

THE GRENFELL TOWER INQUIRY

EXHIBIT AW/13

This is the Exhibit marked “AW/13”
referred to in the witness statement
of Alan Whyte

Phil Leech

From: Alan Whyte
Sent: 25 May 2016 16:33
To: 'steve@allgroupholdings.com'
Cc: SBlake@rydon.co.uk; Jonathon Earl
Attachments: 4.3.7 Smoke Detector Heads.pdf; 4.3.8 Extract Fans.pdf; 4.3.5 Modular Battery Backup Panel.pdf; 4.3.6 Fireman's Override Switch.pdf; 75019 O&M.DOC; 4.3.3 HMI Mimic Override Switch.pdf; 4.3.4 Outstation Modular Control Panel.pdf; 4.3.1 Automatic Lobby Ventilators.pdf; 4.3.2 Control Panel.pdf; 4.3.11 By Pass Dampers.pdf; 4.3.9 Fan Starter Control Panel.pdf; 4.3.10 Pressure Sensor.pdf; 8.1 E75015-800E Electrical Schematic.pdf; Section 10 Commissioning Reports.pdf; Section 11 Completion Certificate.pdf; Glenfell Tower - Service Quote - 05-05-2016.pdf

Steve

Please find attached O&M information from PSB (smoke ventilation) for inclusion in the Mechanical O&M.

Kind regards,

Alan Whyte

Senior Contracts Engineer

Tel: [REDACTED] | Fax: [REDACTED] | Mob: [REDACTED] | Email: alanwhyte@jswright.co.uk | Web: www.jswright.co.uk

HOTEL LEISURE COMMERCIAL STUDENT ACCOMMODATION RESIDENTIAL CARE HOMES



One of the Leading Mechanical & Plumbing Design & Installation Companies in the UK
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Head Office - J S Wright & Co Ltd, The Atlas Building, 16 Portland Street, Aston, Birmingham, B6 5RX
London Office - J S Wright & Co Ltd, 1 Northumberland Avenue, London, WC2N 5BW Tel: [REDACTED]

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PSB UK Ltd
 Witt House
 Shelf Mills
 Wade House Road
 Shelf
 Halifax
 HX3 7BJ

Tel + [REDACTED]
 Fax + [REDACTED]
 Email: info@psbuk.com
 Website: www.psbuk.com

OPERATING AND MAINTENANCE INSTRUCTIONS

for the

ABOVE GROUND SMOKE VENTILATION SYSTEM

at

Grenfell Tower Apartments, London

for



REVISION	ORIGINAL	A	B	C	D	E
ISSUED BY	D Harrison					
DATE	03/05/2016					
PURPOSE	Final					
CHECKED BY	R Yeadon					
APPROVED BY	T Haigh					
AMENDMENTS	○					

Our ref PSBUK 750190 O&M

Date 03/05/2016

Registered Office: PSB UK Ltd, Witt House, Shelf Mills, Wade House Road, Shelf, Halifax, HX3 7BJ
 Company Registration Number 400 66 40



CLIENT DETAILS

CLIENT

JS WRIGHT & CO LIMITED
The Atlas Building
Portland Street
Birmingham
B6 5RX

TELEPHONE

[REDACTED]

CLIENTS SUBCONTRACT No

DP/29111/9497

IN ALL CORRESPONDENCE QUOTE

PSB UK LTD CONTRACT No 75019

PSB UK LTD REF:

75019O&MO

INDEX

SECTION 1.0 – HEALTH AND SAFETY AT WORK

SECTION 2.0 – INTRODUCTION

SECTION 3.0 – DESIGN

SECTION 4.0 – EQUIPMENT SPECIFICATION

SECTION 5.0 – INSTALLATION

SECTION 6.0 – OPERATION

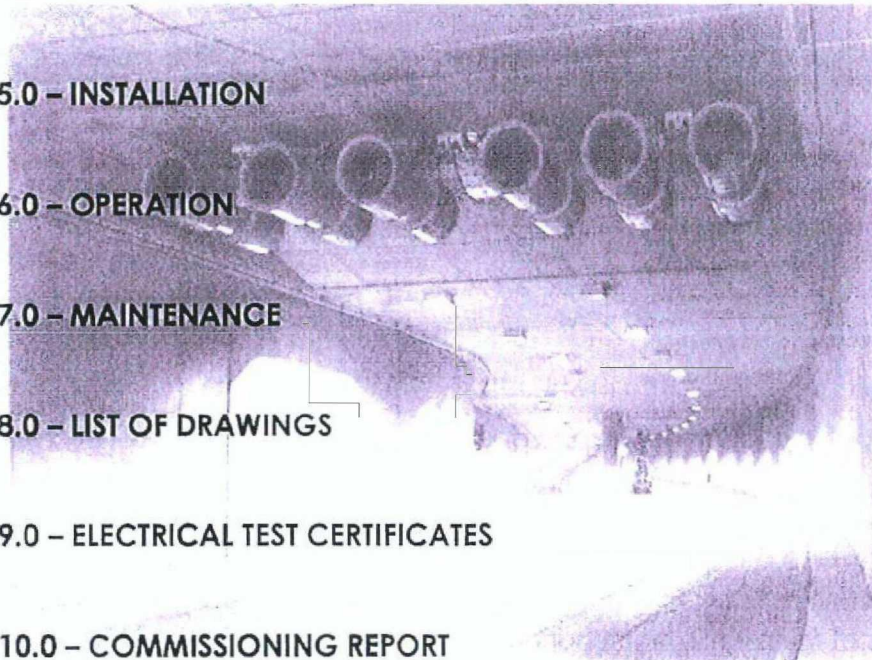
SECTION 7.0 – MAINTENANCE

SECTION 8.0 – LIST OF DRAWINGS

SECTION 9.0 – ELECTRICAL TEST CERTIFICATES

SECTION 10.0 – COMMISSIONING REPORT

SECTION 11.0 – COMPLETION CERTIFICATE



SECTION 1.0 - HEALTH & SAFETY AT WORK

PSB UK Ltd and its associated sub-contractors have, in the design and manufacture of this Equipment, conformed to the legal requirements of the Health and Safety at Work Act 1974, to ensure that as far as is reasonably practicable, the equipment is designed and constructed so that during operation it is safe and does not give rise to risk of injury to operators when properly used. The equipment has been tested and examined relative to the specified duty. The original supplier has made available adequate information and facilities for complete discussion of all aspects of the equipment design and operation, and clarified any conditions necessary to ensure that when put to use it will be safe and without risk of injury to operators and other personnel.

During the design and construction period every endeavour was made to carry out the necessary research and investigation so far as was reasonably practicable to ensure the elimination, when the equipment was properly used, of any risks of injury which the design of the equipment and its application within the plant might create.

The above summary of considerations of operation and safety are directly related to the requirement of the Health & Safety at Work Act 1974, and is intended to cover those aspects of plant design and operation which form the initial responsibility of the original equipment supplier and his design, and installation programme.

The second aspect of equipment operation, maintenance and safety relates to the activities of the clients maintenance staff who will be engaged in the day-to-day overview of this equipment. It is their responsibility to ensure that such equipment operation and maintenance work which takes place respects those original conditions established by the original equipment supplier and all operation and maintenance work carried out within the plant observes the requirements of the Health & Safety at Work Act 1974, with respect to those activities.

Due regard must be made to the operational limitation of the equipment and all operations should conform to the limitations of plant performance established within the operating and maintenance and also in accordance with the results achieved and accepted during tests.

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Company Registration Number 400 66 40

PSBUK 750190 O&M Page 4 of 20

SECTION 1.0 - HEALTH & SAFETY AT WORK (Continued)

All maintenance should follow the prescribed procedures and where in light of local knowledge and conditions alternative procedures are followed, such procedures should follow the requirement of personnel safety as laid down or inferred by the Act.

Before commencing any maintenance activity all prime movers and electrical equipment must be isolated and the related safety notices displayed. At this stage guards may be removed, equipment opened up and the related maintenance activity carried out on the equipment. It is the responsibility of the maintenance supervisor or authorised representative to ensure that beyond all doubt the safety procedures adopted at this stage are completely adequate to guarantee the safety of the actual maintenance personnel.

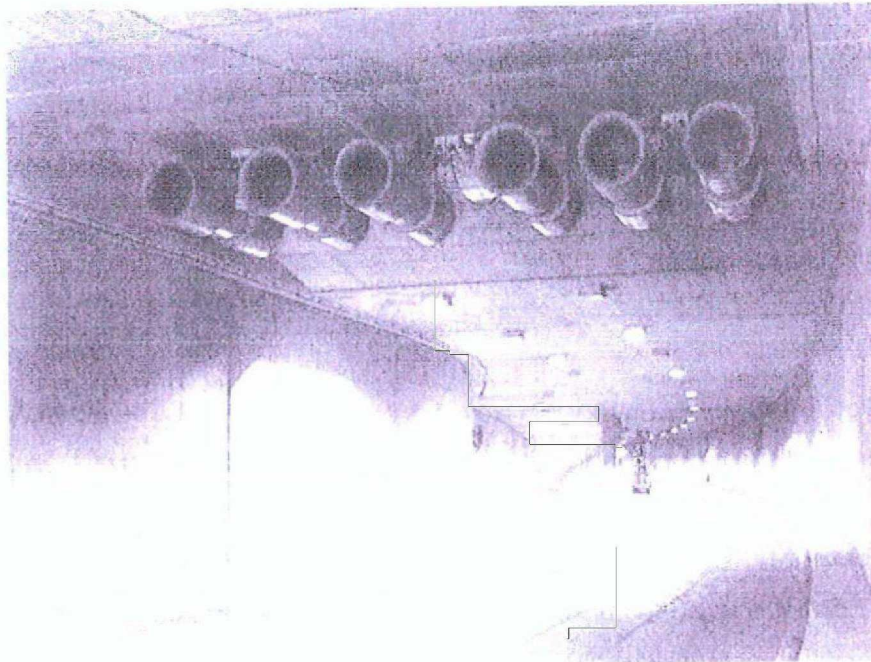
Other aspects of personal safety relate to the maintenance of adequate general equipment cleanliness, walkway clearances, adequate lighting and provision of equipment conducive to personal safety.

