NFPA 72 Requirements for Plan Review and Documentation of Fire Alarm Submittals

Safety Design in Buildings Conference
November 21, 2016, Crowne Plaza Muscat

Presented by: Wail AlMuharzi

Course Description

The plan review and documentation of the design and subsequent acceptance to the Authority Having Jurisdiction (AHJ) for fire alarms systems will be addressed in this presentation. Most of the fire alarm plans submitted for review and comment experience delays in the approval process by the AHJ due to absence of details on the plans and incomplete documentation. The presentation will address the cases behind the delays and describe the minimum documents required by NFPA 72 to help the designer to avoid delays to their projects and make obtaining permits easier.

The content of the presentation will describe the importance of each documents required by NFPA 72 and the best way to document those requirements. At the end of the presentation, the attendances should be able to understand what is the minimum document submittal requirement to obtain approval for the fire alarm design or permit issuance at different stages of the project. Those who submit drawings approval to third party consultancy or AHJ for approval will benefit from the presentation.

Presenter

Wail Almuhrzi, P.E, MSc. Fire Safety Engineering

Managing Director - Muscat

Aman Fire Protection Consultants

Wail is the founder and managing director of Aman Fire Engineering Consultants (Aman FEC). His extensive background in fire protection engineering spans over 10 years' including building and fire code development, code consulting, active and passive fire protection and specifications.

Wail has a Bachelor of Civil Engineering from Sultan Qaboos University and a Master's of Fire Safety Engineering from the University of Central Lancashire.

His primary specialties include fire protection and life safety engineering and consulting, performance of site fire and life safety audits and surveys, project meetings with clients and authorities having jurisdiction, preparation of fire strategy reports, review of fire protection system designs, project management, and participation in business development activities.

Learning Objectives

1. *Provide guideline to help the designers of the fire alarm and detection system on how to provided complete design package*
2. *Provide better understanding on the minimum details required to be shown for design review or approval and Address the importance of these submittals.*
3. *Address reasons and examples behind approval delays*
4. *Address the common mistakes or missing details that are required be provided per NFPA 72*

- The purpose of this presentation is to convey technical knowledge to the conference participants.
- The presentation also contains slides with text that summarises the content of the presentation and the main learning objectives.
- These may be used to update CPD records for relevant organisations including the Chartered Institute of Building (CIOB).

Fire Alarm and Detection System

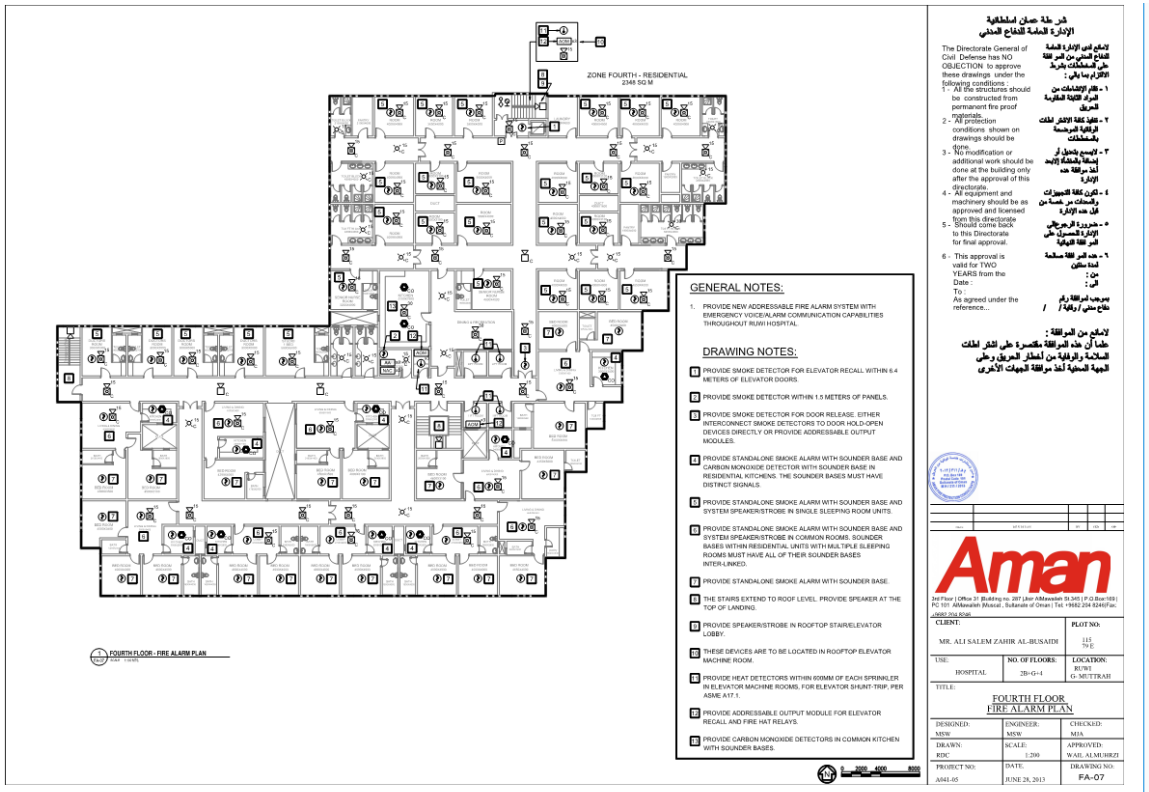
Fire Alarm system

Prepare a conceptual fire alarm detection and notification system layout for the proposed facility.

Drawings shall identify required

- ✓ Control panels
- ✓ Sequence of operation
- ✓ Notification appliances
- ✓ Fire alarm initiating devices
- ✓ Locations of smoke detectors
- ✓ Connections to fire protection and building systems, and necessary connections to off-site monitoring facilities. Applicable codes

Provide Fire Alarm System Note



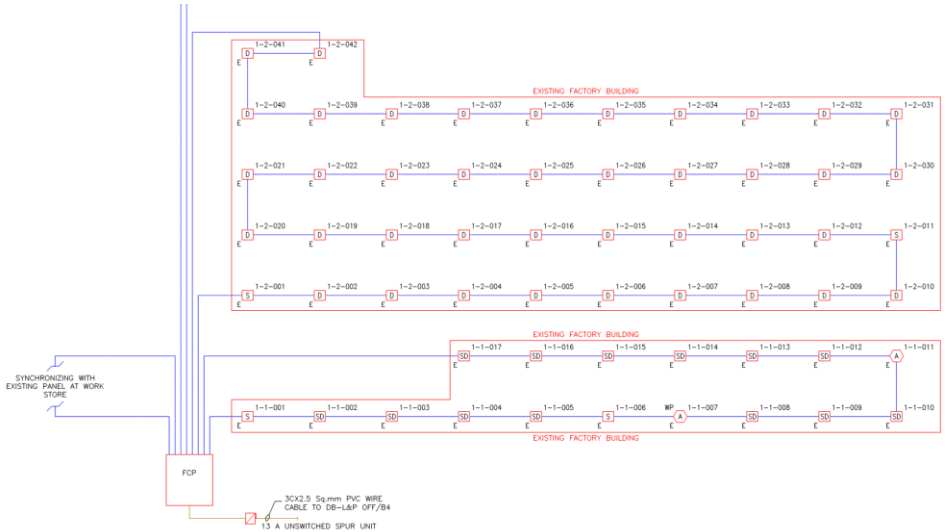
Documentation

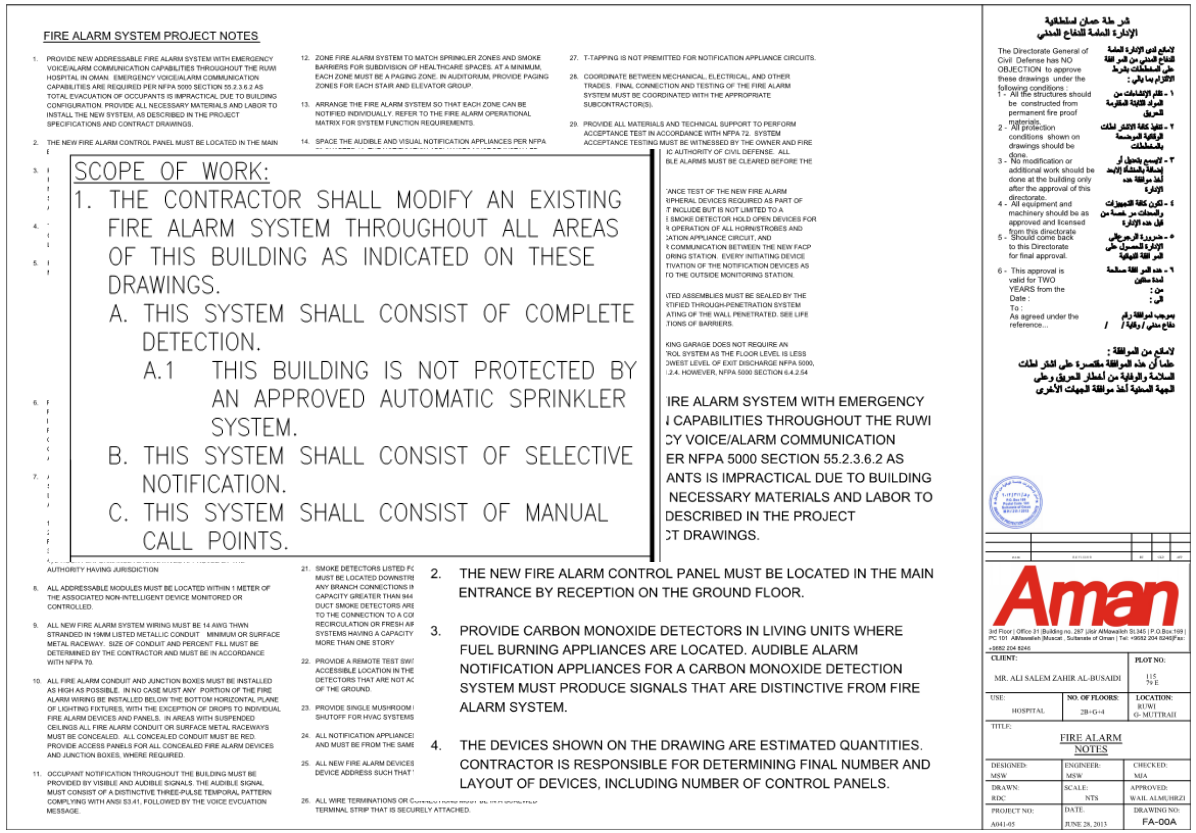
7.2 Minimum Required Documentation	7.3 Design Drawings	7.4 Shop Drawings (Installation) drawings
• For New System • For Existing addition and alternation	• Apply only where required by other governing laws, codes or standards • Project specification	• Apply only where required by other governing laws, codes or standards • Project specification

Documentation Submittal Requirements

7.2.1 Minimum Required Documentation

- Description for the design intent (Scope)
- Riser Diagram





FIRE ALARM SYSTEM PROJECT NOTES

SCOPE OF WORK:

1. THE CONTRACTOR SHALL MODIFY AN EXISTING FIRE ALARM SYSTEM THROUGHOUT ALL AREAS OF THIS BUILDING AS INDICATED ON THESE DRAWINGS.
   - A. THIS SYSTEM SHALL CONSIST OF COMPLETE DETECTION.
     - A.1 THIS BUILDING IS NOT PROTECTED BY AN APPROVED AUTOMATIC SPRINKLER SYSTEM.
   - B. THIS SYSTEM SHALL CONSIST OF SELECTIVE NOTIFICATION.
   - C. THIS SYSTEM SHALL CONSIST OF MANUAL CALL POINTS.

2. THE NEW FIRE ALARM CONTROL PANEL MUST BE LOCATED IN THE MAIN ENTRANCE BY RECEPTION ON THE GROUND FLOOR.
3. PROVIDE CARBON MONOXIDE DETECTORS IN LIVING UNITS WHERE FUEL BURNING APPLIANCES ARE LOCATED. AUDIBLE ALARM NOTIFICATION APPLIANCES FOR A CARBON MONOXIDE DETECTION SYSTEM MUST PRODUCE SIGNALS THAT ARE DISTINCTIVE FROM FIRE ALARM SYSTEM.
4. THE DEVICES SHOWN ON THE DRAWING ARE ESTIMATED QUANTITIES. CONTRACTOR IS RESPONSIBLE FOR DETERMINING FINAL NUMBER AND LAYOUT OF DEVICES, INCLUDING NUMBER OF CONTROL PANELS.

