



## Revolutionizing Office Spaces: A Comprehensive Comparison Between 300mm High Steel Access Floors and CyberFloor

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### **Background and Design Parameters**

CyberFloor was specifically designed as an alternative to standard access floors to avoid the complexities and issues associated with traditional access flooring installations. Standard access floors, which were originally developed for mainframe computer rooms and industrial applications, often require buildings to be designed around their height and weight constraints. These floors are generally elevated by 300mm to 600mm, and their panels, often concrete-filled, weigh up to 65kg per square meter. This design imposes significant structural requirements on buildings, making retrofitting impractical and costly.

Traditional steel access floors also require the installation of fire barriers at 300m<sup>2</sup> intervals or sprinklers underneath, as per National Building Regulations (SABS 0400) and the Electrical Code of Practice. Additionally, cable trays are necessary to manage both electrical and data wiring, which complicates the construction process, particularly when coordinating underfloor services with overhead services like air-conditioning and lighting.

Recognizing that traditional access floors are an overkill in many modern open-plan offices—where only electrical and data cabling is needed at workstations—a group of professionals developed CyberFloor as a more efficient solution. The system was designed with input from the CSIR and Wits University to ensure compliance with building regulations and to address load and impact considerations. The result is a lightweight, low-profile product that integrates with standard 500mm x 500mm carpet tiles, providing significant flexibility in layout and cable management.



## **Wiring Capacity**

Traditional access floors handle wiring using cable trays placed at regular intervals (typically 2 meters apart) beneath the floor. For comparison, in a floor area of 1,000m<sup>2</sup> (approximately 31.6m x 31.6m), a standard cable tray measuring 100mm in width and 75mm in depth is used. Set at 2,000mm intervals, this arrangement provides around 16 runs of 32 meters each, equating to 3.84 cubic meters of cable capacity. With separate trays for electrical and data cables, the total capacity reaches 7.68 cubic meters.

In contrast, CyberFloor's pedestals each provide a capacity of 160mm x 80mm x 45mm, or 0.000576 cubic meters. In a 1,000m<sup>2</sup> space, CyberFloor uses 36,000 pedestals, resulting in a total cable capacity of 20.74 cubic meters—significantly more than traditional access floors.

## **Flexibility**

One of the primary advantages of access flooring systems is the flexibility they offer in positioning outlets for electrical and data connections. With standard access floors, outlet positions must be predetermined before installation, as holes must be drilled into the panels. Typically, four outlet positions are available at the corners of each 600mm x 600mm tile, allowing planners to select from approximately 11,111 possible positions in a 1,000m<sup>2</sup> area.

CyberFloor, on the other hand, offers 36,000 possible outlet positions in the same 1,000m<sup>2</sup> space. This flexibility makes CyberFloor ideal for office layouts that require frequent reconfigurations or adjustments.



## **Construction Cost Implications**

In a building with a 300mm high access floor, the finished floor-to-ceiling height is reduced by the same amount. In existing buildings, this reduction can affect the usability of the space and require modifications such as ramps at entry points. Additionally, the weight of the floor—60kg per square meter—adds a load of 60,000kg to a 1,000m<sup>2</sup> area, which must be taken into account during structural planning.

In new buildings, the height and weight of the access floor are factored into the design, but they still increase the building fabric's cost by approximately 10%, due to the increased height between slabs and the additional loading. This adds roughly 5% to the overall building cost.

In contrast, CyberFloor's low profile (50mm high) and lightweight design (12kg per square meter) minimize the impact on the building's structure. It eliminates the need for significant structural adjustments, making it ideal for both new constructions and retrofits. This also reduces construction costs, as fewer changes are required to accommodate the flooring system.

## **Construction Phase Complications**

Installing standard access floors can be complicated, particularly when coordinating the timing of installation with other trades such as ceiling, lighting, and air-conditioning installers. If the floor is installed too early, it can obstruct other work, and the required underfloor infrastructure may be damaged during construction.

CyberFloor, however, is quick to install and causes minimal disturbance to other trades. It can be installed after most other construction work is completed, and its low profile reduces the height of the finished floor by only 50mm. The final wiring process is also simpler with CyberFloor, as cable runs are easily laid down after removing a line of pedestals. In contrast, traditional access floors require entire panels to be removed to access the cable trays.



## **Cost Benefits of CyberFloor**

CyberFloor offers several cost benefits over traditional access floors. First and foremost, it is more cost-effective to produce and install, thanks to its simplified design. Unlike traditional access floors, CyberFloor eliminates the need for fire barriers or sprinklers beneath the floor and does not require cable trays, reducing both installation time and costs.

CyberFloor also simplifies the electrical and data cabling process. With standard access floors, fly leads and plugs are required to bring electricity to each workstation, in addition to the outlets installed in the cable trays. CyberFloor, however, allows for wiring directly at floor level, eliminating the need for additional plugs and sockets. This results in a reduced cost for electrical installations and an easier cabling process overall.

Moreover, CyberFloor is designed to have minimal impact on building design, both in terms of height and weight. Its low profile makes it easy to retrofit into existing buildings without the structural complications that come with traditional access floors. Additionally, CyberFloor is not permanently attached to the building structure, making it easy to remove and reuse in other locations.

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## **Conclusion**

In summary, CyberFloor presents a modern, efficient alternative to traditional access flooring systems. It provides significantly greater wiring capacity, more flexible outlet positioning, and easier installation. By eliminating the need for fire barriers, sprinklers, and cable trays, CyberFloor reduces construction costs and simplifies the wiring process. Its lightweight design minimizes the impact on building structure, making it an ideal solution for both new constructions and retrofitting existing spaces. With its flexibility, cost-effectiveness, and ease of installation, CyberFloor is a superior choice for modern office environments where only electrical and data cabling is required.