

FIRE ALARM UPGRADE: UTAH STATE VETERAN'S NURSING HOME

700 FOOTHILL BLVD.
SALT LAKE CITY, UTAH
84113



STATE OF UTAH
DEPARTMENT OF ADMINISTRATIVE SERVICES
DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT
4110 State Office Building / SLC, Utah 84114 / (801) 538-3018
DFCM PROJECT NO. 10017490



PROTECTION CONSULTANTS, INC.
1199 SOUTH MAIN STREET, SUITE #101 - CENTERVILLE, UT 84012 - 801.295.6070

DRAWING SCHEDULE

SHEET	DRAWING TITLE
FA-1	FIRE ALARM DEMOLITION PLAN - MAIN LEVEL
FA-2	FIRE ALARM DEMOLITION PLAN - BASEMENT
FA-3	FIRE ALARM INITIATING DEVICE PLAN - MAIN LEVEL
FA-4	FIRE ALARM INITIATING DEVICE PLAN - BASEMENT
FA-5	FIRE ALARM NOTIFICATION APPLIANCE PLAN - MAIN LEVEL
FA-6	FIRE ALARM NOTIFICATION APPLIANCE PLAN - BASEMENT
FA-7	FIRE ALARM NOTES & DETAILS

CODE ANALYSIS

A. Applicable Codes:	Year
1. International Building Code	2009
2. International Fire Code	2009
3. NFPA 101 (Life Safety Code)	2006
4. ADA Accessibility Guidelines	1994
5. National Electrical Code (NFPA 70)	2008
6. International Mechanical Code	2009
7. Utah State Fire Marshal Rule R710-4	N/A
8. National Fire Alarm Code (NFPA 72)	2007

B. Building Parameters:	
1. Occupancy Group:	I-2 (IBC) OR EXIST HEALTHCARE (NFPA 101)
2. Building Area:	48,400 Sq.Ft.
3. Stories:	TWO
4. Type of Construction:	Type II-B
5. Fire Sprinklers:	YES
6. Occupancy Separations:	Mechanical Rooms - 1-hour Corridors - 1-hour

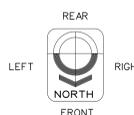
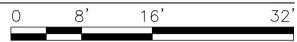
C. Fire Alarm Code Requirements:	
1. Fire Alarm System Required:	YES (IBC 907.2.6)
2. Fire Alarm System Type:	Manual and Automatic (IBC 907.2.6 and 907.2.6.2)
3. Annunciator Locations:	Entry and Nurses Stations (2)
4. Fire Alarm Initiating Devices:	Smoke Detectors in Corridors and Spaces Open to Corridors (IBC 907.2.6.2) Smoke Detectors in Elevator Lobbies (IFC 607) Manual Pull Stations at Nurses Control Stations (IBC 907.2.6 Exception 1) Wet Chemical Fire Suppression System Activation (IBC 904.3.5) Duct Mounted Smoke Detectors (IBC 907.3.1) Fire Sprinkler Flow and Valve Supervisory Switches (IBC 903.4)
5. Fire Alarm Notification Appliances:	Audible Alarms - 15 dB Above Ambient In All Areas Except Patient Rooms (IBC 907.5.2.1) Visible Alarms - All Public and Common Areas (IBC 907.5.2.3) No Notification Appliances are Required in Patient Rooms - Private Mode (IBC 907.2.6 Exception 2)
5. Protected Premise Fire Safety Functions:	Fire Door Release (IBC 715.4.8.3) Fan Shutdown (IMC 606.4) Elevator Recall (IFC 607)

SCHEDULE OF DEFERRED SUBMITTALS

SUB #	DESCRIPTION
1	FIRE ALARM SYSTEM SHOP DRAWINGS
2	FIRE ALARM SYSTEM EQUIPMENT CUT SHEETS
3	FIRE ALARM SYSTEM BATTERY CALCULATIONS
4	FIRE ALARM SYSTEM VOLTAGE DROP CALCULATIONS



FIRE ALARM DEMOLITION PLAN - MAIN LEVEL
 1/8" = 1'-0"



08/03/10

JOB NO: 104542
 DWG ISSUE: BID SET

DRAWN BY: BBH
 CHECKED BY: GTJ

REVISIONS:

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FIRE ALARM
 DEMOLITION PLAN
 MAIN LEVEL

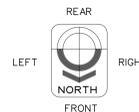
FA-1





FIRE ALARM DEMOLITION PLAN – BASEMENT

1/8" = 1'-0"



