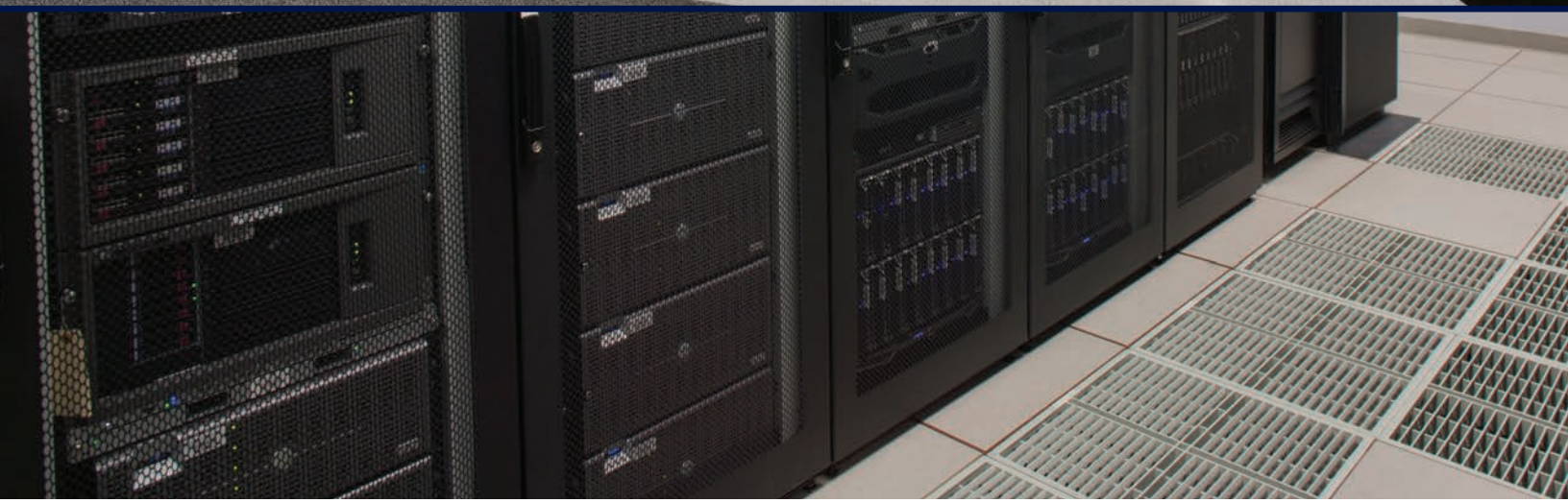
Commercial & Data Center

High Performance Product Solutions



Tate®

Access Floors

BASF North American Headquarters, *Florham Park NJ, 325,000 ft², LEED Platinum*

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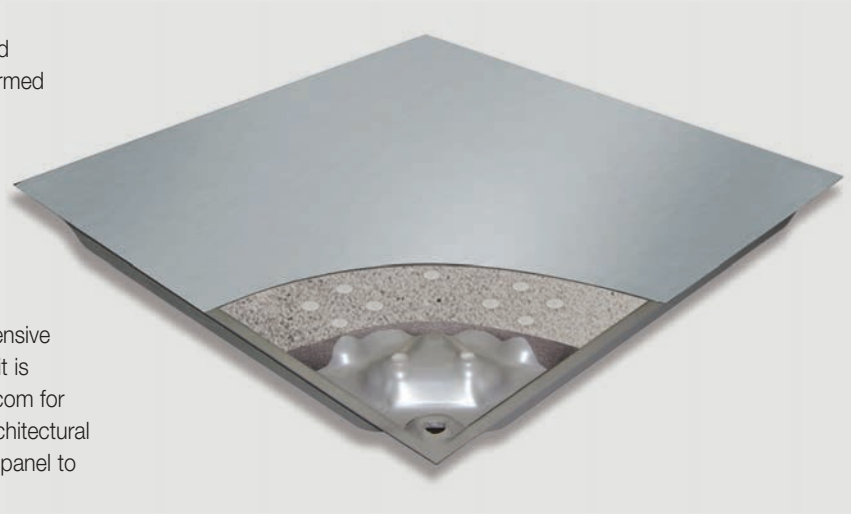
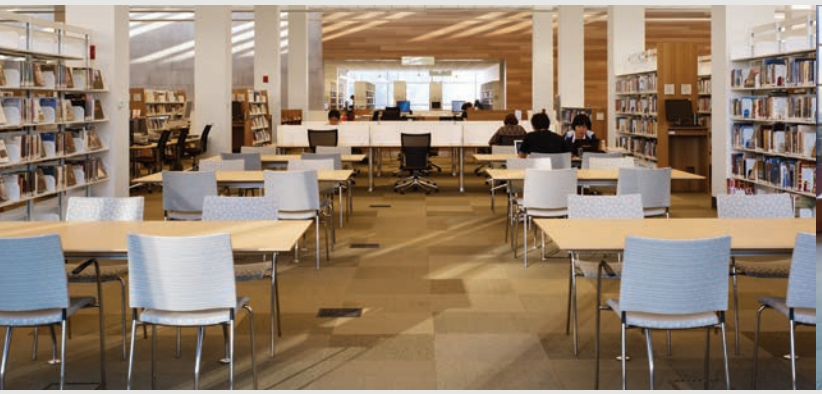
ConCore® Panels

ConCore Access Floor panels are epoxy coated unitized shells consisting of a flat steel top sheet welded to a formed steel bottom sheet filled with a highly controlled mixture of lightweight cement. Manufactured to exacting tolerances, these non-combustible, rigid, solid panels deliver the ultimate in strength, durability, and acoustic performance.

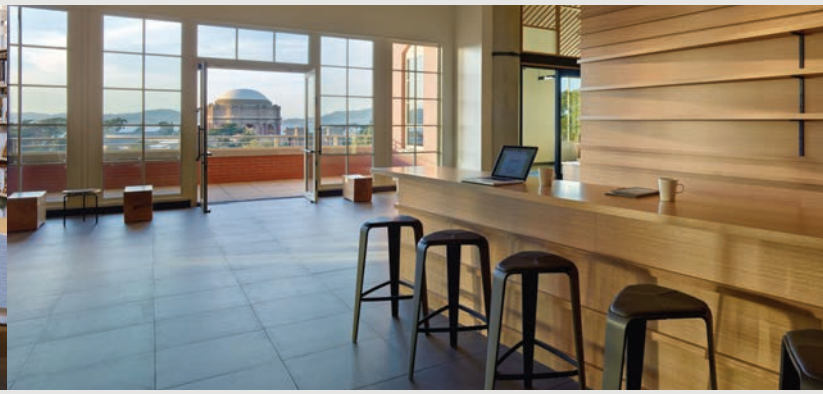


Applications

With six standard load performance grades and an extensive selection of understructure supports and floor finishes, it is recommended that you visit our website: www.tateinc.com for further information on product details, finish options, architectural details, system specifications, and selecting the proper panel to meet the needs of your specific application.



***Champaign Public Library**, Champaign, IL, 122,000 ft²*



Value Act Capital, San Francisco, CA, 10,000 ft2

ConCore® Performance Selection Chart

System Performance Criteria* (Tested on Actual Understructure)

Panel	Understructure	System Weight lbs/ft²	Static Loads			Rolling Loads		Impact Loads lbs
			Design Loads[1] lbs	Minimum Ultimate Loads lbs	Safety Factors[2] min 2.0	10 Passes lbs	10,000 Passes lbs	
ConCore® 1000	PosiLock®	8.0 (39kg/m²)	1000 (4.4kN)	2000 (8.9kN)	PASS	800 (3.6kN)	600 (2.7kN)	150 (68kg)
ConCore® 1250	PosiLock®	8.5 (42kg/m²)	1250 (5.6kN)	2500 (11.1kN)	PASS	1125 (5.0kN)	875 (3.9kN)	150 (68kg)
ConCore® 1500	PosiLock®	9.0 (44kg/m²)	1500 (6.7kN)	3000 (13.3kN)	PASS	1250 (5.6kN)	1000 (4.4kN)	150 (68kg)
ConCore® 1000	Bolted Stringer	9.0 (44kg/m²)	1000 (4.4kN)	2000 (8.9kN)	PASS	800 (3.6kN)	600 (2.7kN)	150 (68kg)
ConCore® 1250	Bolted Stringer	10.0 (49kg/m²)	1250 (5.6kN)	2500 (11.1kN)	PASS	1000 (4.4kN)	800 (3.6kN)	150 (68kg)
ConCore® 1500	Bolted Stringer	10.5 (51kg/m²)	1500 (6.7kN)	3000 (13.3kN)	PASS	1250 (5.6kN)	1000 (4.4kN)	150 (68kg)
ConCore® 2000	Bolted Stringer	11.5 (56kg/m²)	2000 (8.9kN)	4000 (17.8kN)	PASS	1500 (6.7kN)	1250 (5.6kN)	200 (91kg)
ConCore® 2500	Bolted Stringer	12.0 (59kg/m²)	2500 (11.1kN)	5000 (22.2kN)	PASS	2000 (8.9kN)	2000 (8.9kN)	200 (91kg)
ConCore® 3000	Bolted Stringer	13.0 (63kg/m²)	3000 (13.3kN)	6000 (26.7kN)	PASS	2700 (12.0kN)	2400 (10.7kN)	200 (91kg)

All tests are performed using CISCA's Recommended Test Procedures for Access Floors with the exception of Design Load

1. System Design Load is based on permanent set ≤ 0.010" and is verified by loading panels in accordance with the CISCA concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCA Test Procedures.
2. Safety Factor is Ultimate Load divided by Design Load.

All Steel Panels

All Steel Access Floor panels are epoxy coated unitized shells consisting of a flat steel top sheet welded to a formed steel bottom sheet. Manufactured to exacting tolerances, these non-combustible rigid, solid panels deliver the ultimate in strength and durability with the convenience of lightweight construction.

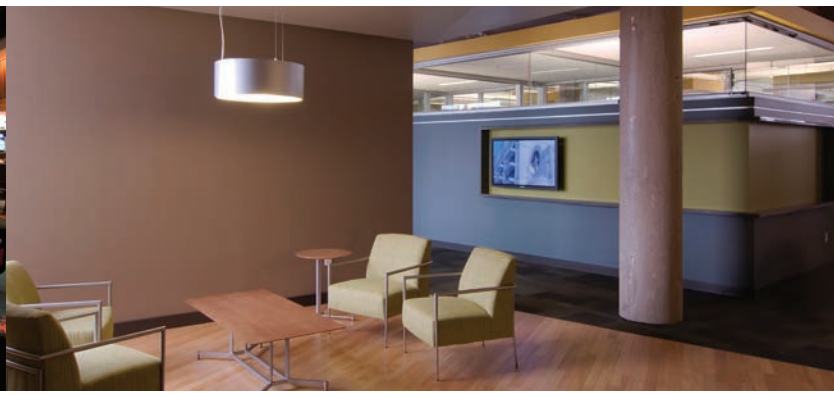
Panel Features

- The safe working load or design load for the panels is equal to the concentrated load
- Lightweight for ease of handling
- Excellent grounding and electrical continuity
- Full range of factory applied finishes
- Completely non-combustible
- Interchangeable with ConCore, Perforated, and Grate panels
- Available in 24" and 60cm sizes

Applications

With three standard load performance grades and complete interchangeability with ConCore, Perforated and Grate airflow panels, these panels coupled with an extensive selection of understructure supports and floor finishes are suitable for a wide range of applications from typical data/computer centers to telecommunication rooms, mission critical facilities, electronic assembly areas, and other general purpose equipment rooms.

