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MEP and Sprinkler Design Brief

45 Blowers Cres., Ajax, ON, L1Z 0N4

(WAREHOUSE AND OFFICE HEADQUARTERS)

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DESIGN BRIEF:

1. INTRODUCTION

a. This Schematic Design Brief has been prepared to outline the mechanical and electrical system concepts proposed for 45 Blowers Cres., Ajax, ON, L1Z 0N4. This document forms the basis for a preliminary budget costing exercise and for the continuation of the design process to the construction document stage of the process.

b. This 22,940 sq. ft. warehouse operates 12 months per year. It contains the second floor , administration offices, warehouse space, storage space, staff rooms, janitor closets, and mechanical, electrical, and garbage rooms.

c. This document does not address site servicing requirements, including stormwater management requirements, which are the responsibility of the site services consultant. Our scope of work is limited to 1500 mm outside of the building.

2. SITE SERVICES

2.1 MECHANICAL

2.1.1 SITE SERVICES - GENERAL

2.1.2 The Site services will be provided by others. Our scope of work is limited to 1500 mm outside the building.

2.1.3 FUEL SOURCES

2.1.4 Natural gas service will be required for this building, which will be connected and extended from the site services with the gas meter to accommodate any additional loads.

2.1.5 DOMESTIC WATER

2.1.6 Domestic potable water will be provided to this building from the incoming water service location with the water meter.

2.1.7 FIRE PROTECTION WATER

2.1.8 Fire protection sprinkler water supplies will be provided from the incoming water line from the Fire Hydrant.

2.1.9 SANITARY SERVICE

2.1.10 The building's sanitary drainage system will connect to the incoming main sanitary line from the site services.

2.1.11 STORMWATER SERVICE

2.1.12 The building storm drainage system design is defined by the civil consultant.

2.2 ELECTRICAL

2.2.1 SITE SERVICES – ELECTRICAL INCOMING SERVICE

2.2.2 Electrical incoming service will come from the existing Hydro pole, and a new high-voltage transformer will be provided with a suitable size for the building and site total power load requirements with an additional contingency to be included. Hydro utility will be coordinated during the design phase for confirmation of rating and capacity of incoming service, service transformer size, Hydro equipment installation details, primary duct route and requirements, etc.

(To be Confirmed by API)

2.2.2 SITE SERVICES – EXTERIOR LIGHTING

A new parking lot will be constructed on the north side of the building. It is understood that the exterior lighting design will be provided for parking lot by others and photometric and location of light fixtures along with details will be provided to us to include in our site plan drawings. The IESNA (Illuminating Engineering Society of North America), municipality requirements, and client standards will be followed for the lighting design (By others).

3. MECHANICAL

3.1 Perform the Energy modeling using eQuest3.65

3.2 HVAC SYSTEM DESIGN CONDITION

- The following forms the basis for the HVAC system design:

  a. Outdoor Design Conditions Summer 30°C (86°F) DB / 23°C (74°F) W.B and Winter -18°C (- 1°F)

  b. Indoor Design Conditions as listed in the table below:

Table 3.1 HVAC System Design - Indoor Design Conditions

Temperature(°C)	Max	Min	Humidity%
Warehouse	- ?	18	-
Office	25	22	55

3.3 **Office Building HVAC**

3.3.1 DX cooling gas fire rooftop units comply with ASHRAE 90.1, and SB-10 provides heated and cooled air. Premier heat loss is covered by the electric baseboard heater below the windows/spandrel controlled by a thermostat based on outdoor air temperature. For maximum ventilation effectiveness, the rooftop units shall supply tempered air during heating, which will be supplemented with electric baseboard heaters.

3.3.2 Rooftop units are equipped with an economizer integrated with the compressors.

3.3.3 Ventilation is provided as required by ASHRAE 62.1 by the roof top units.

3.3.4 The ground floor shall be served by one RTU and the second floor with another RTU.

3.3.5 Washrooms are provided with individual exhaust fans.

3.4 **Warehouse HVAC**

3.4.1 The warehouse is provided with heating and ventilation only. Heating is provided by gas fire unit heaters.

3.4.2 Ventilation is provided with Two outdoor units gas-fired, filtered air is supplied to the space to keep the working area relatively positive pressure. The two outdoor air units supply hot air at high level and used ceiling circulation fan destratification purposes

3.5 **Plumbing for Office area and Warehouse**

3.5.1 Plumbing and drainage are provided to comply with OBC part 7

3.5.2 Plumbing fixtures will be connected with cold, hot, and drainage systems.

3.5.3 Central gas-fired water heater shall provide hot water to the washrooms and kitchenette.

3.5.4 Non combustible piping shall be used for above grade and PVC for underground drainage.

3.5.5 Non-freeze hose bibs shall be provided as required.

3.5.6 Domestic cold water will be provided with a backflow preventer as required by the city.

3.6 **PLUMBING FIXTURES:**

3.6.1 The plumbing fixture schedule will be provided and if the client is looking for any special type we can make alterations accordingly.

