

# Access Floor Solutions

Product Guide



*SustainAbility*  
*to the Power of* **Tate**<sup>®</sup>



**Developer/Built-to-Suit:** KDC Development,  
AAA Customer Contact Center, Oklahoma City, OK, 150,000 ft<sup>2</sup>



**High Performance and Sustainable:** Great River Energy,  
Maple Grove, MN, 166,000 ft<sup>2</sup>, LEED Platinum

# Tate Access Floors & SustainAbility®

Social and environmental responsibility have long been key corporate objectives within Tate. Through continuous improvements and focus our **Ability** to **Sustain** our environment, customers, community and company is stronger today than it has ever been.



**Environment:** Over the years Tate has taken many initiatives to reduce the environmental impact of our manufacturing process from reducing energy usage through automation, utilizing 100% wind power, significantly reducing VOC's from the paint line and implementing a 100% grey water recycling system that saves 4 million gallons annually. Our quest for continual improvement has recently lead us to ISO 14001:2004, ISO 9001:2008 & OHSAS 18001:2007 certifications and membership in the EPA's Green Power Partnership to support sustainable technologies.



**Developer/Multi-Tenant:** Buchanan Partners, Bowie Corporate Center, Bowie, MD, 125,000 ft<sup>2</sup>, LEED Gold



**Data Center:** Montana State Fund, Helena, MN, 2,000 ft<sup>2</sup>



**Customers:** Tate is committed to providing the best quality access floors in the world by requiring stringent product performance and consistency criteria from both its manufacturing operations and partners. With the continued addition of sustainable technology and capacity in our fully owned manufacturing facilities, coupled with international manufacturing agreements we ensure our ability to respond to our customer's needs quickly and efficiently delivering on-time shipments at a rate needed to support any size installation.

Access flooring and underfloor service distribution offer a more sustainable solution for the design and construction of commercial buildings. The distribution of HVAC, electrical power, voice and data cabling and other utilities underneath an accessible modular floor offers enhanced energy-efficiency, life-cycle material savings, configuration flexibility and sustainability.



**Community:** As an advocate of green construction we support both our business and local community through participations in key organizations, ethical procurement and supply chain management and social responsibility.



**Company:** Tate is ensuring the sustainability of our company through our graduate recruitment and mentoring program and by giving each employee adequate training in sustainability issues. Being sure that everyone from key suppliers to installation contractors are fully involved in helping maintain the **SustainAbility** of Tate.

To learn more about Tate's **SustainAbility** visit us online at [www.tateinc.com/sustainability.aspx](http://www.tateinc.com/sustainability.aspx)

# Technical Resources: Design & Resource Support

Tate offers a variety of avenues to access our unsurpassed technical assistance and support from design through construction completion. Draw upon our unmatched breadth of experience using one or more of our valuable resources.

## 'Tate Technical Hotline'

Dial 800.231.7788 or e-mail [tateinfo@tateinc.com](mailto:tateinfo@tateinc.com) to consult directly with our engineers for design and construction support or assistance with seismic calculations.



## Design & Specification Guide

A comprehensive resource for architects and specifiers complete with full product details, architectural drawings and specifications in CSI format.



## On-Site & On-Line Education

AIA, USGBC, IFMA and IDCEC continuing education credits are available through on-site underfloor service distribution presentations by Tate professionals, or by visiting [www.tateinc.com/resources/online\\_education.aspx](http://www.tateinc.com/resources/online_education.aspx).



## Plenum Integrity Guides

Trade specific guides for properly designing, sealing, inspecting and commissioning underfloor air distribution systems are available for the architect, general contractor, and commissioning agent.



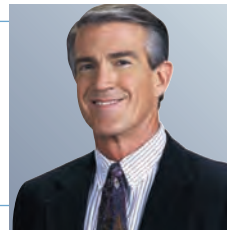
## Interactive Cost Models

Use this tool to create customized cost comparisons of conventional overhead service distribution versus access floor and underfloor services. Contact us for a demonstration.



## Dealer Network

Tate's worldwide team of dealers will assist you with your building needs. Find a dealer in your area by clicking on contacts at [www.tateinc.com](http://www.tateinc.com).



## High Performance & Sustainable Building

As a member of the USGBC, Tate participates in supporting the goals of creating a healthy environment. Contact a Tate LEED™ Accredited professional to find out how underfloor service distribution has helped over 185 projects achieve LEED certification or visit our website at [www.tateinc.com/tate\\_Leed.aspx](http://www.tateinc.com/tate_Leed.aspx)



## Comprehensive Website

Find everything you need from detailed product information, technical support documentation and specifications to industry links, project case studies and more at [www.tateinc.com](http://www.tateinc.com).



Visit [www.tateinc.com](http://www.tateinc.com) or call the **Technical Services Team** at **800.231.7788**.

# Access Floor Products



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# Important Load Criteria and Key Features

CISCA Recommended Test Procedures for Raised Floors is the most widely accepted test methodology for raised floors in the United States. This document provides a standard methodology for all manufacturers to use when testing their products to determine the performance. When a raised floor system is specified to a performance criteria per CISCA the specification is stating the type of test method that must be used in order to evaluate if the raised floor system meets the said criteria.

In addition to CISCA test methods Tate lists performance characteristics using test methods similar to CISCA, but are used in international raised floor standards. We provide this information to help report the load performance of an installed system more accurately.

For Instance, Tate uses Design Load because CISCA's method for Concentrated load is conducted with the panel resting on steel blocks. In order to more accurately represent an installed

system Tate conducts CISCA Concentrated load tests with panels installed on their actual understructure. This test is called Design or Working Load defined as:

**Design Load<sup>1</sup>** is the safe working load that can be applied to the system using a one sq.in. indenter without experiencing permanent set. This test is conducted in conformance with CISCA Concentrated Load test method but with panel tested on actual understructure instead of steel blocks.

Safety Factor is another term used by Tate to indicate that the panel supported on actual understructure system can withstand a point load of no less than (2) two times its design load rating without failure when tested in accordance with CISCA Ultimate Load test method. Failure is defined as the point at which the system will no longer accept the load.

