

Cabinet and Rack Installation

Where the cabinets and racks are on an access floor, they shall be placed so that there are movable tiles in front and behind each cabinet and rack.

This typically means placing the rows of cabinets and racks parallel (rather than at an angle) to the rows of floor tiles and placing the front edge of the cabinets along the edge of the floor tiles to lock down the minimum number of tiles under the cabinets

All overhead cable management (e.g., ladder racks, cable tray, etc.) shall remain free of obstructions such as sprinklers, lighting, and electrical outlets.

The designer shall anticipate the weight of the equipment in the cabinets and racks; ensure that the cabinets, racks and floors (both access floors and slabs) are rated to handle the expected weight.

Adequate power shall be available to all cabinets and racks that will hold active equipment and must be installed in accordance with applicable codes.

Each cabinet and rack shall be labeled on the front and back with its identifier. All patch panels, cables, equipment cords, and patch cords shall be properly labeled per applicable standards (e.g., TIA-606-B, ISO 14,763-2-1).

Cabinet and rack layout designs should be harmonized with lighting (luminaire) delivery layout designs. Anticipate growth and leave room for expansion when/if possible.

Power strips should be labeled with power distribution unit or electrical panel board identifier and circuit breaker number.

Power cords should not be installed under equipment, mats, or covering other than access floor tiles.

The mounting surface for cabinet and racks should be prepared for the specific anchors required for the application.

Cabinets in a line-up where they are properly attached together may require fewer anchors per cabinet than those installed as standalone units.

When drilling into the mounting surface use proper technique to ensure that dust or particles do not get airborne. Using a drill with the attached vacuum is an effective way to prevent dust or particles while drilling in floors or walls.

Equipment in the computer room should be mounted to cabinet or rack rails rather than placed on directories as equipment on directories provides a return path for air between the rear and front of

the cabinet or rack.

Floor tile openings under cabinets and racks should be no larger than required for entry of cabling to minimize loss of underfloor pressure through openings.

Consider using openings with gaskets or brush grommets to satisfy requirements to minimize air pressure loss and short-circuiting of cold aisle/hot aisle air circulation and subsequent reduction in cooling efficiency.

A dedicated pathway should be provided for equipment cords or patch cords within an MDA, IDA, or HDA that is separate from those used for horizontal and backbone cabling.

Ensure all active devices are properly supported and securely mounted to the rack to prevent equipment damage from improper installation.

In seismically active areas, it is recommended that the design of the attachment methods and the installation be reviewed by a licensed structural engineer. Many jurisdictions will require a seismic certification report signed by a professional engineer.

Sharp edges at the top of the threaded rods should be capped (using plastic covers, domed nuts, or other means).

The exposed threads under the access floor should be covered using split tubing or other method to avoid abrading cable.

Racks should be set in place and leveled throughout the line-up.

Shimming of any anchoring point should not exceed 13 mm (0.5 in) unless specified by the project engineer. If racks require more than 13 mm (0.5 in) of shimming, an engineered solution should be used to ensure rack line-ups are properly supported.

Adjacent racks in the line-up should be hanged together before anchors are installed. Install anchors per manufacturer specification, making sure all shims are properly located.

Some line-ups require additional bracing to meet customer specifications or local codes. Required bracing may be based on rack style, equipment, and location.

Bracing should be installed as a system to ensure proper fit and support. Install all parts hand tight and then tighten fasteners in a series to prevent stress on rack lineup. All bracing should be installed before racks are populated.

Avoid empty cabinet or rack positions in rows.

Replace removed cabinets or frames and fill any gaps in a row of cabinets with a substitute blanking panel of the same height as the cabinet or frames to either side to avoid recirculation of air between hot and cold aisles.

Cabinets and racks should be installed with no blank spaces between them. In the case of vacant cabinets and racks and where blank spaces exist in populated cabinets and racks, install blanking panels.

Vertical cable managers can provide cable management and block recirculation of air between racks. Cabinets should be butted up against each other. Where possible, bayed cabinets should still share a side

panel or include other means to seal the rear-to-front airflow path along the side of rack-mounted equipment.

Placing one edge of the cabinet creates unequal aisle sizes, the front aisle should be the larger one as it provides more working space for installation of equipment into cabinets and a greater area for providing cool air to cabinets.

In order to meet the requirement to restrict air passage through all openings outside the cold aisle on access floors, floor tile openings under cabinets and racks should be no larger than required for entry of cabling to minimize loss of underfloor pressure through openings considering anticipated growth.

Consider using openings with gaskets or brush grommets to minimize air pressure loss and short-circuiting of cold aisle/hot aisle air circulation and subsequent reduction in cooling efficiency.

Ensure that all active devices are properly supported and securely mounted to the cabinet to prevent equipment damage from improper installation.

Plan equipment; power strip, cable manager, and cabling layouts in cabinets before making a major purchase.

