



State of Utah

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Department of Administrative Services

KIMBERLY K. HOOD  
Executive Director

Division of Facilities Construction and Management

DAVID G. BUXTON  
Director

## ADDENDUM NO. 1

Date: August 30, 2010

To: Contractors

From: Wayne Smith

Reference: Camp Williams Fire Alarm Upgrade  
Utah National Guard ó Draper, Utah

Project No.10179480

Subject: **Addendum No. 1**

Pages	Addendum	1 page
	<u>Consultants Addendum</u>	<u>19 pages</u>
	Total	20 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 changes to the project schedule.

**1.2 GENERAL** ó Protection Consultants, Inc. ó Please see attached.

**Utah!**  
Where ideas connect



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**Date:** August 28, 2010

**To:** Wayne Smith  
State of Utah DFCM

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

**Project:** Camp Williams Fire Alarm Upgrade – DFCM 10179480

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

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Based on questions presented and conditions observed in the pre-bid walkthroughs held Monday August 23 and Tuesday August 24, several revisions were made to the drawings and specifications for the fire alarm system upgrade. In addition, two 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 specification 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:**

The data sheet for the EST monitor modules have distance limitations, do we have accurate distances from all the buildings when we are using the phone lines to connect to the monitor modules to be located in building 6170 ? .

**Response 1:**

The data sheet for the EST SIGA-CT monitor module indicates a maximum loop resistance of 50 ohms (25 ohms per wire of 2 wire circuit). Assuming that the owner will provide 20 AWG solid copper conductors, the maximum circuit distance is limited to 2,500 ft. The distance between buildings can be approximated by scaling from drawing FA-0.1. The longest distance between any protected building (Building 2620) and Building 6170 appears to be no greater than 2,000 ft.

**Question 2:**

Are suppressors required at each location where the phone wires leave the FACP building and enter building 6170 ?.

**Response 2:**

Transient voltage suppressors are required by NFPA 72 12.2.4.2 and NFPA 70 760.32 where a power limited fire alarm circuit extends beyond one building to another building. Consequently transient voltage suppressors will be required both at the building with the FACP and Building 6170 on each circuit. This requirement will be added to the drawings for Addendum #1

**Specification Section 13851:**

1. Edited paragraph 1.03-C to allow the following fire alarm manufacturers:  
Silent Knight  
Fire-Lite  
Simplex  
Other manufacturer approved by Project Engineer
2. Edited paragraph 2.02-A-6 to indicate a minimum conduit size of 1/2".
3. 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.
4. Added paragraph 2.02-A-11 to indicate that ALL conduit/raceway in Building 8100 shall be installed concealed above finished ceilings or inside wall cavities. Where raceway must be installed exposed, wire mold shall be used. Wire mold shall be painted to blend in with the surrounding wall/ceiling surface. Paint color to be approved by DFCM/Utah National Guard.

**Sheet FA-0.1:**

1. It was determined that no copper conductors exist to connect the FACP in 1150 to the Base Fire Alarm Reporting System with monitor module in Building 6170. Key note 9 was added to require the installation of new copper conductors (2 conductor 18 AWG minimum) from the FACP in Building 1150 to the existing demark in adjacent Building 1190. Existing copper conductors at the demark in Building 1190 can then be used to complete the initiating device circuit between Building 1150 and the monitor module in Building 6170. New wiring shall be installed in conduit (overhead in buildings and underground where outside of building) and shall be rated for underground installation. Transient voltage suppressors shall be installed where wiring enters/exits a building.
2. Corrected the title of the Fire Alarm Scope of Work Notes and added 2 explanatory notes.
3. Edited Key Note 2 to require that wiring be rated for underground installation and that transient voltage suppressors be installed where new wiring enters/exits a building.
4. Edited Key Note 4 to require that transient voltage suppressors be installed where existing wiring used to create new fire alarm circuits enters/exits a building.
5. Updated Fire Alarm Scope of Work Notes to include approximate quantities and make/model of existing fire alarm control panels (where known).

**Sheet FA-2**

1. Replaced spot type smoke detectors (2) in Assembly Hall of Building 8100 with single ended projected beam type detector (1) to eliminate the need to run exposed conduit

- down the center of the room. Added key note 20 to describe detector type/mounting requirements.
2. Relocated notification appliance in Assembly Hall of Building 8100 to west wall and indicated that the device shall be mounted on the existing valence.
  3. Added key note 19 to require installation of concealed conduit/wiring (concealed behind existing valence) along west wall of Assembly Hall in Building 8100.
  4. Added annunciator panel near main entrance to Building 8100.
  5. Added exterior horn/strobe near pool area of Building 8100.
  6. Added exterior horn/strobe near north entry to Building 7030.
  7. Added symbol for projected beam smoke detector to Equipment Legend



**CAMP WILLIAMS FIRE ALARM SYSTEMS UPGRADES  
DFCM # 10179480**

**SPECIFICATION SECTION 13851  
FIRE ALARM SYSTEM**

**ADDENDUM #1 – August 30, 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 specification includes the demolition of existing fire alarm systems, installation of new fire alarm systems, minor maintenance/upgrade to existing fire alarm systems and connection of all new and existing fire alarm control panels at Camp Williams to existing fire alarm reporting system (EST3 panel at guard house). Fire alarm systems shall include, but not be limited to, alarm initiating devices, alarm notification appliances, Fire Alarm Control Panels (FACP), remote power supplies, auxiliary control devices and relays, annunciators, conduit and wiring as shown on the drawings and specified herein.

1.03 QUALITY ASSURANCE:

- A. The fire alarm systems 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
  - 3. Simplex
  - 4. Other Manufacturer approved by Project Engineer
- 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

CAMP WILLIAMS  
FIRE ALARM SYSTEMS UPGRADE  
DFCM PROJECT # 10179480

number on the drawings. Drawings will be signed by the technician and submitted for approval under his name.

- 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 panels.
  - 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 each building and for the campus network for submittal to 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.

CAMP WILLIAMS  
FIRE ALARM SYSTEMS UPGRADE  
DFCM PROJECT # 10179480

1.05 SYSTEM DESCRIPTION:

- A. Add fire alarm system to existing building 7030 and 8100 as indicated on project drawings.
- B. Upgrade existing fire alarm systems in buildings 3010, 6280, 6290 and 6300 as indicated on project drawings.
- C. Perform minor maintenance, upgrade, testing and/or trouble shooting of existing fire alarm systems as summarized on drawings for the following buildings:
  - 1. Building 1000
  - 2. Building 1150
  - 3. Building 1190
  - 4. Building 1830
  - 5. Building 3030
  - 6. Building 3060
  - 7. Building 3220
  - 8. Building 4100
  - 9. Building 4110
  - 10. Building 4120
  - 11. Building 4140
  - 12. Building 4200
  - 13. Building 5131
  - 14. Building 6270
  - 15. Building 8110
  - 16. Building 8200
  - 17. Building 9000
- D. Connect all new and existing fire alarm systems at Camp Williams to existing EST3 panel installed in guard shack to create a facility wide fire alarm reporting system. Interconnection of all fire alarm systems shall be as indicated on drawings and as summarized below:
  - 1. Install new SLC circuit in buried conduit (provided by owner) between guard shack (Building 7011) and telecommunications hub (Building 6170).
  - 2. Install monitor module(s) for each fire alarm system in new cabinet(s) in telecommunication hub (Building 6170).
  - 3. Install new initiating device circuit from each new monitor module to fire alarm and supervisory/trouble relays of fire alarm control panel in each building. Initiating device circuits shall be constructed using existing wiring (unused phone lines) provided by owner.
  - 4. Program EST3 panel in guard shack (Building 7011) to annunciate fire alarm and supervisory/trouble signals by building number/description.

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. New Initiating Device Circuits (IDC) installed within buildings shall be wired Class A (NFPA Style D) as part of an addressable device connected by the SLC Circuit.
  - 3. New Initiating Device Circuits (IDC) installed between each FACP and monitor modules in telecommunications hub (Building 6170) may be Class B.
  - 4. New Notification Appliance Circuits (NAC) shall be wired Class A (NFPA Style Z).