FIRE ALARM DEMOLITION KEY NOTES

- 01 EXISTING SIMPLEX FIRE ALARM CONTROL PANEL (FACP) AND ADJACENT BOOSTER PANELS TO BE DEMOLISHED. REMOVE CONTROL PANELS, CABINETS, MODULES, BATTERIES AND ALL UNUSED WIRING/CIRCUITS. UNUSED JUNCTION BOXES AND CONDUIT MAY REMAIN. PHASE DEMOLITION OF EXISTING FIRE ALARM SYSTEM TO OCCUR AFTER NEW FIRE ALARM SYSTEM IS INSTALLED AND COMPLETELY FUNCTIONAL.
- 02 EXISTING FIRE ALARM ANNUNCIATOR PANEL TO BE DEMOLISHED. REMOVE PANEL AND WIRING. EXISTING JUNCTION BOX AND CONDUIT MAY BE ABANDONED IN PLACE. INSTALL A COVER PLATE ON EXISTING JUNCTION BOX. PHASE DEMOLITION OF ANNUNCIATOR TO OCCUR AFTER NEW FIRE ALARM SYSTEM ANNUNCIATORS ARE INSTALLED AND COMPLETELY FUNCTIONAL.
- 03 EXISTING SMOKE OR HEAT DETECTOR TO BE DEMOLISHED. REMOVE DETECTOR, BASE AND WIRING/CIRCUIT. WHERE DETECTOR IS INSTALLED IN LAY-IN TILE CEILING REMOVE JUNCTION BOX AND REPLACE CEILING TILE WITH NEW TILE MATCHING THE SURROUNDING TILES. WHERE DETECTOR IS INSTALLED IN GYP-BOARD CEILING EXISTING JUNCTION BOX MAY REMAIN BUT INSTALL COVER PLATE ON REMAINING JUNCTION BOX (COLOR TO MATCH SURROUNDING CEILING/WALL SURFACE). PHASE DEMOLITION OF DETECTORS TO OCCUR AFTER NEW FIRE ALARM SYSTEM DETECTORS ARE INSTALLED AND COMPLETELY FUNCTIONAL.
- 04 EXISTING FIRE ALARM PULL STATION TO BE DEMOLISHED. REMOVE PULL STATION AND WIRING/CIRCUIT. EXISTING CONDUIT AND JUNCTION BOX SHALL REMAIN AND MAY BE USED FOR MOUNTING NEW PULL STATION IN SAME LOCATION AS OLD PULL STATION. PHASE DEMOLITION OF OLD PULL STATION AND INSTALLATION OF NEW PULL STATIONS TO OCCUR DURING A SINGLE WORK SHIFT (WITH FIRE WATCH PROVIDED THROUGHOUT SHIFT) TO AVOID DISRUPTION OF MANUAL FIRE ALARM SERVICE IN THE OCCUPIED BUILDING.
- 05 EXISTING FIRE SPRINKLER WATER FLOW AND VALVE SUPERVISORY SWITCHES TO REMAIN. DISCONNECT EXISTING SWITCHES FROM FIRE ALARM SYSTEM TO BE DEMOLISHED AND CONNECT SWITCHES TO NEW FIRE ALARM SYSTEM. PHASE DISCONNECTION/RECONNECTION OF SWITCHES TO OCCUR DURING A SINGLE WORK SHIFT (WITH FIRE WATCH PROVIDED THROUGHOUT SHIFT) TO AVOID DISRUPTION OF FIRE SPRINKLER MONITORING SERVICE IN THE OCCUPIED BUILDING.
- 06 EXISTING MAGNETIC FIRE DOOR HOLD-OPEN DEVICE TO REMAIN. DISCONNECT DOOR HOLD-OPEN DEVICES TO OCCUR DURING A SINGLE WORK SHIFT (WITH FIRE WATCH PROVIDED THROUGHOUT SHIFT) TO AVOID DISRUPTION OF FIRE DOOR SERVICE IN THE OCCUPIED BUILDING.
- 07 EXISTING FIRE ALARM NOTIFICATION APPLIANCE TO BE DEMOLISHED. REMOVE DEVICE AND WIRING/CIRCUIT. EXISTING JUNCTION BOX AND CONDUIT MAY BE ABANDONED IN PLACE BUT INSTALL A COVER PLATE (COLOR TO MATCH SURROUNDING WALL SURFACE) ON REMAINING JUNCTION BOX, PATCH AND PAINT WALL SURFACE AS REQUIRED WHERE NEW COVER PLATE DOES NOT COVER THE ENTIRE PROFILE OF THE DEVICE REMOVED. PHASE DEMOLITION OF NOTIFICATION APPLIANCES TO OCCUR AFTER NEW FIRE ALARM NOTIFICATION APPLIANCES ARE INSTALLED AND COMPLETELY FUNCTIONAL.
- 08 EXISTING FIRE ALARM NOTIFICATION APPLIANCE TO REMAIN.
- 09 EXISTING BURIED CONDUIT AND WIRING BETWEEN FIRE SPRINKLER RISER AND EXTERIOR VALVE SUPERVISORY SWITCH ON POST INDICATOR TO REMAIN. CONDUIT AND WIRING MAY BE REUSED TO CONNECT EXISTING VALVE SUPERVISORY SWITCH TO NEW FIRE ALARM SYSTEM.
- 10 EXISTING EXTERIOR FIRE SPRINKLER WATER FLOW ALARM TO REMAIN.
- 11 EXISTING DUCT SMOKE DETECTOR TO BE DEMOLISHED. REMOVE DETECTOR, SAMPLING TUBES AND WIRING/CIRCUIT. PHASE DEMOLITION OF EXISTING DETECTOR AND INSTALLATION OF NEW DETECTOR TO OCCUR DURING A SINGLE WORK SHIFT (WITH FIRE WATCH PROVIDED THROUGHOUT SHIFT) TO AVOID DISRUPTION OF AIR MOVEMENT SYSTEM DETECTION IN THE OCCUPIED BUILDING.
- 12 EXISTING ROLL DOWN FIRE DOOR (INOPERABLE) AT ELEVATOR SHAFT TO REMAIN. DISCONNECT DOOR RELEASING DEVICE FROM EXISTING FIRE ALARM SYSTEM TO BE DEMOLISHED AND CONNECT TO NEW FIRE ALARM SYSTEM. PHASE DISCONNECTION/RECONNECTION OF DOOR RELEASING DEVICE TO OCCUR DURING A SINGLE WORK SHIFT (WITH FIRE WATCH PROVIDED THROUGHOUT SHIFT) TO AVOID DISRUPTION OF FIRE DOOR SERVICE IN THE OCCUPIED BUILDING.
- 13 EXISTING FIRE ALARM RELAYS FOR ELEVATOR RECALL FUNCTIONS TO BE DEMOLISHED. REMOVE RELAYS AND WIRING/CIRCUITS. PHASE DEMOLITION OF RELAYS AND INSTALLATION OF NEW RELAYS TO OCCUR DURING A SINGLE WORK SHIFT (WITH FIRE WATCH PROVIDED THROUGHOUT SHIFT) TO AVOID DISRUPTION OF ELEVATOR RECALL IN THE OCCUPIED BUILDING.