Either create detailed drawings or preferably create a mock up to ensure that:

- All equipment and cable managers fit properly
- There is adequate space and access to power strips
- There is adequate access to cabinet floor and top openings
- There is adequate space for cable management
- Equipment can properly slide in and out as required
- Equipment intakes and exhausts are not blocked by cabling, cable management, or cabinet structure so that air can flow freely within the rack and to exit out the hot side
- Cabinets, racks, and vertical management do not have large openings for recirculation of air from hot to cold aisles temporarily remove any doors and panels that may interfere with the cabinet installation.

On solid or slab floors, cabinets should be set in place and leveled throughout the line-up. Most cabinets are equipped with leveling feet. If leveling feet are not provided, consult manufacturer for proper shimming hardware.

On access floors, cabinets and racks should be secured to the concrete subfloor. If cabinets in the line-up are to be hanged, attachment hardware should be installed before anchors are installed.

Install anchors per manufacturer's specification, making sure all shimming hardware is properly located.

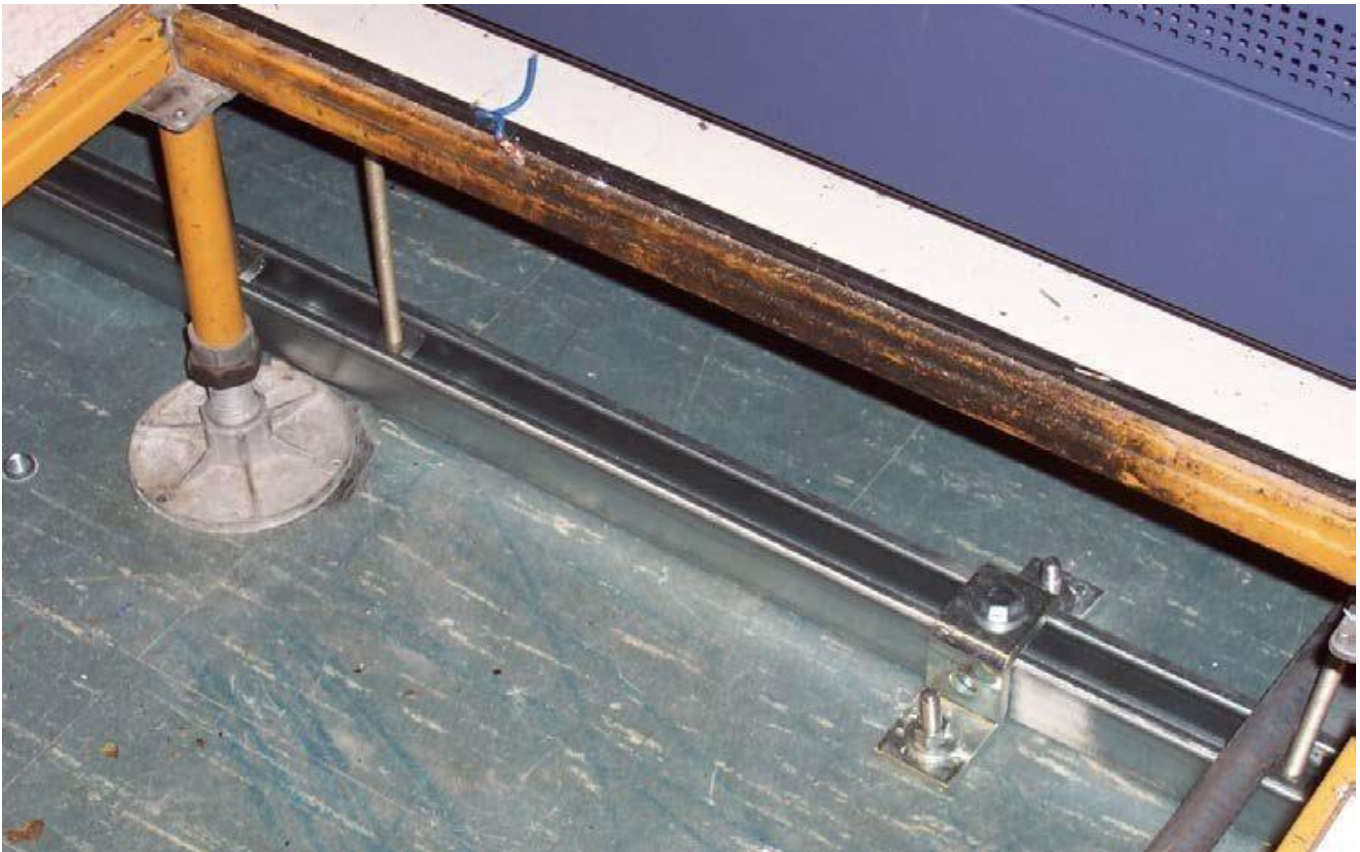
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Sharp edges at the top of the threaded rods should be capped (using plastic covers, domed nuts, or other means).

The exposed threads under the access floor should be covered using split tubing or other method to avoid abrading cable.

Floor tile panels should have correctly sized and placed cutouts for the cabinet or equipment placed over them.

The cutout should be under the cabinet/equipment cord opening and properly sized for the quantity and type of cables to be routed through the opening.



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