HVAC (2017) - Amendment No. 2

As recommended by Specification Committee in the 64th meeting held on 22nd June 2018 and approved by DG, the following amendments are hereby ordered in General Specifications for Heating, Ventilation and Air-Conditioning (HVAC) Works-2017:

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2.9.2.1</td>
<td>CHAPTER : SYSTEMS AND SYSTEM REQUIREMENTS-Mechanical Ventilation (For Non Air Conditioned Areas)- Design Considerations: National Building Code of India 2005 specified the ventilation requirement as per following table: .............</td>
<td>CHAPTER : SYSTEMS AND SYSTEM REQUIREMENTS-Mechanical Ventilation (For Non Air Conditioned Areas)- Design Considerations: National Building Code of India 2016 specified the ventilation requirement as per following table: .............</td>
</tr>
<tr>
<td>2.</td>
<td>2.9.2.4 (iii)</td>
<td>CHAPTER : SYSTEMS AND SYSTEM REQUIREMENTS-Mechanical Ventilation (For Non Air Conditioned Areas)- Design Considerations- CMM required for Basement Parking Ventilation: Minimum 12 air changes/hrs. are required to be provided.</td>
<td>CHAPTER : SYSTEMS AND SYSTEM REQUIREMENTS-Mechanical Ventilation (For Non Air Conditioned Areas)- Design Considerations- CMM required for Basement Parking Ventilation: Minimum 6 air changes/hour subject to fulfilling requirements of local Fire Authorities are required to be provided.</td>
</tr>
</tbody>
</table>
| 3. | 2.9.2.6 (ii) (b) | CHAPTER : SYSTEMS AND
SYSTEM REQUIREMENTS-
Mechanical Ventilation (For Non
Air Conditioned Areas)- Design
Considerations- Selection &
Installation of Fans- Basement
Car Parking Ventilation:

All exhaust fans provided for the
scheme, shall be fire rated for
900°C for 2 hrs.

| 4. | 2.9.2.6(ii) (c) | CHAPTER : SYSTEMS AND
SYSTEM REQUIREMENTS-
Mechanical Ventilation (For Non
Air Conditioned Areas)- Design
Considerations- Selection &
Installation of Fans- Basement
Car Parking Ventilation:

Normal ventilation fans for min.
12 air changes/hr are kept on
during working hours. However
CO2 sensor may be provide
which will continuously monitor
the air quality and operate the
normal fans only when required
and there by conserve energy.

| 5. | 2.9.2.6 (ii) (d) | CHAPTER : SYSTEMS AND
SYSTEM REQUIREMENTS-
Mechanical Ventilation (For Non
Air Conditioned Areas)- Design
Considerations- Selection &
Installation of Fans- Basement
Car Parking Ventilation:

For each zone, zonal electrical
panel is required to be
provided which shall get the
signal from fire alarm panel to
activate the fans in case of fire

| 6. | 2.9.2.6 (iv) (e) | CHAPTER : SYSTEMS AND
SYSTEM REQUIREMENTS-
Mechanical Ventilation (For Non
Air Conditioned Areas)- Design
Considerations- Selection &
Installation of Fans- Basement
Car Parking Ventilation:

Normal ventilation fans for
minimum 6 air
changes/hour subject to
fulfilling requirements of
local Fire Authorities are
kept ON during working
hours. However, CO2
sensor may be provided
which will continuously
monitor the air quality and
operate the normal fans
only when required and
there by conserve energy.

For each zone, zonal electrical
panel is required to be
provided which shall get the
signal from fire alarm panel to
activate the fans in
to achieve 30 air changes per hr. case of fire to achieve minimum of 12 air changes per hour.

6. Para 2.9.2.5:

CHAPTER: SYSTEMS AND SYSTEM REQUIREMENTS - Mechanical Ventilation (For Non Air Conditioned Areas) - Design Considerations - Calculation of Fan Static:

Existing Provision:

Calculation of Fan Static-

i) Pressurization system for lifts lobby, lift shaft, stair case shaft -

As per NBC part - 5 fire and light safety the following pressure are to be maintained for various shafts in high-rise building more than 25 mtr. in height-

<table>
<thead>
<tr>
<th>Building Height</th>
<th>Pressure Difference</th>
<th>Emergency operation (Stage 2 of a 2 stage or single system)(Pa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 15 m</td>
<td>8</td>
<td>50</td>
</tr>
<tr>
<td>15 m or above</td>
<td>15</td>
<td>50</td>
</tr>
</tbody>
</table>

ii) If possible the same levels shall be used for lobbies and corridors, but level slightly lower may be used for these spaces if desired. The difference in pressurization levels between staircase and lobbies (for corridors) shall not be greater than 5 Pa.

iii) For Basement Parking Ventilation the static can be calculated by duct friction method using a ductolator.

Amended Provisions:

CHAPTER: SYSTEMS AND SYSTEM REQUIREMENTS - Mechanical Ventilation (For Non Air Conditioned Areas) - Design Considerations - Calculation of Fan Static:
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Component</th>
<th>Height of Building</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less than 15 m</td>
</tr>
<tr>
<td>(1)</td>
<td>i) Internal staircase not with</td>
<td>Pressurized except</td>
</tr>
<tr>
<td></td>
<td>external wall</td>
<td>for residential</td>
</tr>
<tr>
<td></td>
<td></td>
<td>buildings (A-2 and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A-4)</td>
</tr>
<tr>
<td></td>
<td>ii) Internal staircase with</td>
<td>Naturally Ventilated</td>
</tr>
<tr>
<td></td>
<td>external wall</td>
<td>Pressurized</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(A-2 and A-4) or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Naturally Ventilated</td>
</tr>
<tr>
<td></td>
<td>iii) Lift Lobby</td>
<td>Not required at</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ground and above.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>However lift lobby</td>
</tr>
<tr>
<td></td>
<td></td>
<td>segregation is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>required for lift</td>
</tr>
<tr>
<td></td>
<td></td>
<td>commuting from</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ground to Basement</td>
</tr>
</tbody>
</table>

**NOTE:**

1) The natural ventilation requirement of the staircase shall be, achieved through opening at each landing, of an area 0.5 m² in the external wall. A cross ventilated staircase shall have 2 such openings in opposite/adjacent walls or the same shall be cross-ventilated through the corridor.

2) Enclosed staircase leading to more than one basement shall be pressurized.

Lift lobby with fire doors (120 min) at all levels with pressurization of 25-30 Pa is required. However, if lift lobby cannot be provided at any of the levels in air conditioned buildings or in internal spaces where funnel/flue effect may be created, lift hoist way shall be pressurized at 50 Pa. For building greater than 30 m, multiple points injection air inlets to maintain desired pressurization level shall be provided. If the lift lobby, lift and staircase are part of firefighting shaft, lift lobby necessarily has to be pressurized in such case, unless naturally ventilated.

Superintending Engineer (E) TAS

To,

1. All SDGs, ADGs and CEs of CPWD/PWD Delhi with the request to bring into notice of all concerned. *(Through Website Only)*

2. File No.E-9038254/10(6)/64th Specification Committee/CE(E)CSQ/2016  

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