. REINSTALL JOINER CABLE J3, RADIATING CABLE R7, AND CABLE COUPLERS 7 AND 8.
5. TERMINATE THE (3 EA) CAT6 CABLES AT (1 EA) VGA PORT AND (1 EA) HDMI PORT AT THE CENTER NORTH DATA PORT IN CONF 256C.

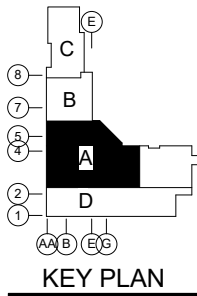
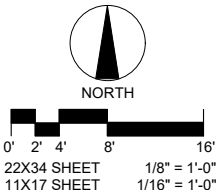
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3. Delete PA speaker from the project scope. In its place, furnish and install a ceiling mounted four square electrical box in it's place flush to the sheet-rock with a 3/4" conduit that terminates horizontally in an accessible ceiling oriented towards the nearest cable tray.

4. Not used on this page.

5. Delete PA speaker, wiring and electrical box from project scope.



1 FLOOR PLAN - LEVEL 2 - AREA A - PHASE 1B - LOW VOLTAGE

REVIEWED BY:
JOB NO. 2018006
PROJ. MGR/Designer
DRAWN BY/Author
DATE: 1-24-2020
REVISIONS:
Ben C. Haight

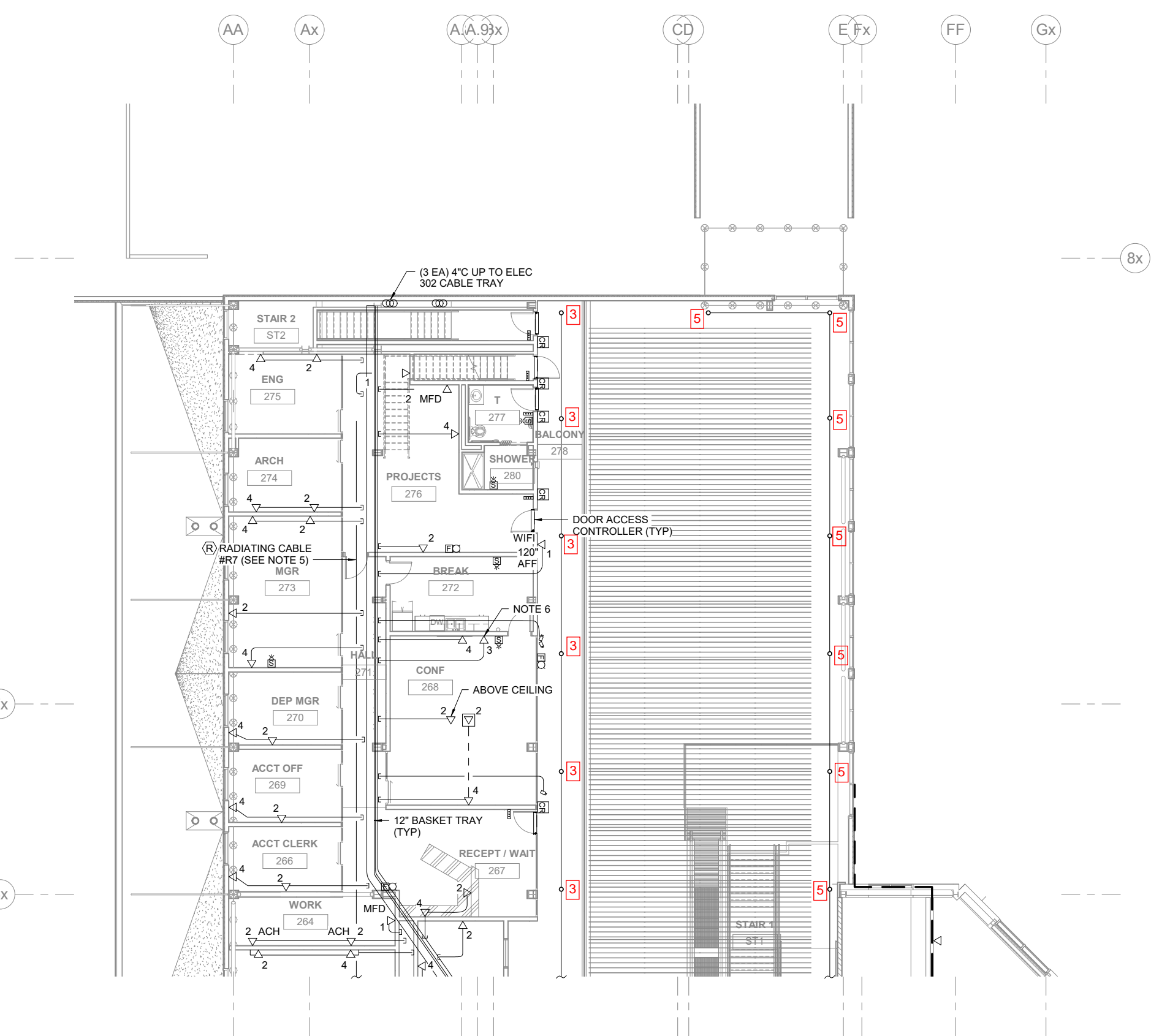
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JNU Terminal Reconstruction
BE20-020
JUNEAU, ALASKA
FLOOR PLAN - LEVEL 2 - AREA A -
PHASE 1B - LOW VOLTAGE