Starlight Casino, *Queensborough, BC, 100,000 ft²*



Engberg Anderson Design Partnership, *Milwaukee, WI, 18,800 ft², LEED Gold*

All Steel Performance Selection Chart

System Performance Criteria* (Tested on Actual Understructure)								
			Static Loads			Rolling Loads		
Panel	Understructure	System Weight lbs/ft²	Design Loads[1] lbs	Minimum Ultimate Loads lbs	Safety Factors[2] min 2.0	10 Passes lbs	10,000 Passes lbs	Impact Loads lbs
All Steel 1000	Bolted Stringer	6.0 (29kg/m²)	1000 (4.4kN)	2000 (8.9kN)	PASS	400 (1.8kN)	400 (1.8kN)	150 (68kg)
All Steel 1250	Bolted Stringer	7.0 (34kg/m²)	1250 (5.6kN)	2500 (11.1kN)	PASS	500 (2.2kN)	500 (2.2kN)	150 (68kg)
All Steel 1500	Bolted Stringer	8.5 (42kg/m²)	1500 (6.7kN)	3000 (13.3kN)	PASS	600 (2.7kN)	600 (2.7kN)	150 (68kg)

All tests are performed using CISCA's Recommended Test Procedures for Access Floors with the exception of Design Load

1. System Design Load is based on permanent set ≤ 0.010" and is verified by loading panels in accordance with the CISCA concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCA Test Procedures.
2. Safety Factor is Ultimate Load divided by Design Load.

Understructure Systems

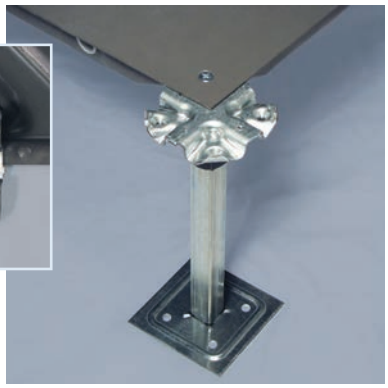
for ConCore and All Steel Systems

PosiLock®

Understructure Features

- PosiLock® design provides self-engagement and positioning of floor panels.
- Self-capturing fastener remains within the panel - will not get lost.
- Steel pedestal head provides maximum strength.
- Pedestal nut provides anti-vibration and locking features.
- Seismic force-resistant pedestals are available that limit or eliminate the need for special bracing.
- Typical floor heights from 6”-16” (15cm-40cm).

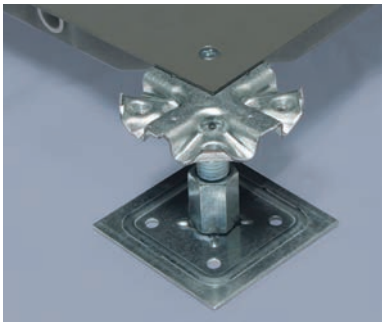
Panel engagement feature viewed from underside



Low Finished Floor Height PosiLock®

Understructure Features

- Available in floor heights from $2^{7}/_{8}$” to 4” (7cm-10cm).
- PosiLock® design provides self-engagement and positioning of floor panels.
- $2^{7}/_{8}$” (7cm) finished floor height is ideal for renovation applications while providing enough space under the floor to allow for easy cable management.
- Excellent for classroom renovations and the creation of training areas.
- Easily levels uneven floors.

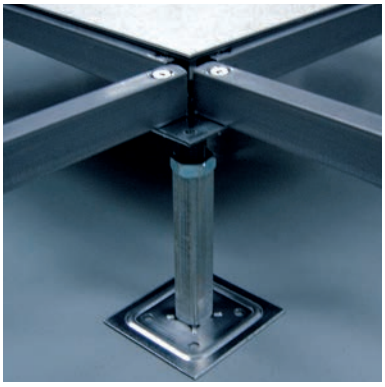


PosiLock® pedestal for low floor height systems

Bolted Stringer

Understructure Features

- Designed for computer rooms, data centers, industrial applications, and heavy rolling load areas.
- Allows floors to be built over 24” (60cm) high.
- Panels can be gravity-held in understructure for fast removal and replacement.
- Stringers provide lateral resistance to heavy rolling loads and seismic loading.
- Seismic force-resistant pedestals are available that limit or eliminate the need for special bracing.
- Typical floor heights from 12”-36” (30cm-90cm).



Hot Dipped Galvanized Pedestals

Seismic Pedestals

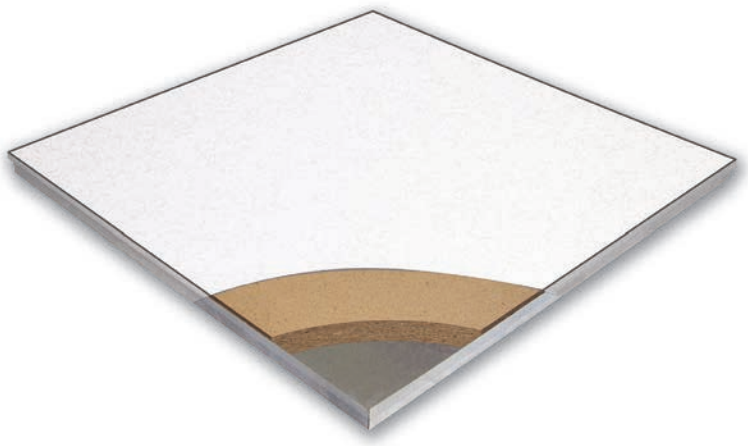
Understructure Features

- Available with standard and fillet welded base assembly.
- Steel pedestal head provides optimum strength.
- Seismic force-resistant pedestals are available that limit or eliminate the need for special bracing.
- Vertical supports ranging from 17 gauge 7/8” (2.2cm) galvanized tubing to Schedule 40 pipe.
- Pedestals can accommodate finished floor heights over 36” (90cm).
- Easily levels uneven floors.

Tate®

Woodcore Panels

Woodcore panels consist of high density composite wood core glued to and encased in hot dipped galvanized formed steel sheets. These panels are ULC Listed for flame spread and smoke development and provide excellent rigidity, durability, and acoustic performance.



Panel Features

- No added urea formaldehyde wood is available.
- High strength to weight performance.
- Full range of factory laminated finishes.
- Finishes available with Integral Trim® edge.
- Internally grounded.
- Wide range of understructure support systems available

Woodcore Performance Chart

System Performance Criteria* (Tested on Actual Understructure)								
			Static Loads			Rolling Loads		
Panel	Understructure	System Weight lbs/ft²	Design Loads lbs	Minimum Ultimate loads lbs	Safety Factors min 2.0	10 Passes lbs	10,000 Passes lbs	Impact Loads lbs
WC5000	CornerLock	6.9 (34kg/m²)	1000 (4.4kN)	2000 (8.9kN)	PASS	1000 (4.4kN)	700 (3.1kN)	150 (68kg)
WC5000	Snap-Tite/Bolt-Tite	7.4 (36kg/m²)	1000 (4.4kN)	2000 (8.9kN)	PASS	1000 (4.4kN)	700 (3.1kN)	150 (68kg)
WC5000	Heavy Duty Stringer	7.6 (37kg/m²)	1250 (5.6kN)	2500 (11.1kN)	PASS	1250 (5.6kN)	875 (3.9kN)	150 (68kg)

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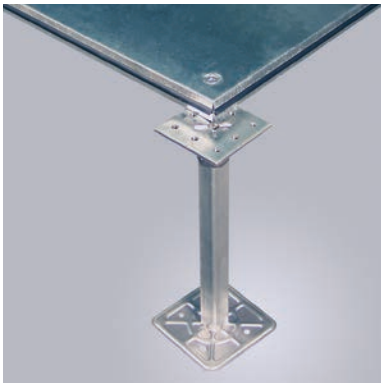
2. Safety Factor is Ultimate Load divided by Design Load.

Understructure

Snap-Tite and Bolt-Tite Stringer
understructure system used primarily for gravity held panels with Integral Trim® edge in computer room or equipment rooms. This system allows for quick and easy access to the underfloor area.

Heavy Duty Stringer
The heavy duty stringer is designed for installations requiring additional design and rolling load capacities. Panels are gravity-held in the understructure for fast removal and replacement.



Cornerlock
understructure system. Used primarily for office environments with modular carpet tile. Panels are locked down using 1/4"-20 fasteners in each corner.

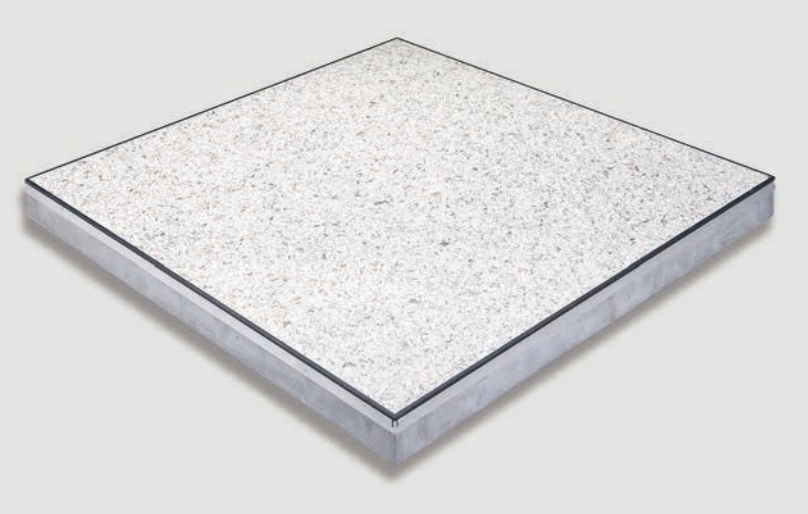
Aluminum Panel Floor Systems

Floating Floors® by Tate

Available in two strengths - FF1250 and FF3000

Solid Panel

- Die Cast aluminum panels meet class A fire rating.
- Available with a wide selection of conductive and static dissipative coverings or coatings.
- Contains no ferrous materials to disrupt magnetic fields.
- Panel-to-pedestal contact ensures continuous conductivity.
- Excellent rolling load performance.
- Lightweight for ease of handling.
- Conductive gasket ensures continuous conductivity.



Floating Floors Performance Selection Chart

System Performance Criteria* (Tested on Actual Understructure)								
			Static Loads			Rolling Loads (lbs)		
Panel	Understructure	System Weight lbs/ft²	Design Loads* lbs	Minimum Ultimate Loads lbs	Safety Factors* min 2.0	10 Passes lbs	10,000 Passes lbs	Impact Loads lbs
FF 1250 Solid Panels	All	6.50 (32kg/m²)	1250 (5.6kN)	2500 (11.1kN)	Pass	1000 (4.4kN)	1000 (4.4kN)	150 (68kg)
FF 1250 Perforated Panels	All	6.50 (32kg/m²)	1250 (5.6kN)	2500 (11.1kN)	Pass	1000 (4.4kN)	1000 (4.4kN)	100 (45kg)
FF 1250 Grates	All	7.25 (35kg/m²)	1250 (5.6kN)	2500 (11.1kN)	Pass	1000 (4.4kN)	1000 (4.4kN)	150 (68kg)
FF 3000 Solid Panels	All	7.60 (37kg/m²)	2250 (10.0kN)	4500 (20.0kN)	Pass	2000 (8.9kN)	2000 (8.9kN)	200 (91kg)
FF 3000 Perforated Panels	All	7.40 (36kg/m²)	2000 (8.9kN)	4000 (17.8kN)	Pass	1500 (6.7kN)	2000 (8.9kN)	100 (45kg)

All tests are performed using CISCA's Recommended Test Procedures for Access Floors with the exception of Design Load

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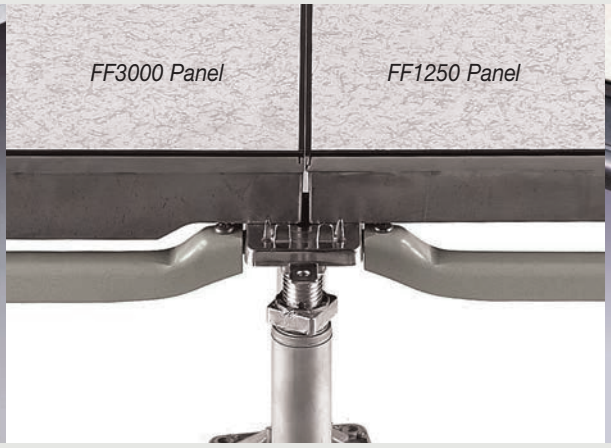
2. Safety Factor is Ultimate Load divided by Design Load.

