SUPPORTING ANNEX B DOCUMENT FOR PROPOSED VENTILATION SYSTEM

178 High Holborn
London
WC1V 7AA

DELTABRAVO LIMITED

Date 16.6.23

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1.0 INTRODUCTION:

This document has been prepared by Delta Bravo Limited on behalf of the client who will be operating this store. Advice has been sought from appointed specialists in HVAC Design, manufacture and installation.

The information contained within this document should be used as supporting information when applying for Change of Use Planning Approval and is based on the '*DEFRA Annex B – Guidance on the control of odour and noise from Commercial* Kitchen *Exhaust system – Jan 05*.

Annex B advises that the aim of any ventilation/extraction is to ensure that no nuisance, disturbance or loss of amenity is caused by odour, fumes, food droplets or noise, to nearby properties.
Additionally, the visual appearance of the flue may be important and the flue itself may require a separate planning permission. Enquiries should be made to the Local Authority Planning Department regarding this matter.
A suitably qualified and experienced person with specialist knowledge of ventilation schemes should undertake the design and installation of a ventilation system.
Designing and installing appropriate ventilation systems may involve considerable expense.
In circumstances where the end user of the premises is unknown, or where the specific type of food to be cooked is unknown, the installation should be designed to achieve the highest level of odour control in order to cater for a worst case scenario.
There are many different types of odour abatement available (carbon filters, electrostatic precipitation, high dilution and high velocity extraction) however not all types are suitable for all cooking methods. In each case, grease filters must be installed.

2.0 PREAMBLE TO SPECIFICATION

Please note that the clients operation produces very little grease and the extract system is predominately removing heat and gas combustion fumes. All work is carried out in accordance with the latest relevant British (or Irish regulations where applicable) and European Standards, statutory Regulation and Byelaws together with the following publications:
CIBSE Codes and guides to current practice
Water Authority Byelaws
HVCA – DW143 Practical Guide to Ductwork Leakage Testing
HVCA - DW144 Specification for Sheet Metal Ductwork
HVCA - DW172 Guide to Good Practice for Kitchen Ventilation Systems
HVCA – RUAG70 Guide to Good Practice Refrigeration
The Building Regulations
Gas Safety (Installation and Use) Regulations 1998

All plant, ducts, pipe cables etc. shall be adequately protected against accidental damage corrosion and external environment and shall be capable of safe decontamination and removal in the future without disturbing other services. Pipes and ducts shall be adequately sized, kept as short as practicable, leak-proof with a minimum number of joints and have provision for routine maintenance. All facilities shall be designed to prevent the ingress or egress of rodents, vermin, and insects.

The duct will be fixed to the shell of the unit using anti-vibration fixing mounts and under no circumstances will flexible ductwork be used other than the fan connections.

The HVAC contractor shall supply the client with system design drawings, prior to manufacture and installation.

For projects in England and Wales, the HVAC contractor shall also demonstrate compliance with Building Regulations Approved documents L2A & L2B. This will include:

(a) Provision of details of the efficiency and controls of heating , cooling and ventilation systems in accordance with Non-Domestic Heating, Cooling and Ventilation compliance Guide (2006)
(b) Provision of commissioning certificates including air leakage tests on the ductwork.

Fire/smoke dampers shall be installed in all fire compartment walls to Building Control requirements.

The HVAC contractor shall ensure that externally the ductwork conforms to the supplied drawings in terms of its route, height and termination. These drawings will have formed part of our Planning Approval and must not be deviated from without express permission from the Project Manager.

Upon completion of the installation, all shall be fully tested and proved including airflows. The contractor shall produce an Operating and Maintenance Manual which shall contain details of all equipment supplied, a record drawing of the complete mechanical services installation and copies of all Test Certificates. It shall contain a Maintenance Schedule based on the manufacturer's recommendations.

3.0 INFORMATION ON PREMISES AND TYPE OF OPERATIONS

The proposed unit is a ground floor unit with basement situated within the LSE main building off High Holborn Road and was formerly the Evans Cycle store. The unit is approximately 198m2 including basement.

For your information, the operation will produce approximately 100 meals on average per day and the method of preparation and cooking is through hand preparation and dry baking.

Meal types served are Pizza and oven baked side dishes

The proposed hours of operation of the business and ventilation plant will be in accordance with the hours stated in the approved Change of Use.

4.0 PLANS AND DRAWINGS

Please refer to Delta Bravo Ltd drawing number DB479 A504, A505 & A506 of the proposed premises which is scaled at either 1:100 or 1:50 and shows the indicative internal and external arrangements and location of the ventilation system. Please refer to these drawings for elevations of the unit.

A schematic drawing produced by the HVAC Designer will be provided at a later date.