The above details are not intended to cover every aspect of health, safety, operation and maintenance, but are indicative of typical aspects of the equipment.

The requirements above are to ensure that the original provisions of the equipment suppliers continue to be respected by the plant and equipment user and in particular that the health and safety of the employees is safeguarded at all times during the subsequent operation and maintenance activities.

SECTION 2.0 - INTRODUCTION

PSB UK Ltd were contracted by JS Wright & Co Ltd to Design, Supply, Install & Commission, Above Ground Smoke Ventilation Systems at Grenfell Tower Apartments, London.



SECTION 3.0 – DESIGN

3.1 Lobby Smoke Control Systems

1.1 Base Documents

This Technical Submission is based in part upon the following documentation:

➤ Drawing Numbers

1. 1279 (04) 101 Revision 05, 1279 (04) 102 Revision 05, 1279 (04) 103 Revision 05,
1279 (04) 105 Revision 01, 11279(08)100, Revision 01 279(08)101Revision 01

➤ Specification

1. Max Fordham-Employers Requirements for MEP Services Document J4350 dated 16th October 2013.

2. Max Fordham Grenfell Tower Smoke Ventilation Analysis Rev A dated 6th May 2014.

3.2 Description of the Project

The building is an existing tower block with 20 storeys of residential accommodation on top of a podium containing new residential accommodation, offices, a nursery and a boxing club.

The general scope of the project is:

- Recladding of the façade
- Reconfiguration of the podium levels to provide additional residential accommodation.
- Relocation and refurbishment of the nursery
- Relocation and refurbishment of the boxing club
- Provision of new office space and meeting rooms
- Modifications to the MEP systems.

It was noted that a key factor for this for this project is that the tenants will remain in occupation throughout the installation and it is essential for all basic services to remain functional at all times apart from pre-agreed interruptions.

SECTION 3.0 – DESIGN (CONTINUED)

3.3 Smoke Control System

The Final smoke control system has been designed to provide the existing stairwell with protection from the ingress of smoke, from a fire within a dwelling, by means of a mechanical extract system. The system has been designed to provide an average open door velocity, across an open lobby/stairwell door of 2.0m/s. This velocity is in accordance with the recommendation for a Class B pressure differential system as defined in Code of Practice BSEN12101 Part 6: Specification for pressure differential systems — Kits. (BSEN12101-6)

The PLC control system will have links to the new fire alarm system to provide an initiating signal (one signal per floor). Once a signal is received all the dampers will close (extract and inlet air) and all four dampers in the smoke affected lobby will then open and all dampers on the other floors are to remain closed.

A human Mechanical Interface Panel (HMI) will be located within the entrance area to provide the fire and rescue service with a central override facility to close all dampers in a single operation.

Each ventilated lobby will be provided with a key override, switch located within the stairwell, at each storey level providing the Fire and Rescue service with a local override facility to open the dampers on any one floor.

Once one switch has been activated to open the dampers on a given floor then all other floor switches will be locked out. Once the activated switch is returned to its original position another floor can be activated.

There are two pairs of smoke extract fans (one duty and one standby in each pair) one pair on the roof top plant room roof and one pair mounted within the new ductwork section on Level 02. There is also a single environmental fan located in the ductwork on Level 02.

SECTION 3.0 – DESIGN (CONTINUED)

The environmental fan and the smoke extract fans on the Level 02 will have a set of bypass dampers so that in environmental mode the smoke fan is isolated from the system and in smoke mode the environmental fan is isolated from the system.

The control system will also have pressure sensors added into each ventilated lobby to control the speed of the fans to ensure that when the doors on the escape route are closed that the opening force on the door does not exceed 100N as detailed IN BSEN12101-6.

The mechanical system will operate as follows:

- Smoke Extract mode: the by-pass damper assembly will shut off the connection to the environmental fan system and all four dampers in the lobby open, to extract air from the lobby through all four openings. Make up air will be provided via the open lobby door.

The environmental system will operate as follows:

- Environmental Mode: the by-pass damper assembly will open and shut off the smoke extract fan set and isolate the two shafts. One shaft will act as a mechanical environmental extract shaft and the other will act as a mechanical fresh air make up shaft.

During normal environmental activities the system damper to the smoke ventilation fan set will be closed and the dampers to the environmental fan sets will be open.

On receipt of a fire alarm signal the environmental system dampers will close and the damper to the smoke ventilation system will open.

On receipt of a signal from the fire alarm system all environmental controls will be overridden by the smoke control system.

SECTION 3.0 – DESIGN (CONTINUED)

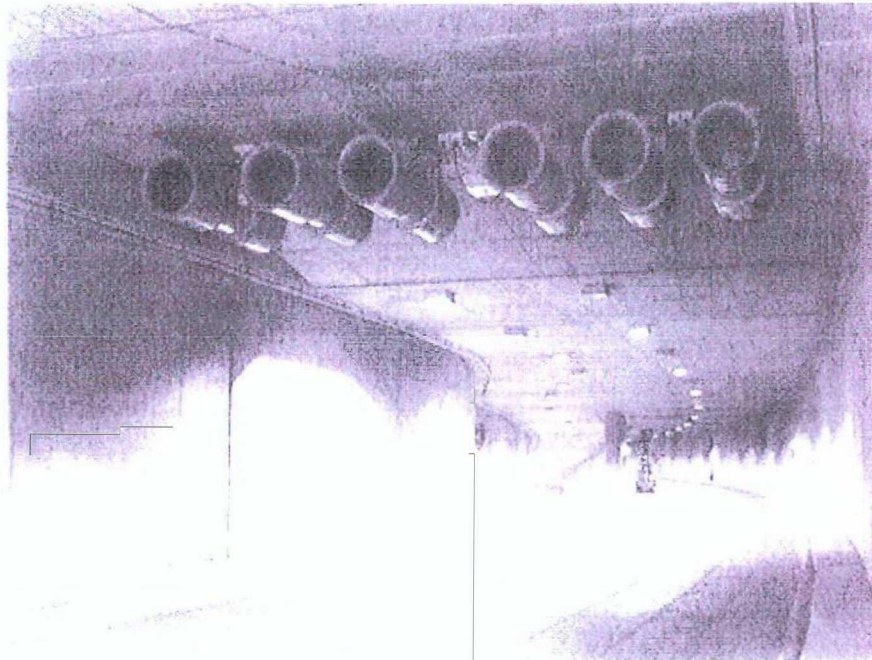
The mechanical system will operate as described above and the mechanical environmental system as follows:

- On alarm signal all dampers in the smoke affected lobby open (four dampers per lobby on the existing twenty floors and two dampers on the ground floor, walkway and walkway mezzanine areas)
- All other dampers close and all other floors are then locked out
- Environmental controls are locked out
- By pass dampers to environmental systems close
- By pass damper to the smoke extract fan set opens
- Make air is provided via the stairwell penthouse louvre which is permanently open.
- Smoke Extract Fans are initiated.
- Pressure sensor in smoke affected lobby active to regulate fan speed
- HMI override available
- If HMI override activated the Fan system shuts down and all dampers and stairwell ventilator will close
- If floor Override switch, in the stairwell, is turned to the on position, (when the HMI override has been activated) then the dampers on that floor will open, the stairwell ventilator will open and the fans will be initiated. Note: the override switch can be used on any one floor once the HMI override is initiated. However only one floor at a time can be activated via the override switches located in the stairwell.

The Boxing club and the common room lobbies have a single Wall mounted Automatic Opening Ventilator (AOV) fitted in each space. The AOV will consist of a bottom hung window which has a 24vDC actuator fitted. Each of the ventilated lobbies are fitted with a dedicated smoke detector linked into the central smoke control system and will both be complete with a fire override switch.

The cause and effect for the AOV ventilators are;
Smoke detected in a lobby only the applicable ventilator will open and the main mechanical system will remain unchanged.

The number & location of the temperature sensors for the environmental system are not within PSB UK Ltd and supplied by others these will operate by a signal from the BMS.



SECTION 4.0 – EQUIPMENT SPECIFICATION

4.1 Lobby

4.3.1 80 No Automatic Lobby Ventilators (By Others)