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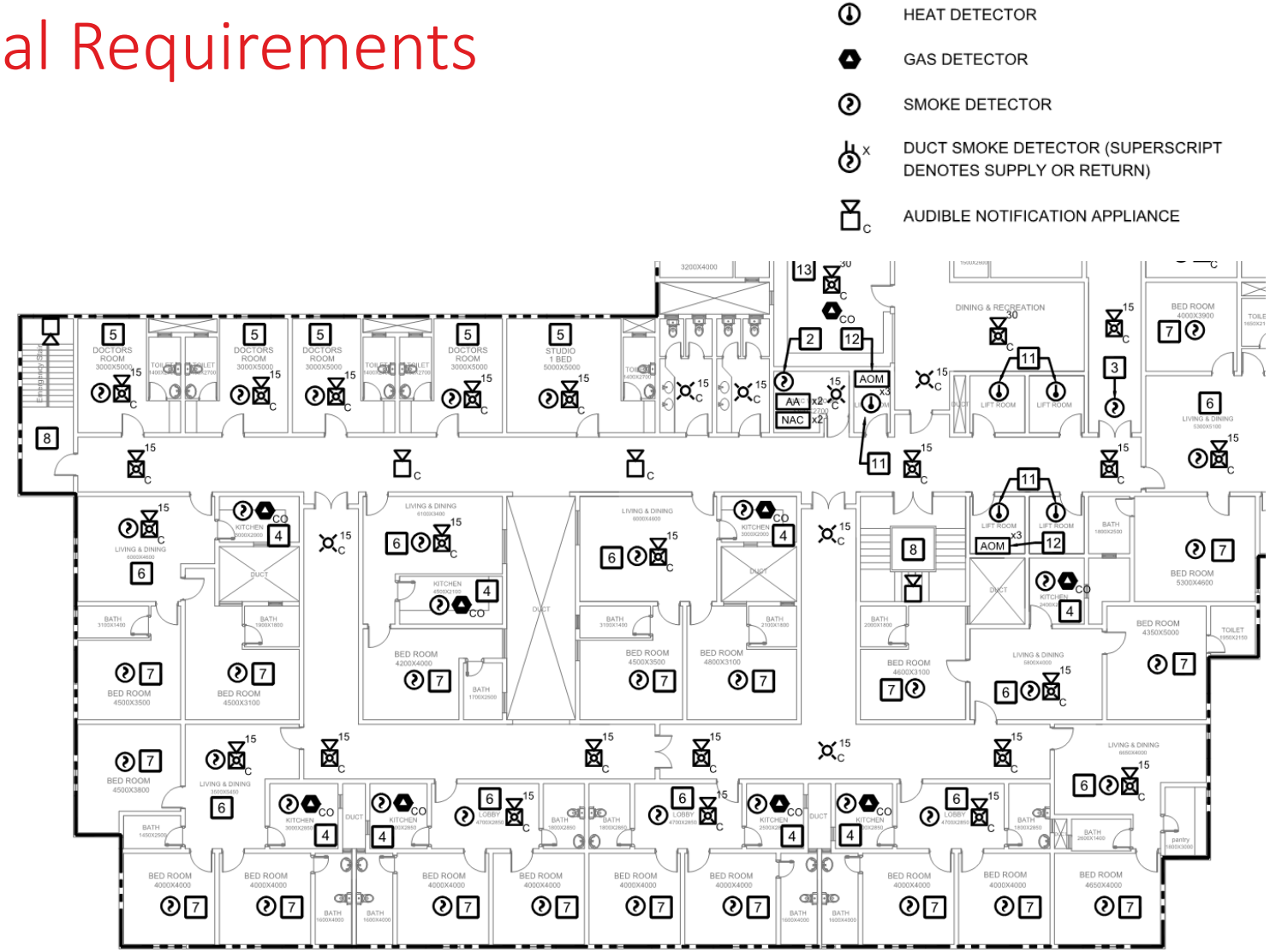
Documentation Submittal Requirements

7.2.1 Minimum Required Documentation

- Floor plan layout showing the locations of all of the following :
  - Devices
  - Appliances
  - Control equipment
  - Supervising station and
  - shared communications equipment
- Drawings formats to consider the following:
  - Graphic representation of the scale used
  - Room use identification
  - Room or space features that will affect the placement of initiating devices and notification appliances
  - Use NFPA 170 symbols



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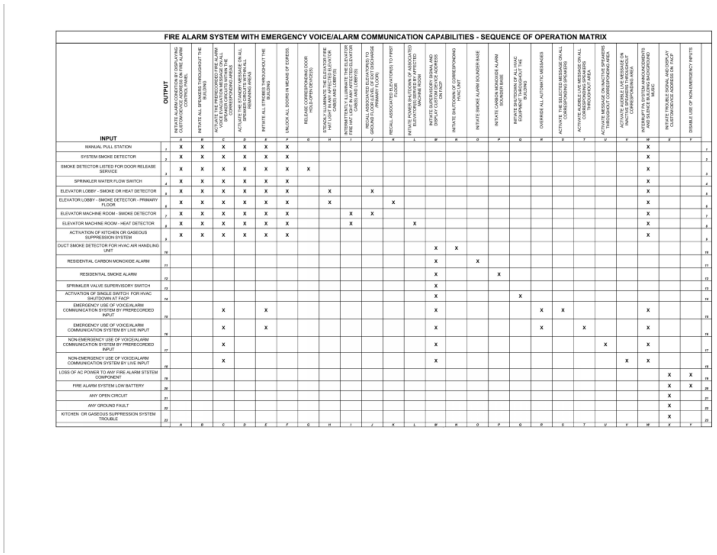
Documentation Submittal Requirements

7.2.1 Minimum Required Documentation

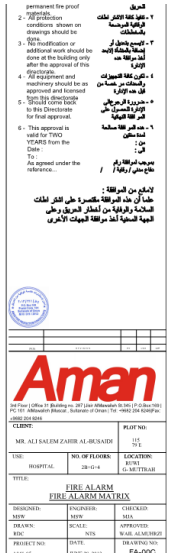
- Sequence of operation either as a narrative or an input/output matrix

- Equipment technical data sheets

- Manufacturer's published instructions



FIRE ALARM SYSTEM WITH EMERGENCY VOICE/ALARM COMMUNICATION CAPABILITIES - SEQUENCE OF OPERATION MATRIX



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CLIENT: MR. ALI SALEM ZAHIR AL-BUSAIDI

PLOT NO: 115, 75-E

USE: HOSPITAL

NO. OF FLOORS: 2B+G+4

LOCATION: IBRI G. MUTTRAH

TITLE: FIRE ALARM FIRE ALARM MATRIX

DESIGNED: MSW

ENGINEER: MSW

CHECKED: MJA

DRAWN: RSC

SCALE: NTS

APPROVED: WAIL ALMUHIGH

PROJECT NO.:

DATE:

DRAWING NO.:

FIRE ALARM SYSTEM WITH EMERGENCY VOICE/ALARM COMMUNICATIO

INPUT		OUTPUT A	B	C	D	E	F	G	H	I	J	K	L
		INITIATE ALARM CONDITION BY DISPLAYING CUSTOM DEVICE ADDRESS ON FIRE ALARM CONTROL PANEL	INITIATE ALL SPEAKERS THROUGHOUT THE BUILDING	ACTUATE THE PRERECORDED FIRE ALARM VOICE EVACUATION MESSAGE ON ALL SPEAKER CIRCUITS WITHIN THE CORRESPONDING AREAS	ACTUATE THE STANDBY MESSAGE ON ALL SPEAKER CIRCUITS WITHIN ALL REMAINING AREAS	INITIATE ALL STROBES THROUGHOUT THE BUILDING	UNLOCK ALL DOORS IN MEANS OF EGRESS.	RELEASE CORRESPONDING DOOR HOLD-OPEN DEVICE(S)	STEADILY ILLUMINATE THE ELEVATOR FIRE HAT LIGHT IN ANY AFFECTED ELEVATOR CAB(S) AND LOBBY(S)	INTERMITTENTLY ILLUMINATE THE ELEVATOR FIRE HAT LIGHT IN ANY AFFECTED ELEVATOR CAB(S) AND LOBBY(S)	RECALL ASSOCIATED ELEVATOR(S) TO GROUND FLOOR (LEVEL OF EXIT DISCHARGE /PRIMARY FLOOR)	RECALL ASSOCIATED ELEVATOR(S) TO FIRST FLOOR	INITIATE POWER SHUTDOWN OF ASSOCIATED ELEVATOR(S) SERVED BY AFFECTED
MANUAL PULL STATION	1	X	X	X	X	X	X						
SYSTEM SMOKE DETECTOR	2	X	X	X	X	X	X						
SMOKE DETECTOR LISTED FOR DOOR RELEASE SERVICE	3	X	X	X	X	X	X	X					
SPRINKLER WATER FLOW SWITCH	4	X	X	X	X	X	X						
ELEVATOR LOBBY - SMOKE OR HEAT DETECTOR	5	X	X	X	X	X	X		X		X		
ELEVATOR LOBBY - SMOKE DETECTOR - PRIMARY FLOOR	6	X	X	X	X	X	X		X			X	
ELEVATOR MACHINE ROOM - SMOKE DETECTOR	7	X	X	X	X	X	X			X	X		
ELEVATOR MACHINE ROOM - HEAT DETECTOR	8	X	X	X	X	X	X			X			X
ACTIVATION OF KITCHEN OR GASEOUS SUPPRESSION SYSTEM	9	X	X	X	X	X	X						

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Documentation Submittal Requirements

7.2.1 Minimum Required Documentation

- Battery capacity and de-rating calculations
- Voltage drop calculations for notification appliance circuits

IBM BLDG 2 NAC 2 4009 NAC

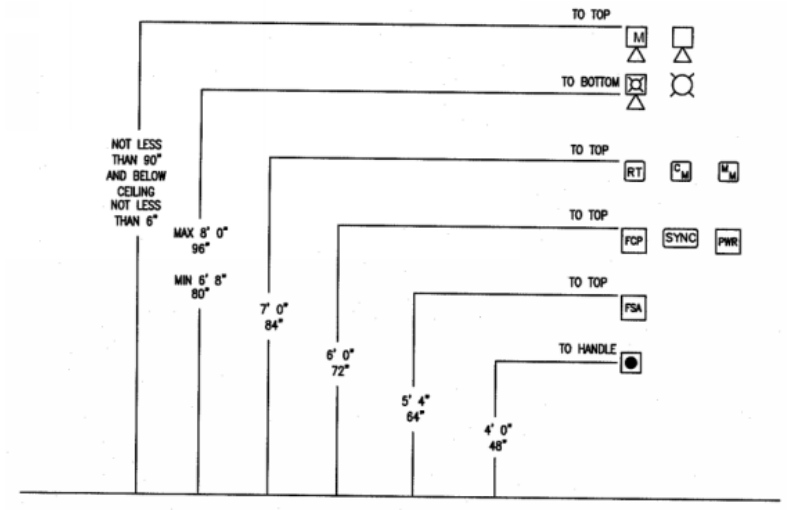
Module	Qty	Description		Standby Current	Total Standby	Alarm Current	Total Alarm
Panel Equipment							
4009-9001	1	FOUR CIRCUIT NAC EXTENDER, 120 VAC		0.0670	0.0670	0.1030	0.1030
4009-9803	1	4 CIRCUIT NAC ADD-ON STYLE Y		0.0370	0.0370	0.0730	0.0730
		Panel Totals			0.1040		0.1760
Notification Appliances							
4904-9136	1	110CD VISIBLE ONLY RED	110	0.0000	0.0000	0.2250	0.2250
4904-9137	5	15CD VISIBLE ONLY RED	15	0.0000	0.0000	0.1000	0.5000
4904-9162	1	15CD VISIBLE ONLY RED, CEILING	15	0.0000	0.0000	0.0900	0.0900
4904-9163	8	30CD VISIBLE ONLY RED, CEILING	30	0.0000	0.0000	0.1280	1.0240
4904-9164	1	110CD VISIBLE ONLY RED, CEILIGN	110	0.0000	0.0000	0.2250	0.2250
E90-24100C-FW	5	WHEELOCK CEILING SPEAKER/STROBE 100CD	100cd	0.0000	0.0000	0.2380	1.1900
E90-2415C-FW	39	WHEELOCK CEILING SPEAKER/STROBE 15CD	15	0.0000	0.0000	0.0670	2.6130
E90-2430C-FW	1	WHEELOCK CEILING SPEAKER/STROBE 30CD	30	0.0000	0.0000	0.1020	0.1020
		Peripheral Totals			0.0000		5.9690
			Total Standby		0.1040	Total Alarm	6.1450

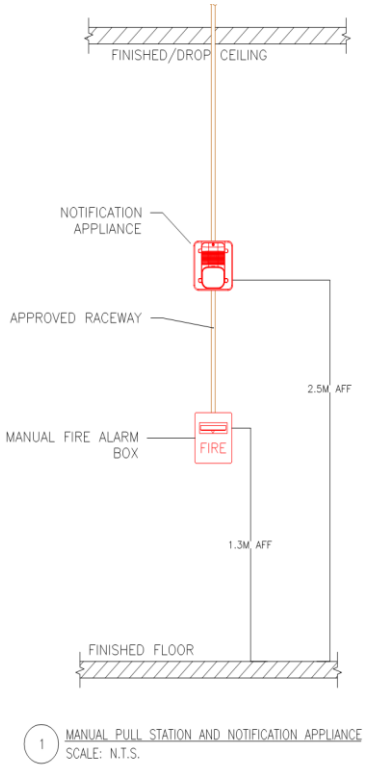
Battery Set #1 (Cabinet/Charger #1)			Standby Current	Standby Total	Alarm Current	Alarm Total
Select ALL Power Supplies on this battery set:						
4009				0.1040		6.1450
			Sub Total	0.1040		6.1450
Spare addressable point capacity	0%	0	x 0	= 0.0000	x 0	= 0.0000
			Total	0.1040		6.1450
Standby Time = 4 Hrs			x 0.1040	= 0.4160 Standby Ah		
Alarm Time = 15 Min			0.25 x 6.145	= 1.5363 Alarm Ah		
				1.9523		
Additional Spare Capacity = 10%				+ 0.1952		
				2.1475		
Battery Discharge Factor = 20%				+ 0.4295		
Minimum Battery Required 2081-9272 6.2AH (2x)				2.5770		
Battery Supplied 2081-9272 6.2AH (2x)						