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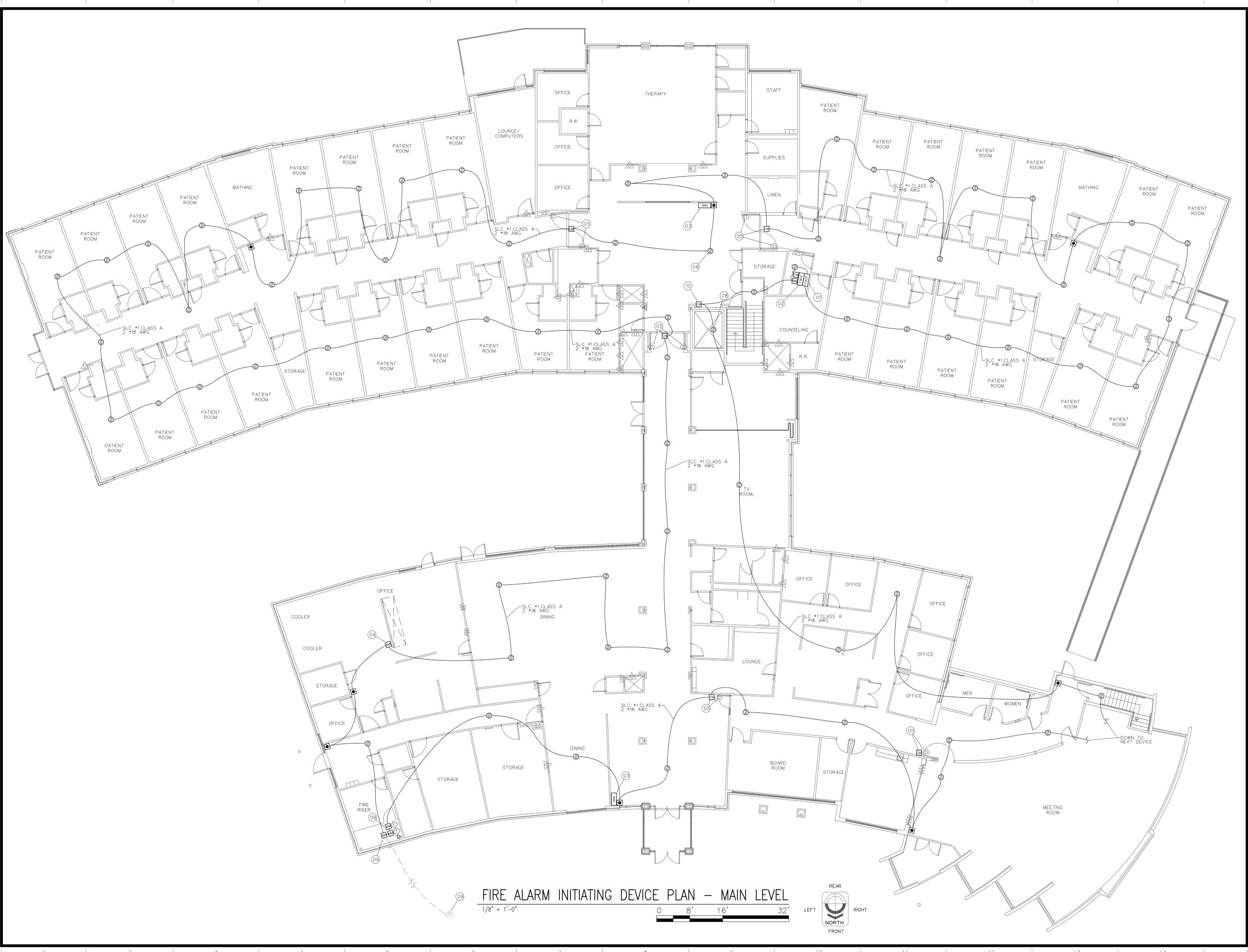
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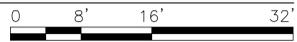
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FIRE ALARM
DEMOLITION PLAN
BASEMENT