Understructure

Stringerless System



Interchangeable Panels

Bolted Stringer System

Architectural Finishes

Tulsa Cancer Institute, *Tulsa, OK, 90,000 ft², LEED Silver*

Factory Laminated Panels ..... page 9
Concrete Panels..... page 10
PosiTile Carpeting ..... page 10

Tate Factory Applied Finishes

Create the *Signature Style* you want for your Building

Porcelain

- 100% natural mineral composition
- Non-absorbent, near zero water absorption
- Easy maintenance, impervious to chemicals
- Colors are mineral based and do not fade under UV rays
- Heavy duty, resists wear and scratches under high traffic
- Finish is recyclable with a high recycled content

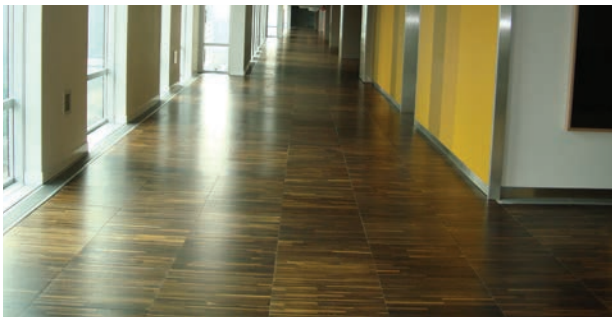
Terrazzo

- Made of epoxy resin, glass and marble chips
- Up to 70% post consumer recycled product
- Maintains accessibility, as opposed to poured terrazzo
- No harsh chemicals required to clean
- Ground smooth at the factory
- Sealed and polished in the field after installation

Factory applied finishes are cost competitive and offer a faster build time

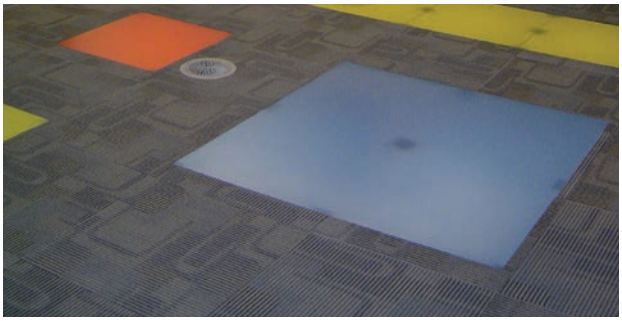
Stak Hardwood

- Made of a 3mm natural wood bonded to 11mm backer board
- Sanded smooth and finished with a natural high solids oil for a long lasting durable finish
- All wood construction
- Made from second life materials and wood species that range from 75%-90% recycled content



Soft Tile

- Several different finish types to choose from
- Can offer specific acoustical, conductive and slip resistant qualities
- Smooth and textured surfaces are available
- Nearly unlimited colors, styles and textures
- Maintains accessibility, as opposed to rolled finishes
- High recycled content and cradle-to-cradle products available



Complete Design Freedom

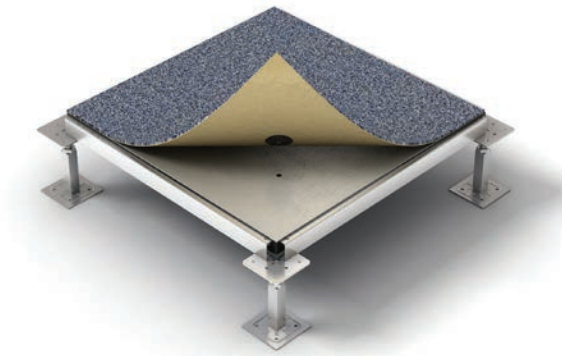
for unique and coordinated interior aesthetics

Concrete

- Offers unique natural finish appeal
- PVC edge banding provides a consistent seam appearance
- Maintains full benefits of a raised access floor
- Smooth concrete surface with exposed aggregate
- High recycled content

PosiTile® Carpet

- 24” and 60cm PosiTile® carpet tiles with four permanently affixed positioning buttons are quickly positioned on access floor panels for one-to-one fit
- No sticky adhesive on floor panels when carpet tiles are removed
- Carpet waste is avoided when floor panels and carpet tiles with matching cutout holes are relocated. No attic stock of carpet required due to planned churn
- A totally sustainable, cradle to cradle carpet tile product

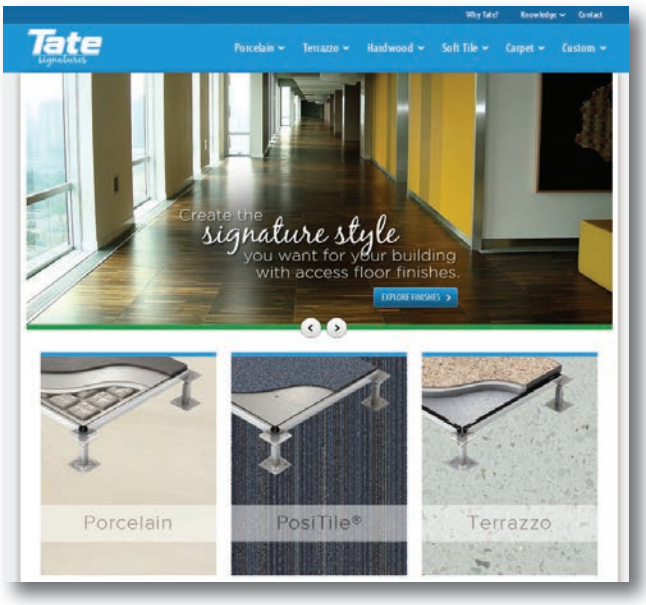


Custom Finishes

Tate has developed an on-line resource of tested and approved finishes for access floor applications. If you do not see a finish style or color you like, Tate can work with you to develop a custom finish.

On the website you will find vendor contact information, application renderings, and product photos to help you select a finish for your facility. Tate also has a dedicated Finishes Specialist to help with any design needs.

Please visit **www.tatesignatures.com** If you are interested in using a material or vendor that does not appear on the list . For more information call the Tate Hotline at **877-999-8283** or e-mail **tateinfo@tateinc.com**



Underfloor Services

Underfloor Wire & Cabling ..... page 12
Underfloor Air Distribution..... page 13
In-Floor Chilled Beam ..... page 14
EcoCore ..... page 15

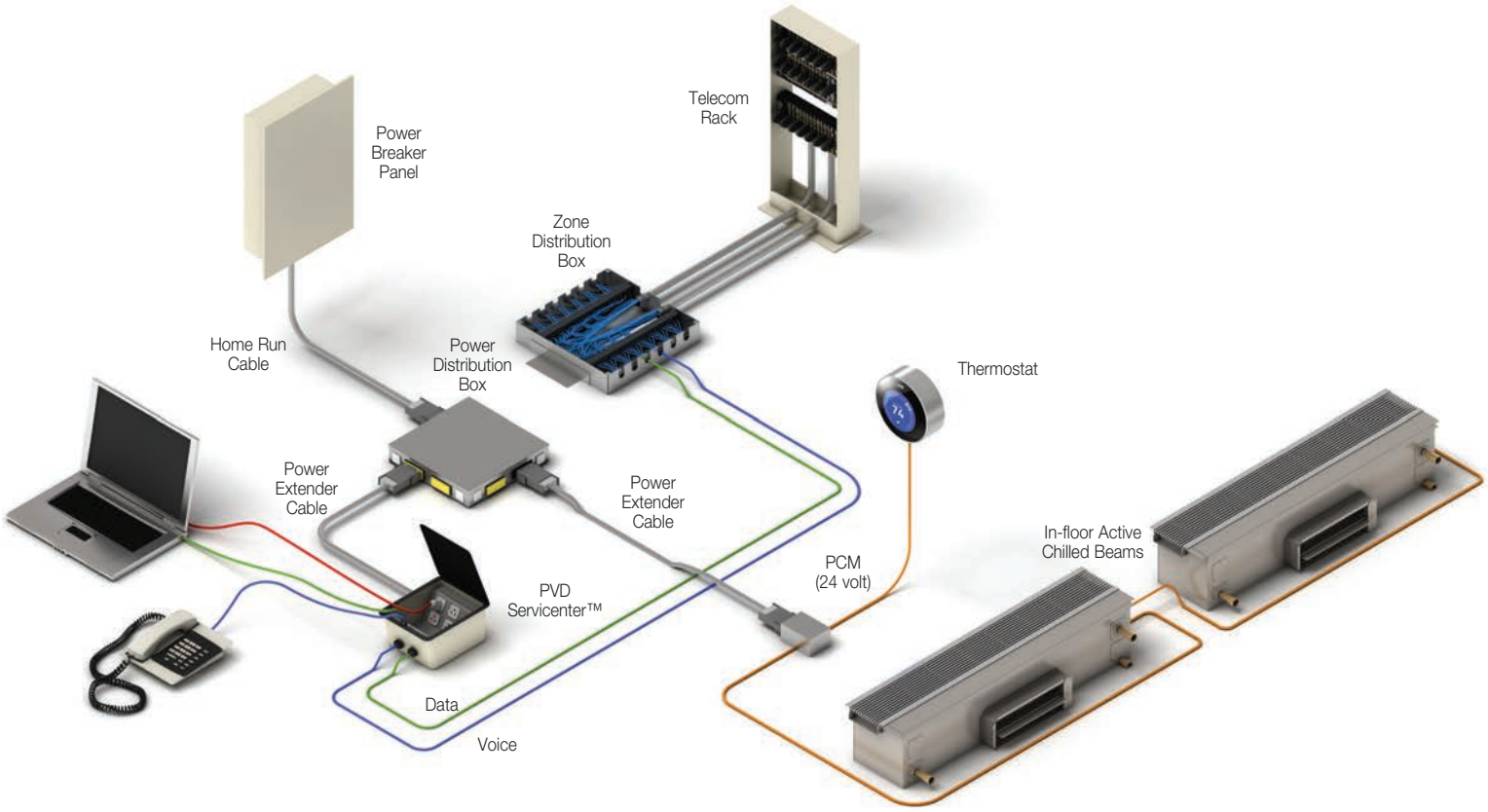
Underfloor Wire & Cable Management

Tate has partnered with Cii, the leading manufacturer of modular power and voice data systems, to provide a flexible solution for commercial interiors. Cii offers superior quality and fast, flexible service with custom application capabilities.

Cii's StationLink® and PVD Servicenter® are the modular answer to providing multiple power and data circuits to desktops and workstations in the office. This plug-and-play system allows you to add new equipment or make moves, adds and changes very simply and quickly. The patented connectors are UL listed and approved to connect and disconnect while energized, meaning the circuit breaker does not need to be locked and tagged-out to make changes. As easy as unplugging a lamp, the user can disconnect and move an entire workstation with a minimal amount of disruption to the rest of the office.

Key features Modular Power & Data Management

- Flexibility- with plug-and-play units, installing and reconfiguring the office layout is fast, easy and cost-effective.
- Capacity – multiple outlet units allow high capacity multi-circuit wiring configurations to be added for future staffing needs.
- Customization – the StationLink® and PVD Servicenter® can be custom engineered to accommodate any office furniture and provide any power, voice or data service required.
- Life Cycle Costs – the mobility of these devices allow you to add, move or relocate as often as you need, without having to reinvest in a new power system.
- Safety – all StationLink and PVD Servicenters are UL and CSA approved. The power connectors have a "first make – last break" grounding and are keyed to ensure proper connection.