File 1382.80

SHEET NO.
E-1B421

CONFORMED DOCUMENTS



NOTES:

1. RUN CONDUITS TO CABLE TRAY FROM DATA DEVICE BOXES, UON. PROVIDE GROUNDING HUBS ON NEW CONDUITS BONDED TO CABLE TRAY GROUNDING SYSTEM. CONDUITS SHALL BE:
 - 3/4\"C THREE CABLES, MAX
 - 1\"C SIX CABLES, MAX
 - 1-1/4\"C NINE CABLES, MAX
 - 1-1/2\"C TWELVE CABLES, MAX
 - 2\"C TWENTY ONE CABLES, MAX
2. PROVIDE CAT6 CABLES FOR NEW DATA PORTS AS INDICATED, CIRCUITED TO PATCH PANELS. PROVIDE (1 EA) NEW CAT 6 PATCH CORD PER NEW DATA PORT.
3. PROVIDE A 3/4\"C FROM EACH NEW CAMERA TO THE CABLE TRAY. PROVIDE (1 EA) CAT6 CABLE CIRCUITED FROM EACH CAMERA TO PATCH PANELS IN ELEC 302. PROVIDE (1 EA) NEW CAT6 PATCH CORD PER NEW CAMERA. CAMERAS SHALL BE OWNER FURNISHED AND INSTALLED.
4. INSTALL PUBLIC ADDRESS CABLES ON HOOKS SUPPORTED FROM STRUCTURAL CEILING, IN RACEWAY, OR IN CABLE TRAY. PROVIDE GROUNDING HUBS ON NEW CONDUITS BONDED TO CABLE TRAY.
5. REINSTALL RATIATING CABLE R7.
6. TERMINATE THE (3 EA) CAT6 CABLES AT (1 EA) VGA PORT AND (1 EA) HDMI PORT AT THE RIGHT NORTH DATA PORT IN CONF 268.

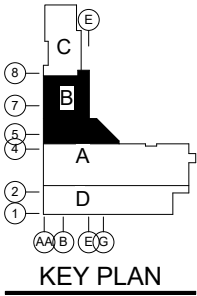
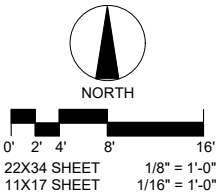
1. Not used on this page.

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3. Delete PA speaker from the project scope. In its place, furnish and install a ceiling mounted four square electrical box in it's place flush to the sheet-rock with a 3/4\" conduit that terminates horizontally in an accessible ceiling oriented towards the nearest cable tray.

4. Not used on this page.

5. Delete PA speaker, wiring and electrical box from project scope.



1 FLOOR PLAN - LEVEL 2 - AREA B - PHASE 1B - LOW VOLTAGE
E-1B422 1/8" = 1'-0"

REVIEWED BY:	DATE:
PROJ. MGR/Designer	1-24-2020
DRAWN BY/Author	Ben C. Haight
DATE:	1-24-2020
REVISIONS:	