4.3.2 1 No Control Panel

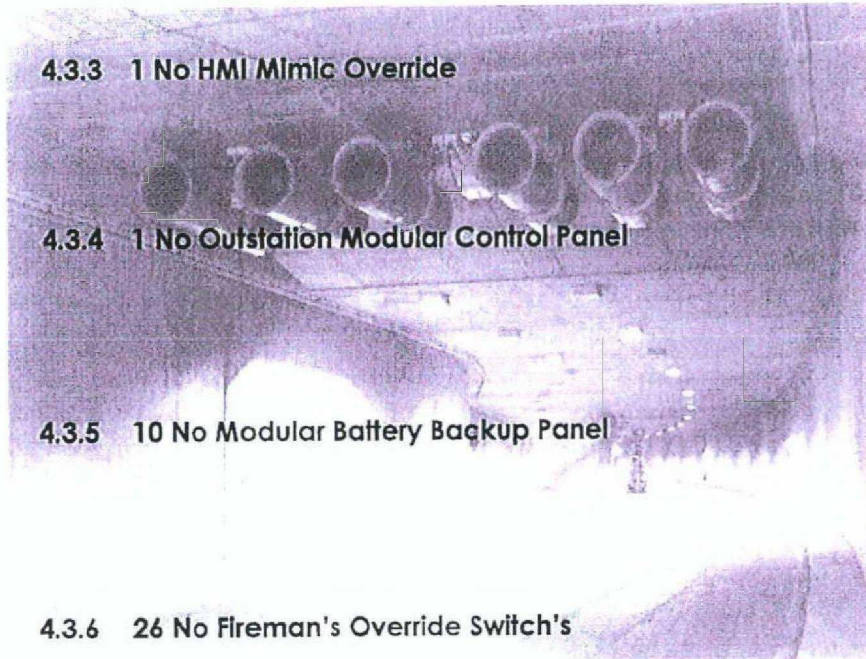
4.3.3 1 No HMI Mimic Override

4.3.4 1 No Outstation Modular Control Panel

4.3.5 10 No Modular Battery Backup Panel

4.3.6 26 No Fireman's Override Switch's

4.3.7 26 No Smoke Detectors

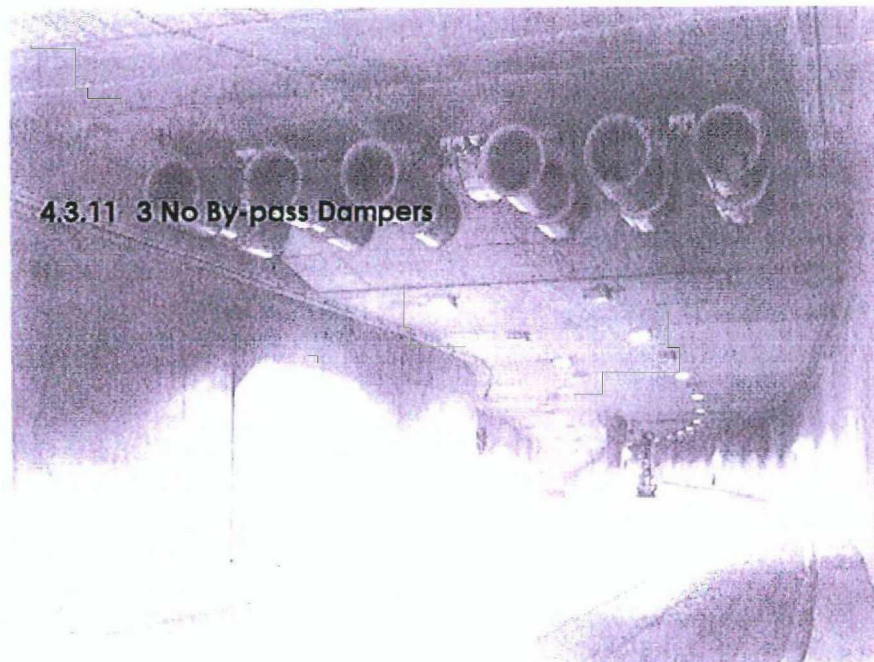


SECTION 4.0 – EQUIPMENT SPECIFICATION (CONTINUED)

4.3.8 2 No Extract Fans

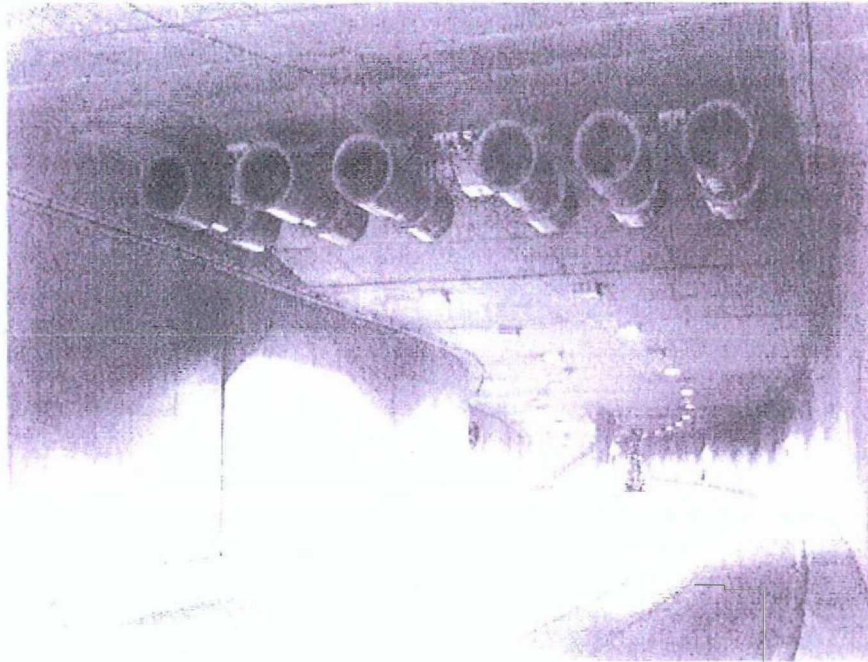
4.3.9 1 No Fan Starter Control Panel

4.3.10 83 No Pressure Sensors



SECTION 5.0 – INSTALLATION

The installation of the Stairwell & Corridor Ventilation Systems was supply only and carried out J S Wright & Co Ltd sub-contractor in accordance with the approved drawings and does not present any specific difficulties, its relation to the adjacent area, which depends on the extent of supply undertaken by PSB UK Ltd.



SECTION 6.0 - OPERATION

6.1 Lobby Smoke Ventilation System Operation

The mechanical fan set will be provided with a fan starter panel incorporating inverter speed drives to control the speed of the fans between low speed (all doors closed) and high speed (door on fire floor open). The open/closed door condition will be monitored by a pressure sensor (see details below) which will measure the pressure differential between the lobby and the stairwell. The system is designed to maintain -25pa in the lobby with all doors closed and will maintain the fans at low speed setting. Once a door to the smoke affected lobby, and only the smoke affected lobby, the pressure differential will be lost and the fans will automatically ramp up to full speed to extract air from the lobby at a rate which will provide an average face velocity of 2m/s across the open lobby / stairwell door.

The master control panel will be provided with a primary and secondary power supply in accordance with BS8519 and the power supplies are to include an auto changeover panel and by pass switch arrangement with a single main feed connection to the fan control panel.

The panel will be linked to the master PLC control panel via a data cable taken from the top floor outstation module in the service riser within the lobby area and will therefore seamlessly link into the existing natural smoke ventilation system installed in phase 1.

The pressure sensors will be fitted at each storey level and will monitor the pressure differential between the stairwell and lobby.

The pressure sensor will have a link to the control outstations fitted at each storey level and will link back to the master control panel via the data link between each outstation.

SECTION 6.0 - OPERATION (CONTINUED)

Once the system has been initiated by the smoke detection system only the smoke affected floor will operate and all floors will be linked out. Only the pressure sensor within the smoke affected lobby can operate the system.

As the smoke shafts are to be used to provide a route for fresh air and extract air for the environmental system a set of by-pass dampers will be incorporated into the ductwork system.

During normal environmental activities the system damper to the smoke ventilation fan set will be closed and the dampers to the environmental fan sets will be open.

On receipt of a fire alarm signal the environmental system dampers will close and the damper to the smoke ventilation system will open.

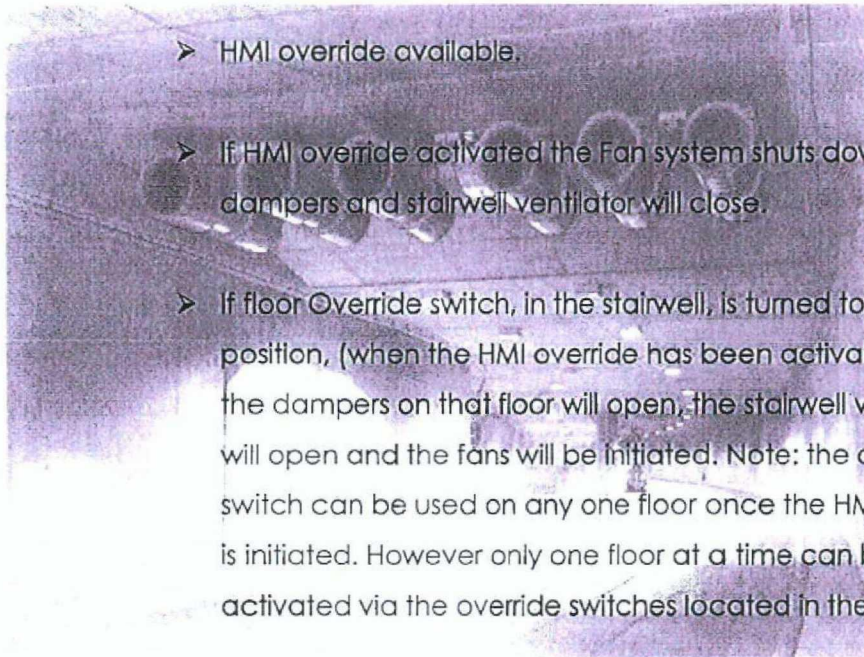
On receipt of a signal from the fire alarm system all environmental controls will be overridden by the smoke control system.

The mechanical system will operate as described above and the mechanical environmental system as follows:

- On alarm signal all dampers in the smoke affected lobby open (four dampers per lobby on the existing twenty floors and two dampers on the ground floor, walkway and walkway mezzanine areas)
- All other dampers close and all other floors are then locked out.
- Environmental controls are locked out.
- By pass dampers to environmental systems close.
- By pass damper to the smoke extract fan set opens.

SECTION 6.0 - OPERATION (CONTINUED)

- Make air is provided via the stairwell penthouse louvre which is permanently open.
- Smoke Extract Fans are initiated.
- Pressure sensor in smoke affected lobby active to regulate fan speed.



- HMI override available.
- If HMI override activated the Fan system shuts down and all dampers and stairwell ventilator will close.
- If floor Override switch, in the stairwell, is turned to the on position, (when the HMI override has been activated) then the dampers on that floor will open, the stairwell ventilator will open and the fans will be initiated. Note: the override switch can be used on any one floor once the HMI override is initiated. However only one floor at a time can be activated via the override switches located in the stairwell.

SECTION 7.0 – MAINTENANCE

7.1 Equipment Maintenance

The attached documents listed in **Section 4.0 – Equipment Specification** above are designed to give sufficient information for the servicing of manufacturer's /supplier's equipment.