**Safety Factor<sup>2</sup>** is the multiple of the design load to the ultimate load.

	Key Features	ConCore System (Explanation and/or benefit)
Design Features	Panel Construction	Flat steel top sheet welded 156 times to a waffle shape bottom sheet then filled internally with lightweight cement.
	Recycled Content	49% recycled content. Over 15% post-consumer.
	Positive Engagement	Tate's PosiLock® pedestal head positions and retains panels in place without screws.
	Combustibility*	Class A flame spread rating, and noncombustible compliant with ASTM E136-99.
	Corner Screws	Screws do not extend below panel underneath. Screws are designed with retention feature.
	Finish Options	Almost unlimited factory laminated finish options. PosiTile® carpet & Integral Trim® edge for HPL.
Performance	Walkability*	Quiet & solid underfoot with a sound transmission of 53 NNIC.
	Safety Factor*	System provides a safety factor greater than two during static point load tests meeting all international standards.
	Overload Protection	System yields gradually for built in safety.
	Panel Strength Options	5 interchangeable panel strengths, meet all the requirements of a modern office building.
	Cutout Strength*	System maintains design load and minimum safety factor strength when cut.
Plenum	Air Leakage*	Straight, die cut panel edges yield low and predictable panel seam air leakage rates.
	Plenum Divider	Attaches to pedestals maintaining underfloor access. Adjustable to meet any width requirement.
	Clean Air Plenum	Painted steel panels with tight seams minimize dust and debris entering the air delivery plenum.
Service & Usability	Industry Commitment	Tate is the oldest and largest manufacturer dedicated solely to the R&D and marketing of access flooring.
	Lifting & Handling	Easy to carry with one hand and can be removed with a suction cup lifter. Panels are 25% lighter than concrete panels.
	Shock Resistance	Fully encapsulated steel shell designed to resist damage when dropped.
	Cracking & Reuse	Steel panels are free from unsightly cracks which improve life cycle and reuse.
	Edge Design	Thin edge design eliminates adhesives from leaking between panels locking them place.
	Ease of Cutting	Steel panel filled with cement cuts without special blades.
	Attaching Walls	Screws and shot-pin can be driven directly into the panel without sacrificing it's integrity.

\*Independently certified test reports are available upon request.

1 For more information on design load visit Tate's website and click on Resources / White Papers.

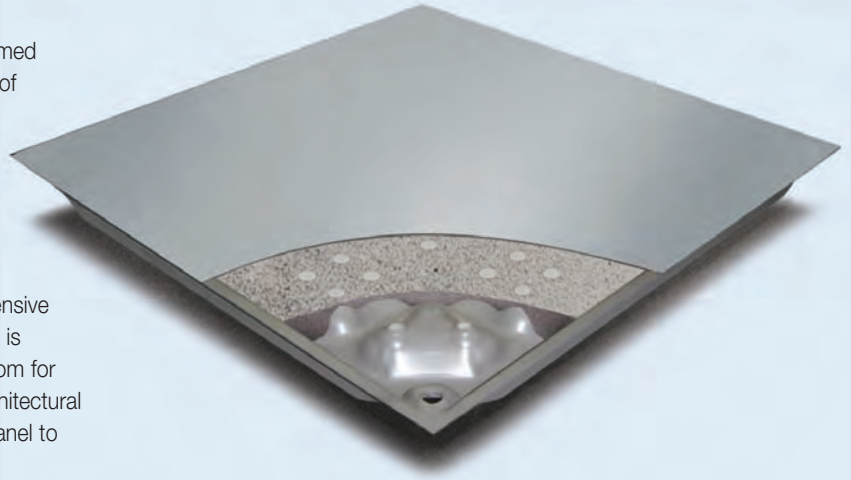
2 The UK's PSA MOB PF2 PS/SPU for raised access floors, the Australian Standard AS 4154-1993 for access floors and The European Standard for Access Floors EN 12825:2001 all require a min safety factor based on point load tests.

# 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 five 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](http://www.tateinc.com) for further information on product details, finish options, architectural details, system specification, and selecting the proper panel to meet the needs of your specific application.



**Library:** Champaign Public Library, Champaign, IL, 122,000 ft<sup>2</sup>

**Municipal Government:** Johnson County Sunset Drive, Olathe, KS, 136,000 ft<sup>22</sup>, LEED Gold

## ConCore® Performance Selection Chart

System Performance Criteria* (Tested on Actual Understructure)							
Panel	Understructure	System Weight (lbs/ft <sup>2</sup> )	Static Loads		Rolling Loads		Impact Loads (lbs)
			Design Loads <sup>1</sup> (lbs)	Safety Factors <sup>2</sup> (min 2.0)	10 Passes (lbs)	10,000 Passes (lbs)	
ConCore® 1000	PosiLock®	8.0 (39kg/m <sup>2</sup> )	<b>1000 (4.4kN)</b>	<b>PASS</b>	800 (3.6kN)	600 (2.7kN)	150 (68kg)
ConCore® 1250	PosiLock®	8.5 (42kg/m <sup>2</sup> )	<b>1250 (5.6kN)</b>	<b>PASS</b>	1125 (5.0kN)	875 (3.9kN)	150 (68kg)
ConCore® 1500	PosiLock®	9.0 (44kg/m <sup>2</sup> )	<b>1500 (6.7kN)</b>	<b>PASS</b>	1250 (5.6kN)	1000 (4.4kN)	150 (68kg)
ConCore® 1000	Bolted Stringer	9.0 (44kg/m <sup>2</sup> )	<b>1000 (4.4kN)</b>	<b>PASS</b>	800 (3.6kN)	600 (2.7kN)	150 (68kg)
ConCore® 1250	Bolted Stringer	10.0 (49kg/m <sup>2</sup> )	<b>1250 (5.6kN)</b>	<b>PASS</b>	1000 (4.4kN)	800 (3.6kN)	150 (68kg)
ConCore® 1500	Bolted Stringer	10.5 (51kg/m <sup>2</sup> )	<b>1500 (6.7kN)</b>	<b>PASS</b>	1250 (5.6kN)	1000 (4.4kN)	150 (68kg)
ConCore® 2000	Bolted Stringer	11.5 (56kg/m <sup>2</sup> )	<b>2000 (8.9kN)</b>	<b>PASS</b>	1500 (6.7kN)	1250 (5.6kN)	150 (68kg)
ConCore® 2500	Bolted Stringer	12.0 (59kg/m <sup>2</sup> )	<b>2500 (11.1kN)</b>	<b>PASS</b>	2000 (8.9kN)	2000 (8.9kN)	150 (68kg)
ConCore® 3000	Bolted Stringer	13.0 (63kg/m <sup>2</sup> )	<b>3000 (13.3kN)</b>	<b>PASS</b>	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. Design Load is tested using CISCA's Concentrated Load test method on actual understructure instead of steel blocks. Design Load is determined by taking the lesser value of ultimate load divided by two or the point at which permanent damage begins to occur (yield point).

2. Safety factor is the multiple of Design load to the Ultimate Load. International standards and Tate recommend a minimum of 2.

# 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 are 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 general purpose equipment applications.