Underfloor Air Distribution

Tate Advancements in Perimeter Heating and Cooling

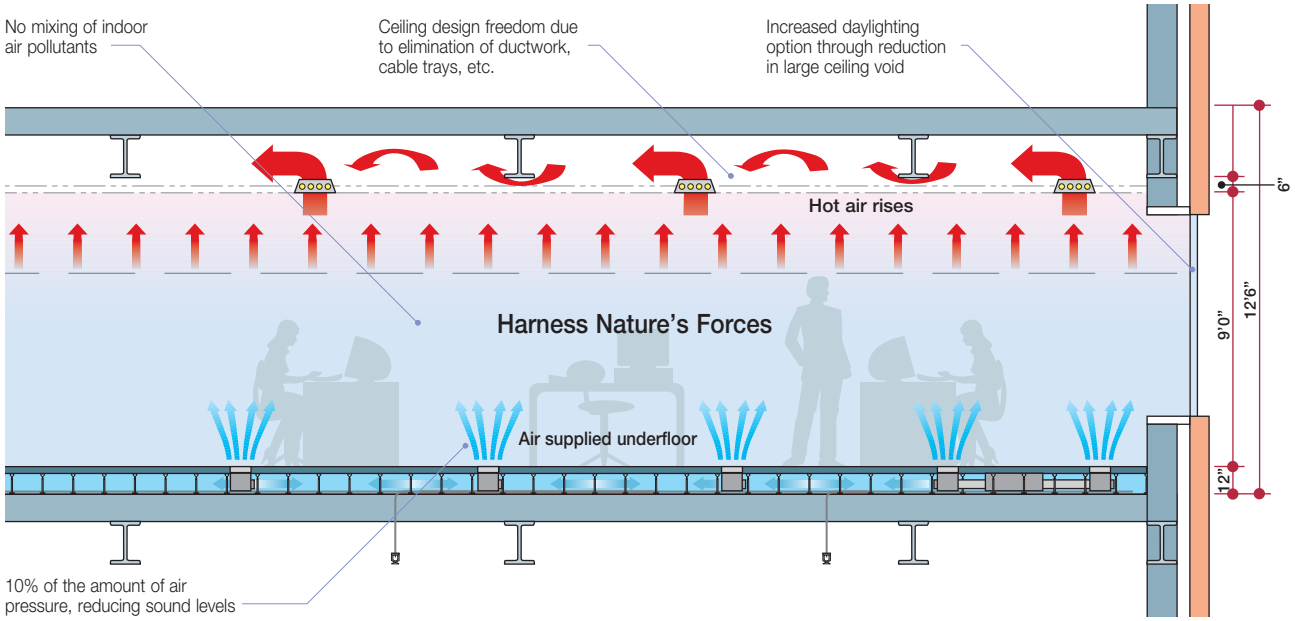
Underfloor Air Distribution (UFAD) has become a popular strategy for heating and cooling an office building due to the significant HVAC energy savings it offers while addressing a variety of other indoor environmental needs. These needs include maintaining high-quality clean air, improving personal comfort control, attenuating noise, responding to organizational and technology changes quickly and easily, and supporting the overall aesthetic value of the facility – all while being cost-effective in both construction and on-going operation.

Tate is committed to improving UFAD design. One of the most critical aspects of any commercial HVAC system is the ability to deal with the perimeter load before it affects the occupants inside the building. Tate's EcoCore and In-Floor Active Chilled Beam are two of the latest technological advancements by Tate designed to improve UFAD perimeter design.

Advantages of UFAD

- Enhance indoor environmental quality through superior IAQ, improved acoustics, and increased daylighting opportunities.
- Maximize flexibility at design inception and throughout the life of the building. With UFAD you can relocate, add or remove diffusers to rezone the space based on current load profiles.
- Save 20% or more on your HVAC energy costs through economizer operation, and less fan energy requirements.
- Easily adapts to technological and organizational changes over the building's lifecycle at low cost.
- Improve personal comfort control with individual volume and air direction control.
- Reduce first cost and construction time due to significant reduction in HVAC ductwork.
- Reduce operating costs and lower facility and maintenance costs through accessible, flexible, and adaptable services.

Tate underfloor air distribution system



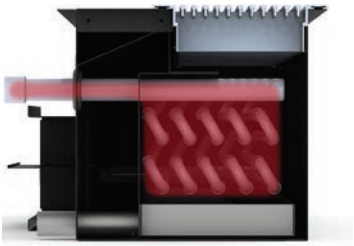
In-floor Active Chilled Beam

An In-floor Active Chilled Beam offers many benefits over other perimeter solutions commonly used in raised floor office environments. Improved energy efficiency, the reduction of equipment and ductwork under the floor, and the ability to create an aesthetically pleasing integrated look along the perimeter are just a few of the advantages.

Features & Benefits

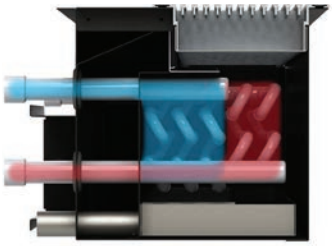
- Handle perimeter heating and cooling loads
- Chilled water is delivered safely below the floor
- Gain the full energy efficiency advantage of water heating and cooling by conditioning at the source of the load
- Can use water below the dew point and control condensation
- Easily manage shoulder season conditioning
- Gain advantages of stratified airflow

In-floor Active Chilled Beam for heating and cooling



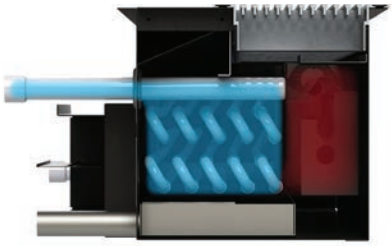
2-Pipe

The 2-Pipe model is designed to have either hot or cold water pass through the unit based on building demands. Supply and return water connections are located on opposite ends of the chilled beam. Thermostatically controlled, the unit time modulates the air valves to meet the perimeter demands.



4-Pipe

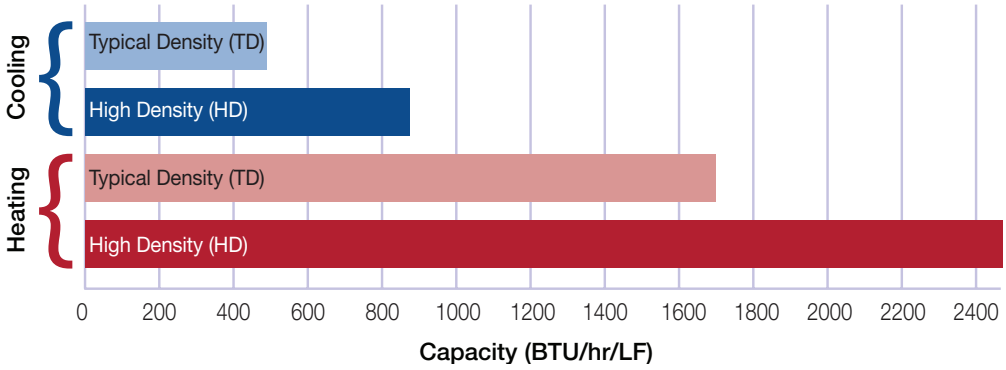
The 4-Pipe model has the ability to supply hot and chilled water to the unit without switch over. Two supply and two return water connections are located on opposite ends of the beam. Time modulated air and water valves allow the unit to meet demand based on a thermostat located in the space.



2-Pipe with Electric Heat

Much like the 4-Pipe model, this unit is capable of both heating and cooling without changing the water supply. Both supply and return water connections and an electrical connection are located on the device. The perimeter demands are met by time modulating the air valves.

In-floor Active Chilled Beam Performance Chart



For more information get Tate's In-floor Active Chilled Beam brochure on-line at: www.tateinc.com

EcoCore

Phase Change Technology for Energy Efficiency

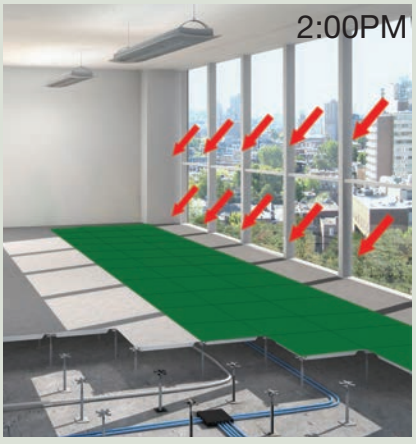
EcoCore access floor panels are steel welded shells filled with an unique mixture of structural cement and PCM that allows the panel to absorb thermal energy while maintaining the high level of integrity and quality expected from Tate's raised access floors. This is possible due to utilizing a patent pending method of mixing microscopic spheres of encapsulated PCM into the cement. The spheres maintain their size, shape and integrity throughout phase transitions. This allows the panels to seamlessly integrate into a raised floor installation while providing a low impact thermal mass to absorb energy during the day that would otherwise affect both the energy efficiency and comfort level of the office. The stored energy is then released again overnight as the temperature drops below the 75º F melting point.

Benefits of Phase Change in a Raised Floor

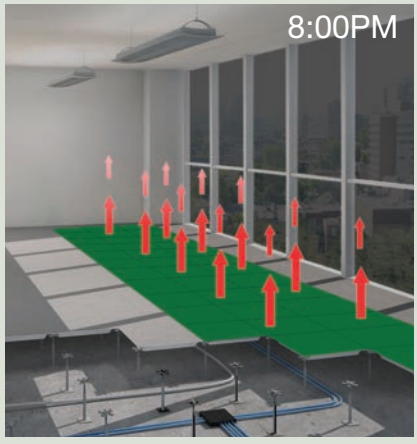
- Reduce perimeter heating and cooling loads during normal business hours
- Use free or low cost cooling to handle the thermal load stored in the panels during non-business hours
- PCM lasts the life of the building (over 100,000 changes)
- Tate's raised floor panels provide a safe solution for applying phase change material in a building. By embedding the material in cement and then fully encapsulating it in a steel welded shell, the material is protected from the external environment
- Gain advantages of a raised floor system

EcoCore Perimeter Solution

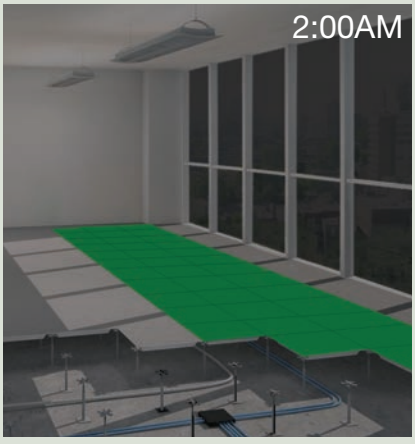
Using EcoCore in the perimeter zone of the office will help to reduce the overall peak load in the space and delay the occurrence of the peak load to later in the day. By reducing the overall peak load, the amount of cooling required to keep the space comfortable is reduced. In addition, by delaying the peak load to later in the day, the load can often be handled with free economizer cooling or with reduced rate electricity.



Solar load warms the panels during the day. As the panels warm the phase change material melts absorbing energy.



The energy is stored in the panels to be released during non-peak hours.



As the panels cool overnight the phase change material solidifies.

Data Center Solutions

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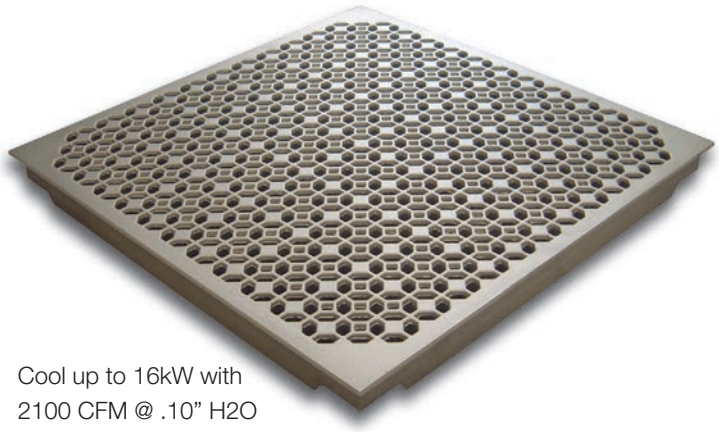
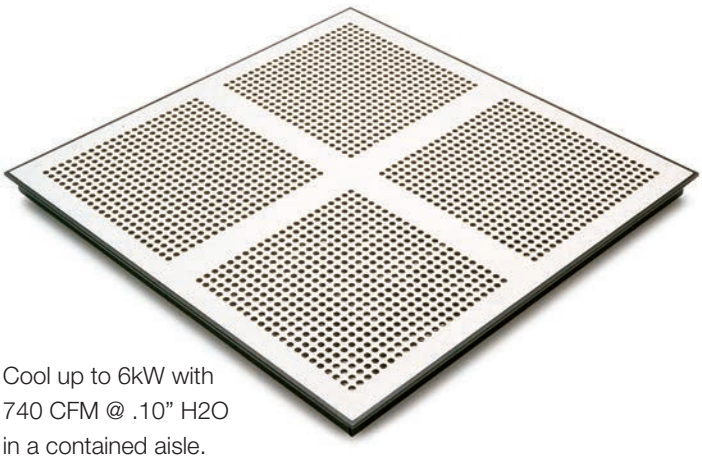
GrateAire & Standard Perf Panels

Physical Aisle Level Containment Airflow Panels



Cool up to 16kW with
2100 CFM @ .10" H2O
in a contained aisle.