CAMP WILLIAMS  
FIRE ALARM SYSTEMS UPGRADE  
DFCM PROJECT # 10179480

5. All circuits shall be power-limited, per 1995 UL864 requirements.
  6. 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.
  7. Alarm signals arriving at the building 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 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.
  6. Alarm signal shall be transmitted via the fire alarm network to the network annunciator located in the Physical Plant Building.
  5. Alarm signal shall be transmitted off-premise via the DACT (install in Network Annunciator) to the central monitoring station selected by the owner.
- C. All copper 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

CAMP WILLIAMS  
FIRE ALARM SYSTEMS UPGRADE  
DFCM PROJECT # 10179480

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 - 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 1/2 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.

CAMP WILLIAMS  
FIRE ALARM SYSTEMS UPGRADE  
DFCM PROJECT # 10179480

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 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.
11. ALL conduit/raceway in Building 8100 shall be installed concealed above finished ceilings or inside wall cavities. Where raceway must be installed exposed, wire mold shall be used. Wire mold shall be installed tight to wall/ceiling surface and shall be painted to blend in with the surrounding surface. Paint color to be approved by DFCM/Utah National Guard.

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 12 or 14 AWG (1.63 mm) 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.

2.03 FIRE ALARM CONTROL PANEL:

- A. Make/model of each fire alarm control panel shall be as indicated on drawings.
- B. Install all required expansion modules to ensure adequate SLC loop capacity for all initiating devices and control relays shown on panel with a additional reserve or a least 20% for future expansion.
- C. The FACP must compensate for the accumulation of contaminants that affect detector sensitivity.

CAMP WILLIAMS  
FIRE ALARM SYSTEMS UPGRADE  
DFCM PROJECT # 10179480

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.

- D. 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.
- E. 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.
- F. Provide all necessary system expansion module 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 NOT USED:

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:

- 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

CAMP WILLIAMS  
FIRE ALARM SYSTEMS UPGRADE  
DFCM PROJECT # 10179480

- 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.
- 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:

CAMP WILLIAMS  
FIRE ALARM SYSTEMS UPGRADE  
DFCM PROJECT # 10179480

- 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 contract 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:
  - 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.

CAMP WILLIAMS  
FIRE ALARM SYSTEMS UPGRADE  
DFCM PROJECT # 10179480

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 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. Three addressable heat detectors.
  - 2. Four addressable smoke detectors.
  - 3. Two addressable manual pull stations.
  - 4. Four addressable contact monitor modules.
  - 5. Two addressable control modules.

CAMP WILLIAMS  
FIRE ALARM SYSTEMS UPGRADE  
DFCM PROJECT # 10179480

6. Six notification appliances corresponding to the type and proportion of notification appliances installed.

**PART III - EXECUTION**

3.01 INSPECTION:

- A. Contractor shall be responsible to attend a mandatory pre-bid walk through of the buildings. 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 systems. 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).
- 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

CAMP WILLIAMS  
FIRE ALARM SYSTEMS UPGRADE  
DFCM PROJECT # 10179480

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.

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

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FIRE ALARM SYSTEMS UPGRADE  
DFCM PROJECT # 10179480

provided.

- B. The contractor and/or the systems manufacturer's representatives shall provide a typewritten "Sequence of Operation"

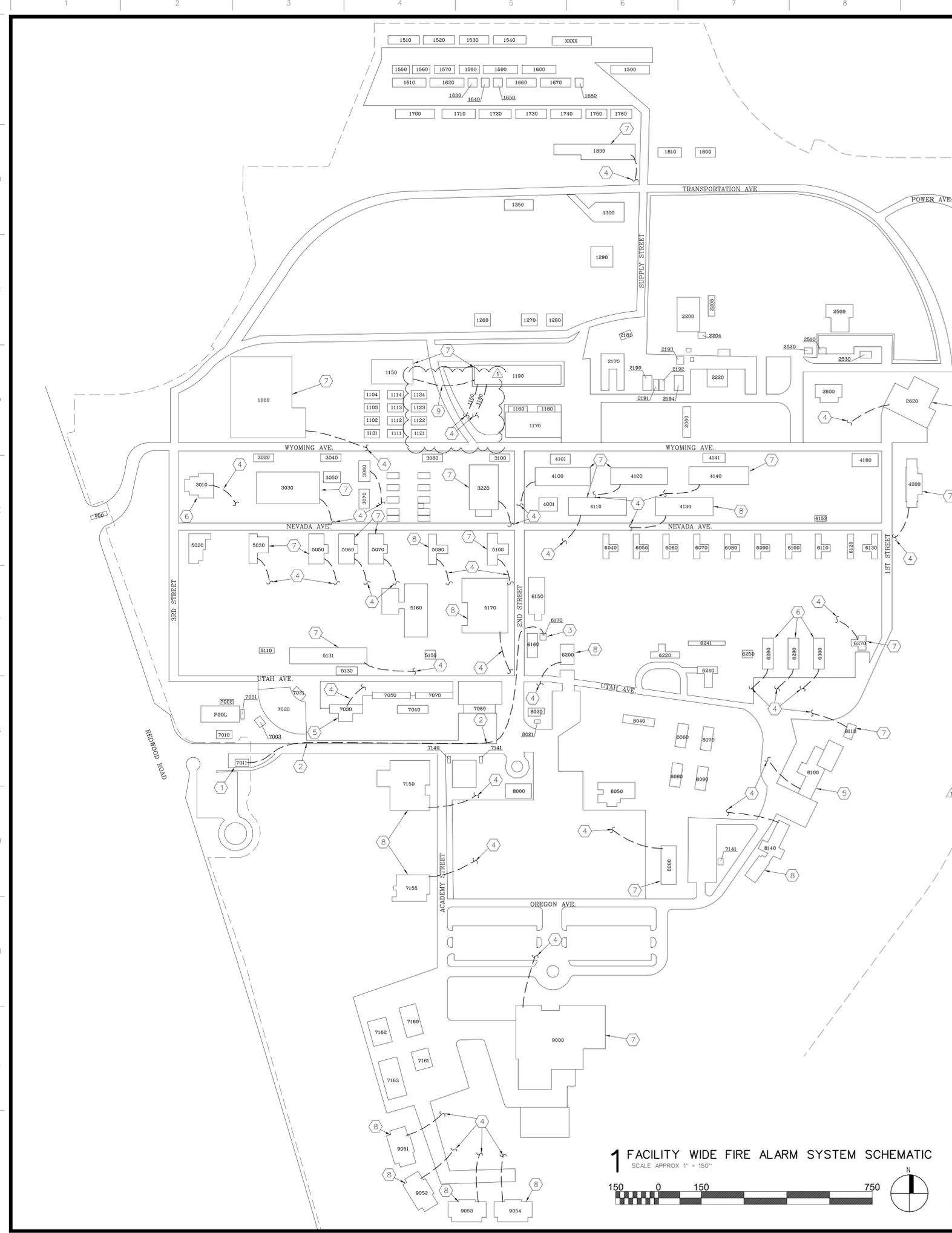
3.07 CLEANING:

- 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. Camp Williams Maintenance Personnel
  - 4. Project Engineer

