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Exceptional Under Floor Observational Monitoring for High Security Data Centers and SCIF.

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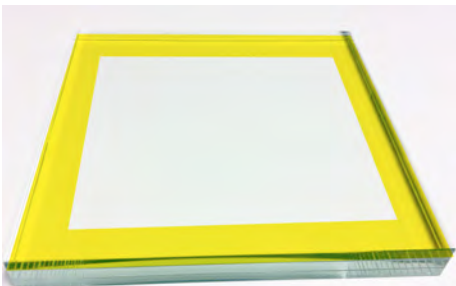
If you are a data center designer, operator or owner and you wonder what is happening under your raised floor, a new category of raised floor tiles may solve more than worrisome curiosity.



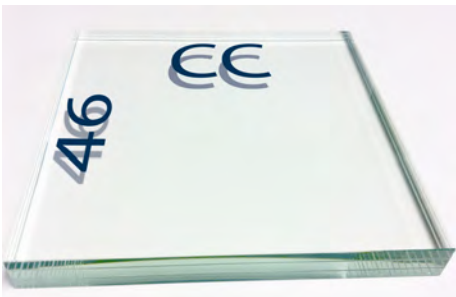
The typical under-floor access.



The typical under-floor condition.



Path of Egress with transparent yellow.



Floor Coordinates markings.

The Security Issue - From Below

Data Centers today are challenged with the complexities of maintenance, management, and above all security issues. Especially in Co-Lo and Tier 3, Tier 4 DOD data centers, and high level SCIF data centers. Raised flooring has always been malleable to some of these issues, but with the ever increasing demands for immediate, if not preemptive response to issues and risk, the traditional raised floor poses obstacles to mitigating infiltration and attack monitoring, knowledge, response and troubleshooting. If data center managers had x-ray vision, this would not be an issue for real time understanding under floor situations, but they don't. In order to access under-floor systems, floor tiles must be pulled and flashlights engaged to inspect. CCTV is one option, wireless another, but is it secure? In dark data centers an intruder can drop below the floor to splice wires, enact sabotage and data theft. It is not about the five security checkpoints prior to accessing a data center. It is all about once an intruder is successfully inside.

Is Your Under-Floor Vulnerable?

While there are different strategies among data center designers regarding on-slab or raised flooring, whether overhead cooling with slab on grade, or under floor cooling using raised floor systems, the raised floor maintains its dominance in the large-scale data center as an integral design component. With raised floor systems comes the convenience of high velocity cooling, under-floor cabling, power distribution, etc. Under floor motion sensors monitoring unauthorized access can be disabled. Everything having to do with the actual security of data is under the floor, and it is hidden from view. While perimeter wall construction around data centers should be a first line of defense, drywall partitions with various internal deterrents are still used, and some without the internal deterrent. Protecting the vital security of a data center must include protecting and regular monitoring of the under-floor area.

A New Category of Raised Floor Panels

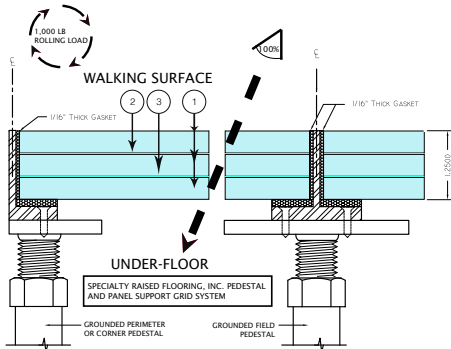
Liquidoranges STUDIO and Specialty Raised Flooring have teamed up to develop an innovative flooring solution which addresses security from a preemptive position. With the basis of design standard Tate Access Flooring braced and fully grounded pedestal system, Specialty Raised Flooring has developed an aluminum frame top-fastened directly to the floor pedestal, and accepting a flush set 1.25" triple laminated, tempered glass floor panel for all non-perforated areas. This glass panel raised floor system is offered in many configurations including Clear, Sandblast, and acid etched, depending upon the purpose. Clear is the optically clear triple laminated tempered glass panel for direct observational monitoring of under-floor conditions. These panels are tested to withstand a direct impact load of



Black shown, mill finish aluminum available as well as any powder coat finish.