Cool up to 6kW with
740 CFM @ .10" H2O
in a contained aisle.

GrateAire® Panels

Tate's aluminum GrateAire offers high volume airflow for physically contained aisles with high heat densities. With 56% open area the lightweight aluminum panel is ideal for areas that need high airflow and load capacity.

Panel Features

- GrateAire® die-cast aluminum panels are compatible with any 24" or 60cm bolted stringer systems.
- Cools up to 16kw per rack in a contained aisle
- 56% open area
- High rolling load capacity (1000 lbs/800 lbs).
- Available with top surface adjustable damper.
- Available with an unpainted textured surface or epoxy powder coatings.
- Interchangeable with Tate's full line of laminated raised floor panels in a stringer system.

Perforated Panels

Tate's perforated steel panels are available with a range of load performance characteristics. They represent the most economical approach to supplying air in a contained cold aisle.

Panel Features

- Compatible with any 24" or 60cm stringer systems.
- 25% open area
- Strong design loads with safety factors of 2.
- Available with top surface adjustable damper.
- Steel perforated panels are available with High Pressure Laminate, vinyl and rubber floor coverings.
- Interchangeable with laminated ConCore, All Steel and Woodcore panels in a stringer system.
- Aluminum perforated panels are available for use with a bolted stringer aluminum system.

*Load Performance Chart**

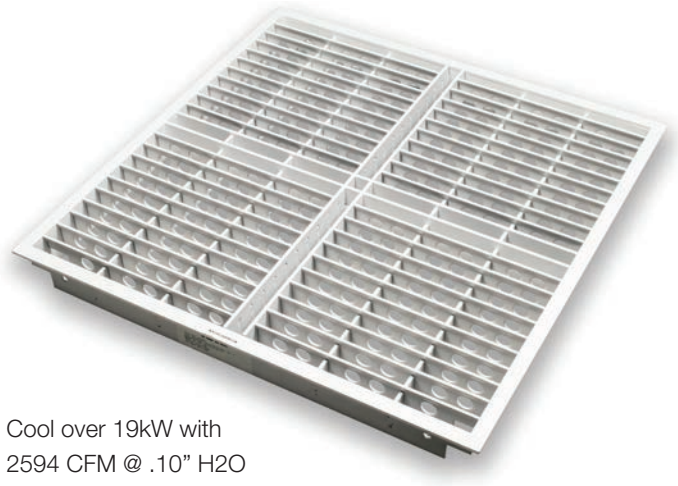
Airflow Panel	Understructure	System Weight lbs/sqft	Static Loads lbs			Rolling Loads lbs		Impact Load lbs	Capture Index*	%Open Area
			Design Load	Safety Factor	Ultimate Load	10 Passes	10,000 Passes			
GrateAire	Bolted Stringer	6.25 (30kg/m^2)	1000 (4.4kN)	Min. > 2	>2000 (8.9kN)	1000 (4.4kN)	800 (3.6kN)	100 45kg)	50%	56%
Perf 800	Bolted Stringer	7.0 (34kg/m^2)	800 (3.6kN)	Min. > 2	>1600 (7.1kN)	-	-	150 (68kg)	50%	25%
Perf 1000	Bolted Stringer	7.5 (37kg/m^2)	1000 (4.4kN)	Min. > 2	>2000 (8.9kN)	-	-	150 (68kg)	50%	25%
Perf 1250	Bolted Stringer	8.25 (40kg/m^2)	1250 (5.6kN)	Min. > 2	>2500 (11.1kN)	-	-	150 (68kg)	50%	25%

All tests are performed using CISCA's Recommended Test Procedures for Access Floors with the exception of Design Load

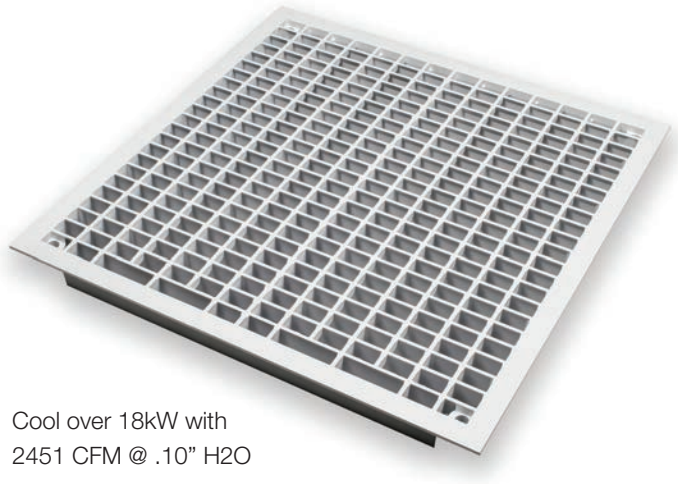
1. System Design Load is based on permanent set ≤ 0.010" and is verified by loading panels in accordance with the CISCA concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCA Test Procedures.
2. Safety Factor is Ultimate Load divided by Design Load.

DirectAire

Strong, Efficient, High Capacity Airflow Panels



Cool over 19kW with
2594 CFM @ .10” H2O



Cool over 18kW with
2451 CFM @ .10” H2O

DirectAire & DirectAire X2 Panels

Ideal for creating a virtual containment system, the steel DirectAire panel directs the airflow toward the server rack to significantly reduce bypass air. DirectAire is designed to evenly distribute airflow across the full height of a standard 42U rack. DirectAire X2 is designed to divide the airflow evenly in two directions to provide even distribution to racks on both sides of a cold aisle.

Panel Features

- Reduce capital expenditures on cooling infrastructure by up to 40%
- Save up to 40% in annual fan energy without the use of containment
- 68% open area provides 2,594 CFM @ .1” H2O
- Cool over 19kW per rack @ .1” H2O
- DirectAire X2 cools up to 10kW per rack @ .1” H2O
- 2,500 lbs design load
- 2,000 lbs 10 pass rolling load capacity
- Available in 24” and 60cm panel sizes

DirectAire Al Panels

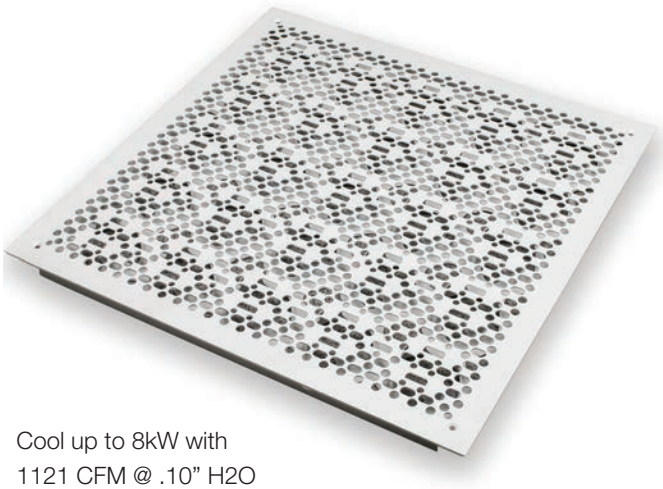
The DirectAire Al is an all aluminum airflow panel that provides the same directional airflow benefits of the steel DirectAire. This allows the panel to provide similar cooling capacities with a panel that is 40% lighter.

Panel Features

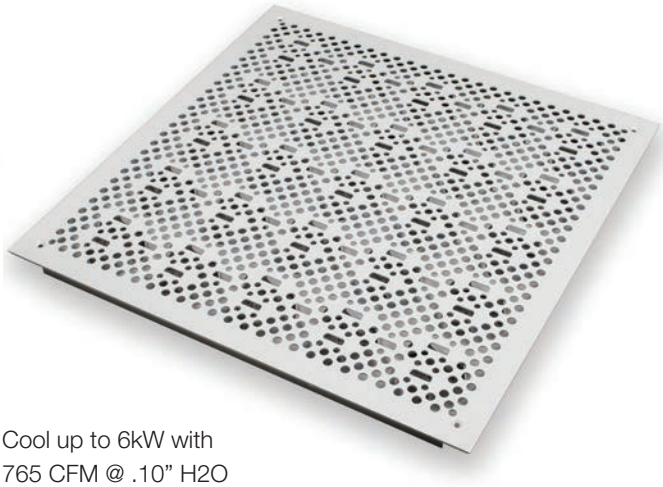
- Die-cast aluminum construction
- 40% lighter than a steel DirectAire
- 60% open area provides 2,451 CFM @ .1” H2O
- Cools over 18kW per rack @ .1” H2O
- 1,500 lbs design load
- 1,250 lbs 10 pass rolling load capacity
- Surface adjustable and automatic damper options
- Available in 24” and 60cm panel sizes

DirectPerfs

Cool the Same Load as Vertical Plume Panels with Half the Airflow



Cool up to 8kW with
1121 CFM @ .10” H2O



Cool up to 6kW with
765 CFM @ .10” H2O

DirectPerf 32% Panels

In uncontained spaces DirectPerf 32% provides nearly the same cooling capacity as a standard 56% open area grate using about half the airflow.

Panel Features

- Same kW cooling capacity as GrateAire
- 32% open area delivers 1,121CFM @ .1” H2O when installed without a damper.
- Directional air flow achieves a 88% capture index.
- Cools up to 8kW per rack.
- Can save over 40% in annual fan energy without the use of containment
- Easily integrates into an existing 24” and 60cm raised floor systems

DirectPerf 25% Panels

Directional Perf 25% directs the airflow toward the server rack to significantly improve energy efficiency and reduce bypass air.

Panel Features

- 25% open area delivers 765CFM @ .1” H2O when installed without a damper.
- Directional air flow achieves a 93% capture index.
- Cools up to 6kW per rack.
- Can save over 40% in annual fan energy without the use of containment
- Easily integrates into an existing 24” and 60cm raised floor systems

*Load Performance Chart**

Airflow Panel	Understructure	System Weight lbs/sqft	Static Loads lbs			Rolling Loads lbs		Impact Loads lbs	Capture Index	Open Area
			Design Load	Safety Factor	Ultimate Load	10 Passes	10,000 Passes			
DirectAire	Bolted Stringer	13.0 (63kg/m^2)	2500 (11.1kN)	Min. > 2	>5000 (22.2kN)	2000 (8.9kN)	2000 (8.9kN)	200 (91kg)	93%	68%
DirectAire X2	Bolted Stringer	13.0 (63kg/m^2)	2500 (11.1kN)	Min. > 2	>5000 (22.2kN)	2000 (8.9kN)	2000 (8.9kN)	200 (91kg)	93%	68%
DirectAire AI	Bolted Stringer	7.4 (36kg/m2)	1500 (6.7kN)	Min. > 2	>3000 (13.3kN)	1250 (5.6kN)	1000 (4.4kN)	150 (68kg)	93%	60%
DirectPerf 32	Bolted Stringer	6.25 (30kg/m^2)	1250 (5.6kN)	Min. > 2	>2500 (11.1kN)	-	-	150 (68kg)	88%	32%
DirectPerf 25	Bolted Stringer	6.85 (33kg/m^2)	1250 (5.6kN)	Min. > 2	>2500 (11.1kN)	-	-	150 (68kg)	93%	25%

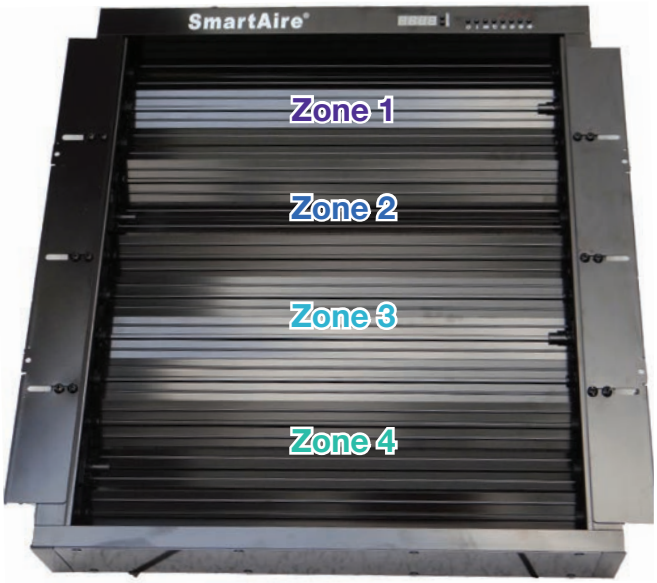
All tests are performed using CISCA’s Recommended Test Procedures for Access Floors with the exception of Design Load

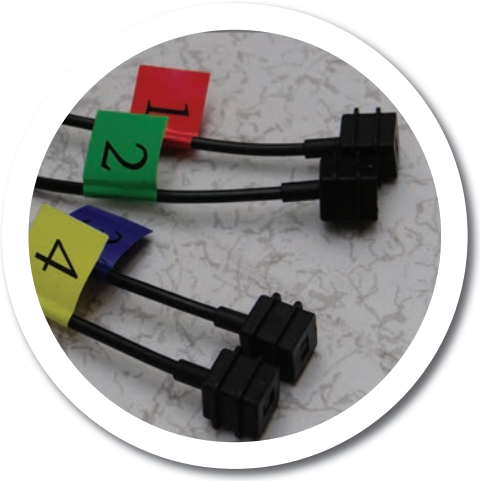
1. System Design Load is based on permanent set ≤ 0.010” and is verified by loading panels in accordance with the CISCA concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCA Test Procedures.

