



State of Utah

GARY R. HERBERT  
Governor

GREGORY S. BELL  
Lieutenant Governor

Department of Administrative Services

KIMBERLY K. HOOD  
Executive Director

Division of Facilities Construction and Management

DAVID G. BUXTON  
Director

## ADDENDUM NO. 1

Date: September 7, 2010

To: Contractors

From: Lucas Davis

Reference: Utah State Veterans Nursing Home Fire Alarm Upgrade  
Salt Lake City, Utah

Project No.10017490

Subject: **Addendum No. 1**

Pages	Addendum	1 page
	Consultants Addendum	17 pages
	Total	18 pages

**Note:** *This Addendum shall be included as part of the Contract Documents. Items in this Addendum apply to all drawings and specification sections whether referenced or not involving the portion of the work added, deleted, modified, or otherwise addressed in the Addendum. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to Disqualification.*

**1.1 SCHEDULE CHANGES** – There are no schedule changes for this project.

**1.2 GENERAL** – PCI, specs and drawings, please see attached

**Utah!**  
Where ideas connect



---

**Date:** September 3, 2010

**To:** Lucas Davis  
State of Utah DFCM

**From:** Greg Jones  
Protection Consultants, Inc.

**Project:** Veterans Nursing Home Fire Alarm Upgrade – DFCM 10017490

**Subject:** Responses to Written Questions and Revisions to Fire Alarm Drawings for Addendum 1

---

Based on questions presented and conditions observed in the pre-bid walkthrough held Tuesday August 31, some revisions were made to the drawings and specifications for the fire alarm system upgrade. In addition, written questions were received from bidders that require a clear response. Responses to the questions received and a brief description of the revisions made to each drawing sheet and the specifications are included below. This letter should be issued with the revised drawings to allow bidding contractors to rapidly identify the revisions to the contract documents.

**Question 1:**

In the specs from PCI it notes that ALL notification wiring shall not be smaller than 14 awg and 12 awg, But on the plans they have them listed as 16 awg, please specify.

**Response 1:**

The correct MINIMUM wire gauge for each circuit is indicated in schedule 5 on sheet FA-7.

SLC – 18 AWG

Initiating Device – 18 AWG

Annunciators/Data (SBUS) – 18 AWG

Notification Appliance – 16 AWG

Paragraph 2.02-B-2 of specification section 13851 will be edited to match the schedule on the drawings.

**Question 2:**

There is no mention of monitoring, are we to provide pricing for monitoring or does DFCM have their own?

**Response 2:**

Monitoring to be provided by Owner.

**Question 3:**

Is there a specific color for the notification devices?

**Response 3:**

Color of notification appliances is indicated in Fire Alarm Equipment Legend on Sheet FA-7. Notification appliances shall be white.

**Specification Section 13851:**

1. Edited paragraph 2.02-A-8 to indicate that use of MC is limited to concealed installation and that MC must have a red finish.
2. Edited paragraph 2.02-B-2 to indicate correct MINIMUM wire gauge for fire alarm circuits (SLC – 18 AWG, Initiating Device – 18 AWG, Annunciators/Data (SBUS) – 18 AWG, Notification Appliance – 16 AWG)
3. Added paragraph 2.02-B-9 to indicate that all wiring must be new and all existing wiring no longer in use must be removed.

**Sheet FA-7:**

1. Deleted stray notification appliance circuit near bottom of Detail 3.
2. Edited Detail 1 to indicate a minimum of 18 AWG wire for circuit to annunciators.
3. Edited Detail 1 to indicate a minimum of 16 AWG wire for notification appliance circuits.
4. Edited Detail 1 to indicate a minimum of 18 AWG wire for SLC circuits.



**UTAH STATE VETERANS NURSING HOME  
VA HOSPITAL CAMPUS  
SALT LAKE CITY, UT  
DFCM # 10017490**

**SPECIFICATION SECTION 13851  
FIRE ALARM SYSTEM**

**ADDENDUM #1  
09/07/2010**

**SECTION 13851 - FIRE ALARM SYSTEM**

**PART I - GENERAL**

1.01 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

1.02 DESCRIPTION OF WORK:

- A. This section of the specifications includes the demolition of existing fire alarm system and furnishing, installation, connection and testing of new microprocessor controlled, intelligent reporting fire alarm equipment required to form a complete, operative, coordinated system to protect the Utah State Veterans Nursing Home in Salt Lake City, UT. Fire alarm system shall include, but not be limited to, alarm initiating devices, alarm notification appliances, Fire Alarm Control Panel (FACP), remote power supplies, auxiliary control devices and relays, door hold-open devices, annunciators, conduit and wiring as shown on the drawings and specified herein.

1.03 QUALITY ASSURANCE:

- A. The fire alarm system shall comply with requirements of NFPA 72 (National Fire Alarm Code) for Local Protected Premises Signaling Systems except as modified and supplemented by this specification. The system field wiring shall be supervised either electrically or by software-directed polling of field devices.
- B. Major system components (control panels, initiating devices, addressable modules or relays, power supplies, etc.) shall be manufactured by a State of Utah DFCM approved manufacturer.
- C. State of Utah DFCM Approved Manufacturers:
  - 1. Fire-Lite
  - 2. Silent Knight
- D. All initiating devices shall be listed compatible with the control equipment used.
- E. Materials, devices and equipment shall be Underwriters Laboratories (UL) listed or Factory Mutual approved for use in fire alarm systems and shall comply with all applicable requirements of the following UL standards:
  - 1. UL 38 Manually Actuated Signaling Boxes
  - 2. UL 50 Cabinets and Boxes
  - 3. UL 864 Control Units for Fire Protective Signaling Systems
  - 4. UL 268 Smoke Detectors for Fire Protective Signaling Systems
  - 5. UL 268A Smoke Detectors for Duct Applications
  - 6. UL 464 Audible Signaling Appliances
  - 7. UL 521 Heat Detectors for Fire Protective Signaling Systems
  - 8. UL 1971 Visual Notification Appliances.
- F. Shop drawings shall be prepared by an engineering technician or senior engineering technician (Level III or Level IV) NICET certified for fire alarm design. Include NICET certification number on the drawings. Drawings will be signed by the technician and submitted for approval under his name.

UTAH STATE VETERANS NURSING HOME – SALT LAKE CITY, UT  
FIRE ALARM SYSTEM UPGRADE  
DFCM PROJECT # 10017490

- G. Contractor (and/or subcontractor) shall be licensed as both an electrical and a fire alarm contractor in the State of Utah. License shall be active throughout the duration of the project.

1.04 SUBMITTALS:

- A. Descriptive Data: Descriptive data shall be submitted on the following items of material and/or equipment. Such data shall consist of manufacturer's or supplier's catalog information in sufficient detail to allow verification that the material and/or equipment meets the specification requirements, or is equal to that specified. Descriptive data shall be included with the shop drawings submittal described in paragraph B below.
1. Fire alarm control panel.
  2. Annunciator panels.
  3. Remote power supplies for notification appliance circuits.
  4. Initiating devices (smoke detectors, heat detectors, manual pull stations, monitor modules, etc.)
  5. Relay modules to control protected premise fire safety functions.
  6. Notification appliances.
- B. Shop Drawings: Prior to ordering or installing any equipment, contractor shall prepare shop drawings for submittal to Utah State Fire Marshal and Owner/Engineer. Shop drawings shall include sufficient information, clearly presented, to determine compliance with drawings and specifications. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts. Indicate type and gauge of wire to be used for each different circuit type. Show annunciator layout, configurations, and terminations.
- C. Submit four sets of drawings, descriptive data, battery calculations and voltage drop calculations to the Owner/Engineer for review. After review and acceptance by the Owner/Engineer, submit to State Fire Marshal for review. Any review comments, and associated drawing revisions, from state or local approving authorities that affect the system design shall be approved by the Owner/Engineer prior to installation.
- D. Testing Documentations/Certificates: Upon completion of installation and prior to final acceptance testing, complete and submit fire alarm system record of completion. Record of completion, along with all other material and test certificates shall be submitted to Project Engineer.
- E. As-Built Drawings: A complete set of "as-built" drawings showing installed wiring, color coding, and wire tag notations for exact locations of all installed equipment, specific interconnections between all equipment, and internal wiring of the equipment shall be delivered to the owner upon completion of system. As built drawings shall be furnished in printed (reproducible) format as well as electronic format (PDF and DWG).
- F. O&M Manuals: Operating and instruction manuals shall be submitted prior to testing of the system. Three (3) complete sets of operating and instruction manuals shall be delivered to the owner upon completion. User operating instructions shall be provided prominently displayed on a separate sheet located next to the control unit in accordance with U.L. Standard 864.
- G. Warranty Letter: Provide letter stating that contractor will warrant all equipment and wiring to be free from inherent mechanical and electrical defects for one year (365 days) from the date of final acceptance. Provide information regarding any equipment warranty provided by the equipment manufacturer that exceeds 365 days.