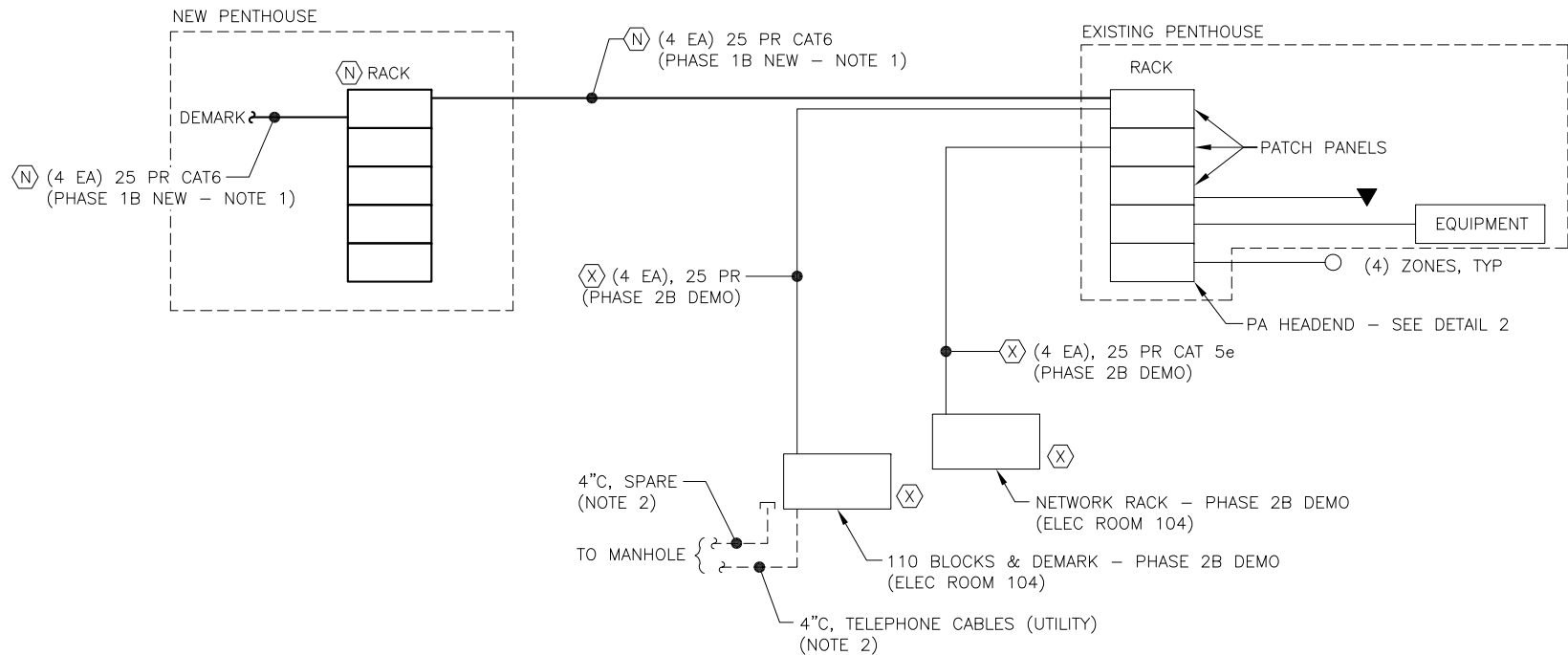


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JNU Terminal Reconstruction
BE20-020
JUNEAU, ALASKA
File 1382.80
FLOOR PLAN - LEVEL 2 - AREA B -
PHASE 1B - LOW VOLTAGE