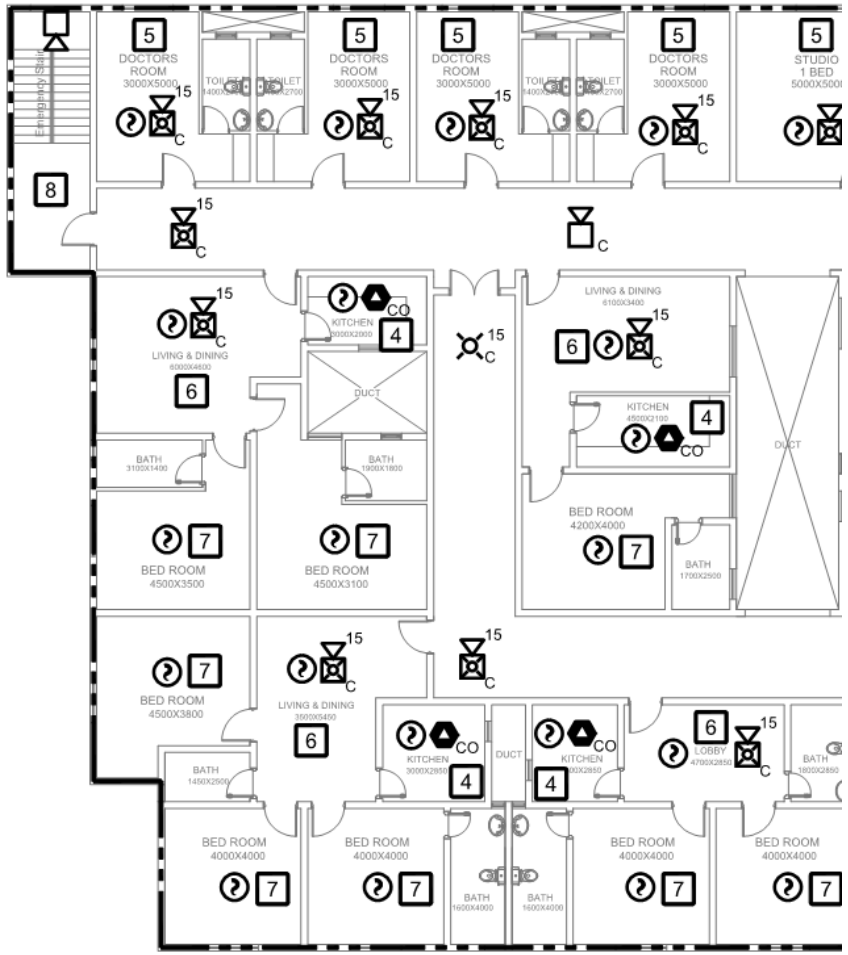
Documentation Submittal Requirements

7.2.1 Minimum Required Documentation

- Mounting height for wall-mounted devices and appliances
- Where notification is required, the minimum Sound Pressure Level to be provided in areas where audible notification is required







Documentation Submittal Requirements

7.2.1 Minimum Required Documentation

- Pathway diagrams between the control unit and the supervising station and shared communication equipment
- The name and contact information for the system designer
- Inspection and Testing Completion records and Checklists

Fire Alarm Systems - Protected Premises — Initial Acceptance Inspection and Testing Checklist

Inspection Information

Project Number:

Inspection Location:

Inspection Date:

Inspector Name and Company:

Inspection Approval: ☐ Approved ☐ Approved with Comments ☐ Rejected

This form is to be completed by the contractor fire protection consultants at the time of system acceptance and approval.

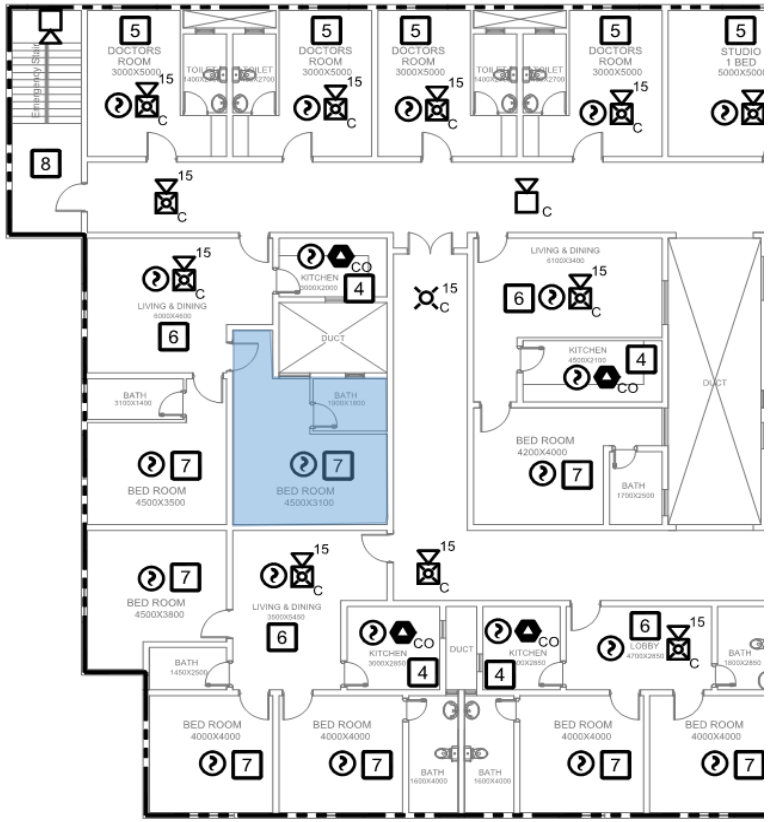
Control Equipment – Inspection

#	Review Question			
1	Control panel type match approved design and submittals?	☐ Yes	☐ No	☐ N/A
2	Control panel location match approved design and submittals?	☐ Yes	☐ No	☐ N/A
3	Annunciator type match approved design and submittals?	☐ Yes	☐ No	☐ N/A
4	Annunciator location match approved design and submittals?	☐ Yes	☐ No	☐ N/A
5	Amplifier type and capacity match approved design and submittals?	☐ Yes	☐ No	☐ N/A
6	Notification appliance extender panel type match approved design and submittals?	☐ Yes	☐ No	☐ N/A
7	Notification appliance extender panel location match approved design and submittals?	☐ Yes	☐ No	☐ N/A
8	Supervising station connection equipment match approved design and submittals?	☐ Yes	☐ No	☐ N/A
9	Releasing panel type match approved design and submittals?	☐ Yes	☐ No	☐ N/A
10	Releasing panel locations match approved design and submittals?	☐ Yes	☐ No	☐ N/A
11	Remote microphone/paging station type match approved design and submittals?	☐ Yes	☐ No	☐ N/A
12	Remote microphone/paging location match approved design and submittals?	☐ Yes	☐ No	☐ N/A

7.3 Design (Layout) Documentation

7.3.4 Notification

- The minimum Sound Pressure Level to be provided in areas where audible notification is required in accordance with 18.4.1.4.3
- Narrow band tone signaling if used in accordance with 18.4.6.4
- specify rooms and spaces that will, and will not, have visible signaling in accordance with 18.5.2.1 (Area To be Hatched)

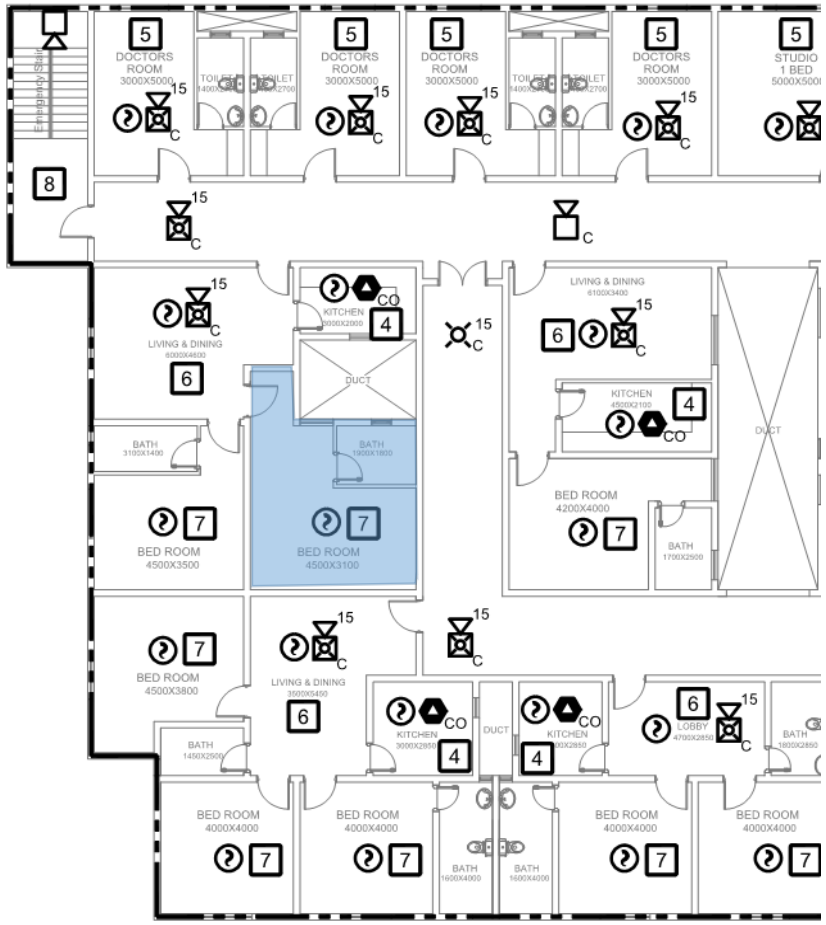


Hatch area show area that dose not have visible signaling

7.3 Design (Layout) Documentation

7.3.4 Notification

- Acoustically Distinguishable Spaces (ADS) in accordance with 18.4.10



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7.3 Design (Layout) Documentation

7.3.5 Detection

- Heat in accordance with 17.6
- Smoke in accordance with 17.7
- Radiant energy-sensing in accordance with 17.8
- Gas in accordance with 17.10

INITIATING DEVICE SPACING TABLE	
P	AT EVERY EXIT AND WITHING A TRAVEL DISTANCE OF 61M
	9.1M X 9.1M
	9.1M X 9.1M
	IN VICINITY OF EACH FUEL BURNING APPLIANCE IN RESIDENTIAL AREAS

7.3 Design (Layout) Documentation

7.3.6 Risk Analysis

- Where required, the findings and considerations of the risk analysis shall be documented
- Documentation shall list the various scenarios evaluated and anticipated outcomes

7.3.7 Performance-based Design

- Documentation of all performance objectives for AHJ approval

7.3 Design (Layout) Documentation

7.3.8 Emergency Response Plan

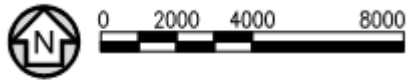
- Various scenarios evaluated and the outcomes to be documented for AHJ approval

7.3.9 Evaluation Documentation

- Attesting statement by the person responsible for the design.

7.4 Shop Drawings (Installation) drawings

- In addition to the minimum information required by 7.2 and 7.3
- Drawings shall consider the following:
  - Drawn to Scale
  - Sheet uniform size (typically A1)
  - Plan of Each floor
  - North Direction
  - Name of protected premises, owner, and occupant
  - Name of installer or contractor
  - Date of issue and revision dates



DATE	REVISION	BY	CKD	APP

Aman

3rd Floor | Office 31 |Building no. 287 |Jisir AlMawaileh St.345 | P.O.Box:169 | PC 101 AlMawaileh |Muscat , Sultanate of Oman | Tel: +9682 204 8246|Fax: +9682 204 8246

CLIENT:		PLOT NO:
MR. ALI SALEM ZAHIR AL-BUSAIDI		115 79 E
USE: HOSPITAL	NO. OF FLOORS: 2B+G+4	LOCATION: RUWI G- MUTTRAH

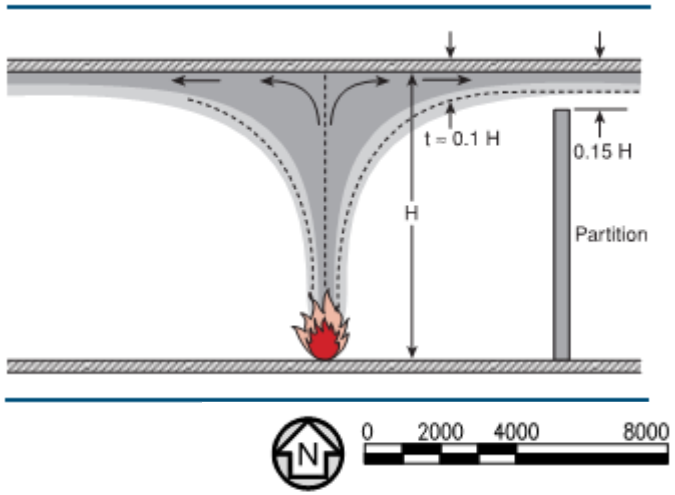
TITLE:

FIRST FLOOR
FIRE ALARM PLAN

DESIGNED:	ENGINEER:	CHECKED:
MSW	MSW	MJA
DRAWN:	SCALE:	APPROVED:
RDC	1:200	WAIL ALMUHRZI
PROJECT NO:	DATE.	DRAWING NO:
A041-05	JUNE 28, 2013	FA-04

7.4 Shop Drawings (Installation) drawings

- Floor plan drawings required information:
  - Floor level or identification
  - Point of compass
  - All walls and doors (partitions extending to within 15% of the ceiling)



DATE	REVISION	BY	CKD	APP

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CLIENT:		PLOT NO:
MR. ALI SALEM ZAHIR AL-BUSAIDI		115 79 E
USE: HOSPITAL	NO. OF FLOORS: 2B+G+4	LOCATION: RUWI G- MUTTRAH

TITLE:

FIRST FLOOR

FIRE ALARM PLAN

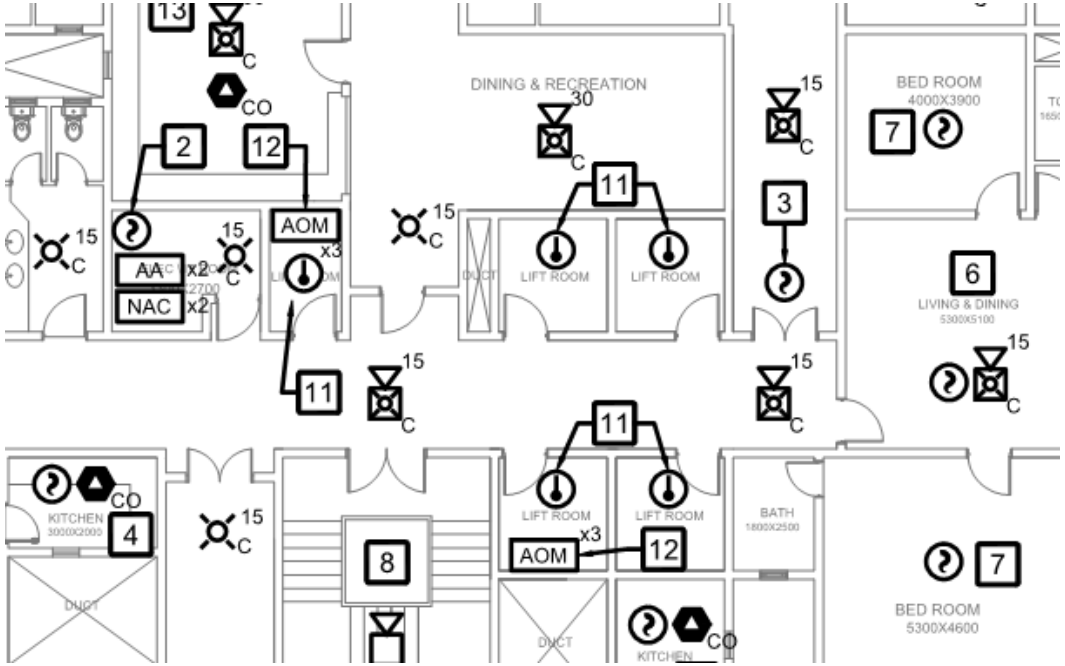
DESIGNED:	ENGINEER:	CHECKED:
MSW	MSW	MJA
DRAWN:	SCALE:	APPROVED:
RDC	1:200	WAIL ALMUHRZI
PROJECT NO:	DATE.	DRAWING NO:
A041-05	JUNE 28, 2013	FA-04

7.4 Shop Drawings (Installation) drawings

- Floor plan drawings required information:
  - Room and area descriptions
  - System devices/component locations
  - Primary power disconnecting location

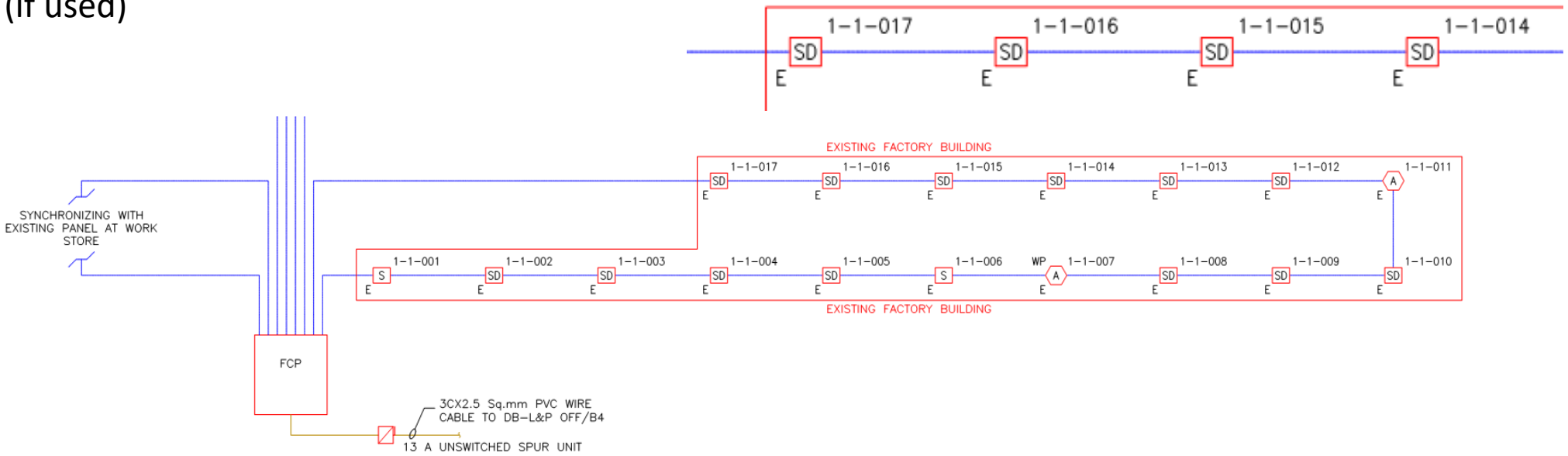
7.4 Shop Drawings (Installation) drawings

- Floor plan drawings required information:
  - Locations of monitor / control interfaces



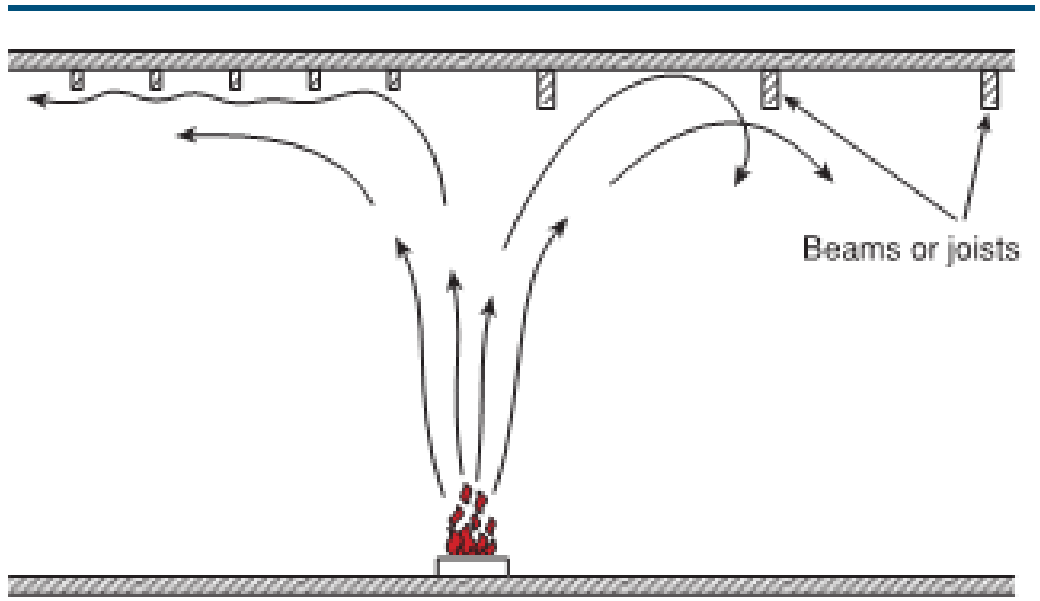
7.4 Shop Drawings (Installation) drawings

- Floor plan drawings required information:
  - Riser locations
  - Type / number of system components / devices on each circuit, on each floor or level
  - Type of quantities of conductors and conduit (if used)



7.4 Shop Drawings (Installation) drawings

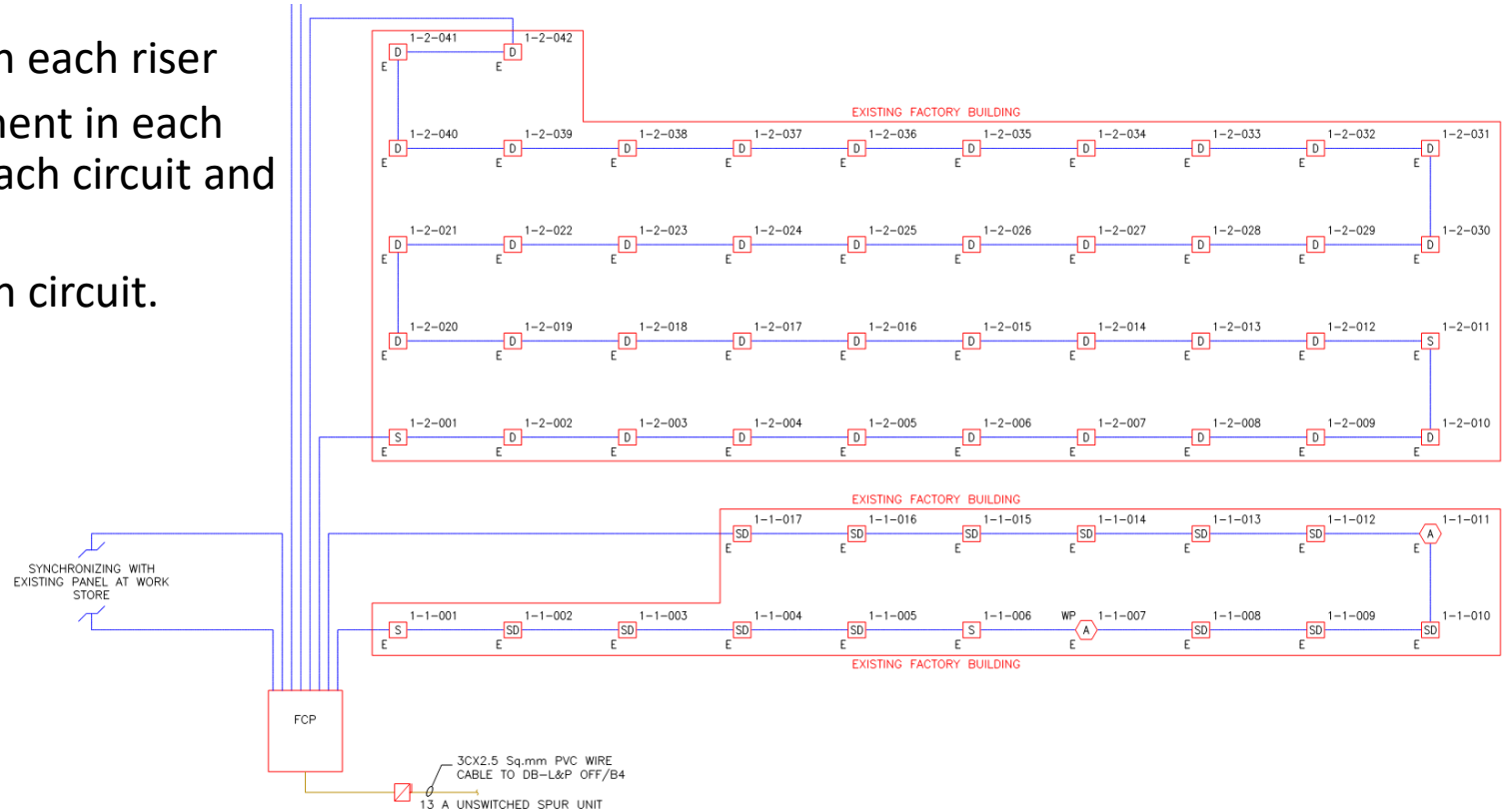
- Floor plan drawings required information:
  - Areas covered with automatic detection proposed the flowing to be identified:
    - Ceiling more than 3 m in height
    - Ceiling geometry, including beams and solid joists
    - Or provide note stating that heights are unde m unless stated otherwise



If not applicable provide note stating that heights are under 3 m unless stated otherwise

7.4 Shop Drawings (Installation) drawings

- System Riser Diagram
  - Number of risers
  - Type and number of circuit in each riser
  - Type and number of component in each components or devices on each circuit and level
  - Number of conductor in each circuit.

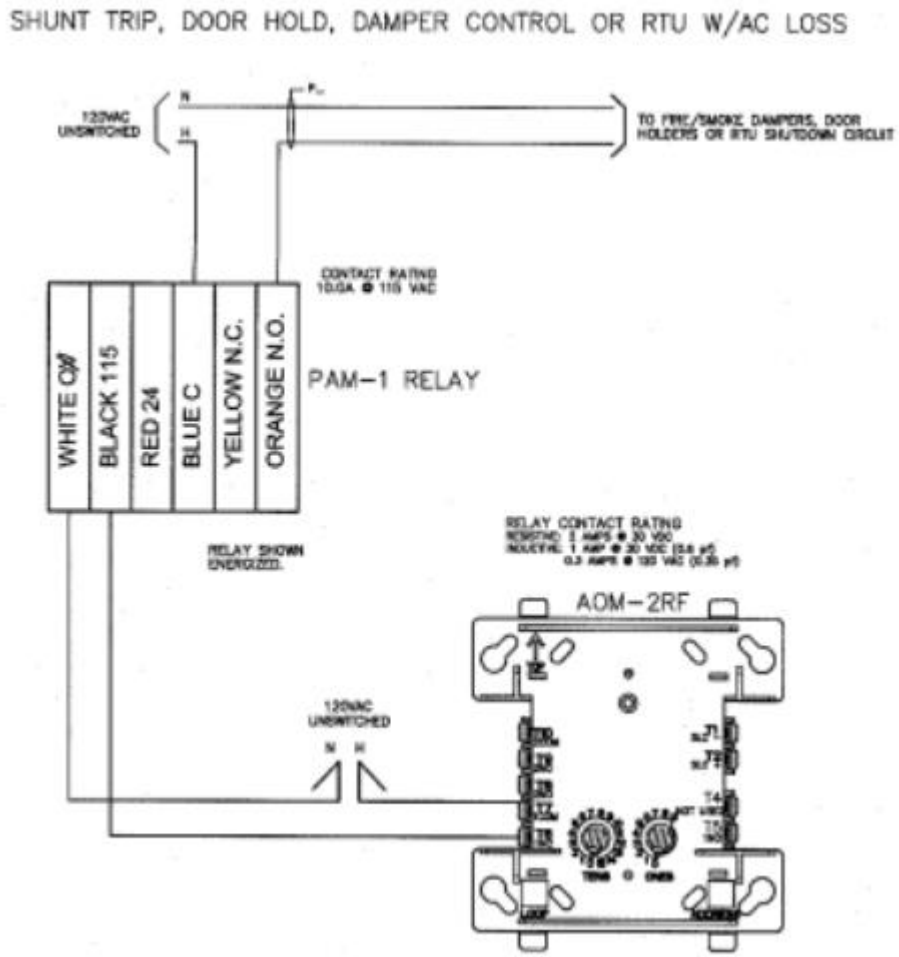


7.4 Shop Drawings (Installation) drawings

- Control unit diagram
  - Applies to equipment listed as either a control unit or control unit accessory
  - Power supplies
  - Battery chargers
  - Annunciators
  - Identification of the control equipment depicted
  - Where is the equipment located
  - Field wiring terminals and terminal identification