**Casino:** Starlight Casino, Queensborough, BC, 100,000 ft<sup>2</sup>



**Renovation:** Engberg Anderson Design Partnership, Milwaukee, WI, 18,800 ft<sup>2</sup>, LEED Gold

## All Steel Performance Selection Chart

System Performance Criteria* (Tested on Actual Understructure)							
Panel	Understructure	System Weight (lbs/ft <sup>2</sup> )	Static Loads		Rolling Loads		Impact Loads (lbs)
			Design Loads <sup>1</sup> (lbs)	Safety Factors <sup>2</sup> (min 2.0)	10 Passes (lbs)	10,000 Passes (lbs)	
All Steel 1000	Bolted Stringer	6.0 (29kg/m <sup>2</sup> )	<b>1000 (4.4kN)</b>	<b>PASS</b>	400 (1.8kN)	400 (1.8kN)	150 (68kg)
All Steel 1250	Bolted Stringer	7.0 (34kg/m <sup>2</sup> )	<b>1250 (5.6kN)</b>	<b>PASS</b>	500 (2.2kN)	500 (2.2kN)	150 (68kg)
All Steel 1500	Bolted Stringer	8.5 (42kg/m <sup>2</sup> )	<b>1500 (6.7kN)</b>	<b>PASS</b>	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. Design Load is tested using CISCA's Concentrated Load test method on actual understructure instead of steel blocks. Design Load is determined by taking the lesser value of ultimate load divided by two or the point at which permanent damage begins to occur (yield point).

2. Safety factor is the multiple of Design load to the Ultimate Load. International standards and Tate recommend a minimum of 2.



# Understructure Systems

for ConCore and All Steel Systems

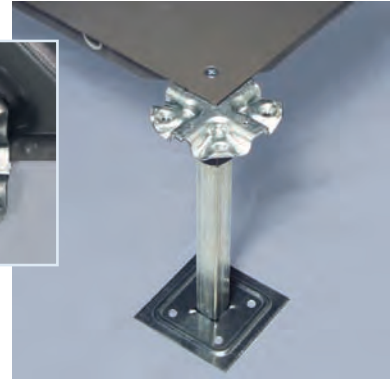
## PosiLock®

### 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 optimum 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).



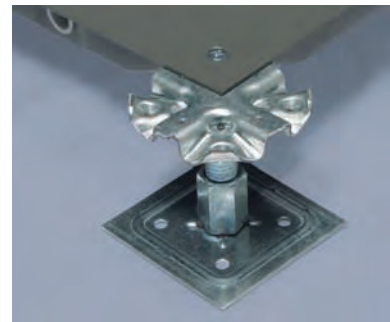
*Panel engagement feature viewed from underside*



## Low Finished Floor Height PosiLock®

### Understructure Features

- Available in floor heights from 2<sup>7</sup>/<sub>8</sub>" to 4" (7cm-10cm).
- PosiLock® design provides self-engagement and positioning of floor panels.
- 2<sup>7</sup>/<sub>8</sub>" (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.

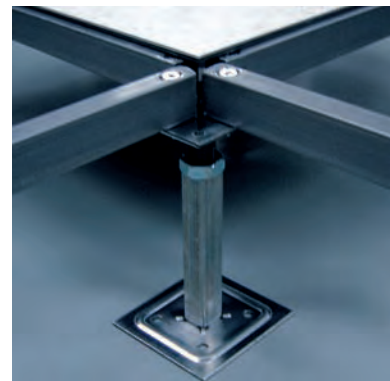


*PosiLock® pedestal for low floor height systems*

## 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 16 gauge 7/8" (2.2cm) galvanized tubing to Schedule 40 pipe.
- Pedestals can accommodate finished floor heights over 36" (90cm).
- Easily levels uneven floors.

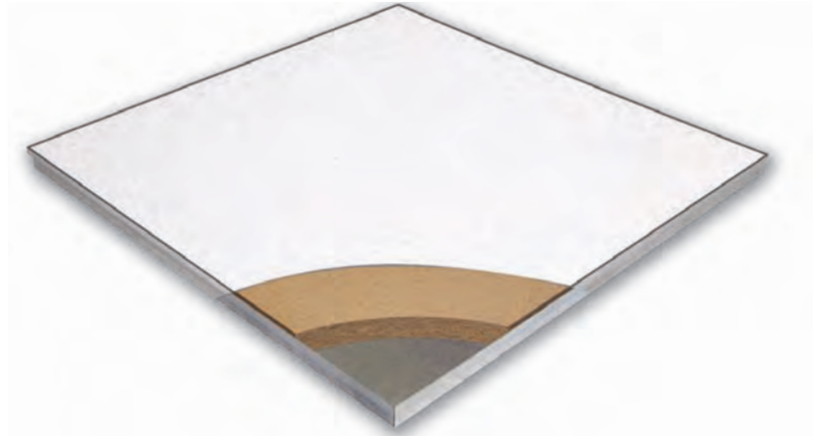


# Woodcore Panels

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

- Mechanically attached air seal gasket available.
- No added urea formaldehyde wood is available upon request.
- High strength to weight performance.
- Full range of factory laminated finishes.
- Finishes available with Integral Trim® edge.
- Internally grounded.



Woodcore panels are available with several understructure support systems and numerous factory laminated finishes. Fully Interchangeable steel perforated and die cast aluminum grates are also available. Together they meet the needs of a wide range of applications from office environments to data centers, telecommunication, and mission critical facilities.



**Owner Occupied:** ABSA, Edmonton, AB, 21,500 ft<sup>2</sup>



**Government:** Calgary Water Centre, Calgary, AB, 183,000 ft<sup>2</sup>

## Woodcore Performance Chart

System Performance Criteria* (Tested on Actual Understructure)							
Panel	Understructure	System Weight (lbs/ft <sup>2</sup> )	Static Loads		Rolling Loads		Impact Loads (lbs)
			Design Loads (lbs)	Safety Factors (min 2.0)	10 Passes (lbs)	10,000 Passes (lbs)	
WC5000	CornerLock	6.9 (34kg/m <sup>2</sup> )	<b>1000 (4.4kN)</b>	<b>PASS</b>	1000 (4.4kN)	700 (3.1kN)	150 (68kg)
WC5000	Snap-Tite/Bolt-Tite	7.4 (36kg/m <sup>2</sup> )	<b>1000 (4.4kN)</b>	<b>PASS</b>	1000 (4.4kN)	700 (3.1kN)	150 (68kg)
WC5000	Heavy Duty Stringer	7.6 (37kg/m <sup>2</sup> )	<b>1250 (5.6kN)</b>	<b>PASS</b>	1250 (5.6kN)	875 (3.9kN)	150 (68kg)
WC6000	Heavy Duty Stringer	8.3 (41kg/m <sup>2</sup> )	<b>1500 (6.7kN)</b>	<b>PASS</b>	1500 (6.7kN)	1050 (4.7kN)	150 (68kg)

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

1. Design Load is tested using CISCA's Concentrated Load test method on actual understructure instead of steel blocks. Design Load is determined by taking the lesser value of ultimate load divided by two or the point at which permanent damage begins to occur (yield point).
2. Safety factor is the multiple of Design load to the Ultimate Load. International standards and Tate recommend a minimum of 2.

