Computer Room Wall Construction

The perimeter walls to the computer room shall be slab-to-slab and the perimeter walls of the computer room shall provide the appropriate level of airtightness suitable for a clean agent fire suppression system.

All wall penetrations shall be fire sealed and sealed to prevent chemical fire suppression leaks. The thickness and shapes of wall structural elements shall meet local authority requirements for the specific wall height to be built.

Metal studs used in constructing interior walls shall have a minimum thickness of 0.64 mm (0.025 in / 22
Gauge) for wall up to a height of 3.5 m (11.5 ft) and a minimum thickness of 1.0 mm (0.039 in / 18 Gauge)
for walls exceeding a height of 3.5 m (11.5 ft).

Studs shall have a minimum depth of 140 mm (5.5 in) to accommodate boxes and piping to be installed in the wall. Coordinate the thickness as all electrical and mechanical items shall be recessed or flush mounted.

Partitions touch a deck or vertical structural members; a joint isolator shall be provided to prevent transfer of vibration and structural loads.

Walls and other structural elements shall be designed for minimum deflection and securely fastened with isolation from all mechanical units and isolation pads or blocking at the top of the partitions.

For envelope walls separating the computer room from a non-conditioned or exterior space, insulation is to be provided as necessary to stabilize temperature migration. A minimum of R-3.3 $m^2 \cdot K/W$ (R-19 $ft^2 \cdot °F \cdot hr/BTU$) insulation is recommended.

Class 3 and Class 4 data centers may want to consider concrete masonry unit (CMU), concrete filled CMU, or tilt up concrete panels for the interior walls of the ITE, electrical, and mechanical space to provide additional structural integrity and high fire ratings.

In the interior of the computer room, partitions that are not required for rated separation shall be from top of access floor to the ceiling above unless additional height is required for security or environmental control. Nonrated walls shall be braced at a minimum of every 3 m (10 ft) and as required to meet lateral bracing requirements of the IBC.

Moisture/vapor seal should be provided completely around humidity-controlled spaces to prevent vapor
Infiltration to and from the computer room.

Doors shall be large enough to move equipment between various data center rooms. Doors must be high enough to allow equipment entry on pallets without tilting.

Doors shall have a minimum thickness of 45 mm (1.75 in) and be a minimum of 1.1 m (3.67 ft) wide by 2.4 m (8 ft) high for a single door or 1.8 m (6 ft) wide by 2.4 m (8 ft) high for a pair of doors. Doors shall be mounted within steel frames, have a solid core, and be either wood or steel.

These doors shall have neither a center post nor doorsills.

All doors and frames within a rated partition assembly (1-hour or 2-hour) shall be rated at the code required rating of that assembly for occupancy rated separations (as per fire protection of Rwanda standards board requires fully rated doors). Doors shall have an air tight and fire-rated weather stripping all around the opening.

All doors along the entire route (i.e., from the loading dock to the computer room) should be a pair of doors.

Glazing within doors shall not exceed 0.065 m2 (100 in2). These requirements are for equipment and main exit doors to the computer rooms.
Glazing within rated doors shall be fire rate and set in metal frames. Glazed openings within rated partitions shall not exceed code limitations as set by the construction standards advised by Rwanda standards board.

Glazed openings within partitions shall be metal frame construction with glazing set in continuous stops
(such as neoprene) to prevent vibration.

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