150 lb. from a height of 36 inches, and a rolling load of 1000 lb. Stronger panels are available by combining ballistic grade polycarbonate as part of the lamination process.

Glass raised floor panels provide unobstructed monitoring of all under-floor systems. They also provide unlimited permanent markings and graphics capabilities, including grid coordinates, egress path identification, special identifiers and information as required for systems navigation within the data center. This is achieved through a high-resolution interlayer allowing virtually any prescribed graphic nomenclature to be permanently encapsulated within the panel, unaffected by foot traffic or other wear and tear. When combined with 50,000 hour life span low-voltage LED lighting, the under-floor status becomes as current as above floor.



- 1 3/8" TEMPERED GLASS
 - 2 0.30 CLEAR PVB
 - 3 A. 0.30 CLEAR PVB
B. OPTIONAL PROPRIETARY GRAPHICS INTERLAYER
C. 0.30 CLEAR PVB
- CLEAR PANELS ARE DESIGNED TO INTEGRATE WITH SPECIALTY RAISED FLOORING, INC. EXCLUSIVE RAISED FLOOR GRID AND PEDESTAL SYSTEM. FOR A COMPLETE PACKAGE SYSTEM INCLUDING GLASS PANELS AND RAISED FLOOR, CONTACT SPECIALTY RAISED FLOORING, INC. AT 888-809-1436

CLEAR Data Center Glass Floor Panel/Specialty Raised Floor Pedestal			
ISSUE	DATE	REV	NOTES
		B	NOTICE: Design information provided is prepared for national and international intellectual copyright and property laws. ©2011 liquidoranges STUDIO. ALL RIGHTS RESERVED
PROJECT NAME			DATA CENTER FLOOR PANEL
LO#			SHEET SK

With the SRF extruded frame extending flush with the panel surface, all under-floor grounding is transferred directly to the floor surface every 24 inches in each direction.

What to Look For

When considering a glass panel raised floor system, there are several things a data center designer must consider. One is track record and reputation of the panel and specialized grid system manufacturer. It is recommended that you speak with representatives of the company to ask questions about costs, lead times, warranties, replacement availability, etc. Another is compatibility with standard pedestal raised floor systems, where you may be thinking of combining traditional steel or concrete core panels with glass panels. The two systems are very different and you will want to be assured that the glass floor panel system is seamlessly integrated with the standard system.

Design Drivers

Installing glass panel raised flooring is especially beneficial to SCIF data center design, where all wiring must be exposed for continuous monitoring. High security data centers, such as government, military and financial institutions are excellent candidates for glass panel raised floor systems for all the above reasons. There are two aspects of glass panel floors owners and managers should be aware of. Glass panels are much heavier than traditional flooring, weighing around 65 lb. per panel. It is possible for one person to suction-cup lift out a panel, but it is really a two person job. Tempered glass floor panels are incredibly strong on their surface as installed, but with any tempered glass, removing the panel from the grid exposes the edges which are vulnerable. A sharp impact on the edge of the panel may possibly shatter the panel. Care must always be taken when removal and reinstallation is required. The advantages of being able to see through the panel make removals less frequent.



Before the racks are installed. Standard Tate Concore 1250 panel with SRF frames and laminated glass panels.

Our Product

Liquidoranges STUDIO, LLC as a strategic partner with Specialty Raised Flooring, LLC produces the tempered laminated glass data center floor panel designed specifically to work with the Specialty Raised Flooring grid frame system for maximum preemptive under-floor security monitoring. This floor panel may incorporate our robust 7-mil exclusive interlayer providing unlimited high-resolution (4000 dpi) graphics and identifiers, which are see-through, depending on the design intent.