5.0 DETAILED DESIGN OF VENTILATION SYSTEM

5.1 Pre-filters

A copy of the manufacturer's product data sheet should be supplied clearly showing:

- Manufacturer's name = Jasun Filtration
- Filter name and product code = **Fresh Air -** Type 90 Panel Filter 594 x 594 x 45mm thick, rated airflow 2.0m/s. **Carbon Filter** – VL4 – 95mm thick rated airflow 2.5m/s
- Dimensions of the pre-filter = see data sheets
- Nature of the filter media = Disposable glass fibre media
- Manufacturer's recommendations on the frequency and type of maintenance of the pre-filter having regard to the conditions that it will be used under = 3 Monthly

5.2 Electrostatic precipitators (NOT REQUIRED ON THIS SITE)

5.3 Carbon Filters

The details and type of carbon filter units should be identified. A copy of the manufacturer's product data sheet should be supplied that clearly shows:

- Manufacturer's name = Jasun Filtration
- Filter name and product code = AC207
- Dimensions of the filter panel = 10no 292x594x20 + 10no 594x549x20
- The total number of filter panels in the filter bed = 20

The following information should also be included:

- The nature of the carbon (including product type) = 207c 70% CTC
- The frequency of replacement of the carbon units having regard to the conditions that it will be used under. The assumptions to this calculation must be clearly stated, including the frequency and duration of use. The manufacturer should provide recommendations on the frequency and type of maintenance required = annually – pre-filter 3 monthly. *Please refer to Appendix 2 which contains a typical maintenance programme adopted by the stores.*

• Total volume of carbon expressed in cubic metres = 0.105cu/m/sec
• Total mass of carbon expressed in kilograms = 46.9kg
• Total surface area of the panels exposed to the exhausted air = 5.2m.sq.
• Dwell time of the gases in the filter compartment and the control setting at which this is achieved = More than 0.1sec - this calculation is based upon the volume of carbon divided by the air volume to give the contact time.

5.4 Odour counteractant or neutralising system

The details and type of counteractant or neutralising system should be identified. A copy of the manufacturer's product data sheet should be supplied that clearly shows:
• manufacturer's name= Springfields Group
• name of delivery system and product code= BMS O3
• counteractant or neutralising chemical to be used= Not required as system uses electrical current to plates that arc against each other to separate out the ozone molecules creating corona discharge. The system has a control panel and alarm to monitor levels of Ozone
• COSHH data sheets for chemical to be used; and
• anticipated counteractant or neutralising delivery rate= 10-20 grams per 1m3/s

5.5 Cooker hood

The following information on the characteristics of the cooker hood should be supplied that clearly shows the hood will made of = Stainless Steel construction with all visible joints to be welded, ground and polished and incorporates a gutter around all edges with a plugged drain connection at lowest point. To include 6 no. mesh type grease filters – Model GF manufactured from Jansun Filtration - approx. 450 x 450mm
• Length that the cooker hood overhangs the appliances = integrated to oven
• Face velocity at the cooker hood, expressed in metres per second = 0.25m/sec
• Dimensions of the opening of the cooker hood = 3250 x 1245mm

5.6 System Operation

In addition to the specification of the components the following must be provided about the system:
Oven = Edge 3870 oven
• Extract rate (expressed as m3/s) at the proposed rate of extract = 1.5m3/sec
• Dwell time of the gases in the carbon filtration zone = 0.1 second
• Volume of the kitchen = Based on average prep area size of 100 -150cu.m
• Efflux velocity = 5-6m/s
Note: The system performance is dependent upon the extract rate of the air. Where the rate can be adjusted by the use of dampers or a variable speed fan, then the conditions under which the extract rate can be achieved must be described = Single speed fan – no adjustment

5.7 Flue Design

The height and velocity of the final discharge are the two important factors. Generally, the greater the flue height, the better the dispersion and dilution of odours. The discharge of air should be at a minimum height of 1m above the roof ridge, especially if there are buildings nearby that may affect odour dispersion and dilution.
Where this is not possible (e.g. because of ownership or structural constraints), additional techniques will be required in order to reduce odours, such as an increase in efflux velocity and additional filters, etc.
The final discharge should be vertically upwards, unimpeded by flue terminals. The number of bends in the ducting should be minimised and the ducting should have a smooth internal surface.
It is proposed to take a 533 x 140mm duct from the side of integrated canopy hood, transferring to rectangular duct at high level within unit , then through the rear dividing wall

between unit and LSE canteen where it transfers to 400mm dia located within and extg bulkhead before terminating on the rear wall via a louvered grill. The fan and carbons will be situated within the unit and Anti-vibration mounts will be used throughout.

5.8 Noise

Data on the noise produced by the system as a whole should be provided including:

• Sound power levels or sound pressure levels at given distances (the assumptions to this calculation must be clearly stated);

• An octave band analysis of the noise produced by the system should also be provided, where possible.

• Hours of operation of the ventilation system (where this differs from the hours of opening).

Please refer to Suono noise assessment 2863.RP.1.0 report

Please refer to Appendix 3 for data sheets regarding the fans for more information.

5.9 Maintenance

A schedule of maintenance must be provided including details for:

• Cleaning of washable grease filters; Weekly

• Frequency of inspection and replacement of all filters (grease filters, pre-filters and carbon filters where proposed); Monthly

• Inspection and servicing of fans; Bi Annually

Please note that the HVAC contractor will provide 12 months spare filters at each new store.