FA-2



FIRE ALARM INITIATING DEVICE PLAN - MAIN LEVEL
 1/8" = 1'-0"



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PROJ CONSULTANTS INC.
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 Provo, UT 84601-1099 FAX: 801-796-2541
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 Since 1983

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FIRE ALARM
 INITIATING DEVICE
 PLAN - MAIN LEVEL

FA-3



FIRE ALARM INITIATING DEVICE PLAN - BASEMENT

1/8" = 1'-0"



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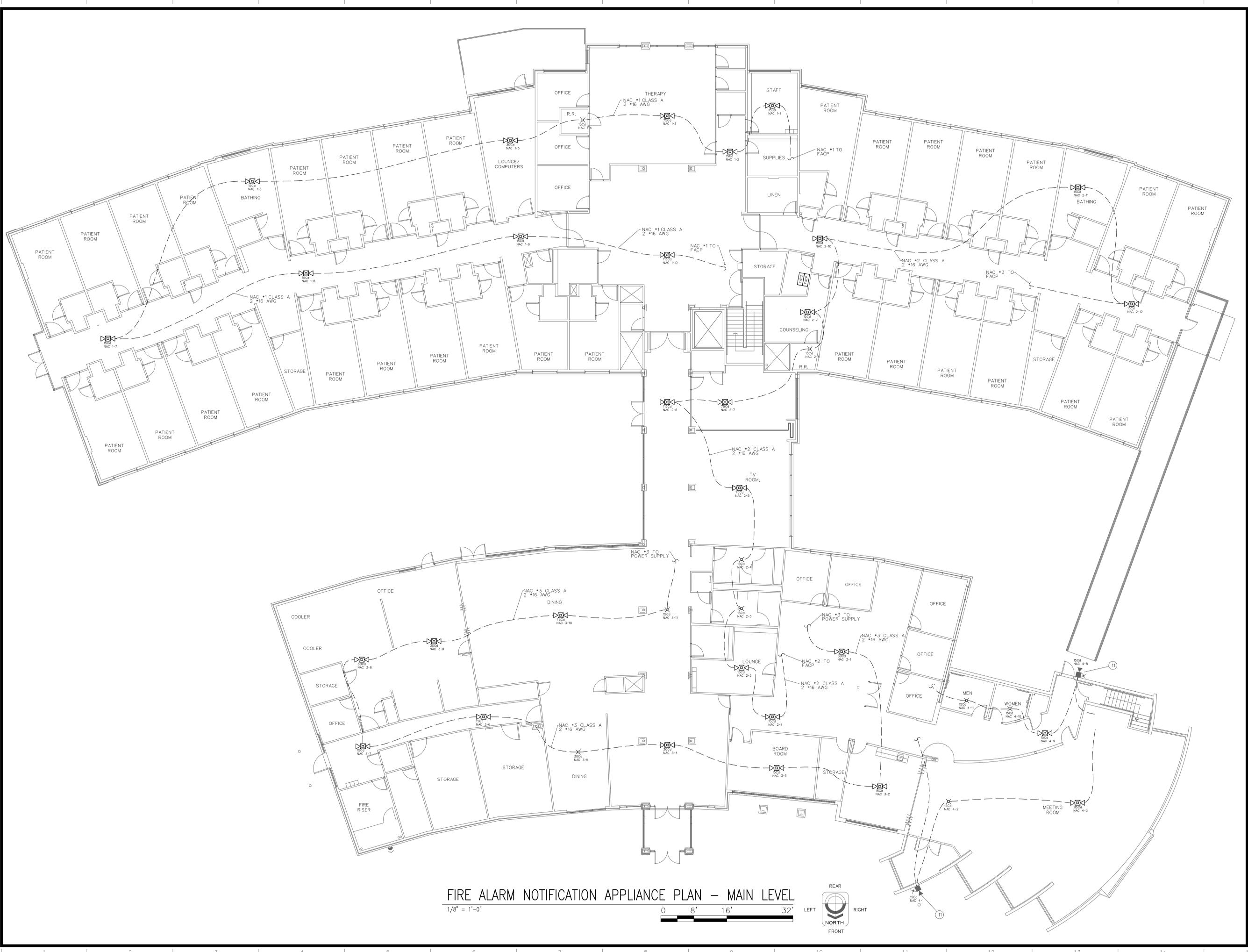
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FIRE ALARM SYSTEM UPGRADE
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FIRE ALARM
INITIATING DEVICE
PLAN - BASEMENT

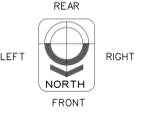
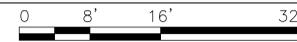
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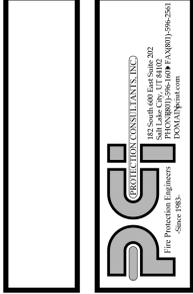


FIRE ALARM NOTIFICATION APPLIANCE PLAN - MAIN LEVEL

1/8" = 1'-0"



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FIRE ALARM NOTIFICATION APPLIANCE PLAN MAIN LEVEL
 FA-5



FIRE ALARM NOTIFICATION APPLIANCE PLAN – BASEMENT

1/8" = 1'-0"



