## 2.17. Mechanical Ventilation System for Smoke Exhaust

**2.17.1.** Mechanical Ventilation System used for smoke exhaust shall comply with the relevant general requirements for smoke control systems as per **Section 2.5** and **Table 10.15.**

**Table 10.15.: Mechanical Ventilation System for Smoke Exhaust**

| ITEMS | REQUIREMENTS |
|---|---|
| **1. OBJECTIVE** | i. Provision of mechanical ventilation to enclosed spaces, Fire Pump room, Generator rooms, stairs or corridors etc. is to overcome fungus, dampness or to clear the smoke accumulated during and post fire emergencies. |
| **2. DESIGN CRITERIA** | i. The ventilation system shall be of exhaust mode only.<br>ii. The system shall be designed to achieve not less than 3ACH.<br>iii. Smoke and fire from other areas shall not compromise and infiltrate the mechanical ventilation system. |
| **3. EXHAUST** | i. The mechanical ventilation system shall be an independent system of exhaust mode only exclusive to the particular area.<br>ii. Exhaust shall not be into underground, basement or car park spaces.<br>iii. Exhaust shall be directly to the exterior, through dedicated ducts or shafts and shall not be less than 5 m from any air intake openings. |
| **4. MAKE-UP AIR** | i. Makeup air for the system shall be drawn directly from the external, with the intake point not less than 5 m from any exhaust discharge openings.<br>ii. Makeup air shall not be drawn from adjoining areas, underground, basement, plant rooms or car park spaces.<br>iii. Where supply air is shared with other systems, a fire and smoke damper shall be provided in order to mitigate fire and smoke spread into the area. However, shared systems intended purpose of cooling, regular ventilation, CO limiting etc. shall not be compromised. |
| **5. DUCTING** | i. Where the exhaust ducts run outside the area they are serving, they shall either be enclosed in a structure or be constructed to give at least the same fire rating as the area they are serving or that of the room through which they traverse, whichever is higher. The rating shall apply to fire exposure from both internal and external of the duct or structure.<br>ii. Ducts serving systems and areas other than the mechanical ventilated areas shall not pass through such rooms.<br>iii. Where the duct risers are required to be enclosed in a protected shaft constructed of masonry or drywall, they shall be compartmented from the rest of the shaft space containing other ducts or services installations. |
| **6. ACTIVATION** | i. This mechanical ventilation system shall be automatically activated by a sprinkler flow switch from the particular area and/or the building fire alarm system, from detectors of the particular area.<br>ii. In addition, a remote manual start-stop switch shall be made available to Civil Defence on the Smoke Control Panel (SCP) at the emergency command center, or near the main FACP.<br>iii. A Visual indication of the operation status of the mechanical ventilation system shall be provided. |