Please ensure that regular maintenance is carried out on every item listed as failure to do so could cause serious damage and may invalidate warranty claims.

The system provided requires little maintenance during normal operation.

It is also recommended that where Permits to Work, Method Statements, Risk Assessments, Health, Safety and Environmental requirements and certificates for crane and lifting equipment are necessary, they are obtained before any maintenance work is undertaken.

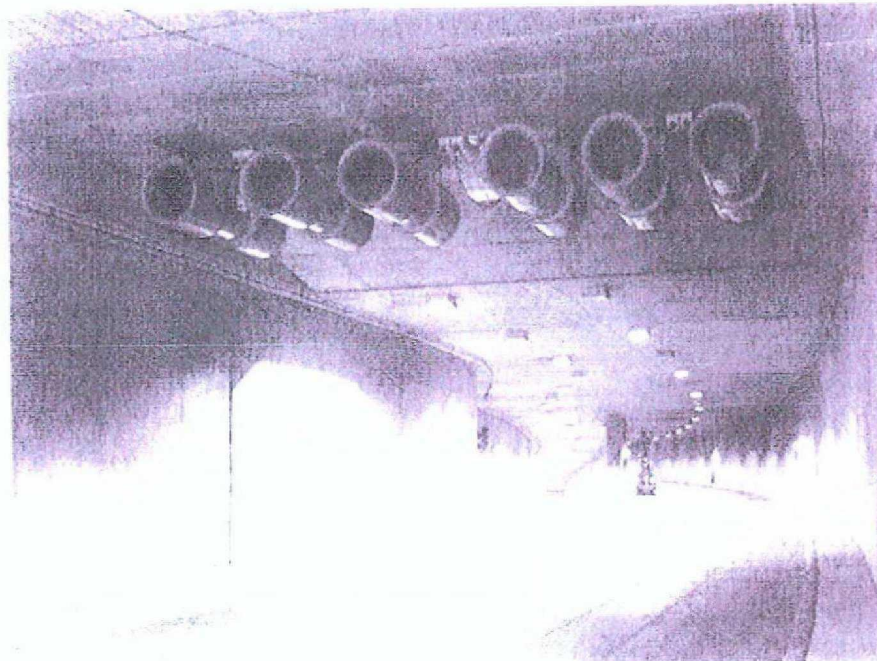
Unscheduled or Periodical Maintenance

Where the manufacturers / suppliers have not given specific frequencies for routine or periodical maintenance of their products, it is important that initially, regular inspections are carried out and recorded. Equipment experience will then indicate whether fewer inspections are required.

Should any unscheduled maintenance be required during the warranty period please contact our **Service Department** on [REDACTED]

SECTION 8.0 - LIST OF MAIN DRAWINGS

8.1 PSB E 75015 800E Lobby Electrical Schematic (Lobby)

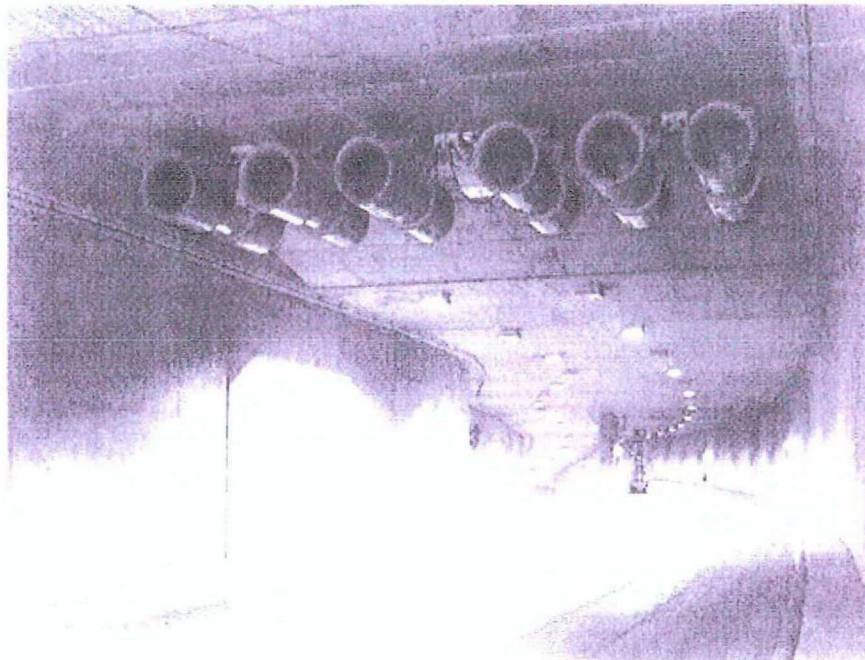


SECTION 9.0 – ELECTRICAL TEST CERTIFICATES

By J S Wright & Co Ltd Sub-Contractor

SECTION 10.0 – COMMISSIONING REPORTS

SECTION 11.0 – COMPLETION CERTIFICATE



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Company Registration Number 400 66 40

PSBUK 75019O O&M Page 20 of 20


Technical Specification for PSB Lobby Smoke Control

Relation : J S Wright & Co Limited
 Date : 15th March 2016
 Reference : PSB UK Ltd 75015 Rev 6
 Project : Grenfell Tower Appertments

2.3.3.5 Floor Override Switches

Product: KAC Ltd Right Choice Control Override Switches

Location: Stairwell at each storey level served by the ventilation system


QTY	CODE	CONSTRUCTION					CONTROLS	
26	FOC FIRE OVERRIDE SWITCH	PLASTIC					VIA INTERFACE MODULE	
Type: FOC Construction : Plastic Mounting Flange Type: Base fixing Base Type: Plastic Colour: Yellow								

A Key operated fire override switch will be located within the stairwell for each ventilated lobby, local to the automatic lobby ventilator, these switches will be in a normal auto position allowing the ventilator to be opened when the system operates. Once the fire override switch on the mimic override panel has been activated the floor override switch will allow the fire and rescue service the facility to open the dampers.

2.3.3.6 Smoke Detector Heads

Product: Apollo Right Choice smoke detector heads

Location: Existing Lobbies

QTY	CODE	CONSTRUCTION					CONTROLS	
26	XP95	PLASTIC					VIA INTERFACE MODULE	
Type: Apollo Optical with relay base Construction : Plastic Mounting Flange Type: Base fixing Base Type: Plastic Colour: white								

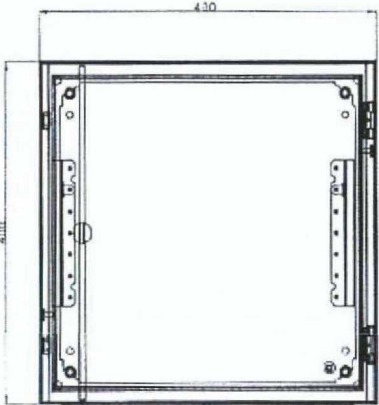
Technical Specification for PSB Lobby Smoke Control

Relation : J S Wright & Co Limited
 Date : 15th March 2016
 Reference : PSB UK Ltd 75015 Rev 6
 Project : Grenfell Tower Appertments

2.3.3.4 Modular Battery Backup Panel

Product: PSB Right Choice Battery Backup Panel

Location: Service Riser Existing

QTY	CODE	CONSTRUCTION	LENGTH	HEIGHT				CONTROLS	
10	BATTERY BACKUP MODULE	STEEL BOX	400	400				240VAC IN 24V DC OUT	
Type: Otstation Control Module Construction: steel cabinet with H width: 400 Height: 400 Mounting Type: SURFACE									

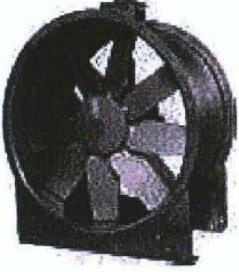
The battery backup smoke control panel will be a plastic wall mounted unit. The dimension of the panel will be 400mm High x 400mm Wide x 300 Deep. The panel will be wall mounted in the electrical riser on every fifth floor level within the ventilated lobbies.

Technical Specification for PSB Lobby Smoke Control


Relation : J S Wright & Co Limited
 Date : 15th March 2016
 Reference : PSB UK Ltd 75015 Rev 6
 Project : Grenfell Tower Appertments

3.1. Run & Standby Extract Fan Arrangement (cont.)

Fan Performance Data: Elta Fan Type LCS063K2-A5/17RS

QTY	CODE	CONSTRUCTION	FLANGE LENGTH	FLANGE WIDTH	OPENING LENGTH	OPENING WIDTH	FLANGE TYPE	CONTROLS	WINDSHIELD
2	AS BELOW	STEEL/ALUMINIUM	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Description of product / remarks: Fan Type: LCS630K2-A5/17RS Fan diameter: 630mm Electrical Supply: 380-420volts 50Hz 3 phase Rated Motor Power: 4.0kW Full Load Current: 10.21 A Starting Current: Invertor soft start Start type: Invertor Absorbed Power: 4.47kW Peak Power: 4.52 kW Certification: BSEN12101-3 specification For powered heat and Smoke exhaust ventilators									

Fan Performance Data: Elta Fan Type LCS050J2-A6/17RS

QTY	CODE	CONSTRUCTION	FLANGE LENGTH	FLANGE WIDTH	OPENING LENGTH	OPENING WIDTH	FLANGE TYPE	CONTROLS	WINDSHIELD
2	AS BELOW	STEEL/ALUMINIUM	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Description of product / remarks: Fan Type: LCS050J2-A6/17RS Fan diameter: 500mm Electrical Supply: 380-420volts 50Hz 3 phase Rated Motor Power: 2.0 kW Full Load Current: 6.43 A Starting Current: Invertor soft start Start type: Invertor Absorbed Power: 2.20 kW Peak Power: 2.64 kW Certification: BSEN12101-3 specification For powered heat and Smoke exhaust ventilators									


Technical Specification for PSB Lobby Smoke Control

Relation : J S Wright & Co Limited
 Date : 15th March 2016
 Reference : PSB UK Ltd 75015 Rev 6
 Project : Grenfell Tower Appertments

2.3.3.5 Floor Override Switches

Product: KAC Ltd Right Choice Control Override Switches

Location: Stairwell at each storey level served by the ventilation system

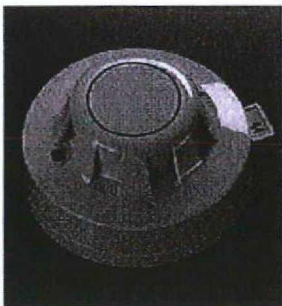
QTY	CODE	CONSTRUCTION						CONTROLS
26	FOC FIRE OVERRIDE SWITCH	PLASTIC						VIA INTERFACE MODULE
Type: FOC Construction : Plastic Mounting Flange Type: Base fixing Base Type: Plastic Colour: Yellow								

A Key operated fire override switch will be located within the stairwell for each ventilated lobby, local to the automatic lobby ventilator, these switches will be in a normal auto position allowing the ventilator to be opened when the system operates. Once the fire override switch on the mimic override panel has been activated the floor override switch will allow the fire and rescue service the facility to open the dampers.