6.0 Additional notes for guidance

The air inlets must not permit pests to enter the kitchen. Fly screens are an example of how this can be achieved.

Sufficient air must be permitted into the premises to replace air extracted. The method for supplying this make-up air should be detailed. The route of the air into the kitchen must not result in its contamination, for example passage through a toilet. Separate provision must be made for ventilation of a toilet.

There must be sufficient access points to permit adequate cleaning of all the ductwork.

Fresh air is introduced via a dedicated air handling unit to supply 80% of the extracted air. Fresh air filtered to EU4 – tempered via a low-pressure hot water coil is introduced via ceiling mounted diffusers to the Preparation, Office and Wash Up areas.

The fresh air intake is proposed through a 900 x 700mm louvered grille on the shopfront through the proposed bike store.

APPENDIX 1

COLDROOM AND AIR CONDITIONING COMPRESSORS

TYPICAL AIR CONDITIONING AND COLD ROOM COMPRESSOR DETAILS

AIR CONDITIONING			COLD ROOM	
Model (typical unit)	**Mitsubishi H.I. FDC224KXZPE1**		**Model (typical unit)**	**Silensys SIL 4519Z- Ceiling mounted Type**
Dimensions	**W 970mm D 370mm H 1505mm**		**Dimensions**	**W 1145mm D 575mm H 690mm**
Weight	**165 kg**		**Weight**	**71 kg**
Airflow	**TBC**		**Compressor**	**Model CAJ4519Z HR**
Current	**Start N/A Max running current 11.1A**		**Refrigerant Connections**	**Gas 3/8" Liquid ½"**
Capacity	**Cool 22.40 kW Heat 22.40 kW**		**Condenser Fan Motor**	**220-240 Volts/ Single phase**
Noise	**50 dBA @ 1m**		**Watts**	**TBC**
Refrigerant	**R410A**		**Refrigerant**	**R404A**
			Noise	**38dBA @ 10m**

APPENDIX 2

STORE MAINTENANCE SCHEDULE FOR CARBONS FILTERS

DOMINO'S STORE: 178 HIGH HOLBORN

DOMINO'S PIZZA UK AND IRELAND
CARBON FILTER MAINTENANCE SCHEDULE

IT IS IMPORTANT THAT YOU MAINTAIN YOUR FUME EXTRACT SYSTEM FOR THE FOLLOWING REASONS:

1. TO KEEP FLUE EMISSIONS TO A MINIMUM.
2. TO KEEP YOUR OVEN AND EXTRACT OPERABLE.
3. TO AVOID THE COSTLY REPLACEMENT OF THE CARBON FILTER CELLS.

WARNING!

THE ACTIVATED CARBON FILTER CELL FILTRATION PACKAGE FITTED TO THIS EXTRACT INSTALLATION HAS A PRE-FILTER WHICH WILL ENSURE THAT GREASE AND SMOKE PARTICLES ARE PREVENTED FROM REACHING THE MAIN CARBON FILTER. FAILURE TO CARRY OUT THE FOLLOWING CHECKS WILL RESULT IN THE PREMATURE DETERIORATION OF THE FILTERS AND COULD LEAD TO PERMANENT DAMAGE TO THE FANS. THE INSTALLATION IS FITTED WITH A GAS SAFETY CUT OFF VALVE WHICH IS DEPENDANT ON THE DESIGNED AIRFLOW THROUGH THE SYSTEM. IF THE FILTER IS NOT MAINTAINED THE GAS SUPPLY TO THE OVENS WILL BE SHUT OFF DISABLING THE SYSTEM UNTIL THE FILTERS ARE REPLACED.

TO ENSURE YOUR BRANCH CAN OPERATE WITHOUT INTERUPTION IT IS ESSENTIAL THAT THE FOLLOWING CHECKS ARE CARRIED OUT

- **EVERY 14 DAYS.**

CHECK THE PRE-FILTERS TO ENSURE THAT NO GREASE BUILD UP OCCURS REPLACE AS NECESSARY.

- **EVERY 3 MONTHS**

CHECK THE MAIN FILTER BODY FOR A BUILD UP OF GREASE AND DUST.

- **EVERY 12 MONTHS**

THE FILTERS ARE TO BE CHECKED BY A QUALIFIED HVAC ENGINEER A REPORT ON THE FILTER CONDITION WILL BE ISSUED IN WRITING WITH A RECOMMENDATION FOR REPLACEMENT OR CONTINUATION TO THE NEXT SEVICE INTERVAL.

APPENDIX 3

DATA SHEETS

- Jasun Filtration Model GF – Canopy Filters
- Flaktwoods Estoc Powerbox 50-355-3 - Extract Fan
- Air Vent Technology – Water heated air handling units SPW5 – Fresh Air
- JASUN Filtration PLC – Type 90 panel Filter - Fresh Air Intake
- JASUN Filtration PLC – V Line panel Filter – Carbon Filter
- BMS O3 – odour neutraliser