1.05 SYSTEM DESCRIPTION:

UTAH STATE VETERANS NURSING HOME – SALT LAKE CITY, UT  
FIRE ALARM SYSTEM UPGRADE  
DFCM PROJECT # 10017490

- A. Remove existing fire alarm system including all control equipment, enclosures, power supplies, initiating circuits and devices, notification appliance circuits and devices and all wiring. Existing conduit and junction boxes may remain where they comply with the provisions of the specification and will be used to mount new devices.
- B. Furnish and install a new addressable FACP at location of existing FACP. FACP shall be Silent Knight model 5820XL or Fire-Lite MS-9600 with DACT-UD. FACP shall have integrated signaling line circuits (SLC) with sufficient capacity for all initiating devices and control modules required with an additional reserve of 20% unused addresses for future expansion.
- C. Furnish and install addressable initiating devices as indicated on the project drawings and as specified below:
  - 1. Smoke detectors: Provide smoke detectors where indicated on drawings, in all corridors, lobbies, elevator shafts and elevator equipment rooms.
  - 2. Heat detectors: Provide fixed temperature type heat detectors where indicated on drawings in elevator equipment room.
  - 3. Duct smoke detectors: Provide duct mounted smoke detectors (sampling tube type) to detect smoke in main air supply and return duct leaving air handler for each air movement system.
  - 4. Manual pull stations: Replace all existing manual pull stations with addressable devices. New pull stations may be mounted on existing junction boxes.
  - 5. Addressable monitor modules: Furnish and install modules to facilitate monitoring of existing fire sprinkler water flow and valve tamper switches and other conventional initiating devices.
- D. Provide addressable relay modules as indicated on the project drawings and specified below to provide the following protected premise fire safety functions:
  - 1. Release fire/smoke dampers
  - 2. Fan shutdown
  - 3. Door release
  - 4. Activation of NAC Circuits
  - 5. Elevator recall (primary and secondary)
- E. Furnish and install notification appliances and remote power supplies for notification appliance circuits as indicated on the drawings.

1.06 SYSTEM DESIGN:

- A. Basic Performance:
  - 1. Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded on NFPA Style 6 or 7 (Class A) Signaling Line Circuits (SLC).
  - 2. Initiation Device Circuits (IDC) shall be wired Class A (NFPA Style D) as part of an addressable device connected by the SLC Circuit.
  - 3. Notification Appliance Circuits (NAC) shall be wired Class A (NFPA Style Z).
  - 4. All circuits shall be power-limited, per 1995 UL864 requirements.
  - 5. A single ground fault or open circuit on the system Signaling Line Circuit shall not cause system malfunction, loss of operating power or the ability to report an alarm.
  - 6. Alarm signals arriving at the main FACP shall not be lost following a primary power failure or outage of any kind until the alarm signal is processed and recorded.
- B. Basic System Functional Operation: When a fire alarm condition is detected and reported by one

UTAH STATE VETERANS NURSING HOME – SALT LAKE CITY, UT  
FIRE ALARM SYSTEM UPGRADE  
DFCM PROJECT # 10017490

of the system initiating devices, the following functions shall immediately occur:

1. The system Alarm LED on the FACP shall flash.
  2. A local sounder with the control panel shall sound.
  3. LCD display on the FACP and all remote annunciators shall indicate all information associated with the fire alarm condition, including the type of alarm point and its location within the protected premises.
  4. In response to a fire alarm condition, the system will process all control programming and activate all system outputs (alarm notification appliances and/or relays) associated with the point(s) in alarm.
  5. Alarm signal shall be transmitted off-premise via the DACT to the central monitoring station selected by the owner.
- C. All wiring shall be free of opens, shorts and grounds. All wiring shall be installed in rigid conduit, metallic clad cable (MC), armored cable (AC) or EMT. All penetrations through rated partitions shall be fire stopped with a suitable caulking compound. All wiring (except new power distribution circuits) shall be fire power limited (FPL) with minimum 300V insulation or equivalent complying with NFPA 70 Article 760.
- D. Provide a ground fault detection circuit, to detect positive and negative grounds on all field wiring. The ground fault detector shall operate the general trouble devices as specified but shall not cause an alarm to be sounded. Ground fault will not interfere with the normal operation, such as alarm, or other trouble conditions.
- E. All low voltage circuits will be protected by microprocessor controlled power limiting or have self restoring polyswitches for the following: smoke detector power, main power supply, indicating appliance circuits, battery standby power and auxiliary output.
- F. Notification circuits shall be designed to limit the voltage drop to a maximum of 20% from the power supply to the most remote device on any notification circuit.
- G. All visible alarms within a single field of view shall flash in synchronization.
- H. Secondary power supply (battery backup) shall be sufficient to provide a minimum of 24 hours of standby power with an additional reserve to operate the system for 5 minutes in alarm.

1.07 WARRANTY:

- A. The contractor shall warrant all equipment and wiring free from inherent mechanical and electrical defects for one year (365 days) from the date of final acceptance.

1.08 APPLICABLE CODES AND STANDARDS:

- A. The specifications and standards listed below form a part of this specification. The system shall fully comply with all applicable provisions of the latest issue of these standards.
1. International Building Code – 2009 edition
  2. International Fire Code – 2009 edition
  3. International Mechanical Code – 2009 edition
  4. Utah State Fire Marshal Rule R710-4
  5. NFPA 70 - National Electrical Code – 2008 edition
  6. NFPA 72 - National Fire Alarm Code – 2007 edition
  7. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems -

UTAH STATE VETERANS NURSING HOME – SALT LAKE CITY, UT  
FIRE ALARM SYSTEM UPGRADE  
DFCM PROJECT # 10017490

- 2009 edition
8. NFPA 101 Life Safety Code – 2009 edition
9. ASME A17.1 – 2000 edition
10. DFCM standards/established procedures

**PART II - PRODUCTS**

2.01 GENERAL:

- A. All equipment and components shall be new, and the manufacturer's current model. The installer shall be an authorized representative of the manufacturer of the major equipment, such as control panels and shall be responsible for the satisfactory installation of the complete system.
- B. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.
- C. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place. Fasteners and supports shall be adequate to support the required load.

2.02 CONDUIT AND WIRE:

A. Conduit:

1. Conduit shall be in accordance with The National Electrical Code (NEC), local and DFCM requirements.
2. Conduit fill shall not exceed 40 percent of interior cross sectional area where three or more cables are contained within a single conduit.
3. Cable must be separated from any open conductors of Power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, as per NEC Article 760-29.
4. Wiring for 24 volt control, alarm notification, emergency communication and similar power-limited auxiliary functions may be run in the same conduit as initiating and signaling line circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.
5. Conduit shall not enter the fire alarm control panel, or any other remotely mounted control panel equipment or backboxes, except where conduit entry is specified by the equipment manufacturer.
6. Conduit shall be 3/4 inch minimum.
7. Install conduit attached to structure by straps, staples, hangers or similar fittings designed and installed to support conduit. Installation shall conform to DFCM requirements, NFPA 70 Article 760 and 300.4.
8. Conduit shall be rigid or EMT. Flexible conduit may be used for a drop to a single device. Metal clad or armored cable may be used as an alternate to conduit where installed and supported in accordance with NFPA 70, DFCM requirements and NEMA RV1. Use of metal clad or armored cable shall be limited to areas where cable is installed concealed above a ceiling or inside a wall cavity. Metal clad or armored cable shall have a red finish.
9. Conduit shall be concealed above ceilings or in walls where ceiling or walls are present. Conduit may be installed exposed in unfinished areas.
10. Conduit and junction boxes used for the fire alarm system shall be marked and labeled to

UTAH STATE VETERANS NURSING HOME – SALT LAKE CITY, UT  
FIRE ALARM SYSTEM UPGRADE  
DFCM PROJECT # 10017490

indicate that they are part of the building fire alarm system. Conduits shall be periodically marked with red paint and labeled to indicate the circuit type and designation contained inside. Junction boxes shall be painted red.