2.3.3.6 Smoke Detector Heads

Product: Apollo Right Choice smoke detector heads

Location: Existing Lobbies

QTY	CODE	CONSTRUCTION						CONTROLS
26	XP95	PLASTIC						VIA INTERFACE MODULE
Type: Apollo Optical with relay base Construction : Plastic Mounting Flange Type: Base fixing Base Type: Plastic Colour: white								


Technical Specification for PSB Lobby Smoke Control

Relation : J S Wright & Co Limited
 Date : 15th March 2016
 Reference : PSB UK Ltd 75015 Rev 6
 Project : Grenfell Tower Appertments

2.3.3.2 HMI Mimic Override Control Panel

Product: PSB Right Choice mimic HMI panels

Location: Local to Fire Alarm Panel – Ground Floor

QTY	CODE	CONSTRUCTION	LENGTH	HEIGHT				CONTROLS	
1	MIMIC	PLASTIC BOX	400	300				24V	
Type: HMI Mimic / Override panel Construction: Plastic cabinet with HMI Screen width: 400 Height: 300 Mounting Type: SURFACE									

The smoke mimic control panel will be a HMI Touch screen and shall comprise of an operator dialogue terminal housed in a plastic wall mounted enclosure. The dimension of the repeater panel will be 400mm Wide x 300mm High x 150 Deep. User facilities will allow the operator to access system configuration, maintenance and testing functions and provide Fireman's override facilities through the menu driven touch screen control interface. The master mimic will communicate with each core master control panel over an Ethernet TCP/IP protocol displaying in full graphical representation status of each core with event recording accessed through the menu system.

Technical Specification for PSB Lobby Smoke Control

Relation : J S Wright & Co Limited
 Date : 15th March 2016
 Reference : PSB UK Ltd 75015 Rev 6
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2.3.3.3 Outstation Modular Control Panel

Product: PSB Right Choice Outstation Panel

Location: Service Riser Existing Lobbies

QTY	CODE	CONSTRUCTION	LENGTH	HEIGHT				CONTROLS	
23	OUTSTATION	PLASTIC BOX	400	300				24V	
Type: Otstation Control Module Construction: Plastic cabinet width: 400 Height: 300 Mounting Type: SURFACE									

The outstation modular smoke control panel will be a steel wall mounted unit. The dimension of the panel will be 300mm High x 400mm Wide x 200 Deep. The panel will be wall mounted in the electrical riser in each of the ventilated lobbies.

Technical Specification for PSB Lobby Smoke Control


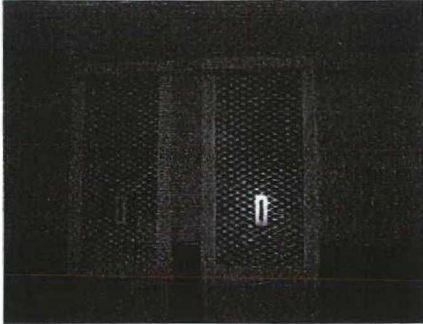
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 Project : Grenfell Tower Appertments

2.0 Phase 1 Equipment and Controls

2.1 Automatic Lobby Ventilators

Product: Gilberts Series 54 Damper

Location: Existing Lobbies

QTY	CODE	CONSTRUCTION	FLANGE LENGTH	FLANGE WIDTH	OPENING LENGTH	OPENING WIDTH	FLANGE TYPE	CONTROLS	
80	SSE	GALVANISED STEEL	637	337	600MM (L)	300MM (W)	SELF	24V	
Damper Type: SSE 300 X 600 Number of Blades: N/A Construction of Blades: Galvanisd steel Opening Height: 600 Opening width: 300 Flange length: 637 Flange width: 337 Flange Type: Self Base Type: N/A Controls: MS Control 24v									
Grille Type Existing Construction Punched Steel									
Colour: Existing Certification: Damper section tested to EN1366 Pt2 Fire resistance test for service installtions Part 2 Fire Dampers									

Note: the damper motor is accessed for maintenance by removing the grille.

Technical Specification for PSB Lobby Smoke Control

Relation : J S Wright & Co Limited
 Date : 15th March 2016
 Reference : PSB UK Ltd 75015 Rev 6
 Project : Grenfell Tower Appertments

2.3.2 Activation Mechanism

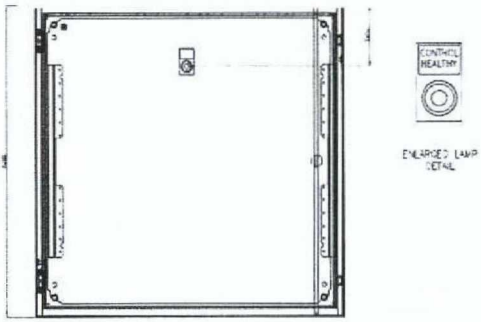
The system is triggered by smoke detectors supplied and installed by PSB. Detection within the lobby shall be provided by ceiling mounted smoke detectors. Signals from the smoke detectors will be relayed direct to the relevant smoke control systems via the local floor outstation.

2.3.3 Control Panels

2.3.3.1 Master Smoke Control Panel

Product: PSB Right Choice Control panel size 600mm wide x 600mm high x 400mm deep

Location: Service Riser Level 01

QTY	CODE	CONSTRUCTION	HEIGHT	WIDTH	DEPTH			CONTROLS	
1	MCP	STEEL BOX	600	600	400			240VAC IN 24VDC OUT	
Type:		SMCP Master smoke control panel incorporating PLC Control system							
Construction:		Steel cabinet							
Height:		600							
width:		600							
Mounting Type:		Surface wall mounted							

The master smoke control panel will be a steel wall mounted unit. The dimension of the panel will be 600mm High x 600mm Wide x 400 Deep with full PLC driven control system. The panel will be wall mounted in the electrical riser on the first floor.

The panel will have control interface wiring to the:

- Mimic HMI panel on the ground floor
- Outstation panels in electrical riser located in the lobby on each level served by the smoke control system.
- Battery backup panel one on every fifth floor

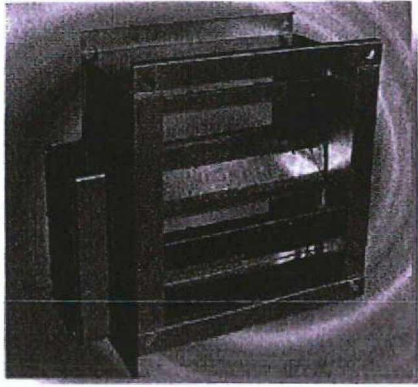
Technical Specification for PSB Lobby Smoke Control

Relation : J S Wright & Co Limited
 Date : 15th March 2016
 Reference : PSB UK Ltd 75015 Rev 6
 Project : Grenfell Tower Appertments

3.4 By-pass Dampers

Product: BSB SC Series

Location: Walkway Environmental Fan Set and Plant Room Smoke Extract Fan Set

QTY	CODE	CONSTRUCTION	FLANGE LENGTH	FLANGE WIDTH	OPENING LENGTH	OPENING WIDTH	FLANGE TYPE	CONTROLS	
3		GALVANISED STEEL	TBA	TBA	TBA	TBA	TBA	24V	
Damper Type: SC TBA Number of Blades: TBA Construction of Blades: Galvanisd Opening Height: TBA Opening width: TBA Flange length: TBA Flange width: TBA Flange Type: Self Base Type: N/A Controls: MS Control 24v									

The environmental fan sets and the smoke extract fan sets will each have a shut off/ bypass damper fitted to isolate the fan sets. The damper sizes will be provided once the final ductwork sizing and arrangement has been agreed. The dampers are Smoke Control dampers which have been tested at elevated temperatures.

Technical Specification for PSB Lobby Smoke Control

Relation : J S Wright & Co Limited
 Date : 15th March 2016
 Reference : PSB UK Ltd 75015 Rev 6
 Project : Grenfell Tower Appertments

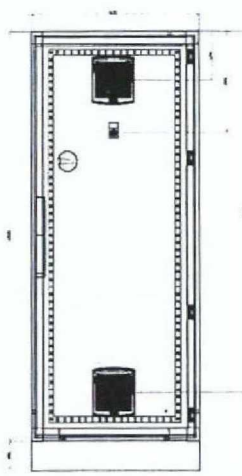
3.3 Mechanical Control System (cont.)

- By pass damper to the smoke extract fan set opens
- Make air is provided via the stairwell penthouse louvre which is permanently open.
- Smoke Extract Fans are initiated.
- Pressure sensor in smoke affected lobby active to regulate fan speed
- HMI override available
- If HMI override activated the Fan system shuts down and all dampers and stairwell ventilator will close
- If floor Override switch, in the stairwell, is turned to the on position, (when the HMI override has been activated) then the dampers on that floor will open, the stairwell ventilator will open and the fans will be initiated. Note: the override switch can be used on any one floor once the HMI override is initiated. However only one floor at a time can be activated via the override switches located in the stairwell.