END OF SECTION 13851



**FIRE ALARM NETWORK KEY NOTES**

- EXISTING EST3 FIRE ALARM CONTROL PANEL TO REMAIN CONFIGURE EXISTING FACP TO FUNCTION AS FIRE ALARM REPORTING SYSTEM FOR THE FACILITY RECEIVING FIRE ALARM AND SUPERVISORY/TROUBLE SIGNALS FROM ALL NEW AND EXISTING FIRE ALARM SYSTEMS PRESENT AT CAMP WILLIAMS. FIRE ALARM AND SUPERVISORY/TROUBLE SIGNALS SHALL ANNUNCIATE BY BUILDING NUMBER. CONFIGURE FACILITY-WIDE FIRE ALARM SYSTEM AS FOLLOWS:
  - INSTALL NEW SIGNALING LINE CIRCUIT FROM EXISTING EST3 PANEL IN BUILDING 7011 (GIARD HOUSE) TO BUILDING 6170 (TELECOM HUB).
  - INSTALL MONITOR MODULES FOR EACH FIRE ALARM SYSTEM PRESENT AT CAMP IN NEW TERMINAL CABINET IN BUILDING 6170 (TELECOM HUB).
  - CONSTRUCT NEW INITIATING DEVICE CIRCUITS FROM EACH FIRE ALARM SYSTEM AND MONITOR MODULES USING EXISTING WIRING (UNUSED PHONE LINES) PROVIDED BY OWNER AND PRESENT IN EACH BUILDING. NEW WIRING SHALL BE INSTALLED IN SEPARATE PULL STRINGS USED. A MINIMUM OF 1 PULL STRING SHALL BE LEFT IN CONDUIT UPON COMPLETION OF WORK FOR FUTURE USE. NEW WIRING SHALL BE INSTALLED IN SEPARATE PULL STRINGS USED. A MINIMUM OF 1 PULL STRING SHALL BE LEFT IN CONDUIT UPON COMPLETION OF WORK FOR FUTURE USE. NEW WIRING SHALL BE INSTALLED IN SEPARATE PULL STRINGS USED. A MINIMUM OF 1 PULL STRING SHALL BE LEFT IN CONDUIT UPON COMPLETION OF WORK FOR FUTURE USE.
  - CONNECT INITIATING DEVICE CIRCUITS FOR EACH BUILDING TO FIRE ALARM SUPERVISORY AND TROUBLE RELAYS AT FACILITY-WIDE FIRE ALARM CONTROL PANEL.
  - PROGRAM FACILITY-WIDE FIRE ALARM CONTROL PANEL TO ANNUNCIATE FIRE ALARM AND SUPERVISORY/TROUBLE SIGNALS BY BUILDING NUMBER.
- INSTALL NEW SIGNALING LINE CIRCUIT (4 CONDUCTOR - 18 AWG MINIMUM) FROM EXISTING EST3 FACILITY-WIDE FIRE ALARM REPORTING SYSTEM TO BUILDING 6170 (TELECOM HUB). INSTALL CIRCUIT IN EXISTING BURIED CONDUIT SUPPLIED BY OWNER. CONTRACTOR MAY USE EXISTING BURIED CONDUIT PROVIDED IT IS IN GOOD CONDITION AND PULL STRINGS USED. A MINIMUM OF 1 PULL STRING SHALL BE LEFT IN CONDUIT UPON COMPLETION OF WORK FOR FUTURE USE. NEW WIRING SHALL BE INSTALLED IN SEPARATE PULL STRINGS USED. A MINIMUM OF 1 PULL STRING SHALL BE LEFT IN CONDUIT UPON COMPLETION OF WORK FOR FUTURE USE.
- INSTALL TERMINAL CABINETS AND EST MONITOR MODULES FOR FACILITY-WIDE FIRE ALARM REPORTING SYSTEM IN BUILDING 6170 (TELECOM HUB). COORDINATE CABINET LOCATIONS WITH OWNER. PROVIDE SUFFICIENT NUMBER OF MODULES TO ALLOW A DISTINCT DEVICE ADDRESS FOR FIRE ALARM AND SUPERVISORY/TROUBLE RELAYS AT EACH FACP IN EACH BUILDING. LABEL EACH MODULE WITH BUILDING NUMBER. CONNECT TO THE MODULE SIZE CABINETS TO HAVE EXCESS CAPACITY (CAPACITY FOR AN ADDITIONAL 10 MODULES) TO ALLOW FOR FUTURE EXPANSION OF FACILITY-WIDE FIRE ALARM REPORTING SYSTEM.
- CONSTRUCT NEW INITIATING DEVICE CIRCUITS FROM EST MONITOR MODULES IN BUILDING 6170 (TELECOM HUB) AND FIRE ALARM SUPERVISORY/TROUBLE RELAYS OF EVERY FIRE ALARM SYSTEM AT CAMP WILLIAMS. CONSTRUCT INITIATING DEVICE CIRCUITS USING EXISTING WIRING (UNUSED PHONE LINES) PROVIDED BY OWNER. EXTEND CIRCUITS INSIDE EACH BUILDING FROM TELEPHONE BOARD TO FACP AS REQUIRED. ALL NEW WIRING INSIDE BUILDING SHALL BE INSTALLED IN SEPARATE PULL STRINGS USED. NEW WIRING SHALL BE INSTALLED IN SEPARATE PULL STRINGS USED. A MINIMUM OF 1 PULL STRING SHALL BE LEFT IN CONDUIT UPON COMPLETION OF WORK FOR FUTURE USE. NEW WIRING SHALL BE INSTALLED IN SEPARATE PULL STRINGS USED. A MINIMUM OF 1 PULL STRING SHALL BE LEFT IN CONDUIT UPON COMPLETION OF WORK FOR FUTURE USE.
- INSTALL NEW ADDRESSABLE FIRE ALARM SYSTEM THROUGHOUT BUILDING AS INDICATED ON DRAWINGS. FIRE ALARM SYSTEM AS INDICATED ON DRAWINGS. CONNECT NEW FIRE ALARM CONTROL PANEL TO FACILITY-WIDE FIRE ALARM REPORTING SYSTEM (SEE KEY NOTES 1-4 ABOVE).
- EXISTING FIRE ALARM SYSTEM TO BE REMOVED AND REPLACED WITH NEW ADDRESSABLE FIRE ALARM SYSTEM AS INDICATED ON DRAWINGS. CONNECT NEW FIRE ALARM CONTROL PANEL TO FACILITY-WIDE FIRE ALARM REPORTING SYSTEM (SEE KEY NOTES 1-4 ABOVE).
- EXISTING FIRE ALARM SYSTEM IN BUILDING TO RECEIVE MINOR MAINTENANCE/ADJUSTMENT AS INDICATED IN SCOPE OF WORK SHEET. CONNECT EXISTING FIRE ALARM CONTROL PANEL TO FACILITY-WIDE FIRE ALARM REPORTING SYSTEM (SEE KEY NOTES 1-4 ABOVE).
- EXISTING FIRE ALARM SYSTEM IN BUILDING TO REMAIN. CONNECT EXISTING FIRE ALARM CONTROL PANEL TO FACILITY-WIDE FIRE ALARM REPORTING SYSTEM (SEE KEY NOTES 1-4 ABOVE).
- NO COPPER CONDUCTORS EXIST TO CONNECT THE FACP IN 190 TO THE BASE FIRE ALARM REPORTING SYSTEM. INSTALL NEW COPPER CONDUCTORS (2 CONDUCTOR - 18 AWG MINIMUM) FROM THE FACP IN BUILDING 190 TO THE EXISTING DEMARK IN ADJACENT BUILDING 190. EXISTING DEMARK IN BUILDING 190 CAN THEN BE USED TO COMPLETE THE INITIATING DEVICE CIRCUIT BETWEEN BUILDING 190 AND BUILDING 6170. NEW WIRING SHALL BE INSTALLED IN CONDUIT (OVERHEAD IN BUILDINGS AND UNDERGROUND WHERE OUTSIDE OF BUILDINGS) SHALL BE RATED OR UNDERGROUND INSTALLATION. TRANSIENT VOLTAGE SUPPRESSORS SHALL BE INSTALLED WHERE WIRING ENTERS/EXITS A BUILDING.

**FIRE ALARM SCOPE OF WORK NOTES**

- NOTES:
- QUANTITIES INDICATED IN SCHEDULE BELOW ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY EXACT QUANTITY.
  - WHERE CLEANING OF DETECTORS IS INDICATED, CLEANING SHALL CONSIST OF REMOVAL AND DISASSEMBLY OF DETECTOR, REMOVING ALL DUST/DEBRIS AND CLEANING DETECTOR OPTICS/MIRRORS.