7.4 Shop Drawings (Installation) drawings

- Control unit diagram
  - All circuits connected to field wiring terminals and circuit identification
  - All indicators and manual controls
  - Field connections to supervising station equipment, releasing equipment, or emergency safety control equipment interfaces



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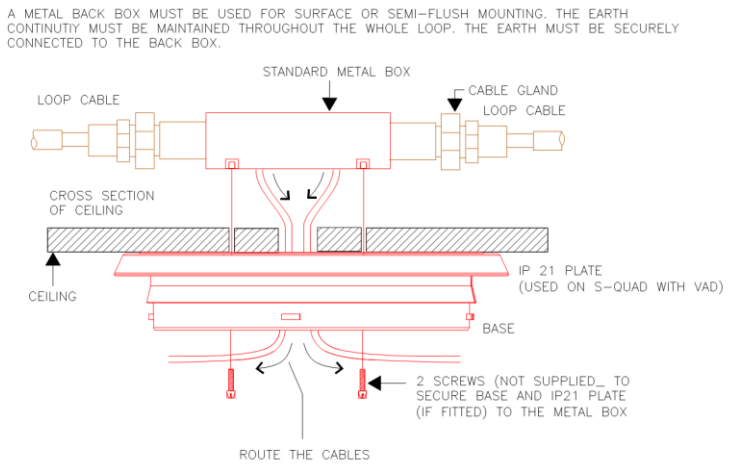
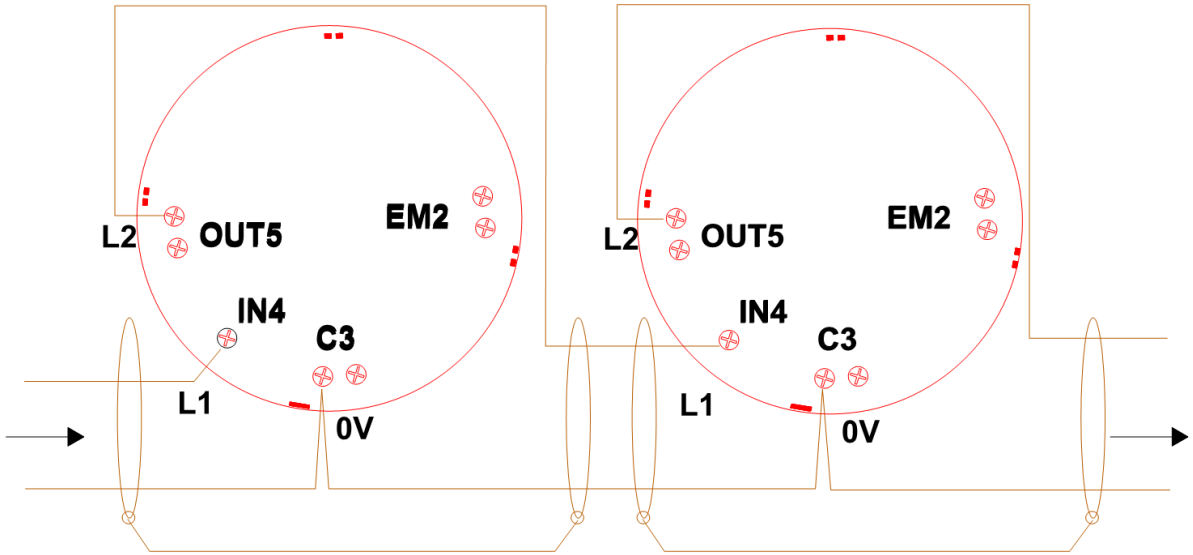
7.4 Shop Drawings (Installation) drawings

- Typical wiring diagrams
  - All initiating device circuits
  - All signaling line circuits
  - All notification appliance circuits
  - All control circuits



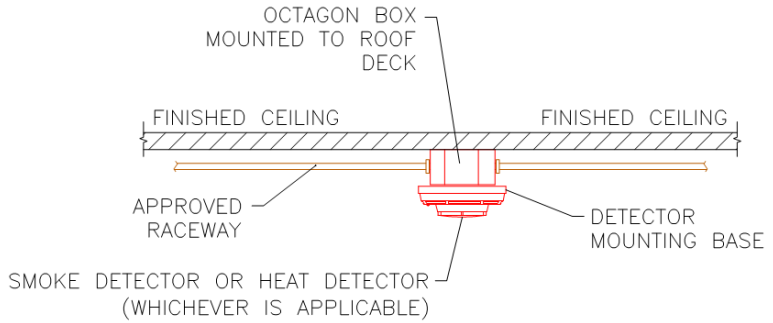
6 SMOKE/HEAT DETECTOR MOUNTING BASE DETAIL
SCALE: N.T.S.



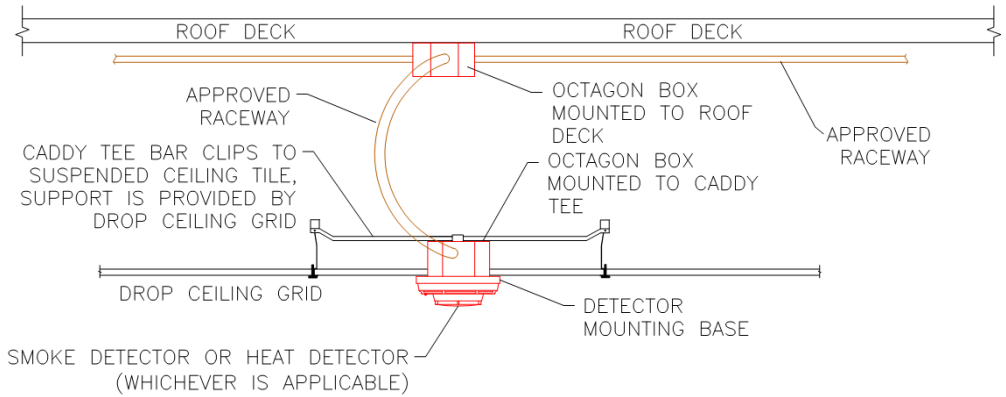
7 SMOKE/HEAT DETECTOR WIRING DIAGRAMS
SCALE: N.T.S.

7.4 Shop Drawings (Installation) drawings

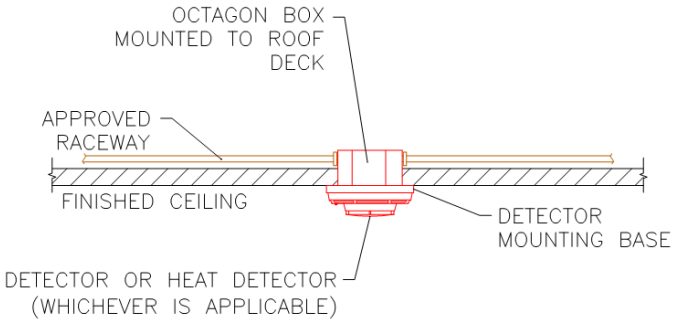
- Typical wiring diagrams
  - Circuits to annunciators
  - Circuits to remote test stations
  - Location of EOL resistors
  - Location of power supervisory devices



2 SURFACE MOUNTED SMOKE/HEAT DETECTOR W/EXPOSED RACEWAY
SCALE: N.T.S.



4 SMOKE/HEAT DETECTOR MOUNTING ON DROP CEILING AND DECKING
SCALE: N.T.S.



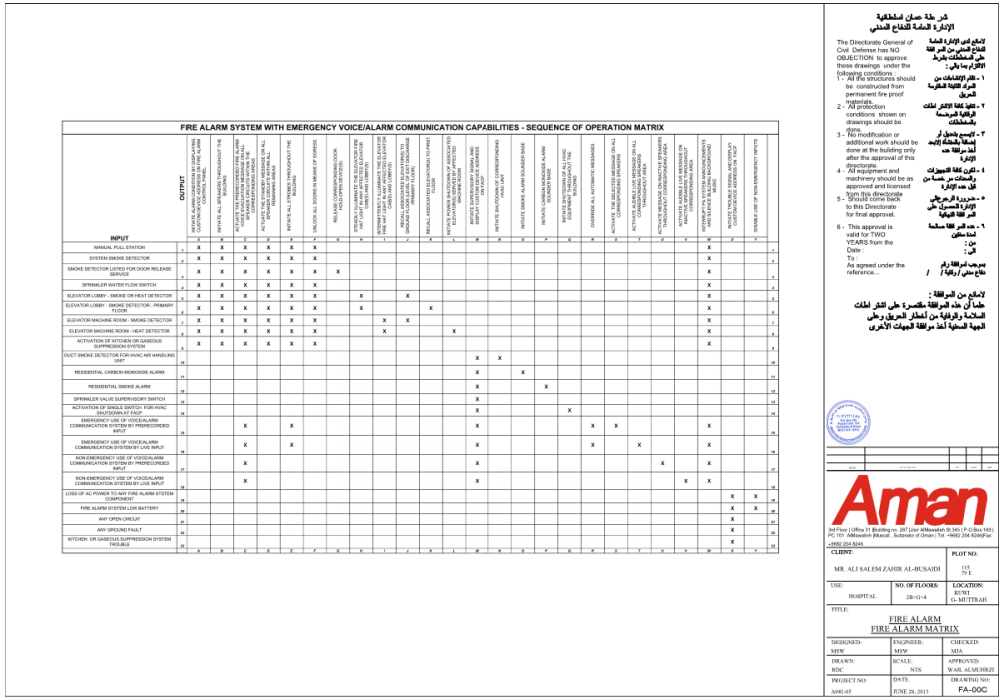
3 FLUSH MOUNTED SMOKE/HEAT DETECTOR W/CONCEALED RACEWAY
SCALE: N.T.S.

7.4 Shop Drawings (Installation) drawings

- Description of system operation
  - Narrative
  - Input / output matrix

FIRE ALARM SYSTEM WITH EMERGENCY VOICE/ALARM COMMUNICATIO

INPUT		OUTPUT: A — INITIATE ALARM CONDITION BY DISPLAYING CUSTOM DEVICE ADDRESS ON FIRE ALARM CONTROL PANEL	B — INITIATE ALL SPEAKERS THROUGHOUT THE BUILDING	C — ACTUATE THE PRERECORDED FIRE ALARM VOICE EVACUATION MESSAGE ON ALL SPEAKER CIRCUITS WITHIN THE CORRESPONDING AREAS	D — ACTUATE THE STANDBY MESSAGE ON ALL SPEAKER CIRCUITS WITHIN ALL REMAINING AREAS	E — INITIATE ALL STROBES THROUGHOUT THE BUILDING	F — UNLOCK ALL DOORS IN MEANS OF EGRESS.	G — RELEASE CORRESPONDING DOOR HOLD-OPEN DEVICE(S)	H — STEADILY ILLUMINATE THE ELEVATOR FIRE HAT LIGHT IN ANY AFFECTED ELEVATOR CAB(S) AND LOBBY(S)	I — INTERMITTENTLY ILLUMINATE THE ELEVATOR FIRE HAT LIGHT IN ANY AFFECTED ELEVATOR CAB(S) AND LOBBY(S)	J — RECALL ASSOCIATED ELEVATOR(S) TO GROUND FLOOR (LEVEL OF EXIT DISCHARGE /PRIMARY FLOOR)	K — RECALL ASSOCIATED ELEVATOR(S) TO FIRST FLOOR	L — INITIATE POWER SHUTDOWN OF ASSOCIATED ELEVATOR(S) SERVED BY AFFECTED
MANUAL PULL STATION	1	X	X	X	X	X	X						
SYSTEM SMOKE DETECTOR	2	X	X	X	X	X	X						
SMOKE DETECTOR LISTED FOR DOOR RELEASE SERVICE	3	X	X	X	X	X	X	X					
SPRINKLER WATER FLOW SWITCH	4	X	X	X	X	X	X						
ELEVATOR LOBBY - SMOKE OR HEAT DETECTOR	5	X	X	X	X	X	X		X		X		
ELEVATOR LOBBY - SMOKE DETECTOR - PRIMARY FLOOR	6	X	X	X	X	X	X		X			X	
ELEVATOR MACHINE ROOM - SMOKE DETECTOR	7	X	X	X	X	X	X			X	X		
ELEVATOR MACHINE ROOM - HEAT DETECTOR	8	X	X	X	X	X	X			X			X
ACTIVATION OF KITCHEN OR GASEOUS SUPPRESSION SYSTEM	9	X	X	X	X	X	X						



Fire Protection and Life Safety Consulting Services

7.4 Shop Drawings (Installation) drawings

- Calculations
  - Battery
  - Notification appliance circuits
  - Loop resistance

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS
MINIMUM UL RATED VOLTAGE: 16 VOLTS
Current shown in calculations is RMS current at 16 volts.