1 VOLTAGE DROP CALCULATIONS NAC #1

Physical Parameters										
Source Voltage	16 AWG					20.4 V				
Wire Gauge	2580 cmil					13 Ohm-cmil/ft				
Wire Resistivity										
Ref. Start No.	Device Distance (feet)	Device Distance (feet)	Cumulative Distance (feet)	Light Intensity (Cd/BA)	Device Current (Amps)	Circuit Current (Amps)	Device Voltage (Vdc)	% Voltage Drop	Ref. End No.	
FACP	70	70	15	0.079	1.041	19.666	3.600	1		
1	30	100	15	0.079	0.962	19.375	1.479	2		
2	30	130	75	0.176	0.883	19.108	1.378	3		
3	30	160	15	0.066	0.707	18.894	1.119	4		
4	30	190	30	0.107	0.641	18.700	1.026	5		
5	80	270	15	0.079	0.534	18.270	2.302	6		
6	80	350	15	0.079	0.455	17.903	2.008	7		
7	60	410	15	0.079	0.378	17.676	1.270	8		
8	60	470	15	0.079	0.297	17.466	1.016	9		
9	45	515	115	0.218	0.218	17.397	0.565	10		
Total Circuit Length		515		Total Circuit Current		1.941		Total Circuit Voltage Drop %		15.76

2 VOLTAGE DROP CALCULATIONS NAC #2

Physical Parameters										
Source Voltage	16 AWG					20.4 V				
Wire Gauge	2580 cmil					13 Ohm-cmil/ft				
Wire Resistivity										
Ref. Start No.	Device Distance (feet)	Device Distance (feet)	Cumulative Distance (feet)	Light Intensity (Cd/BA)	Device Current (Amps)	Circuit Current (Amps)	Device Voltage (Vdc)	% Voltage Drop	Ref. End No.	
FACP	120	120	15	0.079	1.242	18.898	7.363	1		
1	25	145	15	0.079	1.163	18.605	1.550	2		
2	25	170	15	0.066	1.084	18.332	1.468	3		
3	25	195	15	0.066	1.018	18.075	1.399	4		
4	30	225	75	0.176	0.952	17.788	1.562	5		
5	30	255	75	0.218	0.776	17.553	1.319	6		
6	30	285	75	0.176	0.558	17.384	0.961	7		
7	40	325	15	0.066	0.382	17.230	0.896	8		
8	20	345	15	0.079	0.316	17.167	0.370	9		
9	30	375	15	0.079	0.237	17.085	0.417	10		
10	95	470	15	0.079	0.158	16.944	0.885	11		
11	50	520	15	0.079	0.079	16.904	0.235	12		
Total Circuit Length		520		Total Circuit Current		1.242		Total Circuit Voltage Drop %		18.44

3 VOLTAGE DROP CALCULATIONS NAC #3

Physical Parameters										
Source Voltage	16 AWG					20.4 V				
Wire Gauge	2580 cmil					13 Ohm-cmil/ft				
Wire Resistivity										
Ref. Start No.	Device Distance (feet)	Device Distance (feet)	Cumulative Distance (feet)	Light Intensity (Cd/BA)	Device Current (Amps)	Circuit Current (Amps)	Device Voltage (Vdc)	% Voltage Drop	Ref. End No.	
FACP	120	120	30	0.107	1.08	19.094	6.402	1		
1	50	170	15	0.079	0.973	18.604	2.568	2		
2	35	205	15	0.079	0.894	18.288	1.695	3		
3	35	240	30	0.107	0.815	18.001	1.572	4		
4	30	270	30	0.094	0.708	17.787	1.189	5		
5	35	305	15	0.079	0.614	17.570	1.218	6		
6	40	345	15	0.079	0.535	17.355	1.227	7		
7	30	375	30	0.107	0.458	17.217	0.794	8		
8	30	405	30	0.107	0.349	17.111	0.613	9		
9	30	435	75	0.176	0.242	17.038	0.428	10		
10	45	480	15	0.066	0.066	17.008	0.176	11		
Total Circuit Length		480		Total Circuit Current		1.08		Total Circuit Voltage Drop %		17.88

4 VOLTAGE DROP CALCULATIONS NAC #4

Physical Parameters										
Source Voltage	16 AWG					20.4 V				
Wire Gauge	2580 cmil					13 Ohm-cmil/ft				
Wire Resistivity										
Ref. Start No.	Device Distance (feet)	Device Distance (feet)	Cumulative Distance (feet)	Light Intensity (Cd/BA)	Device Current (Amps)	Circuit Current (Amps)	Device Voltage (Vdc)	% Voltage Drop	Ref. End No.	
FACP	190	190	15	0.079	1.102	18.290	10.343	1		
1	30	220	15	0.066	1.023	17.981	1.691	2		
2	35	255	115	0.218	0.957	17.643	1.877	3		
3	40	295	15	0.079	0.739	17.345	1.668	4		
4	25	320	15	0.079	0.66	17.179	0.959	5		
5	30	350	115	0.212	0.561	17.003	1.022	6		
6	30	380	15	0.079	0.369	16.892	0.656	7		
7	40	420	15	0.079	0.29	16.775	0.692	8		
8	25	445	15	0.079	0.211	16.722	0.317	9		
9	20	465	15	0.066	0.132	16.685	0.159	10		
10	20	485	15	0.066	0.066	16.682	0.080	11		
Total Circuit Length		485		Total Circuit Current		1.102		Total Circuit Voltage Drop %		19.48