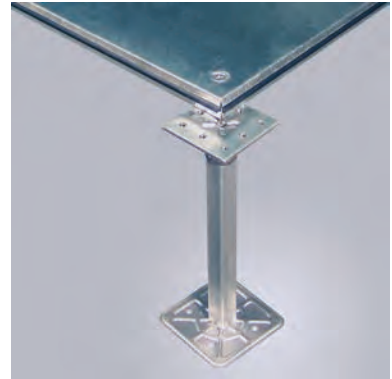
## Understructure



*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 with the air seal gasket mechanically attached to the panel. Used primarily for office environments with modular carpet tile.



**Renovation:** Christman Headquarters, Lansing, MI, 20,000 ft<sup>2</sup>

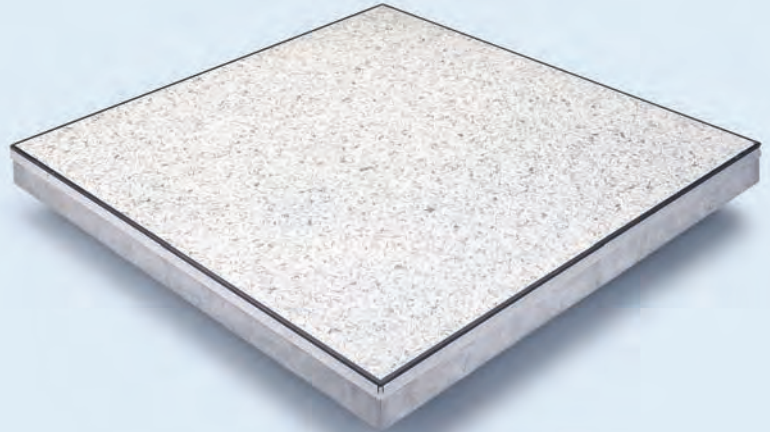
# Aluminum Panel Floor Systems

## 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)							
Panel	Understructure	System Weight (lbs/ft²)	Static Loads		Rolling Loads (lbs)		Impact Loads (lbs)
			Design Loads* (lbs)	Safety Factors* (min 2.0)	10 Passes (lbs)	10,000 Passes (lbs)	
FF 1250 Solid Panels	All	6.50 (32kg/m²)	<b>1250 (5.6kN)</b>	<b>Pass</b>	1000 (4.4kN)	1000 (4.4kN)	150 (68kg)
FF 1250 Perforated Panels	All	6.50 (32kg/m²)	<b>1250 (5.6kN)</b>	<b>Pass</b>	1000 (4.4kN)	1000 (4.4kN)	100 (45kg)
FF1250 Grates	All	7.25 (35kg/m²)	<b>1250 (5.6kN)</b>	<b>Pass</b>	1000 (4.4kN)	1000 (4.4kN)	150 (68kg)
FF 3000 Solid Panels	All	7.60 (37kg/m²)	<b>2250 (10.0kN)</b>	<b>Pass</b>	2000 (8.9kN)	2000 (8.9kN)	200 (91kg)
FF 3000 Perforated Panels	All	7.40 (36kg/m²)	<b>2000 (8.9kN)</b>	<b>Pass</b>	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

1. Design Load is tested using CISCA's Concentrated Load test method on actual understructure instead of steel blocks. Design Load is determined by taking the lesser value of ultimate load divided by two or the point at which permanent damage begins to occur (yield point).

2. Safety factor is the multiple of Design load to the Ultimate Load. International standards and Tate recommend a minimum of 2.

### Understructure



Stringerless System

Interchangeable Panels

Bolted Stringer System



**Federal Government:** United States Census Bureau,  
Suitland, MD, 1,000,000 ft<sup>2</sup>



**Developer/Multi-Tenant:** Cadillac Fairview,  
RBC Centre, Toronto, ON, 1,130,000 ft<sup>2</sup>



**ACCESS FLOOR PRODUCTS**

*Higher Education: Yale University, Kroon Hall,  
New Haven, CT, 58,200 ft<sup>2</sup>, LEED Platinum*

# Exclusive Tate Finishes

## Stone Tile

### Terrazzo Stone Tile Features

- Made of a polyester resin, calcium carbonate, glass and marble chips.
- Ground smooth, polished, sealed and routed for a beautiful long lasting finish.
- Recycled glass and resin fillers contain high recycled content.
- Installs quickly saving time and maintaining accessibility.

### Porcelain Tile Features

- Made with PVC Edge for consistent seams that look more like tradition grout lines.
- Wide selection of colors and style from multiple manufactures.
- Installs quickly saving time and maintaining accessibility.

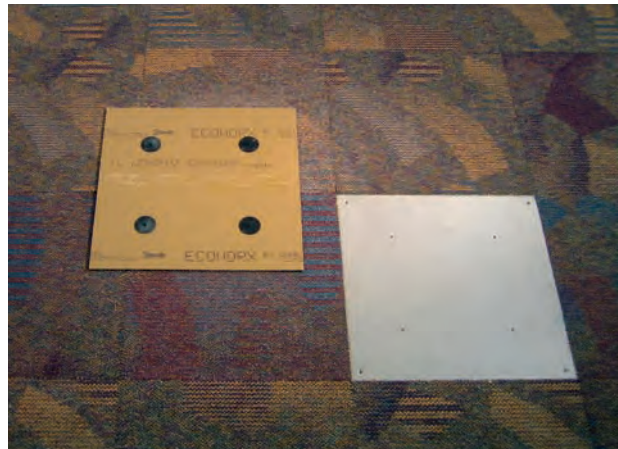


For more info on Tate's Terrazzo Stone Finish visit [www.tateinc.com/products/tate\\_terrazzo.aspx](http://www.tateinc.com/products/tate_terrazzo.aspx)

## PosiTile® Carpet

### PosiTile® System Features

- 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.
- Makes workstation relocation fast and inexpensive.
- PosiTile® is available in a multitude of colors and patterns.
- Available with state-of-the-art static control properties.
- A totally sustainable, cradle to cradle carpet tile product.



For more info or to download a copy of Tate's PosiTile brochure visit [www.tateinc.com/products/positile.aspx](http://www.tateinc.com/products/positile.aspx)

## Tate Hardwood

### Engineered Hardwood System Features

- Made of a 3.4mm natural wood bonded to 11mm Albasia wood backer.
- Sanded smooth and finished with an field applied eco certified high solids oil for a long lasting durable finish.
- Different shades can be accomplished with the use of a stain and oil mix which is field applied and buffed.
- Factory laminated with no trim edge for monolithic look
- Square sides with top edges beveled.
- The backer is made from "compressed" vertical plies of rapidly renewable plantation Albasia.
- Naturally VOC free.
- Virtually free of petroleum products and carrying a long potential use has minimized its environmental footprint.
- No harsh chemicals required to clean hardwood tile.