Resistance	12 Gauge	2.01
	14 Gauge	3.19
	16 Gauge	5.08

Circuit Number: NAC1-1
Location: NEW 1ST FLOOR BOOSTER PANEL — INPUT VOLTAGE = 20.4 VOLTS

Notification Circuit	Current (in amps)	Wire Distance (in feet)	Total Distance (in feet)	Wire Size (AWG)	Resistance (Ohms)	Voltage Drop	From Baseline Voltage
CM Horn/Strobe 75CD	0.176	46	46	14	0.2935	0.2621	20.1379
Strobe 15CD	0.066	30	76	14	0.1914	0.1372	20.0007
CM Horn/Strobe 30CD	0.107	28	104	14	0.1786	0.1163	19.8844
Strobe 15CD	0.066	24	128	14	0.1531	0.0833	19.8011
CM Horn/Strobe 75CD	0.176	39	167	14	0.2488	0.1189	19.6822
CM Horn/Strobe 30CD	0.107	41	208	14	0.2616	0.0790	19.6032
CM Horn/Strobe 95CD	0.194	35	243	14	0.2233	0.0435	19.5596
Enc of Line Resistor	0.001	0	243	14	0.0000	0.0000	19.5596
Totals:	0.893	243			1.5503	0.8404	19.5596
Total Devices:	7						

*Resistance = (3.19/1000) x Total Distance x 2 (for 2-wire conductor)
**Voltage Drop = Resistance x Total Remaining current

Documentation Submittal Requirements

Documentation Submittal Requirements

Drawing number is not referenced or defined

Plan not dated

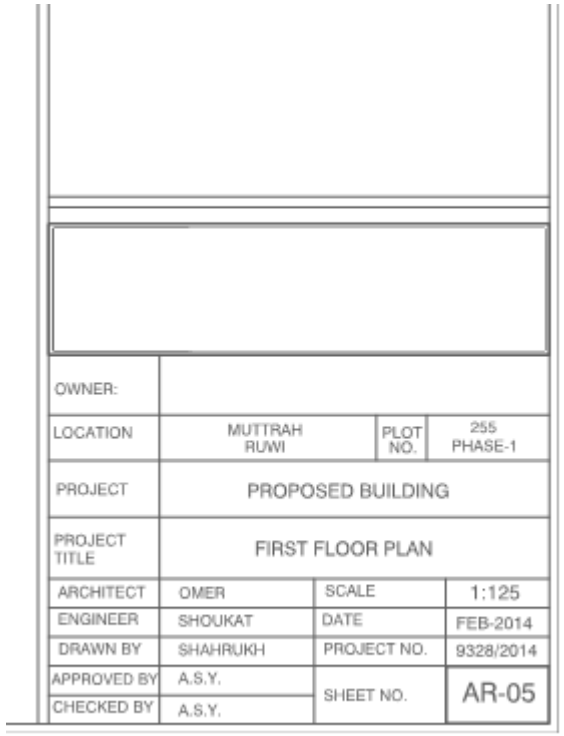
Revision not indicated

Changes not Clouded

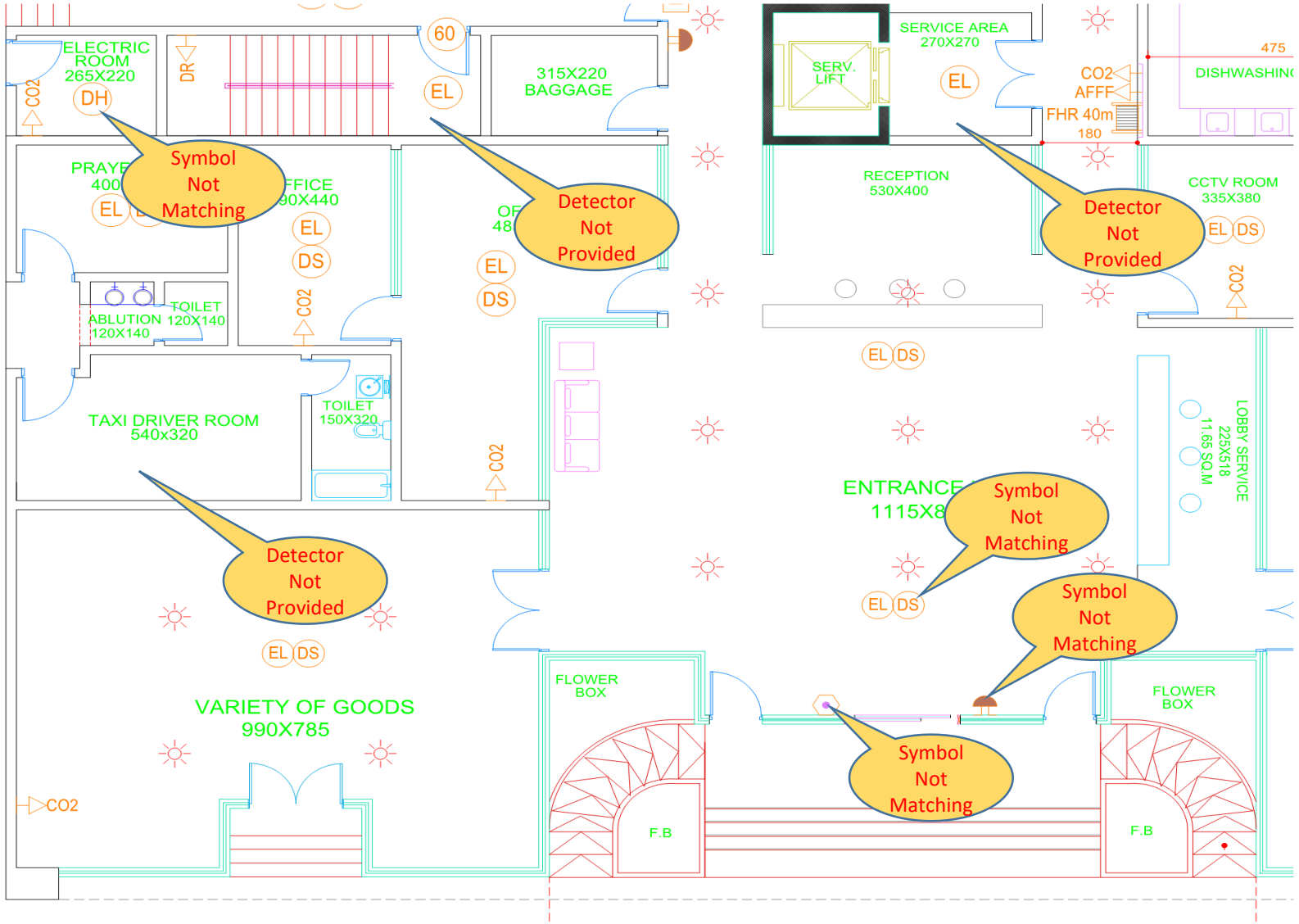
Rooms identification not provided

Legends dose not match NFPA 170 symbols

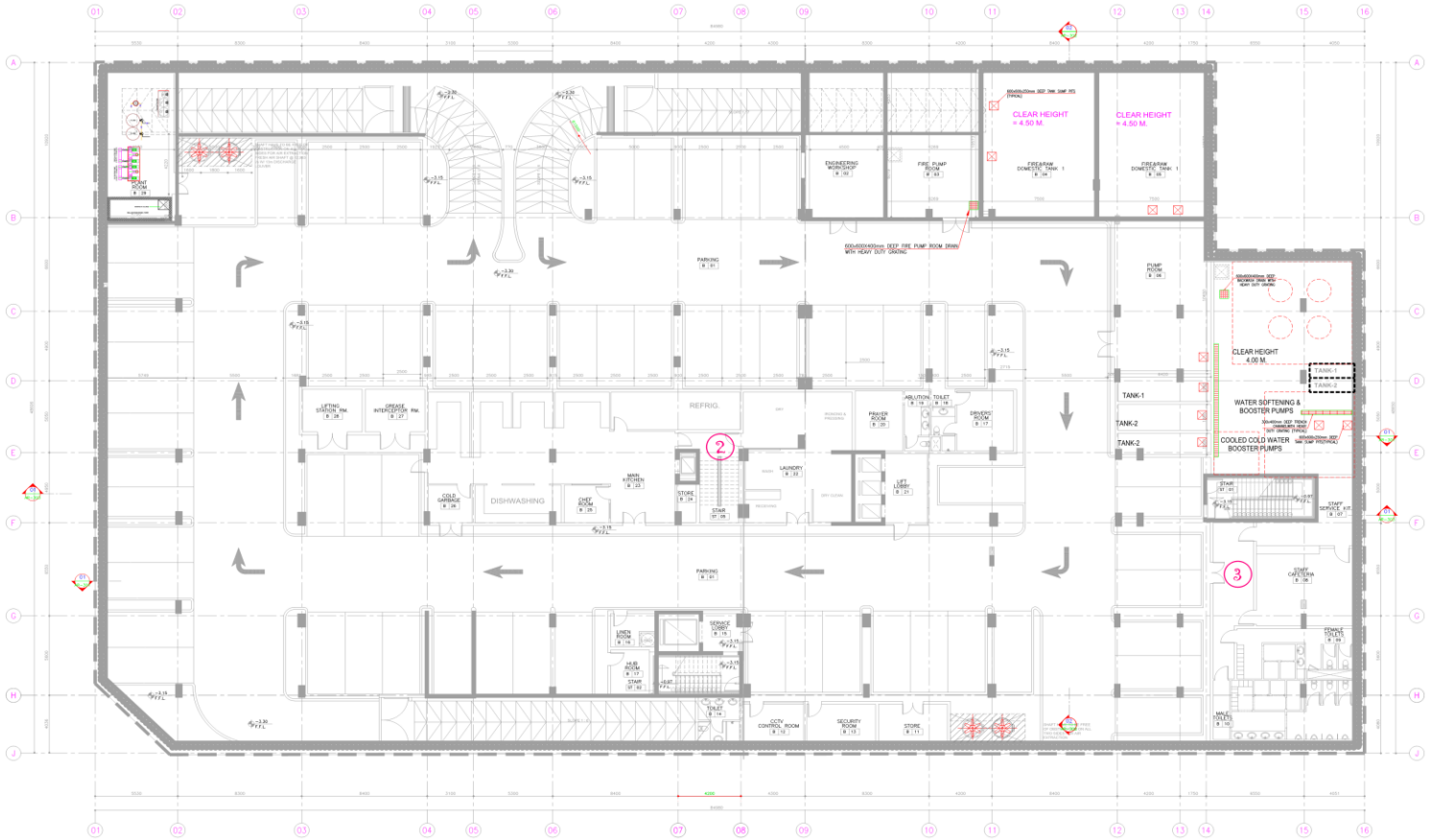
Used Symbols not defined in the legends



OWNER:			
LOCATION	MUTTRAH RUWI	PLOT NO.	255 PHASE-1
PROJECT	PROPOSED BUILDING		
PROJECT TITLE	FIRST FLOOR PLAN		
ARCHITECT	OMER	SCALE	1:125
ENGINEER	SHOUKAT	DATE	FEB-2014
DRAWN BY	SHAHRUKH	PROJECT NO.	9328/2014
APPROVED BY	A.S.Y.	SHEET NO.	AR-05
CHECKED BY	A.S.Y.		



SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	GAS CYLINDER		FIRE CONTROL PANEL ZONE
	1" Ø30.00 M LENGTH HOUSE REEL		LANDING VALVE
S	SMOKE DETECTOR		FIRE EXTINGUISHER DRY POWDER 10 lbs
E	EMERGENCY LIGHT POINT		FIRE EXTINGUISHER CO2 10 lbs
EXIT	EMERGENCY LIGHT		OPTICAL SMOKE DETECTOR
	6" FIRE BELL		DRY RISER VENT
	8" WATER PROOF FIRE BELL		FIRE EXTINGUISHER 5 lbs IN KITCHEN
	FIRE ALARAM BREAK GLASS UNIT		REPEATED FIRE CONTROL PANEL 2 ZONE
	FIRE ALARAM BREAK		AIR RELEASE VALVE



NORTH DIRECTION:

N

Issues / Revisions:

No.	Date	Issue

GENERAL NOTES:
* ALL DIMENSIONS ARE GIVEN IN MILLIMETERS & ALL LEVELS GIVEN IN METERS.
* ALL DIMENSIONS MUST BE VERIFIED BY THE CONTRACTOR BEFORE PREPARATION OF DRAWINGS.

DEVELOPED DESIGN

KEY PLAN :

Job Title

CLIENT:

MAIN CONSULTANT:

STRUCTURE & MEP CONSULTANT:

Drawing Title:
BASEMENT FLOOR PLAN

PROJECT NO.	1515
DRAWN BY	----
CHECKED BY	----
SCALE	1:100
Date	30-04-2016
	A0
Drawing No.	AR-101
	0

شرطة عمان السلطانية
الإدارة العامة للدفاع المدني

The Directorate General of civil Defense has NO OBJECTION to approve these drawings under the following conditions:	لامانع لدى الإدارة العامة للدفاع المدني من الموافقة على المخططات بشرط الالتزام بما يلي :
1. All the structures should be constructed from permanent fire proof materials	١– اقام الإنشاءات من المواد الثابتة المقاومة للحريق .
2. All protection conditions shown on drawings should be done	٢– تنفيذ كافة الاشتراطات الوقائية الموضحة بالمخططات .
3. No modification or additional work should be done at the building only after the approval of this directorate	٣– لا يسمح بتعديل أو إضافة بالمنشأة إلا بعد أخذ موافقة هذه الإدارة
4. All equipment & machinery should be as approved and licensed from this directorate	٤–تكون كافة التجهيزات والمعدات مرخصة من قبل هذه الإدارة
5. Should come back to this Directorate for the final Approval	٥–ضرورة الرجوع الى الإدارة للحصول على الموافقة النهائية.
6. This approval is valid for TWO YEARS from the date : to:	٦–هذه الموافقة صالحة لمدة سنتين من: الى:
As Agreed under the reference	بموجب الموافقة رقم دفاع مدني/وقاية / /

لا مانع من الموافقة :
علما أن هذه الموافقة مقتصرة على الشتراطات السلامة والوقاية من أخطار الحريق وعلى الجهة المعنية أخذ موافقة الجهات الأخرى.