3.3.1 Fan Starter Control Panel

Product: PSB Right Choice Smart Control panel size 600mm wide x 1400mm high x 600mm deep

Location: Roof top plant room local to fan set

QTY	CODE	CONSTRUCTION	HEIGHT	WIDTH	DEPTH				
1	FSP	STEEL BOX	1400	600	600				
Type:		FSP Fan starter control panel incorporating inverter fan drives							
Construction:		Steel cabinet							
Height:		1400							
width:		600							
Mounting Type:		Surface wall mounted							

The fan starter control panel will be a steel wall mounted. The dimension of the panel will be 600mm High x 1400mm Wide x 600 Deep with Macon MR5 inverter drives.
 The panel will be provided with a 3 phase power supply (supplied and installed by others).


Technical Specification for PSB Lobby Smoke Control

Relation : J S Wright & Co Limited
 Date : 15th March 2016
 Reference : PSB UK Ltd 75015 Rev 6
 Project : Grenfell Tower Appertments

3.3.2 Pressure Sensor

Product: Control Pressure Transmitter

Location: Stairwell at every floor level piped into lobby

QTY	CODE	CONSTRUCTION						CONTROLS	
83	PA-DPS-8X	PLASTIC						VIA INTERFACE MODULE	
Type:		PA-DPS-8x Sontay Pressure sensor							
Construction :		Plastic							
Mounting Flange Type:		Base fixing							
Base Type:		Plastic							

A Pressure transmitter will be fitted within the stairwell, at high level on each storey level, and will measure the pressure differential between the stair and the smoke affected lobby. If the pre-set pressure differential is maintain the fan will run at low speed (doors closed) Should a lobby door open then pre-set pressure differential will not be able to be maintained and the fan will ramp up to full speed via inverter drive in the master control panel (open door condition) to extract a higher volumetric rate from the lobby.

DO NOT SCALE - IF IN DOUBT ASK



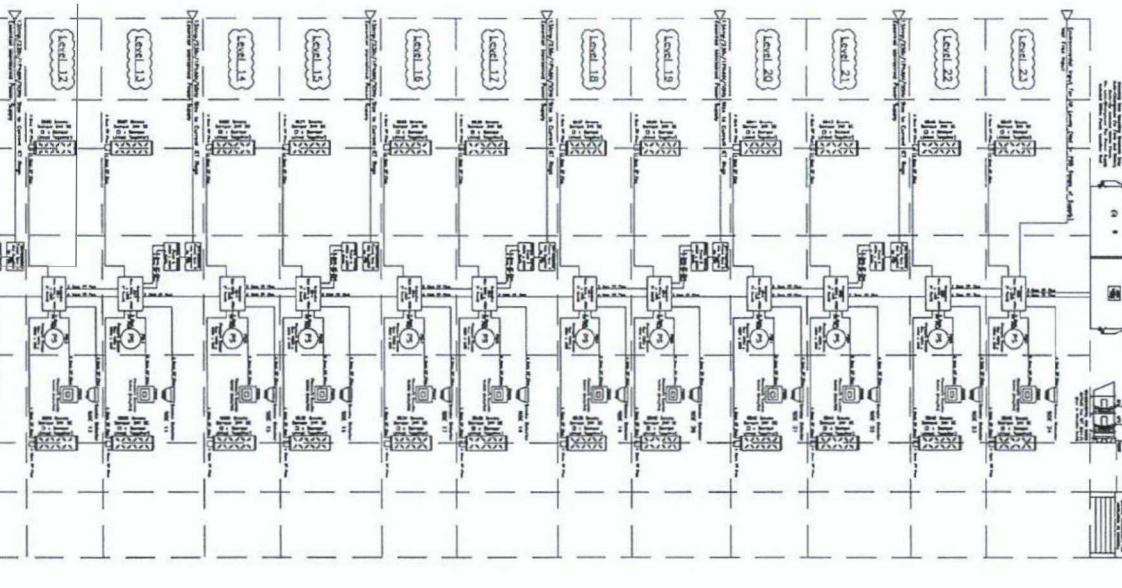
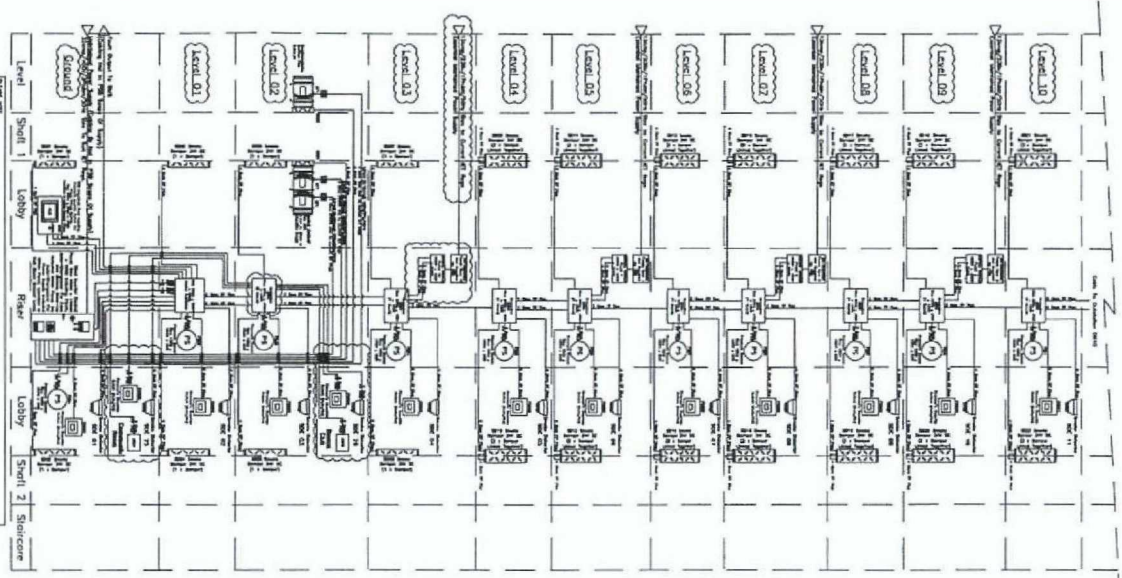
Member of the WITT UK Group
 PSB - UK Ltd.
 Mill House, Shell Mills
 Wash House Road, Shell
 Haven, West Yorkshire, HX23 7JL
 Tel: [REDACTED]
 E-mail: info@psb.co.uk

CLIENT COMMENTS

SIGNATURE	DATE

LEGEND

	VFD UNIT	23 No.
	BATTERY BACKUP PANEL	9 No.
	METER PANEL	2 No.
	FIREMAN'S OVERLOAD	24 No.
	DUMPER	48 No.
	SMOKE EXTRACT FAN	2 No.
	ENVIRONMENTAL FAN	1 No.
	SMOKE EXTRACT FAN	2 No.
	PRESSURE SENSOR	24 No.
	SMOKE DETECTORS	24 No.

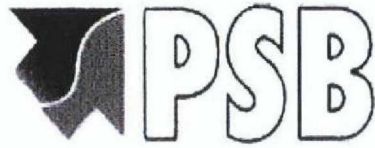


NOTES

1. This drawing is a schematic diagram of the fire alarm and detection system for the building.
2. The system is designed to comply with BS 5839-1:2002 and BS 5839-6:2002.
3. The system is a conventional fire alarm system with a central alarm control panel (ACP) and a fire alarm control unit (FACU).
4. The ACP is located in the main lobby on Level 01.
5. The FACU is located in the main lobby on Level 01.
6. The system is designed to provide a minimum of 24 hours of battery backup.
7. The system is designed to provide a minimum of 24 hours of battery backup.
8. The system is designed to provide a minimum of 24 hours of battery backup.
9. The system is designed to provide a minimum of 24 hours of battery backup.
10. The system is designed to provide a minimum of 24 hours of battery backup.

ALL DIMENSIONS IN 'mm' U.O.S.

Project No. 8127 Date 28/01/15
 Drawn By: [REDACTED]
 Checked By: [REDACTED]
 PSB E 75015 800 E



Above ground commissioning report.

Date	28 th April 2016
Engineer's Name	G Partlow

Site Name	Grenfell Tower
Site Location	London

PSB Contract Number	75015
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Certificate Number	Not Issued
Security Stickers Used	Not Fitted
Next Service Date	N/A

Index

Job information

Check list, updates and notes

Problems on site

Battery test sheet

AOV's test sheet

Dampers door and window actuators test sheet

Break glass units and switches sheet

Other information and customer requests

BATTERY TEST SHEET

Number of batteries: 24

Test equipment used:

Battery number	Battery Volts	Battery Ah	Actual Volts	Actual Ah	Pass	Fail
1 to 24	12	7	12	7	yes	

DAMPERS/DOOR ACTUATORS/WINDOW ACTUATORS

Number – Location	Type	Open	Closed	Damage	Pass	Fail
SD01 to SD48	damper	ok	ok	ok	yes	
CD01 & CD02	damper	ok	ok	ok	yes	

Number	Auto	Open	Off	Damage	Pass	Fail
FOS 01 to 24	ok	ok	n/a	ok	yes	
	operation	reset				
Smoke detector SDE01 to 24	ok	ok		ok	yes	
	operate					
Pressure switch PS01 to PS24	ok			ok	yes	
	Correct function					
Outstation 1 to 22	ok			ok	yes	
Inverter panel 1 & 2	ok			Ok	yes	
Main panel	ok			ok	yes	
Fans x 5	ok			ok	yes	
Battery panels x 10	ok			ok	yes	

Electrical	Installed	Tested
Control Panel Software Loaded	yes	Yes
System Cause and Effect Fully Programmed	yes	Yes
Ensure correct operation of system under simulated mains failure	yes	yes
Ensure correct operation of system in case of failure in one part	yes	Yes
Carry out cable survey and check certification	yes	yes

Fire Detection System	Installed	Tested
Ensure the fire detection system has been installed as per the System requirements.	yes	Yes
Confirm that the system has been correctly commissioned	yes	yes

Fire Service Override	Installed	Tested
Check functionality of the Fire Service override switch	yes	yes

Interfaces	Installed	Tested
Check the interaction between the ventilation system and all other interfaced systems	yes	yes
Ensure that all systems respond in the appropriate manner	yes	yes

Fresh Air openings	Installed	Tested
Ensure the Fresh Air openings are in line with Design requirements	yes	yes

MODIFICATIONS

INTERFACES WITH NON PSB EQUIPMENT AND SYSTEMS

All working according to design

COMMISSIONING OUTCOME

All systems are operating according to design

RECOMMENDATIONS

Completion Certificate

J S Wright & Co Ltd, Project Ref: - DP/29111/9497
PSB UK Ltd Project Ref: - 75019

This is to certify that the "Above Ground Smoke Ventilation System"
supplied by PSB-UK for integration into: -

Grenfell Tower,
Grenfell Road
Notting Hill
London, W11 1TQ

Has been Mechanically & Electrically tested in accordance with the
schedules laid out in the contract and is fully operational, in line with
the agreed specification(s).