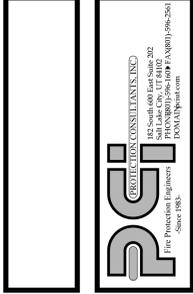
5 VOLTAGE DROP CALCULATIONS NAC #5

Physical Parameters										
Source Voltage	16 AWG					20.4 V				
Wire Gauge	2580 cmil					13 Ohm-cmil/ft				
Wire Resistivity										
Ref. Start No.	Device Distance (feet)	Device Distance (feet)	Cumulative Distance (feet)	Light Intensity (Cd/BA)	Device Current (Amps)	Circuit Current (Amps)	Device Voltage (Vdc)	% Voltage Drop	Ref. End No.	
FACP	45	45	15	0.066	0.895	19.994	1.990	1		
1	35	80	15	0.079	0.829	19.702	1.462	2		
2	45	125	15	0.066	0.75	19.362	1.726	3		
3	45	170	15	0.079	0.684	19.051	1.602	4		
4	50	220	15	0.079	0.605	18.747	1.600	5		
5	30	250	75	0.176	0.526	18.588	0.848	6		
6	60	310	15	0.066	0.35	18.376	1.139	7		
7	40	350	115	0.218	0.284	18.261	0.623	8		
8	35	385	15	0.066	0.066	18.238	0.127	9		
Total Circuit Length		385		Total Circuit Current		0.895		Total Circuit Voltage Drop %		11.12

6 VOLTAGE DROP CALCULATIONS NAC #6

Physical Parameters										
Source Voltage	16 AWG					20.4 V				
Wire Gauge	2580 cmil					13 Ohm-cmil/ft				
Wire Resistivity										
Ref. Start No.	Device Distance (feet)	Device Distance (feet)	Cumulative Distance (feet)	Light Intensity (Cd/BA)	Device Current (Amps)	Circuit Current (Amps)	Device Voltage (Vdc)	% Voltage Drop	Ref. End No.	
FACP	65	65	15	0.066	1.113	19.671	3.574	1		
1	30	95	15	0.218	1.047	19.354	1.690	2		
2	60	155	115	0.107	0.829	18.853	2.599	3		
3	40	195	15	0.066	0.722	18.562	1.544	4		
4	15	210	15	0.066	0.656	18.463	0.534	5		
5	15	225	115	0.079	0.59	18.379	0.483	6		
6	35	260	15	0.079	0.511	18.194	0.981	7		
7	35	295	15	0.107	0.432	18.041	0.838	8		
8	35	330	15	0.107	0.325	17.927	0.635	9		
9	80	410	15	0.218	0.218	17.751	0.980	10		
Total Circuit Length		410		Total Circuit Current		1.113		Total Circuit Voltage Drop %		13.77

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FIRE ALARM NOTIFICATION APPLIANCE PLAN BASEMENT
FA-6

FIRE ALARM SYSTEM GENERAL NOTES

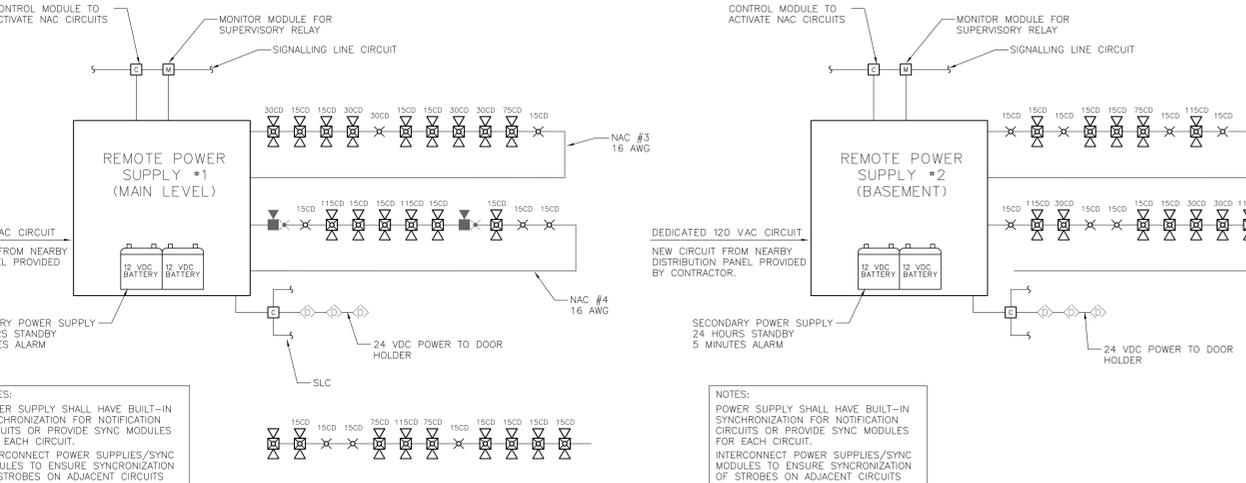
- SCOPE OF WORK: WORK SHALL INCLUDE REMOVAL OF EXISTING SIMPLEX FIRE ALARM SYSTEM INCLUDING ALL CONTROL EQUIPMENT, POWER SUPPLIES, CABINETS, INT. CIRCUITS AND DEVICES, NOTIFICATION APPLIANCE CIRCUITS AND DEVICES, INSTALL NEW FIRE ALARM SYSTEMS INCLUDING CONTROL PANELS WITH NEW SIGNALING LINE CIRCUITS, INITIATING DEVICE CIRCUITS 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 UL 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.N.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 GROUNDS. 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 & S-BUS 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 FUNCTION. EXISTING CONDUIT AND WIRING FROM FIRE SPRINKLER RISER TO EXTERIOR POST INDICATOR MAY BE REUSED.
 - OPERATION OF SMOKE DETECTOR IN ELEVATOR EQUIPMENT ROOM, SHAFT OR ELEVATOR LOBBY IN BASEMENT - ELEVATOR RECALLS TO 1ST LEVEL (PRIMARY RECALL).
 - OPERATION OF SMOKE DETECTOR ON MAIN LEVEL - ELEVATOR RECALLS TO BASEMENT (SECONDARY RECALL).
- 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-