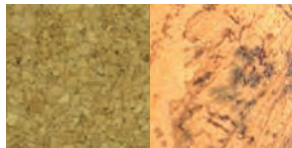
For more info on Tate's Engineered Hardwood Finish visit [www.tateinc.com/products/tate\\_hardwood.aspx](http://www.tateinc.com/products/tate_hardwood.aspx)

# Aesthetic Options For Any Application

## Finishes

The advantages of access flooring and underfloor service distribution are beneficial to a wide range of building applications - from office to educational, mission critical, casinos and beyond. Just like the buildings themselves, the spaces within them have varied and specific requirements, both functionally and aesthetically. Tate offers a wide variety of factory laminated finishes so you can implement the appropriate look, feel and durability for any application. As with conventional flooring, the access floor finish options are limitless.

### Selection of the many floor materials and finishes available



Cork



Wood Laminate



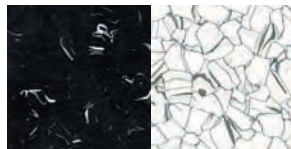
Engineered Hardwood



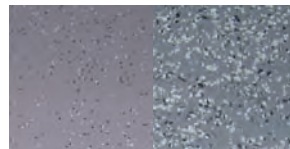
Porcelain



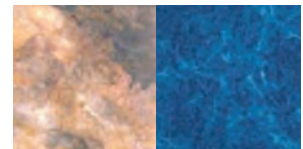
High Pressure Laminate



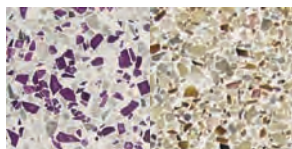
Static Control Vinyl



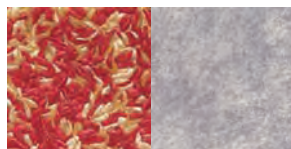
Rubber



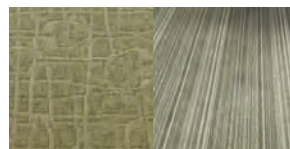
Luxury Vinyl



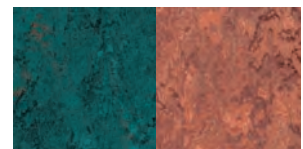
Terrazzo



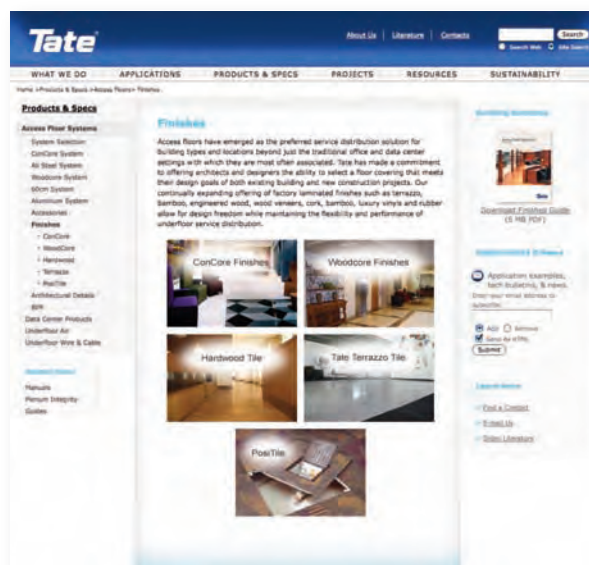
Freelay Hard Surfaces



Carpet Tile



Linoleum



### Finishes Online

There are many different materials, vendors and application methods used to apply finishes on or over access flooring. Tate has comprised an online resource of tested and approved finishes for access floor applications. On the website you will find vendor contact information, application renderings, and product photos to help you select a finish for your facility.

To access the finishes section of our website please visit [www.tateinc.com/products/finishes.aspx](http://www.tateinc.com/products/finishes.aspx). If you are interested in using a material or vendor that does not appear on the list or would like a printed finished brochure please contact the Tate Hotline at **877-999-8283** or e-mail [tateinfo@tateinc.com](mailto:tateinfo@tateinc.com)



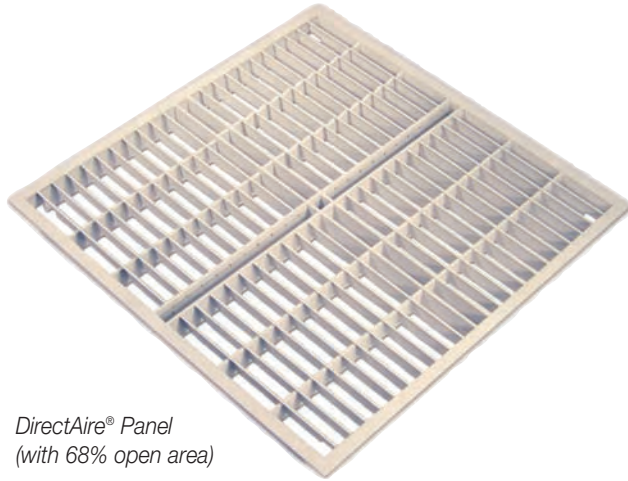
# Data Center Airflow Solutions



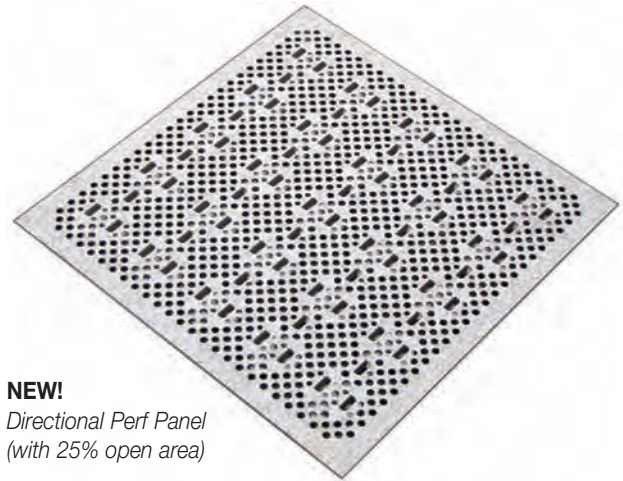
- Directional Airflow Panels .....page 18
- Standard Airflow Panels .....page 19
- Manual Controls .....page 20
- Automatic Controls.....page 21
- Fan-Assisted Controls .....page 22
- ContainAire™ .....page 24
- KoldLok, HotLok, AisleLok .....page 26
- Other Airflow Mgt Solutions.....page 27

# Directional Airflow Panels

Higher Cooling Capacity and Improved Energy Efficiency



DirectAire® Panel  
(with 68% open area)



**NEW!**  
Directional Perf Panel  
(with 25% open area)

## DirectAire® Panels

Unlike other airflow panels the DirectAire® and DirectAire® X2 angle the airflow toward the server rack to significantly reduce bypass air and achieve a 93% Total Air Capture (TAC) rate. This means 93% of the air delivered through the panel is entering the face of a standard 42U rack. DirectAire is designed for a one-to-one pairing with a rack while DirectAire X2 divides the airflow to provide even distribution to racks on both sides of a cold aisle.