Signed on behalf of J S Wright & Co Ltd

Name: _____
Position: _____
Date: _____

Signed on behalf of PSB UK Ltd

Name: _____
Position: Project Manager
Date: 3rd May 2016

Member of the WITT UK Group

WITT & SON UK

IGW Fans

WITT & SON UK Ltd.

Witt House, Shelf Mills,
Wade House Road, Shelf,
Halifax HX3 7BJ ENGLAND

Tel: [REDACTED] Fax: [REDACTED]

Email: service@wittandson.co.uk
Internet: www.wittukgroup.co.uk

Our ref: 05052016RT

5th May 2016

JS Wright & Co LTD
The Atlas Building
16 Portland Street, Aston
Birmingham
B6 5RX

Dear Sir - Madam

Re: Glenfell Tower
Maintenance Contract –Above Ground stairwells Ground to Floor 23 and Roof,
smoke extract system.

Thank you for inviting us to submit our proposals for the preventative maintenance contract for the PSB impulse ventilation system installed at the above car park. I am now pleased to attach an outline of our proposed maintenance agreement.

Please note that system maintenance is still required during the initial standard 12 month warranty period. Therefore, it is advised that a maintenance contract is taken out as soon as possible after PSB's practical completion, and upon issue of our Completion Certificate.

The price quoted is non transferable and has been prepared in accordance with our Standard Terms & Conditions, a copy of which are available on request or on our website:
www.wittukgroup.co.uk.

If you have any questions concerning our proposals, please do not hesitate to contact us.

Yours faithfully
For and on behalf of Witt UK Ltd

Richard Thornley

Richard Thornley
Service, Sales & Witt UK Operations Manager

Fan Systems Group
PSB UK
Alldays Peacock
Witt UK

Registered Office: WITT House,
Company Registration Number: 848896

JSWC JSW00001916/41



Equipment Overview

Quote Ref: 05052016RT

Fireman's over-ride switches	24 QTY
Battery Backup Panels	9 QTY
Out Stations	23 QTY
Inverter Panels	2 QTY
Dampers	48 QTY
Shut off Dampers	3 QTY
Smoke Extract Fans	2 QTY
Environmental Extract Fan	1 QTY
Environmental and Smoke Extract Fan	2 QTY
Pressure Sensors	24 QTY
Smoke Detectors	24 QTY



Equipment Overview

Quote Ref: 05052016RT

General

Our standard maintenance contract allows for labour only and is for a minimum one year period for standard cover. Contracts can be negotiated for longer terms if required. The maintenance contract term will commence from receipt of full payment & completed maintenance agreement form (see page 6) and will elapse upon completion of the last scheduled site visit (on second visit - if every six months) a "Maintenance Completion Certificate" will then be issued.

Installed Equipment

Our maintenance visits can only determine that any fitted equipment is operational at the time of the inspection. Where replacement parts, off-site repairs or interim call-outs are required, these shall be reported to you for approval and, if approved, would be charged for accordingly as an addition to the maintenance contract. Please note however, that no additional work will be undertaken without a covering purchase order. All work shall be carried out in a timely manner and to the best of our ability (dependant upon part/labour availability and our current workloads).

Site Visits / Inspections

Our standard maintenance contract allows for two site visits for the fans & controls, two site visits for the CO detection system, two site visits for the smoke detection system and two site visits for the stairwell & lobby smoke control systems (per annum), as detailed on subsequent sheets. The inspection by our fully trained engineers must be continual without the requirement to revisit site due to areas being occupied, closed off or obstacles preventing safe access (e.g. where it is considered that a vehicle may be damaged as a result of testing a device or where part of the car park is inaccessible).

It is a condition of our offer that free vehicular access is available to all areas of the car park, stairwells & lobbies. Our engineers are also to be provided with free, uncluttered access to all required working areas. Any interruption or delays caused by others or due to circumstances beyond our control may result in additional charges.

Should our engineers require a power supply to carry out their works, it is understood that this will be provided free of charge.

The maintenance inspections will be carried out during normal working hours of the normal working week as outlined below. We anticipate that the fans, controls, CO & Smoke detection systems will be inspected & tested as outlined on page 2. Any additional inspections or time required outside of these hours will be charged extra to the agreed maintenance contract.



Proposal Overview

Quote Ref: 05052016RT

Continued...

System Shutdown

Under normal circumstances we would not expect the system to be shut down for any prolonged periods (i.e. overnight, weekend etc). The system will most likely be shut down for very limited periods throughout the days of maintenance (whilst the checks/tests are carried out), unless of a system failure or requirement for an off-site repair or replacement part(s). In such events, site management would be duly informed and the system would be isolated accordingly.

Working Hours

Only normal working hours of the normal working week have been allowed for in this quotation, these hours being Monday to Friday, 8.00am to 4.30pm. Working outside of these hours can be arranged at extra cost if required.

Exclusions

The following items are specifically excluded from our scope of works in this quotation: -

- Value Added Tax (VAT).
- Non-standard Health & Safety procedures.
- Any replacement parts or consumables.
- Any repair work.
- Cleaning of equipment.
- Lifting equipment or working platforms.
- Out of hours working.
- Unscheduled / interim site visits.
- Emergency call-outs / inspections.
- Extended warranty.
- Any item not specifically referred to in this tender as being included.



Proposal Overview

Quote Ref: 05052016RT

Main Fans, Impulse Fans & Main Control Panel

The main extract fans and impulse fans are fitted with sealed for life bearings and therefore the actual maintenance requirements are minimal with the exception of cleaning which is excluded from this quotation; see our engineer's checklist on page 6. Our price includes for two six monthly site visits (labour only) and excludes the supply of replacement parts or consumables should they be required.

CO Detection System Inc. Sensors & Panel

In accordance with the manufacturers recommendations, the CO detection/monitoring system will only be serviced by fully trained personnel, twice annually, thus ensuring continued performance & compliance. Our price includes for two six monthly site visits (labour only) and excludes the supply of replacement parts or consumables should they be required. The CO cells/elements within each CO sensor have a typical lifespan of 2-3 years; however this is dependant on the environment in which they are installed. Usually these can be fitted insitu on-site with minimum disruption, and are excluded from this quotation.

Smoke Detection System Inc. Sensors & Panel

In accordance with BS5839-1:2002 & BS5839-6:2004, the smoke/fire detection system will be serviced twice annually (Half yearly, 50% per visit). Our price includes for two six monthly site visits (labour only) and excludes the supply of any replacement parts or consumables should they be required.

Agreement

Should you wish to accept our maintenance contract offer, please forward to us a fully signed copy of this agreement (see page 6) and your covering purchase order to the full amount. A sales invoice will then be issued by return for you to submit full payment. The maintenance contract will commence from receipt of full payment, upon which our maintenance team will contact you to schedule suitable site visit dates and site access requirements etc.

Prior to order acceptance by WITT & SON-UK Ltd, there will be a contract review process to ensure that the customer's purchase order is inline with the scope of this and subsequent quotations. Should there be any variance between the customer's purchase order and our quotation, we reserve the right to amend our quotation accordingly.

Payment Terms

All maintenance fees are payable in full, annually in advance. Credits or refunds will not be given for half or part years.

Witt & Son UK Limited

Witt House
 Shelf Mills,
 Wade House Road, Shelf
 Halifax, West Yorkshire
 Tel: [REDACTED]
 Fax: [REDACTED]

WITT & SON UK

IGW Fans

Client to complete all fields marked *

Client *	JS Wright & CO LTD	Witt Quote Ref.	05052016RT
Site Address *	Glenfell Tower North Kensington	Witt Quote Date	5 th May 2016
		Date System Installed	April 2016
Site Contact *		Customer Order No. *	
Site Tel *		Order Date *	

Above Ground Smoke Extract System, See Equipment Overview, Page 2

Total Maintenance Contract Value 2 Visits : Covers 12 month:

Total Price: £3600.00 + VAT

Signed on behalf of : -

Name: _____
 Company: _____
 Position: _____
 Signature: _____
 Date: _____

Formal Acceptance

By signing this agreement (left), you signify your acceptance of the full price & conditions listed within this agreement and hereby agree to enter into a twelve month contract with Witt & Son-UK Ltd to maintain your car park ventilation system installed at the above site, and as detailed in the 'Equipment Overview' on Page 2. By signifying your acceptance, you are also deemed to have read, understood and agreed to Witt & Son-UK Standard Terms & Conditions of Sale.



Standard Terms & Conditions of Sale for UK Mainland

General – These conditions shall be incorporated into and govern the agreement entered into between the parties.