B. Wire:

1. All fire alarm system wiring must be new unless specified herein.
2. Wiring shall be in accordance with local, state and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 18 AWG (1.02 mm) for initiating device circuits and signaling line circuits, and 16 AWG for notification appliance circuits.
3. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.
4. All wiring shall be installed inside permanent conduit or raceway or contained inside approved junction boxes or enclosures.
5. The system shall permit the use of IDC and NAC wiring in the same conduit or raceway with the multiplex communication loop.
6. All field wiring shall be completely supervised. In the event of a primary power failure, disconnected standby battery, removal of any internal modules, or any open circuits in the field wiring; a trouble signal will be activated until the system and its associated field wiring are restored to normal condition.
7. Terminal Boxes, Junction Boxes and Cabinets: All boxes and cabinets shall be UL listed for their use and purpose.
8. The fire alarm control panel and remote notification circuit power supplies shall be connected to dedicated branch circuits. Existing power circuit to FACP to be removed may be reused. Each circuit shall be labeled at the power distribution panel as FIRE ALARM. Primary power wiring shall be 12 AWG. Cabinets shall be grounded securely to either a cold water pipe or grounding rod.
9. Existing wiring (except for existing protected premise fire safety functions that are transferred from existing to new fire alarm system) may not be reused. All existing wiring no longer in use shall be removed.

2.03 FIRE ALARM CONTROL PANEL:

- A. FACP shall be either Silent Knight model 5820 XL or Fire-Lite MS-9600 with DACT-UD.
- B. Install all required expansion modules to ensure adequate SLC loop capacity for all initiating devices and control relays shown on drawings with an additional reserve or a least 20% for future expansion.
- C. The FACP must have an integrated UL approved digital communicator. The communicator must allow local and remote up/downloading of system operating options, event history, and detector sensitivity data. The FACP must automatically test the smoke detectors in compliance with NFPA standards to ensure that they are within listed sensitivity parameters and be listed with Underwriters Laboratories for this purpose.
- D. The FACP must compensate for the accumulation of contaminants that affect detector sensitivity. Maintenance alert feature (differentiated from trouble condition), detector sensitivity selection, auto-programming mode (Jumpstart) and the ability to upgrade the core operating software on site or over the telephone.
- E. The main communication bus shall be capable of class A or class B configuration with a total Bus length of not less than 6,000 feet.

UTAH STATE VETERANS NURSING HOME – SALT LAKE CITY, UT  
FIRE ALARM SYSTEM UPGRADE  
DFCM PROJECT # 10017490

- F. The main control must have a built in annunciator with a minimum 80 character LCD display and feature LED's for General alarm, Supervisory, System trouble, System silence and Power. When in the normal condition the LCD shall display time and date which is capable of automatic daylight savings time adjustments. The annunciator must be able to silence and reset alarms through the use of a keypad-entered code, or by using a firefighter key. The annunciators must have twenty levels of user codes that will allow the limitation of operating system programming to authorized individuals.
- G. Provide all necessary system expansion modules required to provide a complete and functional fire alarm system as described on the project drawings and specified herein.

2.04 NOT USED:

2.05 ANNUNCIATOR PANELS:

- A. The fire system shall be capable of supporting up to eight remote annunciators. LCD Remote annunciators shall have the same control and display layout so that they match identically the built in annunciator on the FACP. Remote annunciators shall be capable of operating at a distance of 6000 feet from the main control panel on unshielded non-twisted cable.

2.06 DACT:

- A. The digital communicator shall be capable of reporting all zones or points of alarm, supervisory, and trouble as well as all system status information such as loss of AC, low battery, ground fault, loss of supervision to any remote devices with individual and distinct messages to a central station or remote station. The communicator must also be capable of up/downloading of all system programming options, Event history and Sensitivity compliance information to a PC on site or at a remote location. The communicator shall have an answering machine bypass feature that will allow the panel to respond to communication even on phone lines that have other communication equipment present. The communicator must be capable of reporting via SIA and Contact ID formats. The communicator shall have a delayed AC loss report function which will provide a programmable report delay plus a 10-25 min random component to help ease traffic to the central station during a power outage. DACT shall be integrated into the FACP circuitry or may be a separate card or panel connected to FACP and installed in FACP or adjacent enclosure. Configure DACT to transmit complete point address and description of device experiencing alarm, supervisory or trouble condition to central station.

2.07 SLC CIRCUITS:

- A. Each SLC shall be capable of a wiring distance of 10,000 feet from the SLC driver module and be capable of supporting at least 127 devices per loop. The communication protocol to SLC devices must be digital. Any SLC loop device, which goes into alarm, must interrupt the polling cycle for priority response from the FACP. The FACP must respond consistently to a device that goes into alarm on an SLC in under 3 seconds. The SLC shall be capable of functioning in a class A configuration.

2.08 SLC LOOP DEVICES:

- A. Devices supported must include analog photoelectric, ionization smoke detectors, analog heat detectors, manual pull stations, contact monitoring modules and relay output modules. There is to be no limit to the number of any particular device type that can be connected to the SLC.

2.09 ADDRESSABLE SYSTEM DEVICES - GENERAL:

UTAH STATE VETERANS NURSING HOME – SALT LAKE CITY, UT  
FIRE ALARM SYSTEM UPGRADE  
DFCM PROJECT # 10017490

- A. Addressable devices shall provide an address-setting means using rotary decimal switches.
  - 1. Addressable devices shall use simple to install and maintain address switches.
  - 2. Detectors shall be Analog and Addressable, and shall connect to the fire alarm control panel's Signaling Line Circuits.
  - 3. Addressable smoke and thermal detectors shall provide dual (2) status LEDs. Both LEDs shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LEDs shall be placed into steady illumination by the control panel, indicating that an alarm condition has been detected.
  - 4. Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72, Chapter 7.
  - 5. The detectors shall be ceiling-mount and shall include a separate twist-lock base which includes a tamper proof feature.
  - 6. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel.
  - 7. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (ION, PHOTO, THERMAL).
  - 8. Provide individual label for each addressable device to indicate device address. Label shall be permanently attached to device and shall be legible from the floor.

2.10 INTELLIGENT PHOTOELECTRIC SMOKE DETECTOR:

- A. The detectors shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.

2.11 INTELLIGENT THERMAL DETECTORS:

- A. Thermal detectors shall be intelligent addressable devices rated at 135 degrees Fahrenheit (58 degrees Celsius) fixed temperature element. Detectors incorporating a rate of rise mechanism shall not be used. Detector shall mount to a base that is connected to the fire alarm control panel signaling line circuit.

2.12 INTELLIGENT DUCT SMOKE DETECTOR:

- A. The in-duct smoke detector housing shall accommodate an intelligent photoelectric detector that provides continuous analog monitoring and alarm verification from the panel.
- B. When sufficient smoke is sensed, an alarm signal is initiated at the FACP, and appropriate action taken to shutdown air handling systems to help prevent the rapid distribution of toxic smoke and fire gases throughout the areas served by the duct system.

2.13 ADDRESSABLE DRY CONTACT MONITOR MODULE:

- A. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional alarm initiating devices (any N.O. dry contact device) to one of the fire alarm control panel SLC loops.
- B. The monitor module shall mount in a 4-inch square, 2-1/8 inch deep electrical box.

UTAH STATE VETERANS NURSING HOME – SALT LAKE CITY, UT  
FIRE ALARM SYSTEM UPGRADE  
DFCM PROJECT # 10017490

- C. The IDC zone shall be suitable for Class A Style D operation. An externally visible LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel. LED shall illuminate continuously when monitored device is in alarm state.