### Panel Features

- 68% Open Area provides 2,600 CFM @ .1" H2O
- Supports 20kW per rack @ .1" H2O (X2, 10kW per rack)
- Available in 24" and 60cm panel sizes

## Directional Perf Panels

Like the DirectAire panels the Directional Perf angles the airflow toward the server rack to significantly reduce bypass air and achieve a 93% Total Air Capture (TAC) rate. This means nearly twice the airflow through the panel is entering the face of the rack, improving cooling capacity and energy efficiency.

### Panel Features

- 25% open area delivers 765CFM @ .1" H2O
- Directional air flow achieves a 93% total air capture
- Cools up to 8kW per rack
- Available in 3 concentrated load ratings 800, 1000 and 1250
- Available with or without a slide damper

### Airflow Panel System Load Performance Chart\* (Tested on Actual Understructure)

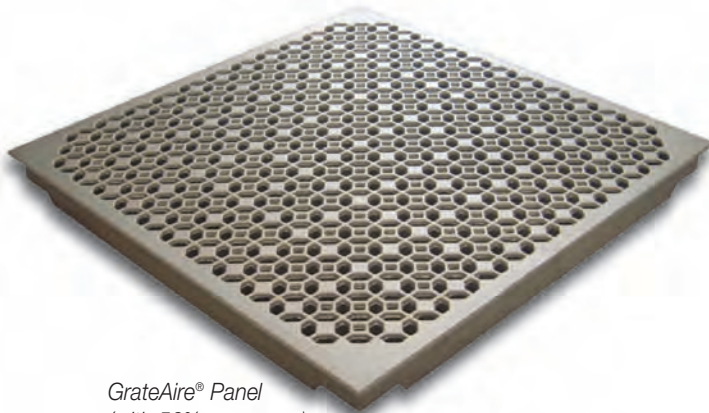
Panel	Understructure	System Weight (lbs/ft²)	Static Loads		Rolling Loads		Impact Loads (lbs)	Total Air Capture
			Design Loads¹ (lbs)	Safety Factors² (min 2.0)	10 Passes (lbs)	10,000 Passes (lbs)		
DirectAire® & X2	Bolted Stringer	13.0 (63kg/m²)	<b>2500 (11.1kN)</b>	<b>Min. &gt; 2.0</b>	2000 (8.9kN)	2000 (8.9kN)	200 (91kg)	93%
DPerf 800	Bolted Stringer	9.5 (46kg/m²)	<b>800 (3.6kN)</b>	<b>Min. &gt; 2.0</b>	-	-	150 (68kg)	93%
DPerf 1000	Bolted Stringer	10.0 (49kg/m²)	<b>1000 (4.4kN)</b>	<b>Min. &gt; 2.0</b>	-	-	150 (68kg)	93%
DPerf 1250	Bolted Stringer	10.5 (51kg/m²)	<b>1250 (5.6kN)</b>	<b>Min. &gt; 2.0</b>	-	-	150 (68kg)	93%

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

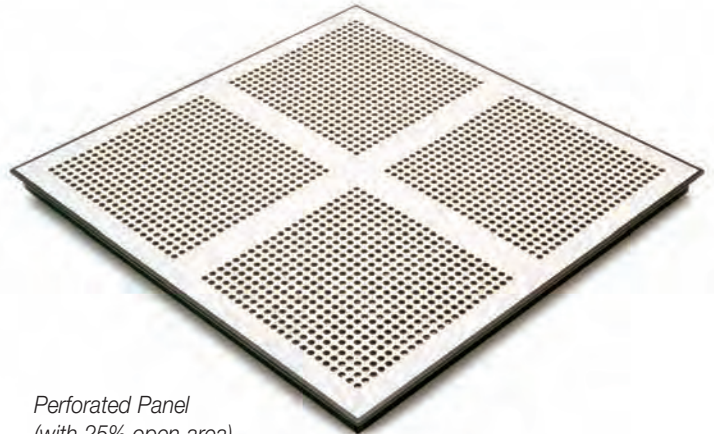
1. Design Load is tested using CISCA's Concentrated Load test method on actual understructure instead of steel blocks. Design Load is determined by taking the lesser value of ultimate load divided by two or the point at which permanent damage begins to occur.

2. Safety factor is the factor of Design load that can be divided into the Ultimate Load. International standards recommend a minimum of 2.

# Standard Airflow Panels



GrateAire® Panel  
(with 56% open area)



Perforated Panel  
(with 25% open area)

## GrateAire® Panels

### Panel Features

- GrateAire® die-cast aluminum panels are compatible with any 24" or 60cm bolted stringer systems.
- 56% unobstructed open area
- Rolling load capacity equal to that of ConCore® 1250 panels (1000 lbs/800 lbs).
- Available with top surface adjustable damper.
- Available with an unpainted textured surface or epoxy powder coatings.
- Interchangeable with laminated ConCore, All Steel, Woodcore and Aluminum panels in a stringered system.

## Perforated Panels

### Panel Features

- Perforated steel panels are compatible with any 24" or 60cm bolted stringer systems.
- 25% open area
- Design loads with safety factors of 2, not recommended for rolling loads.
- All panels are 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 stringered system.
- Perforated aluminum panels available for use with a bolted stringer aluminum system.