Reviewed by Aman Fire Protection Consultants
By: SHH
Date: AUG 17, 2016
The documents are not to be issued for construction.
Aman Fire Protection Consultants has performed a review based on the available information at this time and has been performed to ensure that the basis of design is in compliance with the applicable codes and standards. Aman Fire Protection makes no representation by this review as to the accuracy or completeness of these plans at this time. This review shall not be construed to be a permit for, or approval of any violation of applicable codes or standards by the designer or installation contractor. This review does not relieve the designer or installation contractor of responsibility for complying with all applicable codes and standards as stipulated in their contract.

EXIT CAPACITY

OCCUPANT LOAD SUMMARY

	OCCUPANCY	AREA (SQ.M.)	OCCUPANT LOAD FACTOR (SQ.M. / PERSON)	OCCUPANT LOAD (PEOPLE)
BASEMENT	INDUSTRIAL	505.2	9.3	55
	STORAGE	19	46.5	1
	ASSEMBLY LESS CONCENTRATED	33.3	1.4	24
	ASSEMBLY	13.6	0.65	22
	BUSINESS	39.2	9.3	5
	TOTAL AREA	**610.3**	**TOTAL OCCUPANT LOAD**	**107**

INITIATING DEVICE SPACING DETAIL

(Heat detector)	AS PER MANUFACTURE SPECIFICATION. SPACING SHALL BE REDUCED BASED ON CEILING HEIGHT AS PER NFPA 72 - TABLE 17.6.3.5.1
(Smoke detector)	9.1 M X 9.1 M
(Gas detector)	IN THE VICINITY OF EACH FUEL BURNING APPLIANCE IN RESIDENTIAL AREAS
F	WITHIN 1.5M FROM EVERY EXIT AND WITHIN A TRAVEL DISTANCE OF 61 M

STROBE / CANDELA SPACING TABLE

15cd	6.1 M X 6.1 M
30cd	9.1 M X 9.1 M
75cd	13.4 M X 13.4 M
110cd	16.2 M X 16.2 M

TRAVEL DISTANCE SUMMARY

OCCUPANCY	MAXIMUM DEAD END (M)	MAXIMUM COMMON PATH (M)	MAXIMUM TRAVEL DISTANCE (M)
INDUSTRIAL SPECIAL	15	30	122
PARKING STRUCTURES CLOSED	15	15	60

LEGEND:-

	1 HOUR FIRE BARRIER (45 MINUTE SELF-CLOSING, POSITIVE LATCHING DOOR)
	2 HOUR FIRE BARRIER (90 MINUTE SELF-CLOSING, POSITIVE LATCHING DOOR)
	COMMON PATH OF TRAVEL
	SHORTEST ROUTE OF TRAVEL
FACP	FIRE ALARM CONTROL PANEL
	GAS DETECTOR - CARBON MONOXIDE
S	SMOKE DETECTOR
	HEAT DETECTOR
	STROBE - CEILING MOUNTED
F	HORN
	HORN CUM STROBE - WALL MOUNTED
	EMERGENCY LIGHT
	STROBE - WALL MOUNTED
F	FIRE ALARM BOX - PULL STATION
	EXIT SIGNAGE
	DIRECTIONAL EXIT SIGNAGE - SINGLE SIDED
	DIRECTIONAL EXIT SIGNAGE - TWO SIDED
	DIRECTIONAL EXIT SIGNAGE - TWO SIDED - TWO WAY

NOTE:-

1. BASEMENTS/CAR PARKING TO BE SEPARATED FROM REMAINDER OF THE BUILDING BY MINIMUM 2 HOURS FIRE RATING
2. ALL EXIT STAIRS SHALL BE ILLUMINATED WITH EMERGENCY LIGHT IN ACCORDANCE WITH CODE COMPLIANCE.
3. ALL EXIT STAIRS FROM THE BUILDING SHALL HAVE A MINIMUM WIDTH OF 1120MM AND SHALL BE PROVIDED WITH HANDRAILS ON BOTH SIDES
4. AT LEAST ONE LEAF IN ALL DOUBLE LEAF DOOR ASSEMBLIES SHALL PROVIDE A CLEAR WIDTH OF NOT LESS THAN 810MM.
5. KITCHEN AND PANTRIES SHALL BE EQUIPPED WITH ELECTRICAL HEATING EQUIPMENT. THE KITCHEN AND PANTRIES SHALL BE ENCLOSED WITH 1 HOUR FIRE RATING IN CASE THE USE OF GAS BURNING EQUIPMENT
6. ALL EXIT DOORS SHALL BE NOT LESS THAN 810 MM IN CLEAR WIDTH.
7. LOCATIONS OF EMERGENCY LIGHTS AND NOTIFICATION APPLIANCES ARE INDICATIVE ONLY. ACTUAL SPACING, QUANTITY AND LOCATIONS SHALL BE MODIFIED BASED ON THE SELECTED DEVICES IN ACCORDANCE WITH NFPA 72 & NFPA101.
8. AUDIBLE NOTIFICATION DEVICES SHALL BE AS PER AUDIBLE CHARACTERISTICS [NFPA 72; 18.4] AND ADDITIONAL AUDIBLE DEVICES SHALL BE PROVIDED AS PER THE FINAL SELECTION OF EQUIPMENT TO FULFILL THE MINIMUM SOUND LEVEL REQUIREMENT.
9. LOCATIONS OF HEAT DETECTORS ARE INDICATIVE ONLY, SPACING REQUIREMENTS SHALL BE AS PER MANUFACTURER SPECIFICATION. SPACING SHALL BE REDUCED BASED ON CEILING HEIGHT AS PER NFPA 72; TABLE 17.6.3.5.1 AND ADDITIONAL DETECTORS SHALL BE PROVIDED TO FULFILL TOTAL COVERAGE REQUIREMENT.
10. VISIBLE APPLIANCES SHALL BE PROVIDED AS PER NFPA 72; 18.5.5.4 SPACING IN ROOMS, AS PER THE FINAL SELECTION OF EQUIPMENT.
11. AUTOMATIC DETECTION SYSTEM TO BE PROVIDED ABOVE THE FALSE CEILING WHERE ANY OF THE FOLLOWING IS APPLICABLE:
    - 11.1. SPACES ABOVE THE FALSE CEILING ARE ACCESSIBLE
    - 11.2. THE MATERIALS INSTALLED ABOVE THE FALSE CEILING ARE COMBUSTIBLE. ALSO IF THE MATERIALS ABOVE THE FALSE CEILING ARE COMBUSTIBLE, THESE LOCATIONS SHALL BE MADE ACCESSIBLE AS PER THE CODE REQUIREMENTS
12. FIRE ALARM CONTROL PANEL SHALL BE LOCATOR IN THE MAIN ENTRANCE OF THE GROUND FLOOR.
13. FIRE DETECTION AND NOTIFICATION SYSTEM SHALL BE DESIGN, INSTALLED , TESTED AND COMMISSIONED IN ACCORDANCE WITH NFPA 72.
14. NUMBER AND LOCATIONS OF FIRE AND GAS DETECTOR ARE TENTATIVE ONLY, THE QUANTITY AND LOCATION SHALL BE VERIFIED DURING DETAIL DESIGN.
15. ALL WALL MOUNTED AUDIBLE AND VISIBLE NOTIFICATION APPLIANCES MUST BE INSTALLED A MINIMUM OF 2.03 MTR AND MAXIMUM OF 2.44 MTR ABOVE THE FINISHED FLOOR, AS PER NFPA 72.
16. TOILET ASSUMED TO BE NOT FULL HEIGHT PARTITIONS.
17. STAIR THAT CONTINUE MORE THAN ONE HALF STORY BEYOND THE LEVEL OF DISCHARGE SHALL BE PROVIDED WITH AN APPROVED MANS TO PREVENT OCCUPANTS FROM TRAVELING PAST THE LEVEL OF DISCHARGE DURING EMERGENCY BUILDING EVACUATION.
18. ALL EXIT RAMPS SHALL BE HAVE A MINIMUM SLOPE OF 1:12%.
19. ELECTRICAL ROOM AND BATTERY ROOMS SHALL BE ENCLOSED WITH 2-HOURS RATED CONSTRUCTION PER PACDA REQUIREMENT.
20. IN BUILDING PROTECTED THROUGHOUT BY AN APPROVED SUPERVISED AUTOMATIC SPRINKLER SYSTEM, EACH HOTEL GUEST ROOM, INCLUDING GUEST SUITE SHALL BE SEPARATED FROM OTHER GUEST ROOM BY WALLS AND FLOORS CONSTRUCTED AS FIRE BARRIERS HAVING FIRE RESISTANCE RATING OF NOT LESS THAN HALF HOURS

REV No.	DATE	REVISIONS	DSGN	DRWN	CHKD
A	17.08.2016	SUBMITTED FOR PACDA APPROVAL	SHH	MJB	ARC

MAIN CONSULTANT:- | STRUCTURE & MEP CONSULTANT:

OWNER:-

PROJECT:-
ALPS - 3 STAR HOTEL PLOT No. 2322
PHASE 2 BUSHAR - AL AZAIBA
MUSCAT - OMAN

JOB NUMBER:-

USE:-	FLOORS:-
HOTEL	B+G+5
LOCATION:-	**PLOT No.:-**
AL AZAIBA - MUSCAT	2322

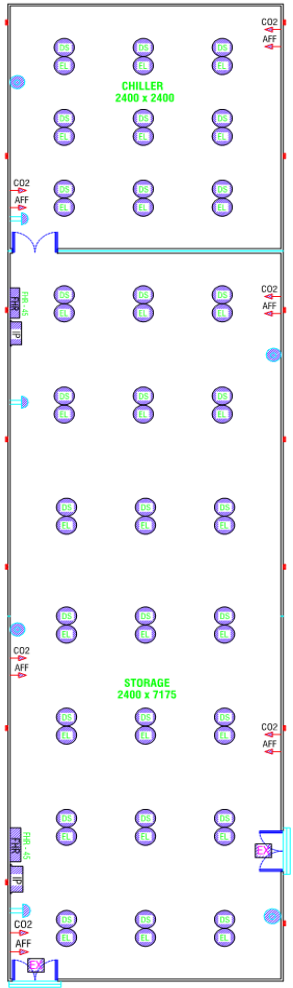
DESIGNED BY:-

Aman Fire Protection Consultants
4TH FLOOR | OFFICE 44 | BUILDING NO. 101
AL MAWALEH | MUSCAT | SULTANATE OF OMAN
P.O BOX 169 | P.C. 101 | WWW.AMANFEC.COM

TITLE:-
BASEMENT FLOOR PLAN
FIRE ALRAM AND LIFE SAFETY LAYOUT

SHEET:-	SCALE:-	DATE:-
A1	1:150	17.08.2016

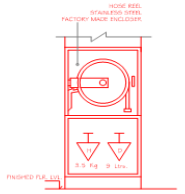
DSGN	SHH	RELEASED FOR:- APPROVAL
DRWN	MJB	DRAWING NUMBER:- FL-101
CHKD	ARC	

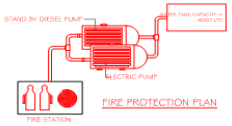


STORAGE FLOOR PLAN 1

FIRE FIGHTING SYMBOLS

	FIRE ALARM CALL POINT
	FIRE ALARM
	SMOKE DETECTOR
	HEAT DETECTOR
	EMERGENCY LIGHT
	EMERGENCY EXIT LIGHT
	VISUAL WARNING DEVICES
FD120	FIRE CHECK DOOR 60 MINS.
FCP	FIRE CONTROL PANEL
	HOSE REEL 25M
	FIRE BLANKET
	FIRE EXTINGUISHER - 9LTS CARBON DIOXIDE TYPE
	FIRE EXTINGUISHER - 9LTS FOAM TYPE
	FIRE EXTINGUISHER VAPORISING LIQUID TYPE
	DRY RISER INLET FOR R. C. P.
	GAS CYLINDER





شروط إعلان الدفاع المدني العام للإدارة العامة

The Directorate General of civil Defense has NO OBJECTION to approve these drawings under the following conditions :

1. All the structures should be constructed from permanent fire proof materials.
2. All protection conditions shown on drawings should be done.
3. No modification or additional work should be done at the building only after the approval of this directorate.
4. All equipments & machineries should be as approved and licensed from this directorate.
5. Should come back to this directorate for the final approval
6. This approval is valid for TWO YEARS from the date : to: As agreed under the reference...

إن مدير عام الدفاع المدني العام لا مانع لديه من الموافقة على الرسومات المعتمدة بالشروط التالية :

١ تنشأ جميع المنشآت من المواد المقاومة للحريق.

٢ تنفذ جميع الاشتراطات الموضحة بالرسومات.

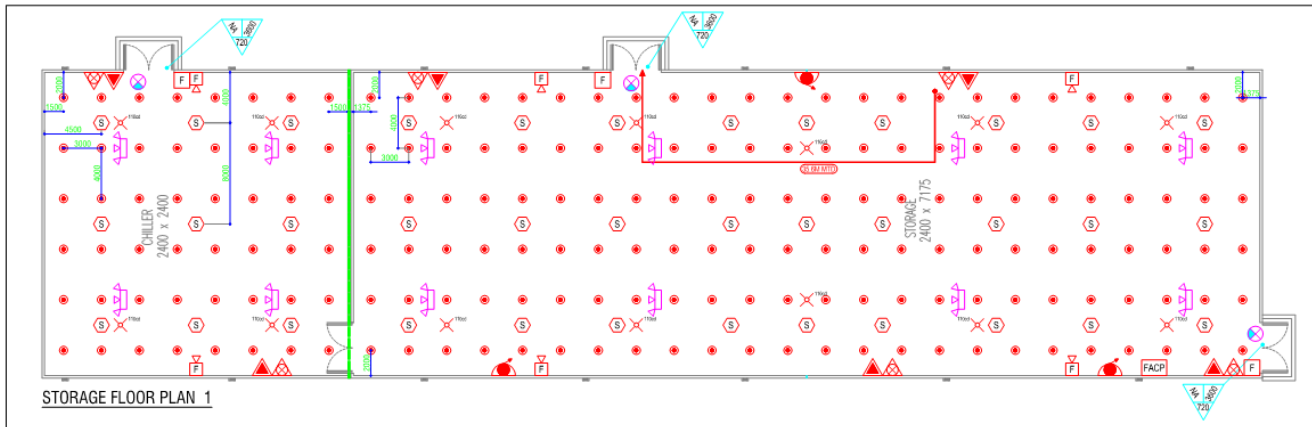
٣ لا يسمح بإجراء أي تعديل أو إضافة بدون الرجوع إلى هذه الإدارة.