2.14 ADDRESSABLE CONTROL MODULE:

- A. Addressable control modules shall be provided to supervise and control the operation of one conventional NACs of compatible, 24 VDC powered, polarized audio/visual notification appliances. For fan shutdown and other auxiliary control functions, the control module may be set to operate as a dry contact relay.
- B. The control module shall mount in a standard 4-inch square, 2-1/8 inch deep electrical box, or to a surface mounted backbox.
- C. The control module NAC may be wired for Style Z (Class A) with up to 1 amp of inductive A/V signal, or 2 amps of resistive A/V signal operation, or as a dry contact (Form-C) relay. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary relay or NACs may be energized at the same time on the same pair of wires.
- D. Audio/visual power shall be provided by a separate supervised power loop from the main fire alarm control panel or from a supervised, UL listed remote power supply.
- E. The control module shall be suitable for pilot duty applications and rated for a minimum of 0.6 amps at 30 VDC.

2.15 MANUAL PULL STATIONS:

- A. Manual Fire Alarm Stations shall be non-coded, double action type, with a key operated test reset lock in order that they may be tested, and so designed that after actual emergency operation, they cannot be restored to normal except by use of a key. The reset key shall be so designed that it will reset the manual Pull Station and open the FACP cabinet without use of another key. An operated station shall automatically condition itself so as to visually detected, as operated, at a minimum distance of fifty feet, front or side. Manual stations shall be constructed of die cast metal with clearly visible operating instructions on the front of the station in raised letters. Stations shall be suitable for surface mounting on matching back box, or semi-flush mounting on a standard single gang box, and shall be installed within the limits defined by the Americans with Disabilities Act (ADA) dependent on Manual Station accessibility or per local requirements.

2.16 BATTERIES AND EXTERNAL CHARGER:

- A. Battery:
  - 1. Shall be 12 volt, Gell-Cell type.
  - 2. Battery shall have sufficient capacity to power the fire alarm system for not less than 24 hours plus 5 minutes of alarm upon a normal AC power failure.
  - 3. The batteries are to be completely maintenance free. No liquids are required. Fluid level checks refilling, spills and leakage shall not be required.
- B. External Battery Charger:

UTAH STATE VETERANS NURSING HOME – SALT LAKE CITY, UT  
FIRE ALARM SYSTEM UPGRADE  
DFCM PROJECT # 10017490

1. Shall be completely automatic, with constant potential charger maintaining the battery fully charged under all service conditions. Charger shall operate from a 120-volt 60 hertz source.
2. Shall be rated for fully charging a completely discharged battery within 48 hours while simultaneously supplying any loads connected to the battery.
3. Shall have protection to prevent discharge through the charger.
4. Shall have protection for overloads and short circuits on both AC and DC sides.

2.17 ENCLOSURES:

- A. The control panels shall be housed in a UL listed cabinet suitable for surface or semi-flush mounting. Cabinet and front shall be corrosion protected, given a rust-resistant prime coat, and manufacturer's standard finish.
- B. The back box and door shall be constructed of 0.060 steel with provisions for electrical conduit connections into the sides and top.
- C. The door shall provide a key lock and shall include a glass or other transparent opening for viewing of all indicators.
- D. The control unit shall be modular in structure for ease of installation, maintenance, and future expansion.

2.18 NOTIFICATION APPLIANCES:

- A. The visible and audible/visible signals shall be listed by Underwriters Laboratories Inc. per UL 1971 and/or 1638.
- B. Each indicating appliance circuit shall be electrically supervised for opens, grounds and short circuit faults, on the circuit wiring, and shall be so arranged that a fault condition on any indicating appliance circuit or group of circuits will not cause an alarm to sound. The occurrence of any fault will light the trouble LED and sound the system trouble sounder, but will not interfere with the proper operation of any circuit which does not have a fault condition.
- C. The notification appliance (combination audible/visible units only) shall produce a peak sound output of 90dba or greater as measured in an anechoic chamber. The visible signaling appliance shall maintain a minimum flash rate of 1Hz or greater regardless of power input voltage. The appliance shall also be capable of meeting the candela requirements of the blueprints presented by the Engineer and ADA. The appliance shall be capable of synchronization with all other appliances in the same field of view.
- D. The appliance shall be polarized to allow for electrical supervision of the system wiring.
- E. The unit shall be provided with terminals with barriers for input/output wiring and be able to mount a single gang or double gang box or double workbox with the use of an adapter plate.
- F. The unit shall have an input voltage range of 20-30 volts with either direct current or full wave rectified power.

2.19 SPARE DEVICES:

- A. Furnish the owner with a stock of spare initiating devices and notification appliances to allow for future addition/relocation of devices or replacement of equipment that fails after expiration of the

UTAH STATE VETERANS NURSING HOME – SALT LAKE CITY, UT  
FIRE ALARM SYSTEM UPGRADE  
DFCM PROJECT # 10017490

warranty period. Manufacturer and model number of spare devices shall match those of devices used for the system installation. Minimum number and type of devices per building shall be as indicated below:

1. Four addressable smoke detectors.
2. One addressable manual pull station.
3. One addressable contact monitor module.
4. One addressable control module.
5. Six notification appliances corresponding to the type and proportion of notification appliances installed.
6. One addressable duct mounted smoke detector (duct mounting kit and sampling tube).

**PART III - EXECUTION**

3.01 INSPECTION:

- A. Contractor shall be responsible to attend a mandatory pre-bid walk through of the building. If required, an additional pre-bid inspection can be arranged. The contractor shall be responsible to examine all areas and conditions under which fire alarm systems are to be installed and identify conditions detrimental to proper completion of the work. All unsatisfactory conditions shall be specifically identified in the bid.
- B. Extent and location of existing fire alarm equipment shown on bid drawings is based on informal field surveys of each building and should be considered to be approximate. Contractor shall be responsible to conduct a detailed inspection to verify conditions prior to preparing shop drawings and/or installing the new fire alarm system.

3.02 INSTALLATION:

- A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.
- B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period.
- C. All fire detection and alarm system devices, control panels and remote annunciators (unless otherwise noted on drawings) shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.
- D. Contractor is responsible for making his own job check and any necessary adjustments in the design prior to installation. Make final coordination with existing building elements and adjust design as necessary. Major conflicts shall be brought to the attention of the Project Engineer for resolution.
- E. Work shall be performed in a manner to minimize interruptions in service of the existing fire alarm system. Contractor shall be responsible to provide a fire watch throughout all times that the automatic fire alarm and detection service is interrupted. Off-premise monitoring of the fire sprinkler control valves and water flow switches shall be provided at all times.
- F. Existing conduit and junction boxes not used for the new fire alarm system may remain. Contractor shall remove all existing wiring from abandoned conduits and junction boxes. Abandoned junction boxes in finished areas shall be covered with a decorative plate (to be approved by the owner).

UTAH STATE VETERANS NURSING HOME – SALT LAKE CITY, UT  
FIRE ALARM SYSTEM UPGRADE  
DFCM PROJECT # 10017490

- G. Work only in one area of a building at a time. Complete all required work in that area before proceeding to the next area.
- H. Contractor shall prepare a schedule of work to be performed and submit the schedule to the building coordinator for review/approval.
- I. Work during normal business hours will be allowed but must be scheduled in advance with building coordinator. Operations involving the creation of dust, debris or distracting noise shall be scheduled in advance with the building coordinator and shall be performed early in the morning or near the end of the work day.

3.03 FIELD QUALITY CONTROL:

- A. Obtain permits and post bonds as required by state and local AHJ's (Authorities Having Jurisdiction).
- B. Inform AHJ's of job progress. Request presence of AHJ's, perform tests, and document results using Contractor's Material and Test Certificates.

3.04 TESTING/TRAINING:

- A. Make and pay for all tests required by applicable codes during and after completion of the work and correct and defects in the systems indicated by the tests.
- B. The service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment shall be provided to technically supervise and participate during all of the adjustments and tests for the system.
- C. Testing shall include but not be limited to the following:
  - 1. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.
  - 2. Open initiating device circuits and verify that the trouble signal actuates.
  - 3. Open signaling line circuits and verify that the trouble signal actuates.
  - 4. Open and short notification appliance circuits and verify that trouble signal actuates.
  - 5. Ground initiating device circuits and verify response of trouble signals.
  - 6. Ground signaling line circuits and verify response of trouble signals.
  - 7. Ground notification appliance circuits and verify response of trouble signals.
  - 8. Check alert tone and prerecorded voice message to all alarm notification devices.
  - 9. Check installation, supervision, and operation of all intelligent smoke detectors using walk test.
  - 10. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.
  - 11. Test system batteries to verify that secondary power supply is sufficient to provide specified standby and alarm power.
- D. Train the Owner's maintenance personnel in the proper operation, testing and maintenance of all installed equipment. Training shall be sufficient to enable owner to service equipment, add or remove devices and make programming changes.