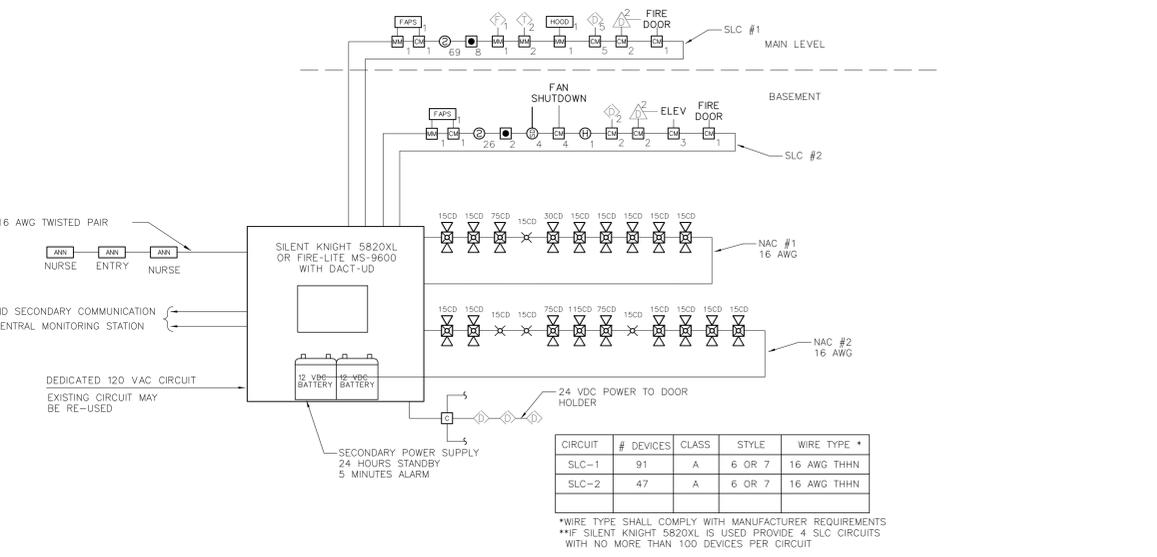


3 REMOTE POWER SUPPLY #1
NTS

4 REMOTE POWER SUPPLY #2
NTS

OUTPUT ACTIONS

SYSTEM INPUTS	ACTIVATE LOCAL FIRE ALARM NOTIFICATION APPLIANCES (ALL CIRCUITS)	ACTIVATE ANY AREA SMOKE DETECTOR	ACTIVATE ANY MANUAL PULL STATION	ACTIVATE ANY DUCT SMOKE DETECTOR	ACTIVATE FIRE SPRINKLER FLOW SWITCH	ACTIVATE FIRE SPRINKLER VALVE TAMPER SWITCH	ACTIVATE ANY SMOKE DETECTOR IN ELEVATOR EQUIPMENT ROOM OR SHAFT	ACTIVATE ANY SMOKE DETECTOR IN ELEVATOR LOBBY (1ST LEVEL)	ACTIVATE ANY SMOKE DETECTOR IN ELEVATOR LOBBY (BASEMENT, 2ND, 3RD & 4TH LEVELS)	LOSS OF AC POWER	LOW BATTERY VOLTAGE	REMOTE POWER SUPPLY TROUBLE	CIRCUIT FAULTS
ACTIVATE LOCAL FIRE ALARM NOTIFICATION APPLIANCES (ALL CIRCUITS)	X	X											
TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION	X	X	X										
SOUND TROUBLE ALARM AT FACP AND ANNUNCIATOR			X										
RECALL ELEVATOR TO 1ST LEVEL (PRIMARY RECALL)					X								
RECALL ELEVATOR TO BASEMENT (SECONDARY RECALL)						X							
SHUT DOWN AIR HANDLERS						X	X	X	X				
RELEASE DOOR HOLD-OPEN DEVICES							X	X	X				
CLOSE FIRE/SMOKE DAMPERS							X	X	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 5845, FIRE LITE FPS-24/30/36/48/60
[ANN]	NEW FIRE ALARM REMOTE ANNUNCIATOR	MOUNT AT 54" AFF ON RECESSED J-BOX WITH CONDUIT CONCEALED IN WALL	SILENT KNIGHT 5860R OR FIRE LITE ANN-80
[ANN]	EXISTING ADDRESSABLE ANNUNCIATOR	EXISTING TO BE REMOVED	REMOVE EXISTING ANNUNCIATOR AND INSTALL COVER PLATE
[SMD]	NEW ADDRESSABLE PHOTOELECTRIC SMOKE DETECTOR	CEILING MOUNT ON RECESSED J-BOX	SILENT KNIGHT SK-PHOTO OR FIRE LITE S205. MAXIMUM SPACING OF 30' ON CENTER.
[SMD]	EXISTING SMOKE DETECTOR	EXISTING TO BE REMOVED	REMOVE EXISTING DETECTOR AND REPLACE CEILING TILE
[HDD]	EXISTING HEAT DETECTOR	EXISTING TO BE REMOVED	REMOVE EXISTING DETECTOR AND REPLACE CEILING TILE
[PST]	NEW ADDRESSABLE PULL STATION	MOUNT 48" TO 48" AFF ON NEW OR EXISTING J-BOX WITH CONDUIT CONCEALED IN WALL	SILENT KNIGHT SK-PULL-DA OR FIRE LITE RP-12/14
[PST]	EXISTING PULL STATION	EXISTING TO BE REMOVED	REMOVE EXISTING PULL STATION. EXISTING J-BOX MAY BE REUSED FOR NEW PULL STATION AT SAME LOCATION
[NMSD]	NEW DUCT MOUNTED SMOKE DETECTOR	SUPPLY AND/OR RETURN DUCTS OF AIR HANDLERS PER MANUFACTURER'S REQUIREMENTS WITH A CAPACITY IN EXCESS OF 2,000 CFM	SILENT KNIGHT SK-DUCT OR FIRE LITE MS-9600 WITH DACT-UD