BUILDING	SCOPE OF WORK
1000 (47,000 SQ FT)	1. CONNECT EXISTING FACP (THORN FIREQUEST 300) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. REPLACE HORN/STROBES IN FREEZERS WITH NEW WEATHERPROOF DEVICES (4) 3. ADD SMOKE DETECTOR ABOVE FACP 4. REPLACE FLOW SWITCH 5. REPLACE PULL STATION (1) 6. CLEAN SMOKE DETECTORS (CEILING (1) AND DUCT MOUNTED)
190 (10,500 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 2001) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. REPLACE FACP BATTERIES 3. INSTALL NEW 120 VAC POWER SUPPLY (PER NFPA 70 & 72) 4. TEST AND TROUBLESHOOT SYSTEM
190 (18,800 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 4020) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. CLEAN SMOKE DETECTORS (8) 3. REPLACE EXISTING SMOKE DETECTOR IN BREAK ROOM (1) 4. REPLACE BATTERIES (8) 5. REPLACE EXTERIOR WEATHERPROOF HORN/STROBES (2) 6. ADD HEAT DETECTORS IN STORAGE AREA IN UPSTAIRS BREAK ROOM (2) 7. ADD HEAT DETECTORS IN FAN ROOM ABOVE SHOP (2) 8. ADD HEAT DETECTORS IN MAINTENANCE BAY AREA (4) 9. ADD HORN/STROBES IN MAINTENANCE BAY AREA (2) 10. ADD STROBE IN WOMENS SHOWER ROOM (1) 11. ADD STROBE IN MAINTENANCE RESTROOM (1)
1830 (13,000 SQ FT)	1. CONNECT EXISTING FACP (SILENT KNIGHT) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. ADJUST RETARD ON FLOW SWITCH TO 90 SECONDS (MAX) 3. INSTALL MODULES TO SYNCHRONIZE STROBES
2620 (20,800 SQ FT)	1. CONNECT EXISTING FACP TO FACILITY FIRE ALARM REPORTING SYSTEM
3010 (8,100 SQ FT)	1. CONNECT NEW FACP TO FACILITY FIRE ALARM REPORTING SYSTEM 2. REMOVE CONVENTIONAL FA SYSTEM AND REPLACE WITH NEW ADDRESSABLE FA SYSTEM AS INDICATED ON DRAWINGS
3030 (20,000 SQ FT)	1. CONNECT EXISTING FACP (SILENT KNIGHT) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. REPLACE BATTERIES (8) 3. CLEAN SMOKE DETECTORS (CEILING AND DUCT MOUNTED) (29) 4. ADD HORN/STROBES IN BAY AREA (1) 5. INSTALL MODULES TO SYNCHRONIZE STROBES
5170 (24,700 SQ FT)	1. CONNECT EXISTING FACP TO FACILITY FIRE ALARM REPORTING SYSTEM
6200 (4,000 SQ FT)	1. CONNECT EXISTING FACP TO FACILITY FIRE ALARM REPORTING SYSTEM
6270 (1,650 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 2001) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. REPLACE EXTERIOR HORN/STROBE (1) 3. REPLACE SMOKE DETECTORS IN KITCHEN WITH HEAT DETECTORS (3) 4. REPLACE SMOKE DETECTORS IN CORRIDOR 5. REPLACE BATTERIES (2)
6280 (2,900 SQ FT)	1. CONNECT NEW FACP TO FACILITY FIRE ALARM REPORTING SYSTEM 2. REMOVE EXISTING CONVENTIONAL FA SYSTEM AND REPLACE WITH NEW ADDRESSABLE FA SYSTEM AS INDICATED ON DRAWINGS
6290 (2,900 SQ FT)	1. CONNECT NEW FACP TO FACILITY FIRE ALARM REPORTING SYSTEM 2. REMOVE EXISTING CONVENTIONAL FA SYSTEM AND REPLACE WITH NEW ADDRESSABLE FA SYSTEM AS INDICATED ON DRAWINGS
6300 (4,800 SQ FT)	1. CONNECT NEW FACP TO FACILITY FIRE ALARM REPORTING SYSTEM 2. INSTALL NEW ADDRESSABLE FA SYSTEM AS INDICATED ON DRAWINGS
7030 (4,800 SQ FT)	1. CONNECT NEW FACP TO FACILITY FIRE ALARM REPORTING SYSTEM
7150 (2,800 SQ FT)	1. CONNECT EXISTING FACP TO FACILITY FIRE ALARM REPORTING SYSTEM
7155 (2,500 SQ FT)	1. CONNECT EXISTING FACP TO FACILITY FIRE ALARM REPORTING SYSTEM 2. INSTALL NEW ADDRESSABLE FA SYSTEM AS INDICATED ON DRAWINGS
8140 (4,500 SQ FT)	1. CONNECT EXISTING FACP (NOTIFIER AFP-100) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. CLEAN SMOKE DETECTORS (13) 3. REPLACE BATTERIES (2) 4. REPAIR/REUSE ANNUNCIATOR 5. ADD SMOKE DETECTOR ABOVE FACP 6. ADD STROBE IN BATHROOM (1) 7. ADD HORN/STROBE IN LAUNDRY ROOM (1) 8. ADD SMOKE DETECTOR IN 1ST FLOOR SOUTH CORRIDOR (1) 9. ADD HORN/STROBE IN 1ST FLOOR SOUTH CORRIDOR (1)
8110 (2,500 SQ FT)	1. CONNECT EXISTING FACP TO FACILITY FIRE ALARM REPORTING SYSTEM
8200 (8,300 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 4010) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. ADD LOCK TO FACP CABINET 3. REPLACE BATTERIES (2)
9000	1. CONNECT EXISTING FACP (NOTIFIER AFP-100) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. REPLACE SMOKE DETECTORS IN KITCHEN WITH HEAT DETECTORS (4) 3. RELOCATE SMOKE DETECTOR IN CORRIDOR AWAY FROM VENT (1) 4. REPLACE HORNS IN KITCHEN WITH HORN/STROBES (3) 5. REPLACE HORN IN KITCHEN RESTROOM HORN/STROBE (1)
9051 (7,400 SQ FT)	1. CONNECT EXISTING FACP TO FACILITY FIRE ALARM REPORTING SYSTEM
9052 (7,400 SQ FT)	1. CONNECT EXISTING FACP TO FACILITY FIRE ALARM REPORTING SYSTEM
9053 (7,400 SQ FT)	1. CONNECT EXISTING FACP TO FACILITY FIRE ALARM REPORTING SYSTEM
9054 (7,400 SQ FT)	1. CONNECT EXISTING FACP TO FACILITY FIRE ALARM REPORTING SYSTEM
4100 (7,500 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 4005) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. REWIRE BATTERIES (2)
410 (7,500 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 2001) TO FACILITY FIRE ALARM REPORTING SYSTEM
4120 (7,500 SQ FT)	1. CONNECT EXISTING FACP (EST FRESHIELD) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. ADD STROBES IN BATHROOMS (4)
4130 (7,500 SQ FT)	1. CONNECT EXISTING FACP TO FACILITY FIRE ALARM REPORTING SYSTEM
4140 (7,500 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 2001) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. REPLACE BATTERIES (4) 3. CLEAN SMOKE DETECTORS (28) 4. REPLACE HORN/STROBES (1)
4200 (6,400 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 4008) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. CLEAN SMOKE DETECTORS (1)
5030 (8,600 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 4008) TO FACILITY FIRE ALARM REPORTING SYSTEM
5060 (5,100 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 4010) TO FACILITY FIRE ALARM REPORTING SYSTEM
5060 (5,100 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 4010) TO FACILITY FIRE ALARM REPORTING SYSTEM
5070 (5,100 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 4010) TO FACILITY FIRE ALARM REPORTING SYSTEM
5080 (3,800 SQ FT)	1. CONNECT EXISTING FACP TO FACILITY FIRE ALARM REPORTING SYSTEM
5100 (3,800 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 4010) TO FACILITY FIRE ALARM REPORTING SYSTEM
5131 (13,700 SQ FT)	1. CONNECT EXISTING FACP (SIMPLEX 4004) TO FACILITY FIRE ALARM REPORTING SYSTEM 2. REPLACE BATTERIES (4) 3. RELOCATE HEAT DETECTORS IN STORAGE ROOM 4. TEST AND TROUBLESHOOT SYSTEM