SHEET NO.
E-1B422

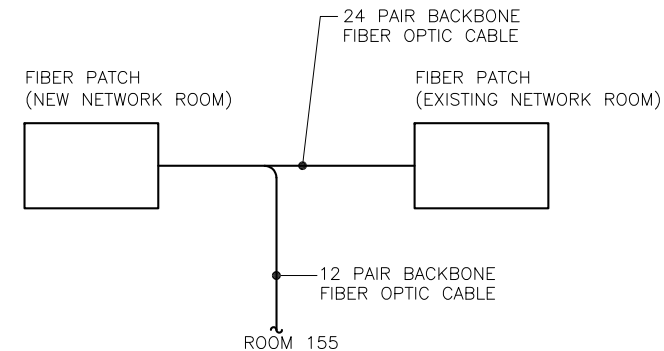
CONFORMED DOCUMENTS



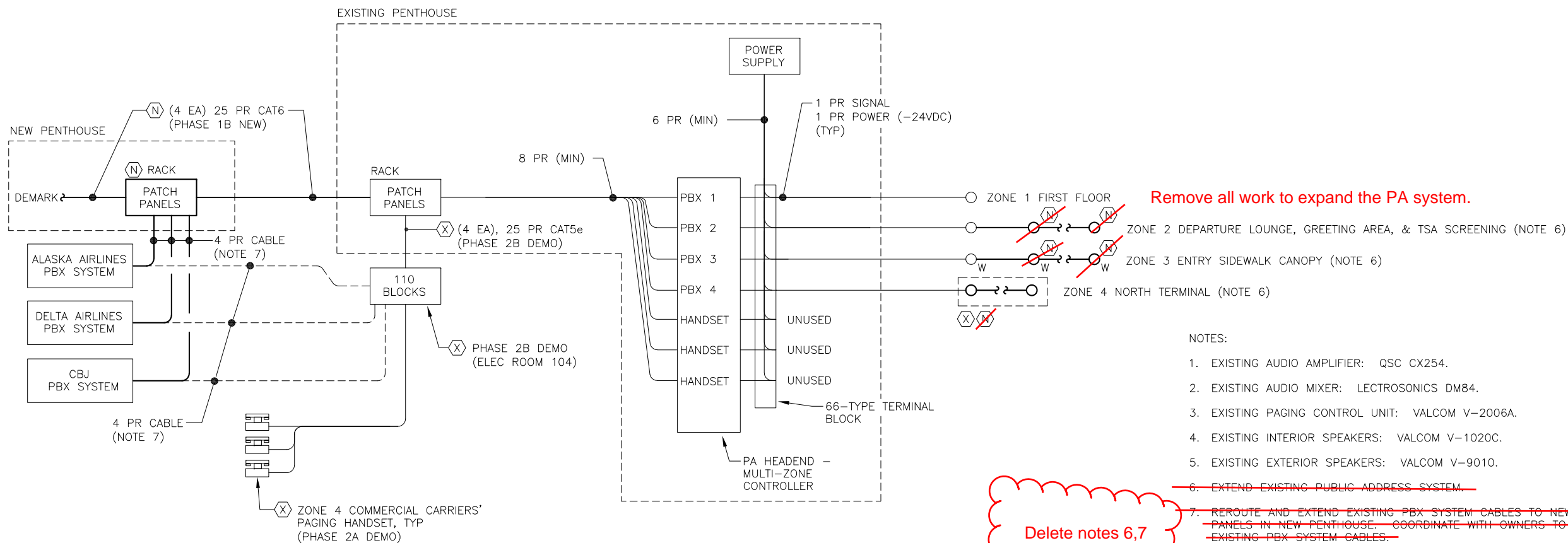
1 LINE DIAGRAM - EXISTING COMMUNICATIONS SYSTEMS
E-902 NO SCALE

NOTES:

1. PROVIDE NEW PUBLIC ADDRESS BACKBONE CABLES FROM EXISTING PUBLIC ADDRESS HEAD-END EQUIPMENT IN MEZZANINE TO NEW NETWORK RACK IN PENTHOUSE. ROUTE CABLES IN EXISTING AND NEW CABLE TRAY AND CONDUITS. SEE SHEETS E-900 AND E-901.
2. EXTEND TELE COMM UTILITY CONDUITS TO NEW ROOM ELEC 302 IN PENTHOUSE. SEE SHEET E-1B411, NOTE 5.



3 LINE DIAGRAM - NETWORK BACKBONE
E-902 NO SCALE



2 LINE DIAGRAM - EXISTING PAGING SYSTEM
E-902 NO SCALE

Remove all work to expand the PA system.

NOTES:

1. EXISTING AUDIO AMPLIFIER: QSC CX254.
2. EXISTING AUDIO MIXER: LECTROSONICS DM84.
3. EXISTING PAGING CONTROL UNIT: VALCOM V-2006A.
4. EXISTING INTERIOR SPEAKERS: VALCOM V-1020C.
5. EXISTING EXTERIOR SPEAKERS: VALCOM V-9010.

~~6. EXTEND EXISTING PUBLIC ADDRESS SYSTEM.~~

~~7. REROUTE AND EXTEND EXISTING PBX SYSTEM CABLES TO NEW PATCH PANELS IN NEW PENTHOUSE. COORDINATE WITH OWNERS TO IDENTIFY EXISTING PBX SYSTEM CABLES.~~

~~8. PROVIDE (1 EA) NEW AUDIO AMPLIFIER FOR NEW NORTH TERMINAL SPEAKERS. THE NEW AMPLIFIER SHALL BE COMPATIBLE WITH THE EXISTING AMPLIFIER AND SHALL HAVE A MINIMUM LOAD RATING OF 200W. INTEGRATE NEW AUDIO AMPLIFIER AND SPEAKERS WITH EXISTING PUBLIC ADDRESS SYSTEM.~~

Delete notes 6,7 and 8

DOE NO. 2018006	REVIEWED BY:
PROJECT: NUP, KHD	
DRAWN BY: REJ, PEL	
DATE: 1-03-2020	Michael P. Carlson
REVISIONS:	
4	ADDENDUM FOUR



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JNU Terminal Reconstruction
BE20-020
JUNEAU, ALASKA
File 1382.80
NETWORKING SINGLE LINE DIAGRAMS

BID DOCUMENTS

SHEET NO.
E-902