2. Safety Factor is Ultimate Load divided by Design Load.

SmartAire® MZ

Automatic Airflow Controls for Virtual Aisle Containment

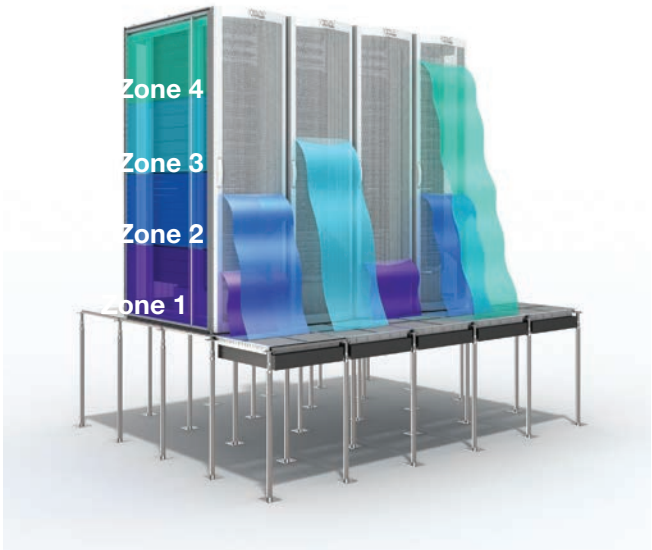




Temperature probes control 4 individual zones.

SmartAire® MZ

The new SmartAire MZ automatic variable-air-volume damper offers the most granular airflow control available for a data center. The unit adjusts cooling independently to 4 separate zones to allow for variable loads and partially deployed areas within a rack. During equipment changes the unit automatically re-balances the airflow in the facility without manual control adjustments.



Key Performance Characteristics

- Automatically re-balances airflow during equipment refresh or tenant changes
- 0-22kW supported IT load with DirectAire panel
- Fail safe operation, opens 100% during failure
- Quick and easy installation
- 12 vane damper for large open area
- Four zone damper positions are variable from 0-100%
- Multiple control options available
  - Quad - 4 rack mounted temperature sensor each controlling an individual zone
  - Dual - zones 1&2 and 3&4 are controlled together
  - Single - entire unit acts a single zone
  - P - pressure differential sensor
  - T - technician activated unit
- Included SNMP and TCP/IP
- User programmable set point
- High Precision, Quick Response Temp Measurement
- Viewable Peak Temp for walk-through check of racks
- E-mail alerts for alarm conditions

Manual Airflow Controls

Manual Zone Control for Diverse and Partially Loaded Racks

Opposed Blade Damper for use with DirectAire®, DirectAire AI, DirectPerf 32% and GrateAire® Panels

Multi-zone Opposed Blade Damper for use with DirectAire®, DirectAire AI or DirectPerf 32% Panels

Dual-zone Opposed Blade Damper for use with DirectAire X2 Panels

Manual Damper for use with GrateAire® and Perf Panels

Opposed Blade Damper (OBD)

Tate's opposed blade damper allows the user infinite airflow adjustability with very little airflow resistance. Easily adjustable through the top surface of the panel for balancing airflow to IT equipment with fixed requirements.

Key Performance Characteristics

- Provides more airflow at 100% open than slide dampers
- Easily adjustable from above without panel removal
- Drop in design allows for easy retrofits under Tate airflow panels

Multi-Zone Opposed Blade Damper

Tate's multi-zone opposed blade damper enables the airflow delivery to be balanced based on the specific load in the rack. The damper allows data center operators to individually adjust airflow to three zones within the rack - top, middle and bottom.

Key Performance Characteristics

- Reduces cooling energy usage.
- For use with full or partial loaded racks.
- Provides the most granular airflow control available
- Easily adjustable from above without panel removal

Dual-zone Opposed Blade Damper

The dual-zone damper allows the user to control the airflow through each half of a panel independently so that racks on opposite sides of the aisle can receive the right amount of cooling for the load in the rack.

Key Performance Characteristics

- Provides more airflow at 100% open than slide dampers
- Easily adjustable from above without grate removal
- Drop in design allows for easy retrofits, with DirectAire X2 in a Tate bolted stringer systems.

Slide Damper

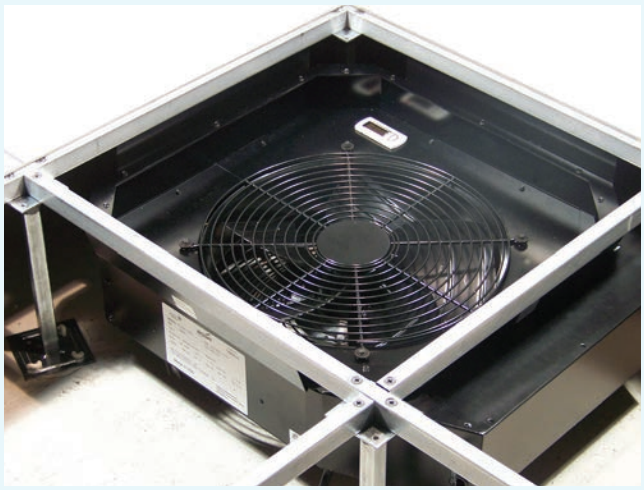
Tate's slide damper is used to manually control airflow under a GrateAire or Perforated panel. The slide damper is mechanically attached to the panel to provide airflow control.

Key Performance Characteristics

- Easily adjustable from above without panel removal
- Mechanically attached to panel for easy underfloor access

PowerAire®

Fan Assisted Airflow Controls



PowerAire® Quad

The PowerAire Quad fan is equipped with 4 fans connected in parallel to provide built in redundancy. This unit is only 4" deep making it ideal for retrofit situations with finished floor heights as low as 7.5". This unit can cool up to 18kW of supported IT load per PowerAire Quad/DirectAire @ 0.1" H2O.

Key Performance Characteristics

- Zero maintenance
- Installation can be carried out by IT staff
- Multiple control options available:
  - M - 3 rack mounted temperature sensors
  - S - 1 rack mounted temperature sensor
  - C - client sensor network
- User programmable set point
- EC fan technology is variable from 0-100%
- Available in 100-120V or 200-240V power options
- Viewable Peak Temp for walk-through check of racks
- Available Auto Transfer Switch offers A/B power feed
- 24" and 60cm raised floor compatible

PowerAire®

Tate's PowerAire fan assist module is designed to provide a blast of cooling through an individual airflow panel. The fan automatically turns on when conditions require additional cooling. Options are available to utilize rack mounted temperature sensors or an existing client sensor network to control the fan. Equipped with a variable speed drive the fan can be throttled up or down based on the heat load requirements. This powerful solution is capable of cooling up to 26kW of IT load per PowerAire/DirectAire at 0.1" H2O for solving the toughest hot spots.

Key Performance Characteristics

- Zero maintenance
- Installation can be carried out by IT staff
- Multiple control options available:
  - M - 3 rack mounted temperature sensors
  - S - 1 rack mounted temperature sensor
  - C - client sensor network
- User programmable set point
- EC fan technology is variable from 0-100%
- Available in 100-120V or 200-240V power options
- Viewable Peak Temp for walk-through check of racks
- Available Auto Transfer Switch offers A/B power feed
- Requires a minimum floor height of 10.5" (28cm)
- 24" and 60cm raised floor compatible

Airflow Performance Information

CFM & kW Capacity Chart

Airflow Panel	0.02" H_20 (5 Pa)		0.04" H_20 (10 Pa)		0.06" H_20 (15 Pa)		0.08" H_20 (20 Pa)		0.10" H_20 (25 Pa)	
	CFM (L/s)	(kW/Rack)	CFM (L/s)	(kW/Rack)	CFM (L/s)	(kW/Rack)	CFM (L/s)	(kW/Rack)	CFM (L/s)	(kW/Rack)
DirectAire										
w/o Damper	1151 (543)	8.5	1626 (767)	12.0	2007 (947)	14.8	2318 (1093)	17.1	2594 (1224)	19.1
w/ OBD	986 (465)	7.3	1427 (673)	10.5	1789 (844)	13.2	2056 (970)	15.2	2331 (1100)	17.2
w/ SmartAire MZ	939 (443)	6.9	1312 (619)	9.7	1595 (753)	11.8	1833 (865)	13.5	2041 (963)	15.1
w/ PowerAire	3378 (1594)	24.9	3432 (1620)	25.3	4395 (1650)	25.8	3512 (1658)	25.9	3555 (1678)	26.2
w/ PA Quad	2012 (950)	14.9	2061 (973)	15.2	2111 (996)	15.6	2158 (1018)	15.9	2199 (1038)	16.2
DirectAire AI										
w/o Damper	1123 (528)	8.3	1572 (753)	11.6	1913 (906)	14.1	2200 (1062)	16.3	2451 (1167)	18.1
w/ OBD	857 (404)	6.3	1293 (610)	9.5	1546 (730)	11.4	1745 (824)	12.9	1951 (921)	14.4
w/ SmartAire MZ	869 (410)	6.4	1208 (570)	8.9	1465 (691)	10.9	1679 (792)	12.4	1867 (881)	13.8
w/ PowerAire	3258 (1538)	24.0	3360 (1586)	24.8	3390 (1600)	25.0	3453 (1630)	25.5	3564 (1682)	26.3
w/ PA Quad	2018 (952)	14.9	2110 (996)	15.6	2140 (1010)	15.8	2130 (1005)	15.7	2158 (1019)	15.9
DirectPerf 32%										
w/o Damper	531 (251)	3.7	744 (351)	5.2	890 (420)	6.2	1010 (477)	7.1	1121 (529)	7.8
w/ OBD	480 (227)	3.4	693 (327)	4.8	822 (388)	5.7	963 (454)	6.7	1063 (502)	7.4
DirectPerf 25%										
w/o Damper	357 (168)	2.6	496 (234)	3.7	602 (284)	4.4	689 (325)	5.1	765 (361)	5.6
w/ Slide damper	260 (123)	1.9	367 (173)	2.7	447 (211)	3.3	515 (243)	3.8	574 (271)	4.2
GrateAire										
w/o Damper	916 (432)	3.6	1320 (623)	5.2	1608 (759)	6.4	1860 (878)	7.4	2096 (989)	8.3
w/ OBD	810 (382)	3.2	1121 (529)	4.5	1386 (654)	5.5	1595 (753)	6.3	1785 (842)	7.1
w/ Slide damper	504 (238)	2.0	712 (336)	2.8	876 (413)	3.5	1008 (476)	4.0	1128 (532)	4.5
Standard Perf										
w/o Damper	332 (152)	1.3	476 (224)	1.9	584 (275)	2.3	666 (314)	2.6	746 (352)	3.0
w/ Slide damper	237 (112)	0.9	328 (155)	1.3	402 (190)	1.6	461 (218)	1.8	515 (243)	2.0

Cooling capacity per rack is based on: CFM x Capture Index % / 126 (CFM needed to cool 1kW @ 25° ΔT)
Tests Conducted with fans operating at 100% power and dampers 100% open.