**1 FACILITY WIDE FIRE ALARM SYSTEM SCHEMATIC**  
SCALE APPROX 1" = 150'



08/02/10

**PROTECTOR CONSULTING INC.**  
222 South 6700 East, Suite 202  
Provo, UT 84604  
Phone: 801-734-0000  
Fax: 801-734-0001  
www.proteccor.com

JOB NO: 104540  
DWG ISSUE: ADD #1  
DRAWN BY: BBH  
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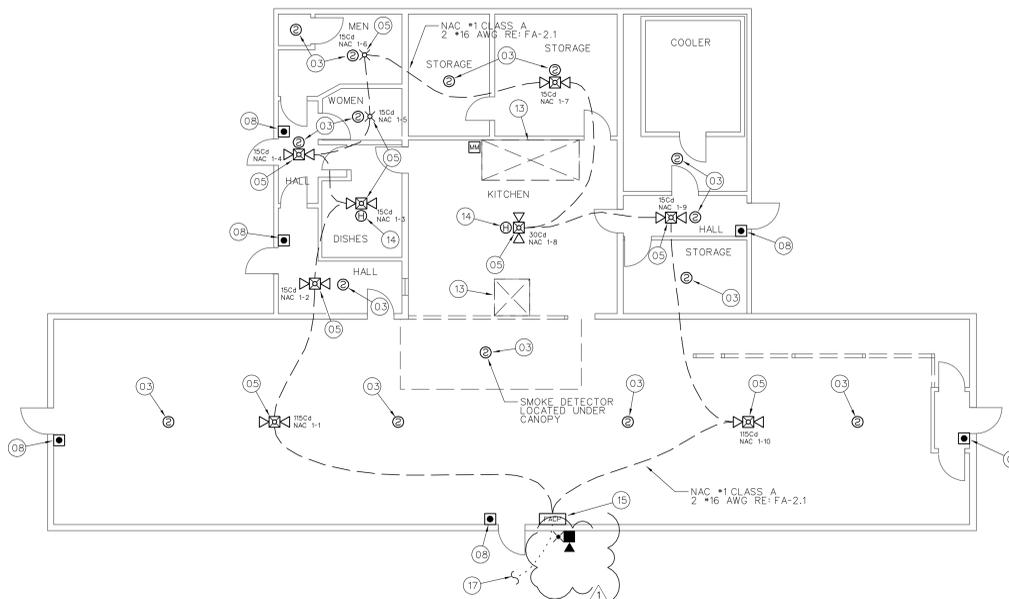
DRAWING DATE:  
08/02/10

REVISION DATE:  
08/30/10

**FACILITY WIDE - FIRE ALARM SYSTEM**  
CAMP WILLIAMS, UT

**FIRE ALARM SYSTEM UPGRADE**  
DFCM PROJECT # 10179480

**FA-0.1**



**MESS HALL (7030) FIRE ALARM PLAN**  
 1/8" = 1'-0"  
 0 8' 16' 32'

**1 VOLTAGE DROP CALCULATIONS**  
**MESS HALL (7030) - NAC #1**

Physical Parameters										
Source Voltage	16 AWG				20.4 V					
Wire Gauge	16 AWG				2580 cmil					
Wire Resistivity	13 Ohm-cmil/ft									
Ref. No.	Device/Distance (feet)	Cumulative Distance (feet)	Light Intensity (Cd/BA)	Device Current (Amps)	Circuit Current (Amps)	Device Voltage (Vdc)	% Voltage Drop	Ref. No.		
FACP	55	55	115	0.218	1.07	19.607	2.717	1		
1	25	80	15	0.079	0.852	19.592	1.084	2		
2	15	95	15	0.079	0.773	19.475	0.596	3		
3	15	110	15	0.079	0.694	19.371	0.539	4		
4	15	125	15	0.066	0.615	19.278	0.480	5		
5	15	140	15	0.066	0.549	19.195	0.430	6		
6	30	170	15	0.079	0.483	19.049	0.761	7		
7	30	200	30	0.107	0.404	18.926	0.641	8		
8	25	225	15	0.079	0.297	18.852	0.395	9		
9	35	260	115	0.218	0.218	18.775	0.408	10		
Total Circuit Length		260		Total Circuit Current		1.07		Total Circuit Voltage Drop %		8.24

**2 VOLTAGE DROP CALCULATIONS**  
**OFFICER'S CLUB (8100) - NAC #1**

Physical Parameters										
Source Voltage	16 AWG				20.4 V					
Wire Gauge	16 AWG				2580 cmil					
Wire Resistivity	13 Ohm-cmil/ft									
Ref. No.	Device/Distance (feet)	Cumulative Distance (feet)	Light Intensity (Cd/BA)	Device Current (Amps)	Circuit Current (Amps)	Device Voltage (Vdc)	% Voltage Drop	Ref. No.		
FACP	50	50	15	0.079	1.1	19.646	2.717	1		
1	15	65	15	0.066	1.021	19.691	1.084	2		
2	15	80	15	0.066	0.955	19.547	0.733	3		
3	15	95	15	0.079	0.889	19.413	0.687	4		
4	25	120	15	0.079	0.81	19.209	1.051	5		
5	85	205	15	0.066	0.731	18.982	3.260	6		
6	25	230	15	0.066	0.665	18.415	0.902	7		
7	50	280	75	0.178	0.599	18.713	1.639	8		
8	85	365	30	0.107	0.423	17.751	2.000	9		
9	35	400	15	0.079	0.316	17.639	0.628	10		
10	40	440	15	0.079	0.237	17.544	0.542	11		
11	20	460	15	0.079	0.158	17.512	0.182	12		
12	40	500	15	0.079	0.079	17.460	0.182	13		
Total Circuit Length		500		Total Circuit Current		1.1		Total Circuit Voltage Drop %		15.30

**3 VOLTAGE DROP CALCULATIONS**  
**BARRACKS (6300) - NAC #1**

Physical Parameters										
Source Voltage	16 AWG				20.4 V					
Wire Gauge	16 AWG				2580 cmil					
Wire Resistivity	13 Ohm-cmil/ft									
Ref. No.	Device/Distance (feet)	Cumulative Distance (feet)	Light Intensity (Cd/BA)	Device Current (Amps)	Circuit Current (Amps)	Device Voltage (Vdc)	% Voltage Drop	Ref. No.		
FACP	10	10	15	0.079	0.883	20.311	0.436	1		
1	30	40	15	0.066	0.804	20.068	1.197	2		
2	50	90	15	0.079	0.738	19.696	1.853	3		
3	30	120	15	0.079	0.659	19.497	1.012	4		
4	15	135	15	0.079	0.58	19.409	0.450	5		
5	55	190	15	0.079	0.501	19.131	1.431	6		
6	20	210	15	0.066	0.422	19.046	0.445	7		
7	20	230	15	0.066	0.356	18.975	0.377	8		
8	50	280	15	0.079	0.29	18.829	0.770	9		
9	30	310	15	0.079	0.211	18.765	0.339	10		
10	40	350	15	0.066	0.132	18.712	0.284	11		
11	20	370	15	0.066	0.066	18.698	0.071	12		
Total Circuit Length		370		Total Circuit Current		0.883		Total Circuit Voltage Drop %		8.66