### Airflow Panel System Load Performance Chart\* (Tested on Actual Understructure)

Panel	Understructure	System Weight (lbs/ft²)	Static Loads		Rolling Loads		Impact Loads (lbs)	Total Air Capture
			Design Loads¹ (lbs)	Safety Factors² (min 2.0)	10 Passes (lbs)	10,000 Passes (lbs)		
GrateAire®	Bolted Stringer	8.0 (39kg/m²)	<b>1000 (4.4kN)</b>	<b>Min. &gt; 2.0</b>	1000 (4.4kN)	800 (3.6kN)	150 (68kg)	50%
Perf 800	Bolted Stringer	9.5 (46kg/m²)	<b>800 (3.6kN)</b>	<b>Min. &gt; 2.0</b>	-	-	150 (68kg)	50%
Perf 1000	Bolted Stringer	10.0 (49kg/m²)	<b>1000 (4.4kN)</b>	<b>Min. &gt; 2.0</b>	-	-	150 (68kg)	50%
Perf 1250	Bolted Stringer	10.5 (51kg/m²)	<b>1250 (5.6kN)</b>	<b>Min. &gt; 2.0</b>	-	-	150 (68kg)	50%

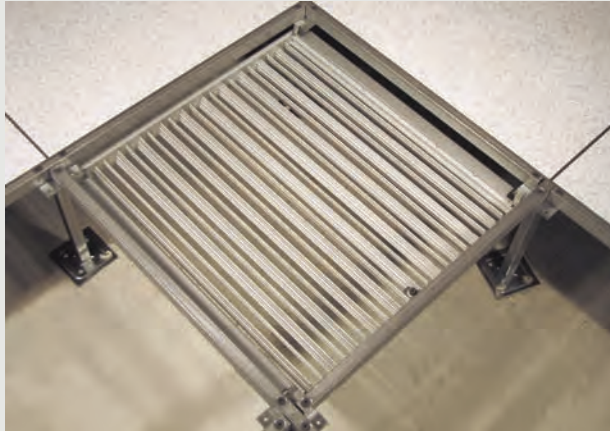
\*All tests are performed using CISCAs Recommended Test Procedures for Access Floors with the exception of Design Load

1. Design Load is tested using CISCAs Concentrated Load test method on actual understructure instead of steel blocks. Design Load is determined by taking the lesser value of ultimate load divided by two or the point at which permanent damage begins to occur.

2. Safety factor is the factor of Design load that can be divided into the Ultimate Load. International standards recommend a minimum of 2.

# Manual Controls for Airflow Panels

for ConCore and All Steel Systems



*Opposed Blade Damper for use with DirectAire and GrateAire® Panels*

## Opposed Blade Damper (OBD)

Tate's opposed blade damper allows the user infinite airflow adjustability with very little airflow resistance. Easy adjustable through the top surface of a GrateAire or DirectAire 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 grate removal
- Drop in design allows for easy retrofits under Tate airflow panels



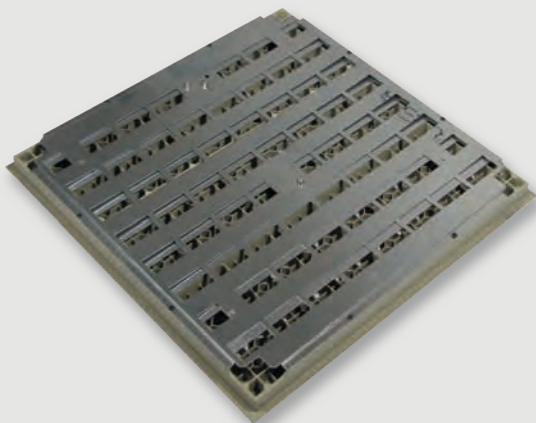
*Multi-zone Opposed Blade Damper for use with DirectAire Panels*

## 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 a 14U section of the rack. The damper allows data center operators to individually adjust airflow to three zones within the rack (top, middle and bottom) without removing the DirectAire panel, ensuring fast and accurate balancing to the fixed IT load.

### 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



*Manual Damper for use with GrateAire® and Perf Panels*

## 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

# Automatic Controls for DirectAir Panels

for ConCore and All Steel Systems

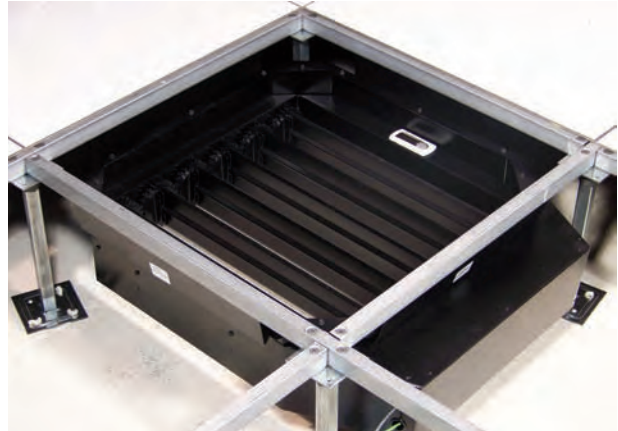
## SmartAire® - Automatic VAV

The data center is in constant flux. Load diversity between racks and variable server loads are the norm. New demands to reduce energy consumption in the green data center require a fine balance to ensure proper air flow to each rack during peak, partial load and idle IT hardware operation.

Tate's SmartAire electronically controlled variable-air-volume damper adjusts cooling to allow for variable loads within a server rack. The damper opens and closes to adjust the amount of airflow and ensure the proper inlet temperature is maintained on a rack-by-rack basis.

### Available Control Options

- **SmartAire C** - client sensor network
- **SmartAire S** - 1 rack mounted temperature sensor
- **SmartAire M** - 3 rack mounted temperature sensor
- **SmartAire P** - pressure differential sensor
- **SmartAire T** - technician activated temperature sensor



SmartAire Automatic Variable-Air-Volume Damper for use with DirectAir Panels



For more information about DirectAir, SmartAire and PowerAire, get Tate's In-floor Cooling Solutions for Data Centers brochure online at: [www.tateinc.com](http://www.tateinc.com)



Temp Display and Setpoint Interface for SmartAire & PowerAire



0-100% Open VAV Actuating SmartAire Damper



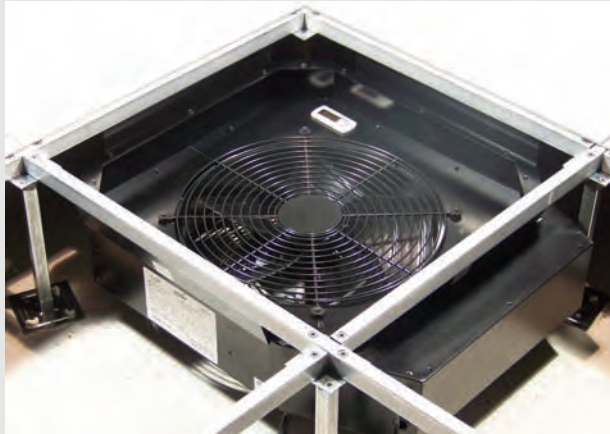
Sensor Mounted to the Face of the Rack for SmartAire & PowerAire

### SmartAire Key Performance Characteristics

- 0-22kW supported IT load per DirectAir/SmartAire pair
- Power disruption fail safe to fully open position
- Zero maintenance
- Quick and easy installation
- Multiple control options available
- Optional BMS interface
- User programmable set point
- 6 vane damper for large open area
- Damper position is infinitely variable from 0-100%
- High Precision, Quick Response Temperature Measurement
- Viewable maximum temp for walkthrough check of each rack
- Available Automatic Transfer Switch offers N+1 reliability

# Fan Assisted Controls for DirectAire Panels

for ConCore and All Steel Systems



*PowerAire High Volume Fan Assist Module for use with DirectAire Panels*



*PowerAire Quad Fan Assist Module with redundant fan output for low finished floor heights*

## PowerAire®

Tate's PowerAire fan assist module is designed to provide a blast of cooling through an individual airflow panel. The fan automatically turn 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 fan drive the fan can be throttled up or down based on the heat load requirements. This powerful solution is capable of cooling up to 25kW of IT load at .1" H2O for solving the toughest hot spots in a data center.