٤ تكون جميع المعدات والآلات مرخصة من قبل هذه الإدارة.

٥ ضرورة الرجوع إلى الإدارة للحصول على الموافقة النهائية.

٦ هذه الموافقة صالحة لمدة سنتين من تاريخ : إلى : كما هو مذكور في المراسلة رقم / /

إلزام بأن هذه الموافقة مقتصرة على الاشتراطات السابقة والموافقة من الدفاع المدني والجهة الصحية أخذ موافقة الجهات الأخرى



STORAGE FLOOR PLAN 1

FIRE FIGHTING SYMBOLS

F	MANUAL CALL POINT
F	AUDIBLE NOTIFICATION DEVICE
110cd	VISIBLE NOTIFICATION DEVICE
S	SMOKE DETECTOR
	HEAT DETECTOR
	EMERGENCY LIGHT
FACP	FIRE CONTROL PANEL
	HOSE REEL
	FIRE EXTINGUISHER - CO2
	FIRE EXTINGUISHER - FOAM
	1 HOUR FIRE BARRIER (45 MINUTE SELF-CLOSING, POSITIVE LATCHING DOOR)
	COMMON PATH OF TRAVEL
	SHORTEST ROUTE OF TRAVEL
	EXIT SIGNAGE
XXM MAX	TRAVEL DISTANCE TAG
	SPRINKLER

NOTES:-

1. LOCATIONS OF EMERGENCY LIGHTS AND NOTIFICATION APPLIANCES ARE INDICATIVE ONLY. ACTUAL SPACING, QUANTITY AND LOCATIONS SHALL BE MODIFIED BASED ON THE SELECTED DEVICES IN ACCORDANCE WITH NFPA 72 & NFPA101.
2. AT LEAST ONE LEAF IN ALL DOUBLE LEAF DOOR ASSEMBLY SHALL PROVIDE A CLEAR WIDTH OF NOT LESS THAN 810MM.
3. MANUAL FIRE ALARM BOXES SHALL BE LOCATED WITHIN 1.9M OF EACH EXIT DOOR WAY ON EACH FLOOR.
4. A COMBINATION OF CO2 & AFFF EXTINGUISHERS ARE PROVIDED AS PER PACDA'S RECOMMENDATION / INSTRUCTION.
5. THE BUILDING HAS BEEN REVIEWED AS AN ORDINARY HAZARD STORAGE. IF FURTHER ASSESSMENTS AT DETAIL DESIGN STAGE INDICATED OTHERWISE, THE DESIGN SHALL BE REVISED TO MEET FIRE & LIFE SAFETY REQUIREMENTS FOR THAT SPECIFIC HAZARD & TYPE OF STORAGE.
6. MINIMUM WIDTH OF THE DOORS IN MEANS OF EGRESS SHALL NOT BE LESS THAN 810MM.

Reviewed by Aman Fire Protection Consultants
By: SHH
Date: 29.05.2016
The documents are not to be issued for construction. Aman Fire Protection Consultants has performed a review based on the available information at this time and has been performed to ensure that the basis of design is in compliance with the applicable codes and standards. Aman Fire Protection makes no representation by this review as to the accuracy or completeness of these plans at this time. This review shall not be construed to be a permit for, or approval of any violation of applicable codes or standards by the designer or installation contractor. This review does not relieve the designer or installation contractor of responsibility for complying with all applicable codes and standards as stipulated in their contract.

SPRINKLER SPACING TABLE

HAZARD	MAX AREA COVERED PER SPRINKLER (M2)	MAX SPACING (M)
ORDINARY	12.1	4.6

INITIATING DEVICE SPACING DETAIL

	AS PER MANUFACTURE SPECIFICATION. SPACING SHALL BE REDUCED BASED ON CEILING HEIGHT AS PER NFPA 72 - TABLE 17.6.3.5.1
S	9.1 M X 9.1 M
F	AT EVERY EXIT AND WITHIN A TRAVEL DISTANCE OF 61 M

STROBE / CANDELA SPACING TABLE

15cd	6.1 M X 6.1 M
30cd	9.1 M X 9.1 M
75cd	13.4 M X 13.4 M
110cd	16.2 M X 16.2 M

EXIT CAPACITY:-
STAIR WIDTH | DOOR WIDTH
120 | 150 | 160
CAPACITY OF PEOPLE PROVIDED

TRAVEL DISTANCE SUMMARY

OCCUPANCY	MAXIMUM DEAD END (M)	MAXIMUM COMMON PATH (M)	MAXIMUM TRAVEL DISTANCE (M)
STORAGE	30	30	122

OCCUPANT LOAD SUMMARY

USE	AREA (SQ.M.)	OCCUPANT LOAD FACTOR (SQ.M. / PERSON)	OCCUPANT LOAD (PEOPLE)
STORAGE	2308.8	46.5	50

BUILDING SUMMARY

MAX. AREA OF SINGLE STOREY(SQ.M.)	HEIGHT (M)	No. OF STOREY	AUTOMATIC SPRINKLER	CONSTRUCTION TYPE	OCCUPANCY CLASSIFICATION
2357.3	5.5	1	YES	TYPE II(000)	STORAGE (O.H.)

شرطة عمان السلطانية
الإدارة العامة للدفاع المدني

The Directorate General of civil Defense has NO OBJECTION to approve these drawings under the following conditions:

1. All the structures should be constructed from permanent fire proof materials
2. All protection conditions shown on drawings should be done
3. No modification or additional work should be done at the building only after the approval of this directorate
4. All equipment & machinery should be as approved and licensed from this directorate
5. Should come back to this Directorate for the final Approval
6. This approval is valid for TWO YEARS from the date : to: As Agreed under the reference .....

يسمح لدى الإدارة العامة للدفاع المدني من الموافقة على المخططات بشرط الالتزام بما يلي :

١- تقام الإنشاءات من المواد المقاومة للحريق .

٢- تنفذ كافة الاشتراطات الواردة بالرسومات .

٣- لا يسمح بتعديل أو إضافة بالمبنى إلا بعد أخذ موافقة هذه الإدارة

٤-تكون كافة الأجهزة والمعدات مرخصة من قبل هذه الإدارة

٥-ضرورة الرجوع إلى الإدارة للحصول على الموافقة النهائية

٦-هذه الموافقة صالحة لمدة سنتين من: إلى: كما هو مذكور في المراسلة رقم / /

لا مانع من الموافقة :
على أن هذه الموافقة مقتصرة على الاشتراطات السابقة والموافقة من الدفاع المدني والجهة الصحية أخذ موافقة الجهات الأخرى

NO.	DATE	REVISIONS	BY	CKD.	APP.
A	05.06.2016	SUBMITTED FOR PACDA APPROVAL	SHH	MPS	ARC

REV No. | DATE | REVISIONS | DSGN | DRWN | CHKD

NOTES
* ALL DIMENSIONS ARE IN CENTIMETERS, UNLESS OTHERWISE STATED.
* DRAWINGS NOT TO BE SCALED, WORK TO BE CARRIED OUT BY FIGURED DIMENSIONS ONLY.
* PREFERENCE TO BE GIVEN TO DETAILS OVER SMALLER SCALE DRAWINGS.
* CHECK ALL THE DIMENSIONS ON THE SITE, PRIOR TO CARRYING OUT THE WORK.
* ANY VARIATION OR DISCREPANCY IN THE DRAWING TO BE REFERRED TO THE CONSULTANT.

FOR MUNICIPALITY USE

CLIENT: AL ERAIG POULTRY FARM
PROJECT TITLE: POULTRY FARM
LOCATION: AL ERAIG, WADI WAMIL
SHEET CONTENTS: STORAGE FLOOR PLAN FIRE FIGHTING LAYOUT
SCALE: A3 - 1:300 | DATE: APR. 2016
PROJECT No.: 2636 / 2016 | PLOT No.: 3-26-034-01-025 | No. OF FLOOR: ONE
SHEET No.: FL - 02 | CADD BY: ANIL | DESIGNED: RICAR

MAIN CONSULTANT:-
PROJECT:- POULTRY FARM
JOB NUMBER:- 2636 / 2016
OWNER:- AL ERAIG POULTRY FARM
USE:- STORAGE | FLOORS:- 1
LOCATION:- AL ERAIG, WADI WAMIL | PLOT No.:- 3-26-034-01-025

REVIEWED BY:-
Aman Fire Protection Consultants
4TH FLOOR | OFFICE 44 | BUILDING NO. 101
AL MAWALEH | MUSCAT | SULTANATE OF OMAN
P.O BOX 169 | P.C. 101 | WWW.AMANFEC.COM

TITLE:- STORAGE
LIFE SAFETY, FIRE ALARM & FIRE SUPPRESSION LAYOUT

SHEET:-	SCALE:-	DATE:-
A3	1:300	05 JUNE 2016
DSGN SHH	RELEASED FOR:- APPROVAL	
DRWN MPS	DRAWING NUMBER:- FL-02	
CHKD ARC		

Aman
Fire Protection and Life Safety Consulting Services

Documentation Submittal Requirements

Rooms not labeled with a name or use on the drawings

Rooms numbered but not without a legend that describes their use

Control units (FACU) not listed for their intended use (Local, Remote Station, Central Station or Proprietary service)

Documentation Submittal Requirements

Failure to provide the correct standby power based on:

- Local requirements
- Minimum code requirements
- 24 hrs + 15 min. (EVAC systems)
- 24 hrs + 5 min. (Other systems)
- 20% safety factor requirement
- Systems with auto-start generator (4 hours standby)

Documentation Submittal Requirements

FACU or an annunciator not located to provide ready access by the responding personnel (was the FD consulted)

Documentation Submittal Requirements

Failure to provide monitoring and interface relay equipment for:

- Elevator Phase I for Emergency
- Recall Operation Elevator
- Shutdown
- Elevator Warning Signal

Documentation Submittal Requirements

Initiating devices not provided with mechanical guards (listed) where subject to physical damage. (17.4.2)

Documentation Submittal Requirements

Where heat or smoke detection is proposed:

Failure to indicate ceiling height and configuration

Failure to show solid beams and joists

Documentation Submittal Requirements

Waterflow and pressure devices not located on the drawings to the extent provided by the sprinkler contractor

Vane type Pressure type

Control valves

Documentation Submittal Requirements

Failure to include fire alarm equipment modules for:

Pressure monitoring(high/low air)

Water level monitoring Water temperature

Room temperature (17.16)

Documentation Submittal Requirements

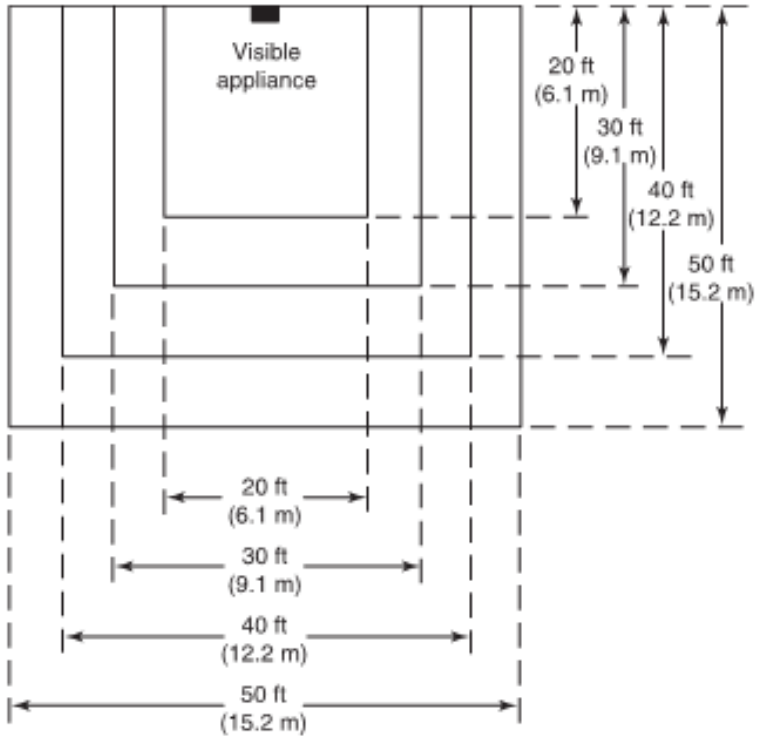
Failure to locate Notification Appliances according to Chapter 18

Candela setting not appropriate for room size

Corridor spacing/candela settings

Wall-Mounted Visible Appliance

Max. Room Size meters	Minimum cd One light per room
6.1 X 6.1	15
8.53 X 8.53	30
13.7 X 13.7	75
16.5 X 16.5	110
16.8 X 16.8	115
18.3 X 18.3	135
19.2 X 19.2	150
20.7 X 20.7	177



Documentation Submittal Requirements

Failure to identify circuit information on the plans:

Circuit gauge

Survivability (where applicable) Location of circuits (plenums)

Circuits identified that exceed the maximum devices permitted by code or the manufacturer

Fire Protection and Life Safety Consulting Services

Questions?