**4 FACP BATTERY CALCULATIONS**  
**MESS HALL (7030)**

PART	DESCRIPTION	QTY	REQUIRED CURRENT (STANDBY)		REQUIRED CURRENT (ALARM)	
			EACH (A)	TOTAL (A)	EACH (A)	TOTAL (A)
5700	CONTROL PANEL	1	0.2000	0.2000	0.3250	0.3250
5860	ANNUNCIATOR	1	0.0200	0.0200	0.0250	0.0250
SK-PULL-DA	PULL STATION	4	0.0006	0.0024	0.0006	0.0024
SK-PHOTO	SMOKE DETECTOR	15	0.0006	0.0090	0.0006	0.0090
SK-DUCT	DUCT SMOKE DETECTOR	0	0.0006	0.0000	0.0006	0.0000
SK-MINIMON	MONITOR MODULE	1	0.0006	0.0006	0.0006	0.0006
RISON 996	DOOR HOLD OPEN DEVICE	2	0.0000	0.0000	0.0000	0.0000
SK-HEAT	HEAT DETECTOR	2	0.0006	0.0012	0.0006	0.0012
NAC #1	NOTIFICATION CIRCUIT	1	0.0000	0.0000	2.0000	2.0000
TOTAL			0.2144	0.2144	2.3394	2.3394

SECONDARY STANDBY BATTERY CALCULATIONS: (STANDBY) X 24  
 HOUR + (ALARM) X 5 MINUTES + 10% = 5.9

**6 FACP BATTERY CALCULATIONS**  
**BARRACKS (6300)**

PART	DESCRIPTION	QTY	REQUIRED CURRENT (STANDBY)		REQUIRED CURRENT (ALARM)	
			EACH (A)	TOTAL (A)	EACH (A)	TOTAL (A)
5700	CONTROL PANEL	1	0.2000	0.2000	0.3250	0.3250
5860	ANNUNCIATOR	1	0.0200	0.0200	0.0250	0.0250
SK-PULL-DA	PULL STATION	6	0.0006	0.0036	0.0006	0.0036
SK-PHOTO	SMOKE DETECTOR	10	0.0006	0.0060	0.0006	0.0060
SK-DUCT	DUCT SMOKE DETECTOR	4	0.0006	0.0024	0.0006	0.0024
SK-MINIMON	MONITOR MODULE	0	0.0006	0.0000	0.0006	0.0000
RISON 996	DOOR HOLD OPEN DEVICE	0	0.0000	0.0000	0.0000	0.0000
SK-HEAT	HEAT DETECTOR	6	0.0006	0.0036	0.0006	0.0036
NAC #1	NOTIFICATION CIRCUIT	1	0.0000	0.0000	2.0000	2.0000
TOTAL			0.2156	0.2156	2.3400	2.3400

SECONDARY STANDBY BATTERY CALCULATIONS: (STANDBY) X 24  
 HOUR + (ALARM) X 5 MINUTES + 10% = 5.9

**5 FACP BATTERY CALCULATIONS**  
**OFFICER'S CLUB (8100)**

PART	DESCRIPTION	QTY	REQUIRED CURRENT (STANDBY)		REQUIRED CURRENT (ALARM)	
			EACH (A)	TOTAL (A)	EACH (A)	TOTAL (A)
5700	CONTROL PANEL	1	0.2000	0.2000	0.3250	0.3250
5860	ANNUNCIATOR	1	0.0200	0.0200	0.0250	0.0250
SK-PULL-DA	PULL STATION	4	0.0006	0.0024	0.0006	0.0024
SK-PHOTO	SMOKE DETECTOR	19	0.0006	0.0114	0.0006	0.0114
SK-DUCT	DUCT SMOKE DETECTOR	0	0.0006	0.0000	0.0006	0.0000
SK-MINIMON	MONITOR MODULE	1	0.0006	0.0006	0.0006	0.0006
RISON 996	DOOR HOLD OPEN DEVICE	0	0.0000	0.0000	0.0000	0.0000
SK-HEAT	HEAT DETECTOR	1	0.0006	0.0006	0.0006	0.0006
NAC #1	NOTIFICATION CIRCUIT	1	0.0000	0.0000	2.0000	2.0000
TOTAL			0.2150	0.2150	2.3400	2.3400

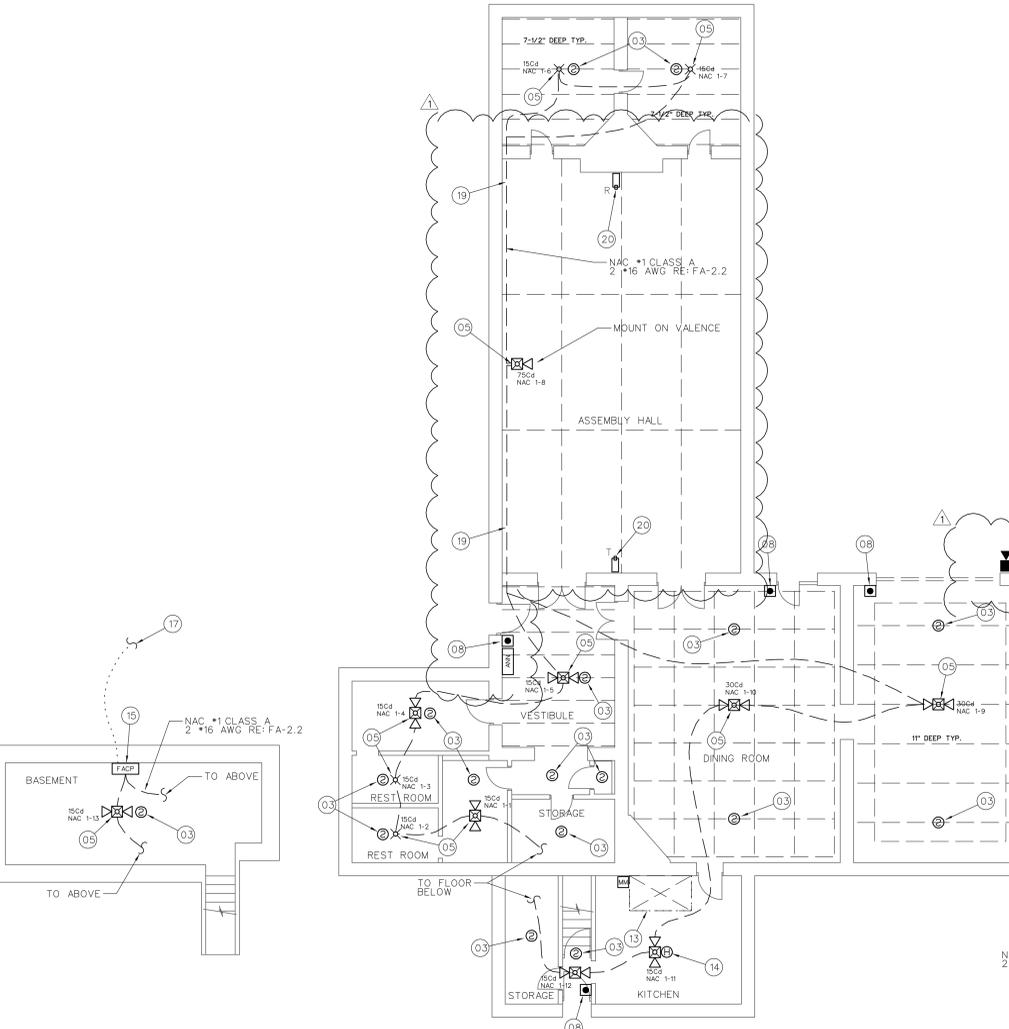
SECONDARY STANDBY BATTERY CALCULATIONS: (STANDBY) X 24  
 HOUR + (ALARM) X 5 MINUTES + 10% = 5.9

