2.14. Jet Fan Smoke Clearance System

2.14.1. Jet Fan Smoke clearance system shall comply with the relevant general requirements for smoke control systems as per **Section 2.5** and **Table 10.12.**

Table 10.12.: Jet Fan Smoke Clearance System

ITEMS	REQUIREMENTS
1. JET FANS	i. Jet fans shall be listed and approved by Civil Defence as per the test requirements of **Section 6.** ii. Jet fans shall be approved for effective operation at 400^0C for 2 hours. iii. All jet fans shall be connected to the local jet fan control panel in groups of not more than 3 jet fans, by 60 minutes fire rated cabling in a zigzag configuration. No two consecutive jet fans in a straight line shall be wired in the same group.
2. EXTRACTION DUCTS	i. Ducted extraction outlets shall be incorporated into the jet fan system design to enhance the performance of jet fans, where a well defined openings on the perimeter of the area are not available for an effective smoke clearance. ii. Extracted air shall be discharged directly to the external and shall not be less than 5 m from any air intake openings. iii. The ducts shall be approved in compliance with **Table 10.1.3.2.**
3. DESIGN CRITERIA	i. At least 10 air-changes per hour shall be achieved with a jet fan system, during fire condition. ii. Each smoke control zone shall have its own jet fan system. The exhaust fan system in each zone should be designed to run in at least two parts, such that the total exhaust capacity does not fall below 50 % of the required rate of extract in the event of failure of any one part and that a fault or failure of the exhaust jet fan system in one zone will not affect the operation of the exhaust jet fan system in the other zones. iii. The capacity of the exhaust fan and any associated ducting should be calculated on the basis that the pressure close to the extract points or discharge points is equal to the external atmospheric pressure. iv. The smoke discharge points should be located such that the smoke extracted from the smoke exhaust fans does not affect any occupied area or means of escape at the level where smoke is discharged. v. The jet fans system design shall be such that the bulk air velocity induced by the jet fans is sufficient to stop the advance of the ceiling jet within 5 m from the fire location in the direction opposite to the induced bulk air flow. vi. The jet fans system design shall take into consideration the presence of any down-stand beams and other obstruction that are of depths of more than 1/10 of the floor to ceiling height of the volume so as to account for any resistance to airflow and turbulence. vii. On activation of the jet fans system, the movement of smoke towards the extract/discharge point(s) should not adversely affect the means of escape and cause smoke to be blown into the egress areas. viii. The operation of the jet fans system should be such that there are no stagnant areas where smoke can accumulate in the event of fire. ix. The operation of the jet fans system should not cause the volume of air movement to be greater than that volume extracted by the main exhaust or extract fans.