UTAH STATE VETERANS NURSING HOME – SALT LAKE CITY, UT  
FIRE ALARM SYSTEM UPGRADE  
DFCM PROJECT # 10017490

3.05 FINAL INSPECTION:

- A. At the final inspection, a factory-trained representative of the manufacturer of the major equipment shall demonstrate that the system functions properly in every respect.

3.06 INSTRUCTION:

- A. Instruction shall be required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.
- B. The contractor and/or the systems manufacturer's representatives shall provide a typewritten "Sequence of Operation"

3.07 CLEANING:

- A. Remove dust, scale, debris, and foreign substances from interior and exterior of devices, equipment, and materials prior to installation.
- B. Upon job completion, remove tools, surplus materials and equipment, leaving all areas broom clean.

3.07 AUTHORITIES HAVING JURISDICTION:

- A. Acceptance of installation is subject to final inspection and approval by:
  - 1. State of Utah Fire Marshal's Office
  - 2. State of Utah Division of Facilities and Construction Management
  - 3. Building Maintenance Personnel
  - 4. Project Engineer.

END OF SECTION 13851

**FIRE ALARM SYSTEM GENERAL NOTES**

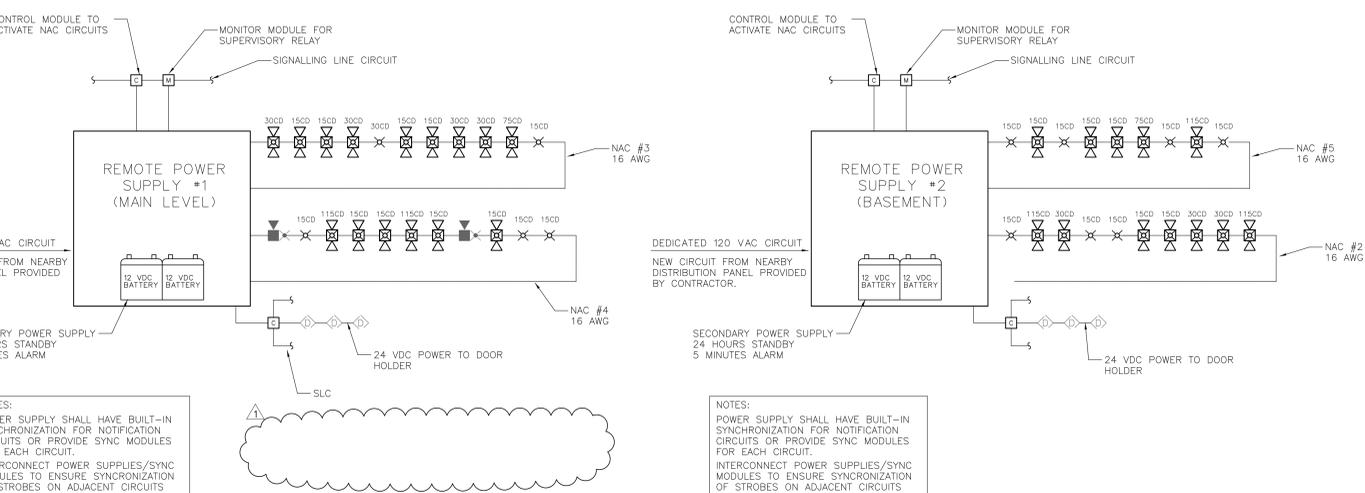
- SCOPE OF WORK: WORK SHALL INCLUDE REMOVAL OF EXISTING SIMPLEX FIRE ALARM SYSTEM INCLUDING ALL CONTROL EQUIPMENT, POWER SUPPLIES, CABINETS, INT. CIRCUITS AND DEVICES, NOTIFICATION APPLIANCE CIRCUITS AND DEVICES, INSTALL NEW FIRE ALARM SYSTEMS INCLUDING CONTROL PANELS WITH NEW SIGNALING LINE CIRCUITS, INITIATING DEVICES AND NOTIFICATION APPLIANCE CIRCUITS. NEW FIRE ALARM SYSTEM SHALL BE IN ACCORDANCE WITH NFPA 72, THESE DRAWINGS AND SPECIFICATIONS.
- APPLICABLE CODES/STANDARDS: INTERNATIONAL BUILDING CODE - 2009 EDITION INTERNATIONAL FIRE CODE - 2009 EDITION UTAH STATE FIRE MARSHAL RULE R710-4 NFPA 70 - 2008 EDITION NFPA 72 - 2007 EDITION NFPA 101 - 2009 EDITION
- QUALITY ASSURANCE: ALL EQUIPMENT, MATERIAL AND DEVICES USED FOR THE FIRE ALARM SYSTEM INSTALLATION SHALL BE LISTED AND/OR FM APPROVED FOR USE IN FIRE PROTECTION SYSTEMS. ALL INITIATING DEVICES SHALL BE LISTED COMPATIBLE WITH THE FIRE ALARM CONTROL PANEL (FACP). MAJOR SYSTEM COMPONENTS (CONTROL PANELS, INITIATING DEVICES, ADDRESSABLE MODULES AND RELAYS, POWER SUPPLIES, ETC.) SHALL BE FROM A STATE OF UTAH DFCM APPROVED MANUFACTURER. APPROVED MANUFACTURERS INCLUDE FIRE-LITE AND SILENT KNIGHT.
- SUBMITTALS: CONTRACTOR SHALL PREPARE AND SUBMIT COMPLETE SHOP DRAWINGS AND CALCULATIONS FOR FIRE ALARM SYSTEM TO STATE FIRE MARSHAL, OWNER AND ENGINEER FOR REVIEW/ APPROVAL PRIOR TO ORDERING OR INSTALLING ANY EQUIPMENT. SUBMITTALS SHALL CONFORM TO THE CONSTRUCTION DOCUMENTS REQUIREMENTS OF IFC 907.1.1.
- DEMOLITION: IT IS THE INSTALLER'S RESPONSIBILITY FOR THE DEMOLITION OF THE EXISTING FIRE ALARM SYSTEM. EXISTING DEVICES AND CONDUIT NOT BEING REPLACED AND REUSED THAT ARE VISIBLE, SUCH AS CABINETS, NOTIFICATION APPLIANCES OR SMOKE DETECTORS SHALL BE REMOVED AND REMAINING WALL OR CEILING SURFACE REPAIRED OR REPLACED TO MATCH SURROUNDING AREAS (U.A.O.). REMOVE ALL UNUSED WIRE IN ALL REMAINING J-BOXES AND/OR CONDUITS. ANY CEILING TILE DAMAGED BY THE INSTALLER MUST BE REPLACED WITH THE SAME OR EQUIVALENT TILE.
- SYSTEM TYPE: FIRE ALARM SYSTEM SHALL MEET THE REQUIREMENTS FOR PROTECTED PREMISE FIRE ALARM SYSTEMS. SYSTEM SHALL PROVIDE OFF-PREMISE NOTIFICATION OF STATUS TO CENTRAL STATION DETERMINED BY OWNER.
- OCCUPANT NOTIFICATION: RECEIPT OF ANY FIRE ALARM SIGNAL AT THE FACP SHALL RESULT IN THE ACTIVATION OF ALL NOTIFICATION APPLIANCES IN THE BUILDING (STROBES AND HORN/STROBES), FOR PURPOSES OF FIRE ALARM NOTIFICATION, THE BUILDING SHALL BE CONSIDERED AS A SINGLE ZONE.