**FIRE ALARM SYSTEM KEY NOTES**

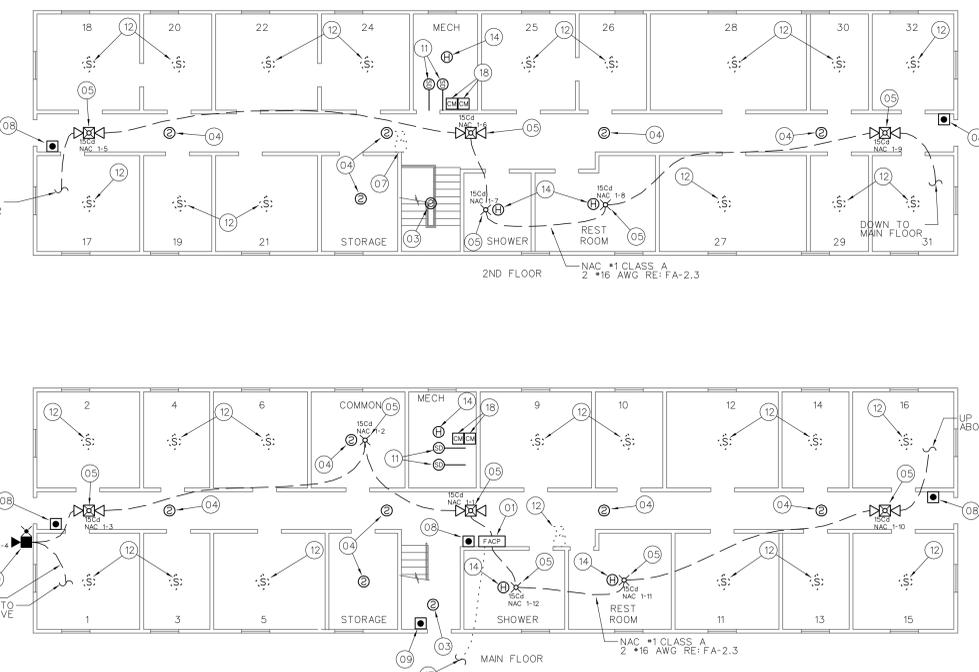
- REPLACE EXISTING FIRE ALARM CONTROL PANEL (FACP) WITH NEW ADDRESSABLE FACP (SILENT KNIGHT 5700 OR EQUAL). FACP SHALL PROVIDE ALL REQUIRED PROTECTED PREMISES FIRE SAFETY FUNCTIONS (ACTIVATION OF LOCAL ALARMS). FACP SHALL RELAY FIRE ALARM SUPERVISORY AND TROUBLE SIGNALS TO OFF-PREMISE MONITORING COMPANY SELECTED BY OWNER. EXISTING 120 VAC DEDICATED POWER MAY BE RE-USED.
- REMOVE EXISTING FIRE ALARM COMMUNICATOR AND ENCLOSURE. PATCH, REPAIR AND/OR PAINT WALL SURFACE TO MATCH SURROUNDING AREA.
- FURNISH AND INSTALL NEW SMOKE DETECTOR AS SHOWN ON PLAN. CONNECT NEW DEVICE TO NEW SIGNALING LINE CIRCUIT AND PROGRAM ACTIVATION OF DEVICE AS A FIRE ALARM SIGNAL.
- REPLACE EXISTING SMOKE DETECTOR WITH NEW SMOKE DETECTOR AS SHOWN ON PLAN. CONNECT NEW DEVICE TO NEW SIGNALING LINE CIRCUIT AND PROGRAM ACTIVATION OF DEVICE AS A FIRE ALARM SIGNAL. EXISTING CONDUIT AND J-BOXES MAY BE RE-USED IF IN GOOD CONDITION.
- FURNISH AND INSTALL NEW NOTIFICATION APPLIANCE AS SHOWN ON PLAN. CONNECT NEW DEVICE TO CORRESPONDING NOTIFICATION APPLIANCE CIRCUIT.
- REPLACE EXISTING NOTIFICATION APPLIANCE WITH NEW NOTIFICATION APPLIANCE AS SHOWN ON PLAN. CONNECT NEW DEVICE TO CORRESPONDING NOTIFICATION APPLIANCE CIRCUIT. EXISTING CONDUIT AND J-BOXES MAY BE RE-USED IF IN GOOD CONDITION.
- EXISTING NOTIFICATION APPLIANCE TO BE REMOVED. REMOVE DEVICE, J-BOX, CONDUIT AND WIRING BACK TO FACP. PATCH, REPAIR AND/OR PAINT WALL SURFACE TO MATCH SURROUNDING AREA.
- REPLACE EXISTING MANUAL PULL STATION WITH NEW MANUAL PULL STATION AS SHOWN ON PLAN. CONNECT NEW DEVICE TO NEW SIGNALING LINE CIRCUIT AND PROGRAM ACTIVATION OF DEVICE AS A FIRE ALARM SIGNAL. EXISTING CONDUIT AND J-BOXES MAY BE RE-USED IF IN GOOD CONDITION.
- FURNISH AND INSTALL NEW MANUAL PULL STATION AS SHOWN ON PLAN. CONNECT NEW DEVICE TO NEW SIGNALING LINE CIRCUIT AND PROGRAM ACTIVATION OF DEVICE AS A FIRE ALARM SIGNAL.
- REPLACE EXISTING EXTERIOR NOTIFICATION APPLIANCE WITH NEW WEATHER-PROOF HORN/STROBE AS SHOWN ON PLAN. EXISTING CONDUIT AND J-BOXES MAY BE RE-USED IF IN GOOD CONDITION. PROVIDE WATER-PROOF CONNECT NEW DEVICE TO CORRESPONDING NOTIFICATION APPLIANCE CIRCUIT.
- FURNISH AND INSTALL NEW DUCT SMOKE DETECTOR ON HVAC DUCTWORK AS SHOWN ON PLAN. CONNECT NEW DEVICE TO NEW SIGNALING LINE CIRCUIT AND PROGRAM ACTIVATION OF DEVICE AS A SUPERVISORY SIGNAL.
- EXISTING SINGLE STATION SMOKE ALARM TO REMAIN.
- FURNISH AND INSTALL NEW MONITOR MODULE TO MONITOR ACTIVATION OF EXISTING WET-CHEMICAL COOKING HOOD. CONNECT MODULE TO EXISTING CONTACTS ON HOOD SUPPRESSION SYSTEM. CONNECT MODULE TO NEW SIGNALING LINE CIRCUIT AND PROGRAM ACTIVATION OF DEVICE AS A FIRE ALARM SIGNAL.
- FURNISH AND INSTALL NEW SMOKE OR HEAT DETECTOR AS SHOWN ON PLAN. CONNECT NEW DEVICE TO NEW SIGNALING LINE CIRCUIT AND PROGRAM ACTIVATION OF DEVICE AS A FIRE ALARM SIGNAL.
- FURNISH AND INSTALL NEW ADDRESSABLE FACP (SILENT KNIGHT 5700 OR EQUAL). FACP SHALL PROVIDE ALL REQUIRED PROTECTED PREMISES FIRE SAFETY FUNCTIONS (ACTIVATION OF LOCAL ALARMS). FACP SHALL RELAY FIRE ALARM, SUPERVISORY SIGNALS TO OFF-PREMISE MONITORING COMPANY SELECTED BY OWNER. PROVIDE NEW 120 VAC POWER CIRCUIT FROM NEARBY POWER DISTRIBUTION PANEL.
- FURNISH AND INSTALL NEW NOTIFICATION APPLIANCE CIRCUIT POWER SUPPLY (SILENT KNIGHT 5495 OR EQUAL) TO PROVIDE 24 VDC POWER TO NEW NOTIFICATION APPLIANCE CIRCUITS. PROVIDE BACKUP BATTERIES TO MEET STANDBY DEMAND OF POWER SUPPLY FOR 24 HOURS WITH AN ADDITIONAL RESERVE FOR 5 MINUTES OF ALARM POWER. NUMBER AND CAPACITY OF POWER SUPPLIES AND LAYOUT OF NOTIFICATION APPLIANCE CIRCUITS SHALL LIMIT VOLTAGE DROP BETWEEN POWER SUPPLY AND MOST REMOTE DEVICE ON CIRCUIT TO LESS THAN 20%. PROVIDE MODULES AS REQUIRED TO SYNCHRONIZE STROBE FLASHES OF ALL NOTIFICATION APPLIANCES WITHIN A SINGLE FIELD OF VIEW. PROVIDE NEW 120 VAC POWER FROM DEDICATED CIRCUIT.
- CONSTRUCT NEW INITIATING DEVICE CIRCUIT FROM EST MONITOR MODULE IN BUILDING 8020 (TELECOM HUB) AND FIRE ALARM CONTROL PANEL. RE: FA-0.1 KEY NOTE 4.
- FURNISH AND INSTALL NEW CONTROL RELAY TO SHUT DOWN AIR HANDLERS UPON ACTIVATION OF FIRE ALARM. CONNECT TO NEW SIGNALING LINE CIRCUIT.
- ALL WIRING/CONDUIT IN ASSEMBLY HALL OF BUILDING 8000 SHALL BE INSTALLED CONCEALED FROM VIEW. INSTALL CONDUIT/WIRING CONCEALED BEHIND VALENCIA ALONG SOUTH WALL. IT IS PERMISSIBLE TO INSTALL OUTGOING AND RETURN CONDUCTORS FOR CLASS A CIRCUITS IN SAME LOCATION (SERVING ROOMS LESS THAN 1,000 SQ FT) BUT OUTGOING AND RETURN CONDUCTORS SHOULD BE INSTALLED IN SEPARATE CONDUIT/RACEWAY.
- INSTALL PROJECTED BEAM TYPE SMOKE DETECTOR TO PROTECT ASSEMBLY HALL OF BUILDING 8100. DETECTOR SHALL BE SINGLE ENDED TYPE. INSTALL DETECTOR NEAR PEAK OF PITCHED ROOF AND IN ACCORDANCE WITH ALL APPLICABLE PROVISIONS OF NFPA 72 AND MANUFACTURER'S LISTING.

