Underfloor Cable Trays

Ensure that necessary airflow is passing under the access floor it has to be properly ventilated. Refer
ANSI/TIA-569-C for further cable tray design considerations.

Under floor cable trays may be installed in multiple layers to provide additional capacity. Metallic cable tray shall be bonded to the data center grounding infrastructure. The cable tray should have a maximum depth of 150 mm (6 in).

To provide room for cables to exit the pathways, there shall be a minimum of 20 mm (0.75 in) from the bottom of the access floor tiles to the top of the cable tray and cabling in a cable pathway that is loaded
100% of calculated capacity.

Under floor systems that require periodic access or maintenance of such as valves, electrical receptacles, and smoke detectors should not be located below under floor cable pathways unless there is an empty row of tiles adjacent to these pathways.
Under-floor cable tray routing should be coordinated with other under floor systems during the planning stages of the building.

Planning of overhead cable trays for telecommunications cabling should be coordinated with architects, mechanical engineers, electrical engineers, and plumbing and structural engineers that are designing luminaries, plumbing, and HVAC, power, and fire protection systems. Coordination should consider routing, clearances, and accessibility; consider use of three-dimensional drawings to simplify coordination.

Lighting fixtures (luminaries) and sprinkler heads should be placed between cable trays, not directly above cable trays.

Overhead cable trays should be routed to avoid impeding airflow, sprinkler patterns, and lighting. This typically implies routing cable trays over cabinets and racks rather than above aisles between them.

Overhead cable tray systems may alleviate the need for access floors in data centers that do not employ floor-standing systems that are cabled from below.

Typical installations include two or three layers of cable trays, one for power cables and one or two for cabling.

One of the cable tray layers may employ brackets on one side that hold the data center grounding infrastructure. These overhead cable trays may be supplemented by a duct or tray system for fiber patch cables. The fiber duct or tray may be secured to the same hanging rods used to support the cable trays.

Cable pathways should not be located where they interfere with proper operation of fire suppression systems such water distribution from sprinkler heads.

Overhead cable pathways should not block airflow into or out of cabinets (e.g., not block air exiting the hot aisle or cabinet vents if located at the top of cabinets).

Cables should not be left abandoned in overhead cable trays. Cables shall be terminated on at least one end in an MDA, IDA, or HDA, or shall be removed.

In aisles and other common spaces in internet data centers, co-location facilities, and other shared tenant data centers, overhead cable trays should have solid bottoms or be placed at least 2.7 m (9 ft) above the finished floor to limit accessibility or be protected through alternate means from accidental and/or intentional damage.

The maximum recommended depth of cable in any cable tray is 150 mm (6 in). Typical cable tray types for overhead cable installation include policy-type cable ladders, center spine cable tray, or wire basket cable tray. The cable tray system shall be bonded and grounded per ANSI/TIA-607-B.

Overhead cable trays should be suspended from the ceiling. Where building structural characteristics make overhead suspension of a cable tray impossible, the tray can be suspended from a structural grid that is supported by other means. If all racks and cabinets are of uniform height, the cable trays may be attached to the top of racks and cabinets, but this is not a recommended practice because suspended cable trays provide more flexibility for supporting cabinets and racks of various heights and provide more flexibility for adding and removing cabinets and racks.

Lighting fixtures and sprinkler heads should be placed between cable trays, not directly above cable trays. Cable trays should be located above cabinets and racks instead of above the aisles where lighting should
be located.

Access flooring shall meet the performance requirements of ANSI/TIA-569-C. Access floors for data centers should use a bolted stringer understructure as they are more stable over time than stringer less systems. Additionally, access floor stringers should be 1.2 m (4 ft) long installed in a “basket weave” pattern to improve stability.

Pedestal adhesive should be applied under all base plates. Pedestal bases should also be bolted to the subfloor (except post-tension floors) for added stability in seismic areas.

Access floor tile cuts should have edging or grommets along all cut edges. If the edging or grommets are higher than the surface of the access floor, they shall be installed as not to interfere with placement of racks and cabinets.

The edging or grommets shall not be placed where the racks and cabinets normally contact the surface of the access floor.

In the case of down-flow AC systems where the access flooring is being used as an air distribution plenum, floor tile cuts should be limited in both size and quantity to ensure proper airflow.

Floor tiles with cement or wood cores should have their exposed cut edges sealed in order to prevent core material from being blown into the computer room.

After cuts are made to the access floor system and all equipment racks, cabinets, etc. are in place, it is recommended that the AC system be properly balanced.

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