- WIRING/CONDUIT: ALL WIRING SHALL BE NEW EXISTING WIRING MAY NOT BE RE-USED AND SHALL BE FREE OF OPENS, SHORTS AND GROUNDING. ALL WIRING SHALL BE INSTALLED IN RIGID CONDUIT OR EMT. METAL CLAD OR ARMORED CABLE MAY BE USED WHERE INSTALLED AND SUPPORTED PER NFPA 70, DFCM REQUIREMENTS AND NEMA STANDARD RVL. MINIMUM CONDUIT SIZE SHALL BE 3/4". CONDUIT SHALL BE CONCEALED IN FINISHED AREAS AND MAY BE EXPOSED IN UNFINISHED AREAS. PAINT EXPOSED CONDUIT TO MATCH COLOR OF SURROUNDING BUILDING ELEMENTS. ALL PENETRATIONS THROUGH RATED PARTITIONS SHALL BE FIRE STOPPED WITH A SUITABLE CAULKING COMPOUND. ALL WIRING USED IN THE FIRE ALARM SYSTEM SHALL BE FPL (FIRE POWER LIMITED) WITH MINIMUM 300V INSULATION OR EQUIVALENT AS PER NFPA 70 ARTICLE 760.
- WIRING STYLES/PER NFPA 72): INITIATING DEVICE CIRCUITS SHALL MEET THE REQUIREMENTS FOR CLASS A STYLE D CIRCUITS. SIGNALING LINE & SBUS CIRCUITS SHALL MEET THE REQUIREMENTS FOR CLASS A STYLE 6 OR 7 CIRCUITS. NOTIFICATION APPLIANCE CIRCUITS SHALL MEET THE REQUIREMENTS FOR CLASS A STYLE Z.
- POWER EXISTING DEDICATED BRANCH CIRCUITS MAY BE REUSED TO PROVIDE PRIMARY POWER TO NEW FACP AND REMOTE NOTIFICATION CIRCUIT POWER SUPPLIES. FURNISH A BATTERY BACKUP TO PROVIDE SECONDARY POWER SUPPLY TO FIRE ALARM PANEL AND NOTIFICATION CIRCUIT POWER SUPPLIES. BATTERY BACKUP SHALL BE OF SUFFICIENT CAPACITY TO PROVIDE 24 HOURS OF STANDBY POWER WITH AN ADDITIONAL RESERVE TO OPERATE SYSTEM FOR 5 MINUTES IN ALARM.
- INITIATING DEVICES: DUCT SMOKE DETECTORS: INSTALL DUCT SMOKE DETECTORS IN SUPPLY AND RETURN DUCTS OF ALL AIR HANDLERS WITH A CAPACITY IN EXCESS OF 2,000 CFM. SMOKE DETECTORS: PROVIDE SMOKE DETECTORS WHERE SHOWN ON PLANS IN ALL CORRIDORS AND LOBBIES. MAXIMUM SPACING OF DETECTORS SHALL BE 30' BETWEEN DETECTORS OR 15' FROM FURTHEST WALL. MANUAL PULL STATIONS: INSTALL NEW PULL STATIONS AT SAME LOCATION AND HEIGHT AS EXISTING PULL STATIONS USING EXISTING JUNCTION BOXES. WHERE NEW MANUAL PULL STATIONS ARE INDICATED ON THE PLAN INSTALL WITH OPERATING ELEMENT AT 48" AFF. SLC CIRCUITS: SLC LOOP DEVICE ADDRESSING SHALL NOT EXCEED 160 DEVICES (80 DETECTORS AND 80 MODULES) PER LOOP. AT LEAST 20 ADDRESSES (20%) SHALL BE LEFT VACANT ON EACH SLC LOOP IN ORDER TO ALLOW SPACE FOR ADJUSTMENTS/EXPANSION.
- NOTIFICATION APPLIANCES: PROVIDE AUDIBLE AND VISUAL NOTIFICATION APPLIANCES THROUGHOUT BUILDING AS SHOWN ON PLANS. VOLUME OF HORNS SHALL BE SUFFICIENT TO PROVIDE A SOUND LEVEL OF 15 Db ABOVE AMBIENT IN ALL OCCUPIED AREAS. VISIBLE ALARMS SHALL BE PROVIDED THROUGHOUT ALL OCCUPIED AREAS OF THE BUILDING EXCEPT PATIENT ROOMS (PRIVATE MODE). STROBES SHALL FLASH IN SYNCHRONIZATION.
- PROTECTED PREMISE FIRE SAFETY FUNCTIONS: INSTALL PROGRAMMABLE OUTPUT MODULES WITH RELAY CONTACTS TO INITIATE REQUIRED FIRE SAFETY FUNCTIONS (DOOR RELEASE, FAN SHUTDOWN, ELEVATOR RECALL, ETC.). OUTPUT MODULES SHALL BE INSTALLED WITHIN 36" OF DEVICE OR CIRCUIT CONTROLLED. ALL EXISTING PROTECTED PREMISE FIRE SAFETY FUNCTIONS CONTROLLED BY EXISTING FIRE ALARM SYSTEM SHALL BE MIGRATED TO NEW SYSTEM AND TESTED TO VERIFY PROPER FUNCTION.
- PHASING: PLAN SEQUENCE OF WORK TO COMPLETE INSTALLATION OF NEW FIRE ALARM SYSTEM PRIOR TO DEMOLITION OF EXISTING SYSTEM TO AVOID DISRUPTION OF FIRE ALARM SERVICE FOR OCCUPIED BUILDING. WHERE FIRE ALARM SYSTEM DISRUPTION OCCURS FOR A PERIOD OF LONGER THAN 4 HOURS WITHIN A 24 HOUR PERIOD CONTRACTOR SHALL PROVIDE AN APPROVED FIRE WATCH. IT IS THE INSTALLER'S RESPONSIBILITY TO NOTIFY PROPER AUTHORITIES AND PROVIDE A FIRE WATCH DURING INTERRUPTIONS OF FIRE DETECTION AND ALARM SERVICE IN THE BUILDING.
- TESTING: SCHEDULE AND PERFORM ALL ACCEPTANCE TESTS REQUIRED BY NFPA 72. TESTING SHALL BE WITNESSED BY STATE FIRE MARSHAL'S OFFICE, PROJECT ENGINEER, DFCM AND BUILDING MAINTENANCE PERSONNEL. SUBMIT A WRITTEN TESTING PLAN DETAILING EACH TEST TO BE PERFORMED TO EACH AGENCY AT LEAST ONE DAY PRIOR TO SCHEDULED TEST.