**FIRE ALARM EQUIPMENT LEGEND**

DEVICE	DESCRIPTION	MOUNTING	REMARKS
FACP	NEW ADDRESSABLE FIRE ALARM CONTROL PANEL	SURFACE MOUNT ON WALL	SILENT KNIGHT SEE KEYNOTES FOR MODEL
ANN	NEW FIRE ALARM REMOTE ANNUNCIATOR PANEL	MOUNT ON NEW SURFACE BOX	SILENT KNIGHT 5860 OR EQUAL
NAC-PS	NEW INTELLIGENT POWER SUPPLY	SURFACE MOUNT ON WALL	TO POWER NOTIFICATION APPLIANCE CIRCUITS. SILENT KNIGHT 5495 OR EQUAL
⊙	NEW ADDRESSABLE PHOTOELECTRIC SMOKE DETECTOR	CEILING MOUNTED ON RECESSED J-BOX	INSTALL NEW SMOKE DETECTORS AS SHOWN ON DRAWINGS AT A MAXIMUM SPACING OF 30' O.C. SILENT KNIGHT SK-PHOTO OR EQUAL
⊙	EXISTING SINGLE STATION SMOKE DETECTOR	EXISTING CEILING MOUNT	EXISTING TO REMAIN.
⊙	NEW ADDRESSABLE HEAT DETECTOR (FIXED TEMP.)	CEILING MOUNTED ON RECESSED J-BOX	INSTALL NEW HEAT DETECTORS IN ALL ROOMS WITHOUT SMOKE DETECTORS. AT A MAXIMUM SPACING OF 50' O.C. SILENT KNIGHT SK-HEAT OR EQUAL
⊙	NEW ADDRESSABLE MANUAL PULL STATION	WALL MOUNT AT 48" AFF ON NEW OR EXISTING J-BOX	SILENT KNIGHT SK-PULL-DA OR EQUAL
⊙	EXISTING MANUAL PULL STATION TO BE REMOVED	EXISTING TO BE REMOVED	EXISTING TO BE REMOVED
RM	NEW ADDRESSABLE CONTROL RELAY	MOUNT ON J-BOX WITHIN 3' OF DEVICE CONTROLLED	TO SHUT DOWN AIR HANDLERS UPON ACTIVATION OF FIRE ALARM. SILENT KNIGHT SK-READY OR EQUAL
MM	NEW ADDRESSABLE MONITOR MODULE	MOUNT ON J-BOX WITHIN 3' OF DEVICE OR CIRCUIT MONITORED	TO MONITOR MONITORING OF CONVENTIONAL FIRE ALARM DEVICES. SILENT KNIGHT SK-MINIMON OR EQUAL
⊙	NEW FIRE ALARM HORN/STROBE	CEILING MOUNTED ON RECESSED J-BOX	CANDLE RATING OF STROBE SHALL BE AS INDICATED ON DRAWINGS. STROBES SHALL BE SYNCHRONIZED WITH ALL OTHER STROBES IN VIEW. DEVICE SHALL BE POWERED FROM FACP OR REMOTE NOTIFICATION APPLIANCE CIRCUIT. POWER SUPPLY. COLOR SHALL BE RED. SYSTEM SENSOR SCR OR EQUAL.
⊙	NEW FIRE ALARM STROBE	CEILING MOUNTED ON RECESSED J-BOX	CANDLE RATING OF STROBE SHALL BE AS INDICATED ON DRAWINGS. STROBES SHALL BE SYNCHRONIZED WITH ALL OTHER STROBES IN VIEW. DEVICE SHALL BE POWERED FROM FACP OR REMOTE NOTIFICATION APPLIANCE CIRCUIT. POWER SUPPLY. COLOR SHALL BE RED. SYSTEM SENSOR SCR OR EQUAL.
⊙	NEW EXTERIOR FIRE ALARM HORN/STROBE	WALL MOUNTED ON NEW WEATHERPROOF J-BOX AT HEIGHT INDICATED ON DWG.	CANDLE RATING OF STROBE TO BE A MINIMUM OF 15/75 O.C. DEVICE SHALL BE SUPPLY. COLOR SHALL BE RED. DEVICE SHALL BE LISTED FOR EXTERIOR INSTALLATION.
⊙	EXISTING FIRE ALARM HORN/STROBE	EXISTING TO BE REMOVED	REMOVE EXISTING DEVICE. WIRING J-BOX AND CONDUIT.
⊙	EXISTING FIRE ALARM HORN	EXISTING TO BE REMOVED	REMOVE EXISTING DEVICE. WIRING J-BOX AND CONDUIT.
⊙	EXISTING FIRE ALARM HORN	EXISTING TO BE REMOVED	REMOVE EXISTING DEVICE. WIRING J-BOX AND CONDUIT.
T/R	PROJECTED BEAM SMOKE DETECTOR	WALL MOUNT NEAR PEAK OF PITCHED ROOF	SINGLE ENDED REFLECTED TUBE BEAM DETECTOR (SYSTEM SENSOR BEAM 12245 OR EQUAL)



**OFFICER'S CLUB (8100) FIRE ALARM PLAN**  
 1/8" = 1'-0"  
 0 8' 16' 32'



**BARRACKS (6300) FIRE ALARM PLAN**  
 1/8" = 1'-0"  
 0 8' 16' 32'

08/02/10

JOB NO: 104540  
 DWG ISSUE: ADD #1  
 DRAWN BY: BBH  
 CHECKED BY: GTJ

REVISIONS:  
 ADDENDUM #1  
 08/30/10

DRAWING DATE: 08/02/10  
 REVISION DATE: 08/30/10

**FACILITY WIDE - FIRE ALARM SYSTEM**  
 CAMP WILLIAMS, UT  
**FIRE ALARM SYSTEM UPGRADE**  
 DFCM PROJECT # 10179480

**BARRACKS (6300),  
 MESS HALL (7030) &  
 OFFICER'S CLUB (8100)  
 BUILDINGS  
 FIRE ALARM PLAN  
 FA-2**