[NMSD]	EXISTING DUCT MOUNTED SMOKE DETECTOR	EXISTING TO BE REMOVED	REMOVE EXISTING DETECTOR HOUSING AND SAMPLING TUBES
[MM]	NEW ADDRESSABLE MONITOR MODULE	MOUNT ON J-BOX WITHIN 3' OF DEVICE OR CIRCUIT MONITORED	SILENT KNIGHT SK-MONITOR OR FIRE LITE MS-9600 TO MONITOR CONVENTIONAL INITIATING DEVICES AS AN ADDRESSABLE POINT
[EM]	NEW ADDRESSABLE CONTROL RELAY	MOUNT ON J-BOX WITHIN 3' OF DEVICE OR CIRCUIT BEING CONTROLLED	SILENT KNIGHT SK-RELAY OR FIRE LITE MS-9600 FOR INITIATION OF PROTECTED PREMISE FIRE SAFETY FUNCTIONS (DOOR RELEASE, FAN SHUTDOWN, ELEVATOR RECALL, ETC.)
[REL]	EXISTING CONTROL RELAY	EXISTING TO BE REMOVED	REMOVE EXISTING FIRE ALARM RELAYS
[WFS]	EXISTING WATER FLOW SWITCH	EXISTING TO REMAIN	EXISTING SWITCH TO REMAIN. CONNECT TO NEW FIRE ALARM SYSTEM
[VSS]	EXISTING VALVE SUPERVISORY SWITCH	EXISTING TO REMAIN	EXISTING SWITCH TO REMAIN. CONNECT TO NEW FIRE ALARM SYSTEM
[MDO]	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
[HNS]	NEW FIRE ALARM HORN/STROBE	CEILING MOUNT ON RECESSED J-BOX	SYSTEM SENSOR (P/OW (WHITE) OR EQUAL STROBES SHALL BE SYNCHRONIZED WITH ALL OTHER STROBES IN NEW POWER TO DEVICE FROM FACP OR FAPS. CANDELA RATING SHALL BE SET AS INDICATED ON DRAWINGS
[HNS]	NEW FIRE ALARM STROBE	CEILING MOUNT ON RECESSED J-BOX	SYSTEM SENSOR (OW (WHITE) OR EQUAL STROBES SHALL BE SYNCHRONIZED WITH ALL OTHER STROBES IN NEW POWER TO DEVICE FROM FACP OR FAPS. CANDELA RATING SHALL BE SET AS INDICATED ON DRAWINGS
[HNS]	EXISTING FIRE ALARM HORN/STROBE	EXISTING TO BE REMOVED	REMOVE EXISTING NOTIFICATION APPLIANCE AND CIRCUIT. INSTALL COVER PLATE ON REMAINING J-BOX
[HNS]	EXISTING EXTERIOR FIRE ALARM HORN	EXISTING TO BE REMOVED	REMOVE EXISTING NOTIFICATION APPLIANCE AND CIRCUIT. INSTALL COVER PLATE ON REMAINING J-BOX
[HNS]	EXISTING EXTERIOR FIRE ALARM HORN/STROBE	EXISTING TO BE REMAIN	EXISTING DEVICE TO REMAIN. CONNECT TO NEW FIRE ALARM SYSTEM

08/03/10

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DWG ISSUE: BID SET

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REVISIONS:

08/03/10

REVISION DATE:

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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