No contract shall be formed unless and until any Order placed by the Main Contractor (or Sub-Contractor to the Main Contractor) has been accepted in writing. The written acceptance of the Order shall constitute an unequivocal agreement by the parties to be bound by these conditions of contract.

Validity – All quotations are valid for acceptance up to **30 days** from the date of this tender.

N.E.D.O. – Where time scales for projects are extended beyond three (3) months from the tender date the purchaser accepts that prices will be adjusted using the NEDO Indices.

Definitions – Unless the context otherwise requires or this contract specifically provides otherwise, the following words and phrases shall have the meanings set out below.

Word or phrase	Meaning
"sub-contract documents"	<i>The tender, including such drawings and/or a specification and/or priced Bills of Quantities, submitted by WITT & SON UK to the Main Contractor (or Sub-Contractor), the Order placed by the Main Contractor (or Sub-Contractor) and accepted in writing by WITT & SON UK and these terms and conditions.</i>
"attendances and facilities"	<i>Those attendances and facilities set out in the documents submitted by WITT & SON UK.</i>
"sub-contract works"	<i>The works described in the sub-contract documents together with any changes to those works made in accordance with the contract.</i>
"WITT & SON UK"	<i>WITT & SON UK Limited</i>

WITT & SON UK's Obligations

WITT & SON UK shall carry out and complete the contract works in accordance with the agreed sub-contract documents in a good and workmanlike manner using materials up to the standard required by the contract documents and of satisfactory quality.

WITT & SON UK shall provide everything required by the sub-contract documents to be provided

WITT & SON UK shall not have any liability for any lack or shortage of materials specified by the Main Contractor (or Sub-Contractor) and/or the Architect for incorporation into the contract works.

If at any time WITT & SON UK notifies the Main Contractor (or Sub-Contractor) of any lack or shortage of materials specified by the Main Contractor (or Sub-Contractor) and/or the Architect, the Main Contractor (or Sub-Contractor) shall forthwith issue a written instruction to WITT & SON UK to overcome such lack or shortage.

WITT & SON UK Ltd shall not have any liability for errors or omissions in the information supplied by the Main Contractor (or Sub-Contractor) and/or the Architect.

Main Contractor's (or Sub-Contractor's) Obligations

The Main Contractor (or Sub-Contractor) shall at all times act in a fair and reasonable manner towards WITT & SON UK in relation to all its obligations and duties under the contract.



Standard Terms & Conditions of Sale (Contd.)

The Main Contractor (or Sub-Contractor) shall provide free of charge to WITT & SON UK all reasonable and necessary attendances and facilities to carry out and complete the contract works.

The Main Contractor (or Sub-Contractor) shall be responsible for the protection and security of WITT & SON UK works following practical completion of PSB UK works.

Loss and/or Expense

If the regular progress of the contract works is either prolonged and/or disrupted and/or otherwise materially affected by any act, omission or default either on the part of the Employer (including those for whom the Employer is responsible) or the Main Contractor, and/or his Sub-Contractor's or agents, then WITT & SON UK shall notify the Main Contractor (or Sub-Contractor) in writing within a reasonable period of time of such matters and provide details of the direct loss and/or expense incurred by WITT & SON UK. The direct loss and/or expense incurred by WITT & SON UK shall be added to the contract sum and shall be paid by the Main Contractor (or Sub-Contractor) in the interim payment due to WITT & SON UK immediately following the notification referred to above.

Extension of Time

If the preparation, performance or completion of the contract works is delayed, disrupted or hindered by any event, circumstance or cause beyond the control of WITT & SON UK then the period for the completion of the contract works shall be extended by the same period of time as the period of delay, disruption or hindrance.

WITT & SON UK shall constantly use its best endeavours to prevent delay to the progress of the contract works.

Payments

The Main Contractor (or Sub-Contractor) shall pay WITT & SON UK the contract sum together with such other amounts which become due and payable including a fair and reasonable sum for instructions, variations and direct loss and/or expense.

The parties expressly agree that the Main Contractor (or Sub-Contractor) shall not be entitled to deduct retention monies from monies otherwise owing to WITT & SON UK.

No sums shall be deducted or withheld from any interim or final payment due to WITT & SON UK unless agreed by WITT & SON UK or unless relating to a claim by the Main Contractor (or Sub-Contractor) for the actual loss already incurred by the Main Contractor (or Sub-Contractor) as a direct result of a breach of this contract agreement by WITT & SON UK.

No abatement or set-off relating to such a claim shall be made from any payment unless a written statement of the amount of the claim to be made, quantified in detail and with reasonable accuracy and setting out the ground or grounds for such withholding or deduction has been received by WITT & SON UK not less than seven (7) days before the final date for payment.

Overdue payments will be subject to interest charges equivalent to 4% above UK Clearing Bank Base Lending Rate ruling at the time of invoice.

It is part of the contract that an application for payment for the completion of detailed design work, representing 10% of the contract value, will be made before commencement of installation works



Standard Terms & Conditions of Sale (Contd.)

Suspension

If any interim or final payment has not been received in full by WITT & SON UK by the final date for payment the following shall apply:

- a) *WITT & SON UK may serve a notice of intension in writing to suspend work and shall be entitled seven (7) days after serving such notice to suspend work until such payment has been made in full.*
- b) *The period of suspension shall not be a period of delay or a period of delay for which WITT & SON UK is responsible.*

Determination by WITT & SON UK

If at any time prior to the date of practical completion of the contract works the Main Contractor (or Sub-Contractor):

- a) *Without reasonable cause wholly or substantially suspends the main contract works, or*
- b) *Without reasonable cause fails to proceed with the main contract works which substantially affects the progress of the contract works, or*
- c) *Fails to pay WITT & SON UK in accordance with the terms of this contract*

Then WITT & SON UK may, without prejudice to our rights and entitlement under the "SUSPENSION" clause, give a written notice to the Main Contractor (or Sub-Contractor specifying the default or defaults and if that specified default or those specified defaults continue or are not otherwise remedied within that period of seven (7) days for a period of seven (7) days following the giving of the notice, then WITT & SON UK may, within a further seven (7) days, give the Main Contractor (or Sub-Contractor) a further notice determining WITT & SON UK's employment under the contract.

Post Contract Determination

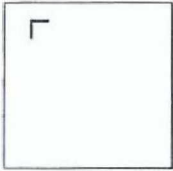
Where WITT & SON UK has determined its employment under the above clause, WITT & SON UK shall, as soon as is reasonably practical, remove from site all labour, plant and goods or materials and shall immediately thereafter prepare and submit to the Main Contractor (or Sub-Contractor) an account setting out the total value of the contract work carried out and completed at the date of the determination, the value of goods and materials ordered by WITT & SON UK for incorporation into the contract works (whether incorporated or not), the reasonable costs of the removal from site and the direct loss and/or expense occasioned by the determination.

Thereafter, the Main Contractor (or Sub-Contractor) shall pay within twenty one (21) days to WITT & SON UK without any deduction whatsoever, the full amount of the above account after taking into account previous payments received by WITT & SON UK.

Notices – Any notice or document may be served on the other party by any effective means. The effective means are a properly addressed, pre-paid notice served by first class post at the last known business address of the other party.

Electrical Power Supply On Site – It is assumed that a 110 volt electrical power supply will be provided adjacent to and free of charge for installation and commissioning work.

Control Panels - WITT & SON UK Ltd requires that the Main Contractor (or Sub-Contractor) provide an essential power supply of adequate capacity to the PSB Control panel, the glanding of cables, termination and testing of the power supply to specified requirements.



Standard Terms & Conditions of Sale (Contd.)

Validation of the System – Cold smoke generation will be used at the time of commissioning to prove the air and smoke paths within the car park.

Property Rights – The contents of this tender are exclusive to and remain the property of WITT & SON UK Ltd and must not be divulged or copied to any other party without the express permission of WITT & SON UK Ltd.

Secrecy – The Purchaser undertakes to maintain the strictest secrecy towards third parties in respect of all information in the widest sense about WITT & SON UK Ltd as may come to his knowledge in connection with any contract, including such information as design, instructions, patterns, technical specifications, prices and the like. The Purchaser hereby undertakes, both during and after the term of contract, not to disclose, directly or indirectly, all or any of such information, except as is necessary for the performance of the contract.

Publicity – The Order and all details appertaining thereto shall be treated as confidential between the Purchaser and the Vendor, and shall not be disclosed to any third party, nor used for publicity / promotional purposes without the consent of the Vendor in writing.

Force Majeure – Neither the Vendor nor the Purchaser shall be liable for any failure to fulfil its obligations under the contract if such failure is caused by circumstances beyond reasonable control. In the event of failure the affected party shall notify the other party as promptly as possible but no later than 7 days from the occurrence.

Title in the Goods – Title in the goods and materials delivered to site for incorporation into the contract works shall remain the property of WITT & SON UK until payment in full for the goods and materials has been received in full by WITT & SON UK.

Adjudication – Either party may at any time refer any dispute arising out of this sub-contract to adjudication in accordance with The Scheme for Construction Contracts (England and Wales) Regulations 1998.

Arbitration – Any dispute or difference arising under, out of, or in connection with a sub-contract agreement shall be referred to the arbitration and final decision of a person to be agreed between the two parties, or failing agreement within 14 days after either party has given the other a written request to concur in the appointment of an Arbitrator, a person to be appointed on the request of either party by the President or a Vice-President of the Charter Institute of Arbitrators.

Third Party Rights – Nothing in these conditions shall confer or purport to confer upon any third party any benefit or right against the Vendor or Purchaser.

Law – These terms & conditions and the contract of which they form a part shall be governed by and construed in accordance with English Law and Purchaser and Vendor submit to the jurisdiction of English Courts.

Witt & Son UK Contact Details –

WITT & SON UK Limited
Witt House
Wade House Road,
Shelf Mills,
Shelf,
Halifax, West Yorkshire, HX3 7BJ

Tel: 
Fax: 
Email: service@wittandson.co.uk
Web: www.wittukgroup.co.uk