ContainAire®

Aisle Containment Solutions for Data Centers

Dual & Single Sliding Doors

- Full perimeter compression gaskets efficiently seal and minimize air leakage
- No threshold design prevents tripping
- Sturdy aluminum framing
- Multiwall panel option adheres to new NFPA codes
- Ergonomically designed with angled handles to reduce pinch points
- Easy installation with integrated door slide locks

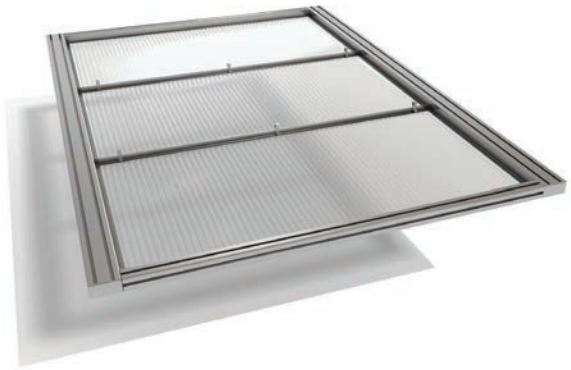
Hinged Door

- Full perimeter compression gaskets efficiently seal and minimize air leakage
- Right or left hinged option for easy maintenance and installation
- No threshold design prevents tripping
- Sturdy aluminum framing
- Multiwall panel option adheres to new NFPA codes
- Ergonomically designed with angled handles to reduce pinch points

Strip Door

- Unique Pivot and Grip installation method for vinyl allows for any location any time installation or adjustment
- Modular design (field adjustable)
- UL listed fusible links
- 360 degree ceiling attachment
- Overlapping vinyl
- Temperature release point
- Tool-less assembly

ContainAire® Aisle Containment



Hard Roof

- Pre-assembled sections for quick and easy installation
- Drop away tiles allow for use under water sprinkler system when permitted by code
- 4' and 6' foot aisle widths
- Thin profile to prevent overhead obstructions
- Modular design works with any aisle length

Soft Partitions

- Unique Pivot and Grip installation method for vinyl allows for any location any time installation or adjustment
- Modular design (field adjustable)
- Overlapping design for improved air sealing
- 360 degree mounted fire suppression link equipped hanger
- UL listed Fusible Links

Hard Partitions

- Pre-assembled for easy installation
- Modular design (all parts screw together)
- Transparent or semi-transparent panel
- Compression gaskets efficiently seal and minimize air leakage

Structural Grid

Continuous Threaded Slot for Maximum Flexibility

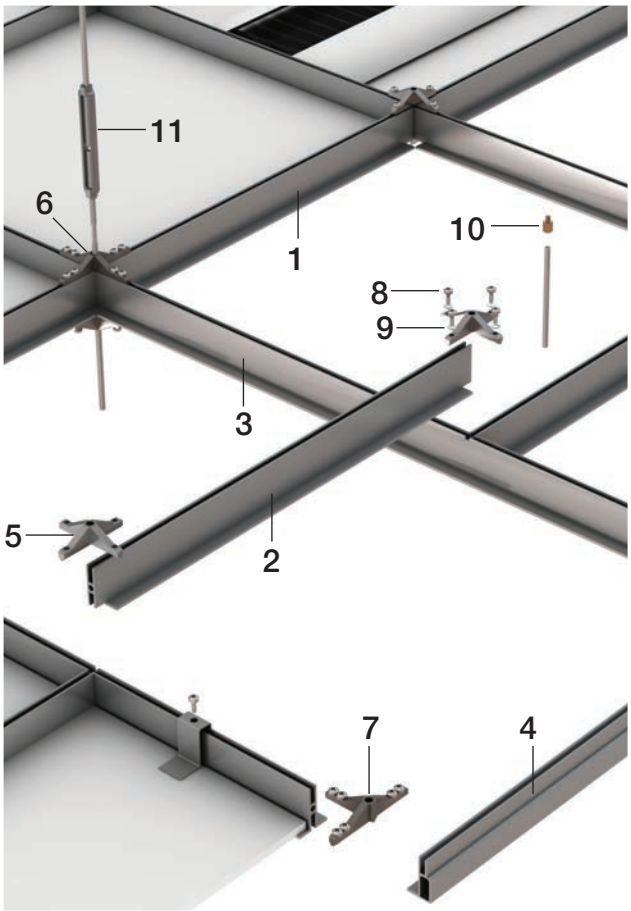
Tate's Structural Ceiling Grid is the ideal solution for any application where large heavy items need to be suspended within a building. Replacing custom-built on-site structural support systems such as unistrut, with Tate's Structural Ceiling Grid can offer many advantages. A structural ceiling allows you to pre-design and specify the support solution in advance and, best of all it's less expensive and faster to install.

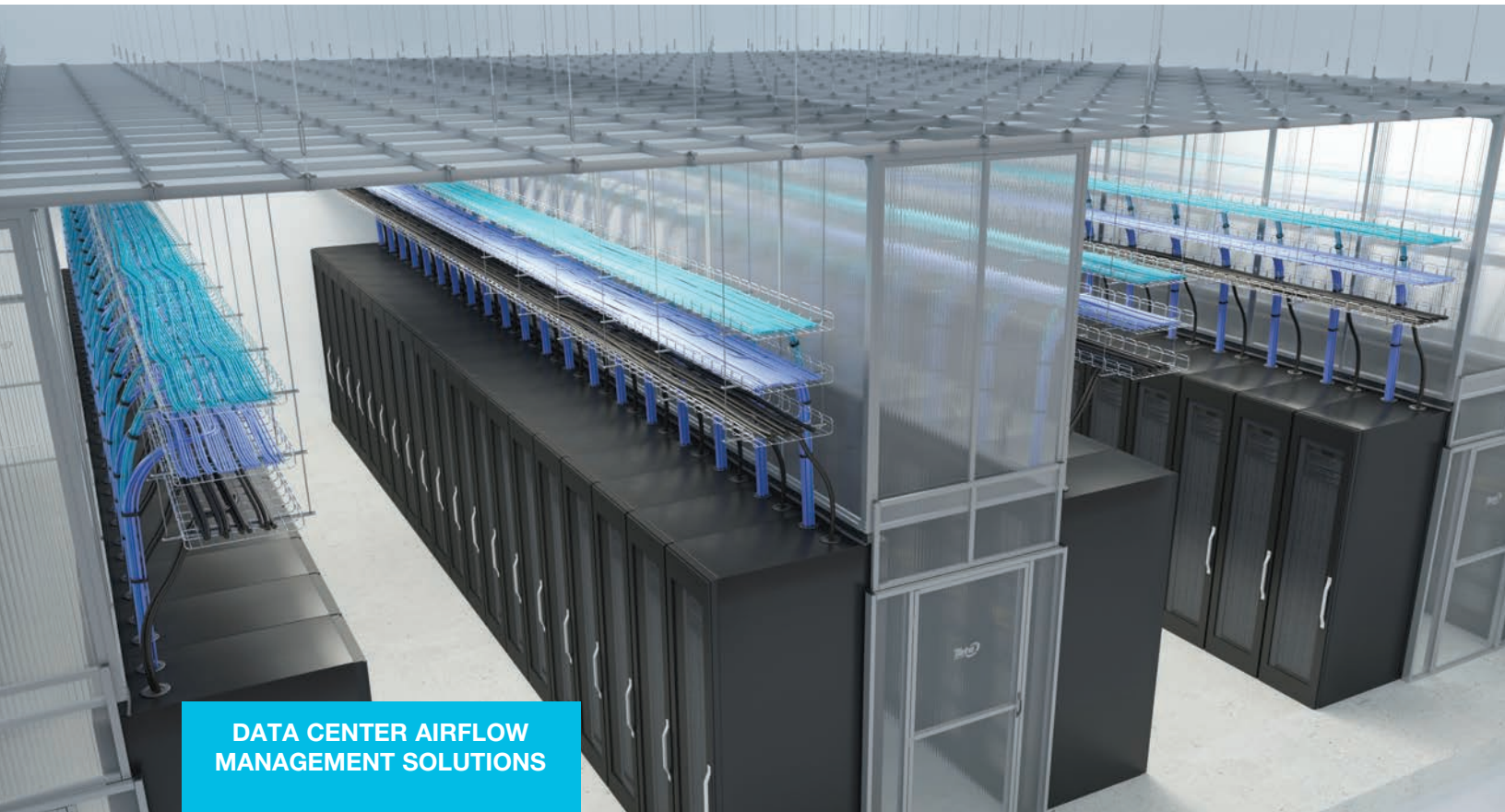
Benefits of Tate's Structural Ceiling Grid:

- Faster and easier to install than other grid systems
- 24" grid accepts standard 600mm ceiling tiles and lights
- Eliminates the need for multiple trades on-site
- Experienced data center product manufacturer and contracting teams

Structural Ceiling Grid Component List:

1. 144" or 360cm Main Runner
2. 24" or 60cm Structural Tee
3. 48" or 120cm Structural Tee
4. 144" or 360cm Perimeter Angle
5. Field Connector
6. XL Field Connector
7. Perimeter Connector
8. ¼"-20 x 1-1/4" Screws
9. ¼" Lock washer
10. ¼"-20 to 3/8"-16 or ¼"-20 to M10-1.5 adapter
11. 3/8"-16 x 7" or M10-1.5 x 18cm Turnbuckle Assembly

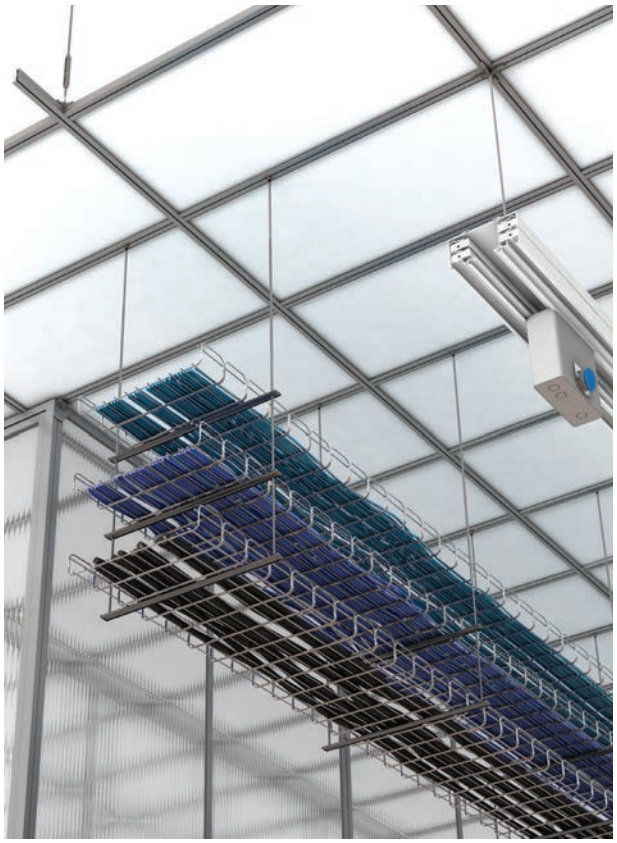




DATA CENTER AIRFLOW MANAGEMENT SOLUTIONS

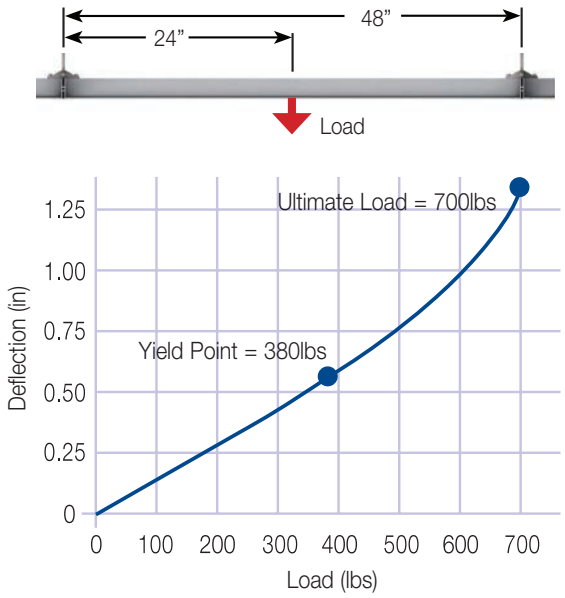
Performance Criteria

The bottom side of the structural grid has a continuous threaded 1/4”-20 slot for mounting items directly to the grid. In many cases the configuration of the equipment may require the use of 3/8”-16 or M10-1.5 all thread. There are two options for these instances. First we offer a field adapter that simply screws into the grid and has a female connection point for a 3/8”-16 or M10-1.5 threaded bolt. Second is the use of a standard perimeter connector. This is best for mounting very heavy equipment to the ceiling. Refer to the table below for load performance details on the grid and connections.