3.7 Fire Protection:

3.7.1 Sprinklers system shall be provided per NFPA 13 medium hazard fire in the warehouse and light hazard for the offices. Zoning shall comply with NFPA 13.

3.7.2 The warehouse's sprinkler system shall be designed with ESFR sprinkler K22.4 to satisfy class I to IV commodities as per NFPA 13-2013. Diesel packaged fire pumps are required to stratify the flow rates and pressure for the warehouse.

3.7.3 Portable fire extinguishers shall be provided as per NFPA 10.

3.7.4 Sprinkler heads: Concealed pendant sprinkler heads with white cover plates in the office area.

3.7.5 Upright sprinkler heads for the Warehouse area.

3.7.6 Hydraulic calculation will be done.

3.8 CONTROLS AND BUILDING AUTOMATION

3.8.1 Stand-Alone Controls and No ABS.

3.9 GENERAL INFORMATION AND ASSUMPTIONS

3.9.1 Sanitary and storm drainage site services will be provided by others. Our scope of work is limited to 1,500mm outside the building

3.9.2 Concrete work (housekeeping pads) for mechanical equipment will be provided by Division 03.

3.9.3 The mechanical consultant will verify where and size.

3.9.4 We understand that painting for mechanical systems will be provided by Division 9.

4 ELECTRICAL

4.1 POWER DISTRIBUTION SYSTEM

4.1.1 The main electrical room will be located on the north side of the facility, where the hydro metering will be located. The electrical equipment will be located in different locations in the warehouse and on the first and second floors of office space to provide services to all loads of the building and site areas.

4.1.2 Sufficient maintenance and service clearances for each equipment will be maintained for future maintenance and service purposes.

4.1.3 Electrical power distribution will follow the SB-10 and ASHRAE 90.1 standards for energy efficient requirements of installation.

4.1.4 The main switchboard will be sized in accordance with the service transformer size with its main circuit breaker, as well as feeder circuit breakers for downstream panelboards and loads, spares and spaces properly sized and provided for the entire building power distribution system.

4.1.5 All construction and installation of entire electrical system including the construction of service rooms will be as per latest OESC, Ontario Building Code, and any other relevant codes and standards.

4.2 LIGHTING AND LIGHTING CONTROL SYSTEM

4.2.1 LED lighting fixtures will be proposed throughout the building, with different type of fixtures with detailed requirements to be specified under Contract documents, which the different types of fixtures to be installed in different areas and rooms for specific application.

4.2.2 Emergency lighting will be based on battery units and remote heads and exit signs will be fed from battery units throughout the building.

4.2.3 Lighting control system will be proposed based on local control switches and occupancy sensors for each space.

4.2.4 Energy consumption and lighting controls shall comply to ASHRAE 90.1 as a minimum.

4.3 FIRE ALARM SYSTEM (NEEDS TO BE DISCUSSED WITH THE CLIENT, SO HOLD&TBD)

4.3.1 Full addressable fire alarm and emergency voice/alarm communications (EVAC) system will be provided for the building.

4.3.2 The fire alarm system will be designed in accordance with the CAN/ULC-S524-(latest revision) and other relevant codes and standards.

4.3.3 Electrical division will coordinate with mechanical division to include all fire alarm interconnection requirements with mechanical devices or system for an integrated and complete fire alarm system.

4.4 IT, COMMUNICATION AND SECURITY SYSTEMS

4.4.1 The IT, communication and security systems of this building will be designed by others. The provisions for these systems including the required conduits and backboxes can be included in the electrical drawings (To be provided to us by client at early stages of design).

4.5 EMERGENCY POWER SYSTEM

4.5.1 Emergency power system including generator and UPS is not required for this building and will not be a part of our design.

4.6 ELECTRIC VEHICLE CHARGING STATION SYSTEM

4.6.1 Design of two (2) EV charging stations in the parking lot as well as ductbank detail will be provided.

4.6.2 If there is a specific EV charging station requirements c/w control management methodology to be implemented, the requirements can be incorporated into the design. The required details to be provided to us at early stages of design.