**FIRE ALARM SYSTEM KEY NOTES**

- FURNISH AND INSTALL NEW ADDRESSABLE FIRE ALARM CONTROL PANEL (SILENT KNIGHT 5820XL OR FIRE-LITE MS-9600 WITH DACT -UD) IN EXISTING ELECTRICAL ROOM. FACP SHALL BE CONNECTED TO ALL NEW AND EXISTING FIRE ALARM INITIATING DEVICES AND NOTIFICATION APPLIANCES IN THE BUILDING. FACP SHALL PROVIDE ALL REQUIRED PROTECTED PREMISE FIRE SAFETY FUNCTIONS (FIRE DOOR RELEASE, FAN SHUTDOWN, ELEVATOR RECALL, ETC.). FACP SHALL RELAY FIRE ALARM SUPERVISORY SIGNALS TO OFF-PREMISE MONITORING COMPANY. SELECTED BY OWNER USING DIGITAL COMMUNICATOR AND NEW OR EXISTING PHONE LINES (PRIMARY AND SECONDARY).
- PROVIDE REMOTE POWER SUPPLIES TO PROVIDE 24 VDC POWER TO NOTIFICATION APPLIANCE CIRCUITS AND MAGNETIC DOOR HOLD-OPEN DEVICES. SURFACE MOUNT ON WALL. PROVIDE ADDRESSABLE MONITOR MODULE TO SUPERVISE TROUBLE OUTPUT OF POWER SUPPLY. PROVIDE CONTROL MODULE TO ACTIVATE NOTIFICATION CIRCUITS UPON RECEIPT OF FIRE ALARM SIGNAL AT FACP. PROVIDE BATTERIES FOR SECONDARY POWER SUPPLY. SIZE BATTERIES TO PROVIDE 24 HOURS OF STANDBY POWER WITH AN ADDITIONAL RESERVE TO PROVIDE 5 MINUTES OF ALARM POWER. SYNC MODULE TO SYNCHRONIZE ALL STROBE FLASHES WITHIN A SINGLE FIELD OF VIEW.
- FURNISH AND INSTALL NEW ANNUNCIATOR PANEL FOR ADDRESSABLE FIRE ALARM SYSTEM AT MAIN ENTRANCE AND NURSE'S STATIONS (MAIN LEVEL AND BASEMENT). INSTALL ANNUNCIATOR PANEL AT 54" AFF ON RECESSED JUNCTION BOX WITH CONDUIT CONCEALED IN WALL.
- FURNISH AND INSTALL MODULE TO MONITOR STATUS OF EXISTING WET CHEMICAL FIRE SUPPRESSION SYSTEM IN KITCHEN. CONNECT TO EXISTING CONTACTS THAT ARE PART OF THE FIRE SUPPRESSION SYSTEM CONTROLS.
- EXISTING FIRE DOOR MAGNETIC HOLD-OPEN DEVICE TO REMAIN. CONNECT DEVICE TO NEW FACP OR FIRE ALARM POWER SUPPLY TO PROVIDE POWER AND CONTROL. PROGRAM DOOR HOLD-OPEN DEVICE TO RELEASE UPON RECEIPT OF ANY FIRE ALARM SIGNAL AT FACP.
- PROVIDE PROGRAMMABLE RELAY TO CLOSE EXISTING FIRE/SMOKE DAMPER IN DUCT. PROGRAM RELAY TO CLOSE DAMPERS UPON RECEIPT OF ANY FIRE ALARM SIGNAL AT FACP. PROVIDE AT LEAST ONE RELAY MODULE PER LEVEL. ADDITIONAL RELAY MODULES MAY BE REQUIRED DEPENDING ON NUMBER AND CONFIGURATION OF POWER CIRCUITS TO DAMPERS. CONTRACTOR SHALL VERIFY NUMBER AND LOCATION OF DAMPERS AND POWER CIRCUITS.
- FURNISH AND INSTALL A PROGRAMMABLE RELAY TO SHUT DOWN EACH AIR HANDLER WITH A CAPACITY IN EXCESS OF 2,000 CFM. CONTROL RELAYS SHALL BE NORMALLY ENERGIZED AND FAN CONTROLS SHALL BE CONNECTED TO NORMALLY CLOSED CONTACTS ON THE RELAYS. RELAYS SHALL BE PROGRAMMED TO SHUT DOWN ALL AIR HANDLERS SIMULTANEOUSLY UPON ACTIVATION OF ANY AREA OR DUCT SMOKE DETECTOR AND SHALL NOT RESTORE UNTIL THE FACP HAS RESET. FIELD VERIFY LOCATION OF HVAC CONTROLS.
- FURNISH AND INSTALL DETECTORS AT EACH ELEVATOR LOBBY, AT THE TOP OF ELEVATOR SHAFT AND IN ELEVATOR EQUIPMENT ROOM TO PROVIDE ELEVATOR RECALL FUNCTIONS IN ACCORDANCE WITH NFPA 72 AND ASME A17. PROVIDE ADDRESSABLE RELAYS TO INTERFACE WITH ELEVATOR CONTROLS AND PROGRAM RECALL FUNCTIONS AS FOLLOWS:  
1. OPERATION OF SMOKE DETECTOR IN ELEVATOR EQUIPMENT ROOM, SHAFT OR ELEVATOR LOBBY IN BASEMENT - ELEVATOR RECALLS TO 1ST LEVEL (PRIMARY RECALL).  
2. OPERATION OF SMOKE DETECTOR ON MAIN LEVEL - ELEVATOR RECALLS TO BASEMENT (SECONDARY RECALL).  
OWNER TO PAY FOR SERVICE CALLS FROM ELEVATOR SERVICE CONTRACTOR REQUIRED FOR SYSTEM INTERFACE.
- FURNISH AND INSTALL MODULES TO MONITOR FIRE SPRINKLER CONTROL VALVE SUPERVISORY (INTERIOR AND EXTERIOR) AND WATER FLOW SWITCHES. CONNECT TO CONTACTS ON EXISTING SWITCHES. EXISTING CONDUIT AND WIRING FROM FIRE SPRINKLER RISER TO EXTERIOR POST INDICATOR MAY BE REUSED.
- FURNISH AND INSTALL PROGRAMMABLE RELAY TO OPERATE ROLL DOWN FIRE DOOR AT ELEVATOR SHAFT ON EACH LEVEL. PROGRAM DOORS TO RELEASE UPON RECEIPT OF ANY FIRE ALARM SIGNAL AT FACP. EXISTING DOORS ARE NOT FUNCTIONAL AND SHALL BE REPAIRED BY OWNER UNDER SEPARATE CONTRACT.
- EXISTING FIRE ALARM NOTIFICATION APPLIANCE TO REMAIN. CONNECT DEVICE TO NEW NOTIFICATION APPLIANCE CIRCUIT FOR NEW FIRE ALARM SYSTEM.

**5 WIRE SCHEDULE**

CIRCUIT	NUMBER OF CONDUCTORS	CIRCUIT CLASS	CIRCUIT STYLE	WIRE GAUGE (MIN)	GRAPHIC DESIGNATION
NOTIFICATION APPLIANCE CIRCUIT (NAC)	2	A	Z	16 AWG	---
SIGNALING LINE CIRCUIT (SLC)	2	A	6 OR 7	18 AWG	---
INITIATING DEVICE CIRCUIT (IDC)	2	A	D	18 AWG	.....
SBUS CIRCUIT	4	A	6 OR 7	18 AWG	-X-X-

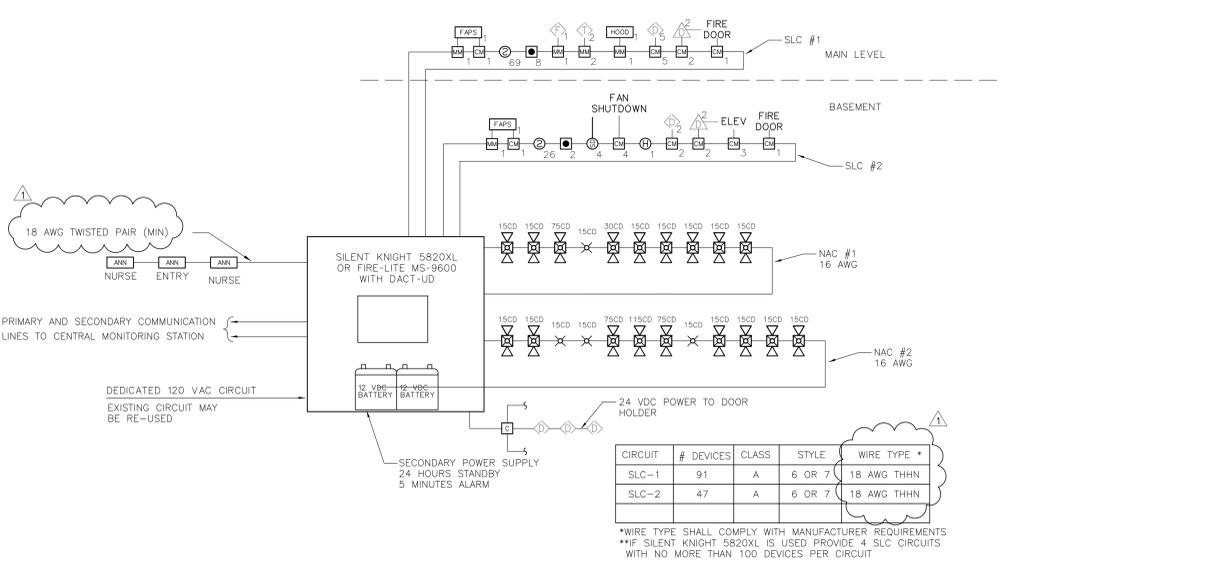


**3 REMOTE POWER SUPPLY #1**  
NTS

**4 REMOTE POWER SUPPLY #2**  
NTS

**OUTPUT ACTIONS**

	ACTIVATE LOCAL FIRE ALARM NOTIFICATION APPLIANCES (ALL CIRCUITS)	TRANSMIT FIRE ALARM SIGNAL TO CENTRAL STATION	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION	SOUND TROUBLE ALARM AT FACP AND ANNUNCIATOR	RECALL ELEVATOR TO 1ST LEVEL (PRIMARY RECALL)	RECALL ELEVATOR TO BASEMENT (SECONDARY RECALL)	SHUT DOWN AIR HANDLERS	RELEASE DOOR HOLD-OPEN DEVICES	CLOSE FIRE/SMOKE DAMPERS
ACTIVATION OF ANY AREA SMOKE DETECTOR	X	X					X	X	X
ACTIVATION OF ANY MANUAL PULL STATION	X	X					X	X	X
ACTIVATION OF ANY DUCT SMOKE DETECTOR	X		X				X		
ACTIVATION OF FIRE SPRINKLER FLOW SWITCH	X	X					X	X	X
ACTIVATION OF FIRE SPRINKLER VALVE TAMPER SWITCH	X		X				X		
ACTIVATION OF ANY SMOKE DETECTOR IN ELEVATOR EQUIPMENT ROOM OR SHAFT	X	X		X	X	X	X	X	X
ACTIVATION OF ANY SMOKE DETECTOR IN ELEVATOR LOBBY (1ST LEVEL)	X	X		X	X	X	X	X	X
ACTIVATION OF ANY SMOKE DETECTOR IN ELEVATOR LOBBY (BASEMENT, 2ND, 3RD & 4TH LEVELS)	X	X		X	X	X	X	X	X
LOSS OF AC POWER			X						
LOW BATTERY VOLTAGE			X						
REMOTE POWER SUPPLY TROUBLE			X						
CIRCUIT FAULTS			X						