Structural Tee Deflection

(Midspan Beam)



Calculate midspan beam deflection at any point below yield

$$S = \frac{w\ell^3}{48EI}$$

S = Deflection
w = load
ℓ = 48in
E = $10x10^6$ lbs/in^2
I = .153 in^4

System Performance Criteria			
Hanging Method	**Grid Load Performance** *(with building connections 4’x4’ on centers)*	**1/4”-20 Connection to Grid** *(Adapters for 1/4”-20 to 3/8”-16 or M10-1.5 are also available)*	**Perimeter Connector** *(In line with building connection)*
Point Load (lbs)	380 lbs* (1.7 kN)	380 lbs* (1.7 kN)	800 lbs (3.6 kN)
Uniform Load (lbs/ft^2)	50 lbs/ft^2 (2.4 kN/m^2)	-	-
Ultimate Point Load (lbs)	700 lbs (3.1 kN)	760 lbs (3.4 kN)	1600 lbs (7.1 kN)

**Max point load no less than 4’ (120cm) apart in any direction.*

Air Sealing Grommets

By-pass air, which is any air delivered into the data center that is not consumed by the equipment and exhausted as waste heat, can have a significant impact on the cooling capacity of a data center.

Tate's air sealing grommets are designed to improve the energy efficiency and air sealing performance of your data center by preventing leakage from the raised floor plenum when penetrations are required for power and data cables above the floor.

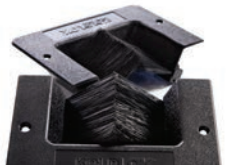
Tate has identified a standard cut-out location that works with any rack to ensure that the cutout is always in the proper location inside the back door. Tate's unique standardization option means that the time and mess associated with field cutting is eliminated.

Standard Integral

A heavy duty grommet with a removable lid. The grommet uses a double layer gasket system made of a flexible rubber membrane below a brush to deliver air-tight seals around cables.

Mini

Designed to seal small cable openings in the raised floor of new or existing computer rooms. The 5" x 2.5" opening offers flexibility for data centers that have multiple cable opening sizes.



Surface Mount

Provides a quick and easy way to seal existing cable cutouts without the need to disconnect cables. Installs using adhesive tape on the underside of the grommet and screws.

Round

The Split feature of the Round 4" allows product installation or removal without disturbing cables. Designed to seal openings in new and existing raised floor cutouts to block bypass airflow and maximize cooling system efficiency.

Extended

Designed to seal a variety of existing larger openings, with the added flexibility of modification for unique openings. Can be modified to seal unique cable openings and areas such as gaps around CRAC & CRAH units.

Grommet Name	Area	Imperial (Inches)	Metric (mm)
Standard Integral	Usable Cable Area	7.25 x 4.75	184 x 120
Surface Mount	Usable Cable Area	6.5 x 6.5	165 x 165
Mini	Usable Cable Area	5 x 2.5	127 x 64
Round	Usable Cable Area	4 Dia.	102 Dia.
Extended	Usable Cable Area	22 x 2.5	559 x 64

Rack Level Management

Snap In Blanking Panels

Blanking panels eliminate the migration of hot and cold air through unoccupied areas of an IT equipment rack. Ergonomically designed for simple tool free installation. Also available with quick view temperature strips that display a temperature range from 50°- 102° F (10º - 38.8º C)

Pass Through Blanking Panels

This innovative aluminum and Hybrid Brush Technology panel cost effectively controls airflow. Designed to provide an effective airflow sealing solution when used in conjunction with pullout switches or servers that may be occasionally extracted.

Full Rack Blanking Panels

Designed to seal up to 42U of opening in the server rack, the Full Rack Blanking Panel Kit greatly reduces bypass airflow by eliminating the gaps in the server rack and creating a contained server rack environment.

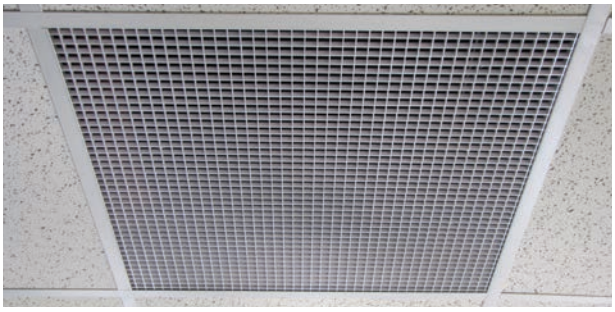
Aisle Level Management

Under Rack Panels

Designed to seal large and unique openings found under various sized racks and cabinets, the Under Rack Panel allows easy modifications for new and retrofit applications.

Ceiling Return Grille

Tate's high volume ceiling return grille directs large volumes of hot exhaust air into the drop ceiling plenum enabling the hot air to exit freely minimizing mixing with the cooling air flow.



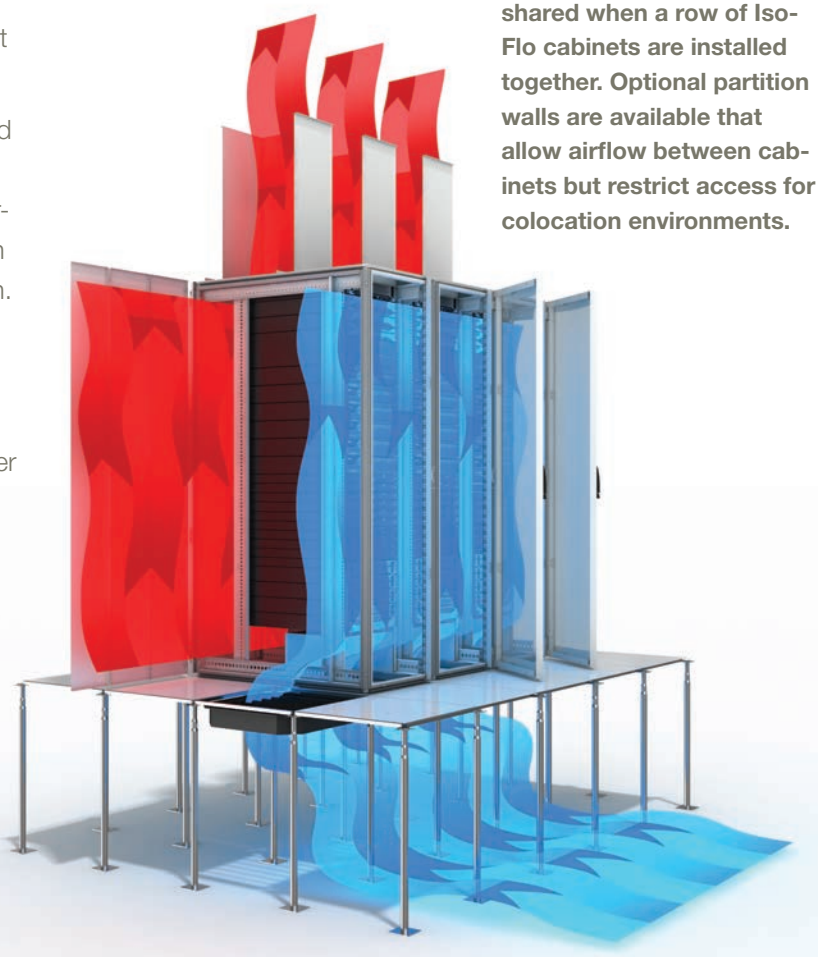
IsoFlo® Cabinet

Fully Contained Cabinet Improves Cooling Efficiency

Tate's IsoFlo cabinet completely isolates the IT cooling from the rest of the facility. Automated airflow controls reduce energy costs and provide the most efficient use of the data centers IT cooling capacity. The dedicated airflow path for equipment cooling aids in the implementation of fully economized or passive airflow cooling designs.

Cabinet Benefits

- **Efficient -** Cabinet level containment allows for increased inlet air temperatures and completely eliminates bypass airflow.
- **Operationally Cost Effective -** The ability to incrementally increase the equipment inlet air temperature or use passive airflow supply allows IsoFlo to provide a very cost effective data center cooling platform.
- **Capital Cost Effective -** IsoFlo cabinets are more cost effective than cabinets with aisle containment, and offer mechanical equipment savings in new build.
- **Flexible -** There is no requirement for hot/cold aisle layout. The isolated airflow paths and standard module sizes of the chimney and airflow panel allow the cabinet to be deployed in any new or existing pod or cage configuration.
- **Monitoring and Control -** Automatic airflow controls allow for simple integration with the building management system and DCIM can provide real time information to the data center manager.



The hot and cold airflow paths within the cabinet are shared when a row of IsoFlo cabinets are installed together. Optional partition walls are available that allow airflow between cabinets but restrict access for colocation environments.

DATA CENTER AIRFLOW MANAGEMENT SOLUTIONS

ContraFlo® Cabinet

Reverse Flow Cabinet for Raised Floor Data Centers

The ContraFlo cabinet turns airflow upside down to offer an alternative to hot aisle containment or chimney designs. Using a raised floor plenum as the return path, ContraFlo can simplify the isolation of hot exhaust air. Using any flooded room approach the cool air is supplied to the IT equipment through a typical perforated front cabinet door. ContraFlo then uses a solid roof and rear doors to channel the exhaust air down through a high volume airflow panel into the raised floor plenum, isolating it from the cool air in the room. Pressure differential monitoring is used at the rack level to maintain accurate airflow delivery at all times, ensuring no more energy than required is used for cooling the space.

Advantage over other hot air containment

Hot air containment requires additional components and considerations to realize the benefits. ContraFlo reduces costs and eliminates the obstructions created by chimneys or aisle containment systems and ductwork to air handling equipment simplifying the distribution of other services.

Benefits:

- No chimneys, rigid barriers or additional air handling ductwork required
- Eliminate potential service distribution coordination conflicts
- Allows for simple retrofit into existing raised floor down-flow spaces
- Low cost design compared to other rack and containment configurations
- Utilizes raised floor plenum for exhaust path maintaining data center flexibility
- Efficient design that prevents intermixing of exhaust air and supply air
- Multiple options for rack level pressure monitoring to efficiently manage airflow volume

Slab Design

Slab designs limit the flexibility and adaptability of a data center. By using aisle or chimney containment on a slab wire & cable service distribution becomes challenging due to the many overhead obstructions.

Reverse Flow Cabinet

Using a reverse flow cabinet with a raised floor offers many advantages over a slab design. A raised floor return plenum and reverse flow cabinet is more cost effective than a cabinet with a hot air containment solution. In addition, raised floors simplify the maintenance and distribution or other services.

Corporate Headquarters:
7510 Montevideo Road, Jessup, MD 20794
Tate Hotline: 1-800-231-7788
Tel: 410-799-4200 Fax: 410-799-4207
Production Facilities:
7510 Montevideo Road, Jessup, MD 20794
52 Springvale Road, Red Lion, PA 17356

Canadian Sales & Support Office:
880 Equestrian Court, Oakville, ON L6L 6L7 Canada
Tate Hotline: 1-800-231-7788
Tel: 905-847-0138 Fax: 905-847-0141

Australian Sales & Support Office:
28 Biloela Street, Villawood NSW 2163
Tel: 02-9728-4111 Fax: 02-9728-3088

Asia Sales & Support Office:
Suite 11-68, Level 11
Marina Bay Financial Centre Tower 1
8 Marina Boulevard,
Singapore 018981
Tel: 65-9897-9070 Fax: 65-6468-6681

Central and South American Sales & Support:
Tel: 443-690-3244

European Sales & Support:
Tel: 353-879-820-873

Middle East Sales & Support:
Tel: 514-512-2605

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