**1 FIRE ALARM SINGLE LINE RISER**  
NTS

**2 SEQUENCE OF OPERATION**

**FIRE ALARM EQUIPMENT LEGEND**

DEVICE	DESCRIPTION	MOUNTING	REMARKS
FACP	NEW ADDRESSABLE FIRE ALARM CONTROL PANEL	SURFACE MOUNT ON WALL AT 48" AFF TO CENTER OF CABINET	SILENT KNIGHT 5820XL OR FIRE-LITE MS-9600 WITH DACT-UD
FACP	EXISTING FIRE ALARM CONTROL PANEL	EXISTING TO BE REMOVED	EXISTING TO BE REMOVED
FAPS	NOTIFICATION APPLIANCE POWER SUPPLY	SURFACE MOUNT ON WALL	SILENT KNIGHT 9400, FIRE LITE FSP-2400 OR EQUAL
ANN	NEW FIRE ALARM REMOTE ANNUNCIATOR	MOUNT AT 54" AFF ON RECESSED J-BOX WITH CONDUIT CONCEALED IN WALL	SILENT KNIGHT 6800R OR FIRE LITE 6810-RD
ANN	EXISTING ADDRESSABLE ANNUNCIATOR	EXISTING TO BE REMOVED	REMOVE EXISTING ANNUNCIATOR AND INSTALL COVER PLATE
⊙	NEW ADDRESSABLE PHOTOELECTRIC SMOKE DETECTOR	CEILING MOUNT ON RECESSED J-BOX	SILENT KNIGHT SK-PHOTO OR FIRE LITE S2000. MAXIMUM SPACING OF 30' ON CENTER
⊙	EXISTING SMOKE DETECTOR	EXISTING TO BE REMOVED	REMOVE EXISTING DETECTOR AND REPLACE CEILING TILE
⊙	EXISTING HEAT DETECTOR	EXISTING TO BE REMOVED	REMOVE EXISTING DETECTOR AND REPLACE CEILING TILE
⊙	NEW ADDRESSABLE PULL STATION	MOUNT 42" TO 48" AFF ON NEW OR EXISTING J-BOX WITH CONDUIT CONCEALED IN WALL	SILENT KNIGHT SK-PULL-DA OR FIRE LITE 861-10LA
⊙	EXISTING PULL STATION	EXISTING TO BE REMOVED	REMOVE EXISTING PULL STATION. EXISTING J-BOX MAY BE REUSED FOR NEW PULL STATION AT SAME LOCATION
⊙	NEW DUCT MOUNTED SMOKE DETECTOR	SUPPLY AND/OR RETURN DUCTS OF AIR HANDLERS PER MANUFACTURER'S REQUIREMENTS	SILENT KNIGHT SK-DUCT OR FIRE LITE FSP-2400. MAXIMUM SPACING IN EXCESS OF 2,000 CFM
⊙	EXISTING DUCT MOUNTED SMOKE DETECTOR	EXISTING TO BE REMOVED	REMOVE EXISTING DETECTOR HOUSING AND DAMPING TUBES
⊙	NEW ADDRESSABLE MONITOR MODULE	MOUNT ON J-BOX WITHIN 3' OF DEVICE OR CIRCUIT MONITORED	SILENT KNIGHT SK-MONITOR OR FIRE LITE MS-300. TO MONITOR CONVENTIONAL INITIATING DEVICES AS AN ADDRESSABLE POINT
⊙	NEW ADDRESSABLE CONTROL RELAY	MOUNT ON J-BOX WITHIN 3' OF DEVICE OR CIRCUIT BEING CONTROLLED	SILENT KNIGHT SK-RELAY OR FIRE LITE FSP-2400. FOR INITIATION OF PROTECTED PREMISE FIRE SAFETY FUNCTIONS (DOOR RELEASE, FAN SHUTDOWN, ELEVATOR RECALL, ETC.)
⊙	EXISTING CONTROL RELAY	EXISTING TO BE REMOVED	REMOVE EXISTING FIRE ALARM RELAYS
⊙	EXISTING WATER FLOW SWITCH	EXISTING TO REMAIN	EXISTING SWITCH TO REMAIN. CONNECT TO NEW FIRE ALARM SYSTEM
⊙	EXISTING VALVE SUPERVISORY SWITCH	EXISTING TO REMAIN	EXISTING SWITCH TO REMAIN. CONNECT TO NEW FIRE ALARM SYSTEM
⊙	EXISTING MAGNETIC DOOR HOLD-OPEN DEVICE	EXISTING TO REMAIN	EXISTING SWITCH TO REMAIN. POWER AND CONTROL TO DEVICE PROVIDED FROM NEW FIRE ALARM SYSTEM
⊙	EXISTING MONITORED SMOKE DAMPER	EXISTING TO REMAIN	EXISTING DAMPERS AND POWER SUPPLY TO REMAIN. INSTALL CONTROL RELAYS TO CLOSE DAMPERS UPON ACTIVATION OF FIRE ALARM SYSTEM
⊙	NEW FIRE ALARM HORN/STROBE	CEILING MOUNT ON RECESSED J-BOX	SYSTEM SENSOR (HOW WHITE) OR EQUAL. STROBES SHALL BE SYNCHRONIZED WITH ALL OTHER STROBES IN NEW POWER TO DEVICE FROM FACP OR FAPS. CANDELA RATING SHALL BE AS INDICATED ON DRAWINGS
⊙	NEW FIRE ALARM STROBE	CEILING MOUNT ON RECESSED J-BOX	SYSTEM SENSOR (HOW WHITE) OR EQUAL. STROBES SHALL BE SYNCHRONIZED WITH ALL OTHER STROBES IN NEW POWER TO DEVICE FROM FACP OR FAPS. CANDELA RATING SHALL BE AS INDICATED ON DRAWINGS
⊙	EXISTING FIRE ALARM HORN/STROBE	EXISTING TO BE REMOVED	REMOVE EXISTING NOTIFICATION APPLIANCE AND CIRCUIT. INSTALL COVER PLATE ON REMAINING J-BOX
⊙	EXISTING EXTERIOR FIRE ALARM HORN	EXISTING TO BE REMOVED	REMOVE EXISTING NOTIFICATION APPLIANCE AND CIRCUIT. INSTALL COVER PLATE ON REMAINING J-BOX
⊙	EXISTING EXTERIOR FIRE ALARM HORN/STROBE	EXISTING TO BE REMAIN	EXISTING DEVICE TO REMAIN. CONNECT TO NEW FIRE ALARM SYSTEM

08/03/10

PROJ CONSULTANTS  
185 South 400 East Suite 202  
Provo, UT 84601-7096 FAX (801) 996-2561  
P.O. Box 1000  
Salt Lake City, UT 84101-1000

JOB NO: 104542  
DWG ISSUE: ADD #1

DRAWN BY: BBH  
CHECKED BY: GTJ

REVISIONS:  
ADDENDUM #1  
09/07/10

DRAWING DATE: 08/03/10  
REVISION DATE: 09/07/10

UTAH STATE VETERAN'S NURSING HOME  
700 Foothill Blvd.,  
Salt Lake City, Utah

FIRE ALARM SYSTEM UPGRADE  
DFCM PROJECT #10017490

DETAILS AND CALCULATIONS  
FA-7