### PowerAire Key Performance Characteristics

- Zero maintenance
- Installation can be carried out by IT staff
- Multiple control options available:
  - **PowerAire C** - client sensor network
  - **PowerAire S** - 1 rack mounted temperature sensor
  - **PowerAire M** - 3 rack mounted temperature sensors
- High Precision, Quick Response Temperature Measurement
- User programmable set point
- Fan speed is infinitely variable from 0-100%
- Available in 100-120V or 200-240V power input options
- Viewable Peak Temp for walkthrough check of each rack
- Available Automatic Transfer Switch offers N+1 reliability

## PowerAire® Quad

The PowerAire Quad fan assist module 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 @ .1" H2O

### PowerAire Quad Key Performance Characteristics

- Zero maintenance
- Installation can be carried out by IT staff
- Multiple control options available:
  - **PowerAire Quad C** - client sensor network
  - **PowerAire Quad S** - 1 rack mounted temperature sensor
  - **PowerAire Quad M** - 3 rack mounted temperature sensors
- Available in 100-120V or 200-240V power input options
- High Precision, Quick Response Temperature Measurement
- User programmable set point
- Fan speed is infinitely variable from 0-100%
- Available in 100-120V or 200-240V power input options
- Viewable Peak Temp for walkthrough check of each rack
- Available Automatic Transfer Switch offers N+1 reliability

### Airflow Panel CFM and kW Capacity Chart

Airflow Panel	0.02" H <sub>2</sub> O (5 Pa)		0.04" H <sub>2</sub> O (10 Pa)		0.06" H <sub>2</sub> O (15 Pa)		0.08" H <sub>2</sub> O (20 Pa)		0.10" H <sub>2</sub> O (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)
<b>DirectAire</b>										
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	938 (443)	6.9	1310 (618)	9.7	1666 (786)	12.3	1912 (902)	14.1	2134 (1007)	15.8
w/ PowerAire	2717 (1282)	20.1	2780 (1312)	20.5	2877 (1358)	21.2	2974 (1404)	22.0	3014 (1422)	22.2
w/ PA Quad	2012 (950)	14.9	2061 (973)	15.2	2111 (996)	15.6	2158 (1018)	15.9	2199 (1038)	16.2
<b>Directional Perf</b>										
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
<b>GrateAire</b>										
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	907 (428)	3.6	1313 (620)	5.2	1587 (749)	6.3	1841 (869)	7.3	2062 (973)	8.2
w/ Slide damper	504 (238)	2.0	712 (336)	2.8	876 (413)	3.5	1008 (476)	4.0	1128 (532)	4.5
<b>Standard Perf</b>										
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 are calculated based on the following formula (CFM x TAC) / 126 (CFM needed to cool 1kW @ 25°ΔT)

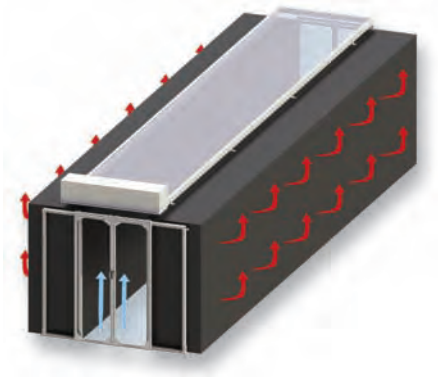


**Data Center** Syracuse University,  
Syracuse, NY, 12,000 ft<sup>2</sup>

# Aisle Containment

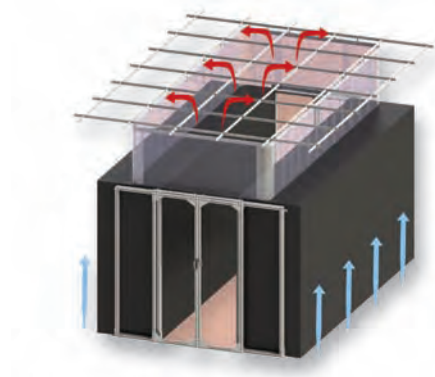
## Cold Aisle Containment

A cold aisle containment system can be created using ContainAire partitions or a retracting roof. A retracting roof keeps the cool air closer to the equipment however, Partitions can be used when solid ceiling tiles are in place over the aisle.



## Hot Aisle Containment

A hot aisle containment system will need to use the ContainAire partitions around the top of the racks since the hot air will need to exhaust through the ceiling return grilles. These systems can be used with any door option.



## ContainAire™ Partitions

The ContainAire Vertical Partition System combines cost-effectiveness and ease of installation to create the finest ceiling mounted partition system for both hot and cold aisle containment. Tate formulated special ceiling attachments with a 360 degree swivel so as to easily attach to ceiling grid in any direction and at any point along the track.

High-grade aluminum tracks are connected with splicers and then hung with UL and FM rated fire suppression links designed so that curtains fall away during a fire, allowing sprinklers full operation range.



ContainAire Partition (close-up of fire suppression link)



ContainAire Retracting Roof

## ContainAire™ Retracting Roof

The Tate ContainAire retracting roof system is a UL material solution for both cold and hot aisle containment. It combines cost-effectiveness, ease of installation, fire safety, and clean aesthetics.

High-grade aluminum track, UL rated drop in panels make for a below sprinkler containment solution. The ContainAire retracting roof kit includes all of the components and fasteners required to assemble and install the roof containment. Tate roofs can be installed on the top of the rack cabinets.

### Features

- Modular design (all parts snap together)
- 2-6 foot wide models (60cm-180cm)
- Unlimited lengths
- UL/FM rated ceiling panels
- Flat roof to prevent overhead obstructions
- No tools required for installation





*ContainAire Strip Door*

## ContainAire™ Strip Door

The ContainAire Strip Door system provides a cost-effective and easy to install ceiling mounted solution for sealing the aisles of the containment system. Strip doors provide a reliable barrier that keeps hot and cold air stream segregated while also allowing for easy access to the containment aisle even when carrying servers and other objects.

The ContainAire Strip Door kit includes all of the components and fasteners required to assemble and install the system. The ContainAire Strip Door can be installed on the drop-ceiling grid or be hung onto any stationary ceiling system such as cable trays, U channel, and or directly into a variety of ceiling materials (metal, cement, etc.).

### Features

- Modular design (all parts snap together)
- 1-6 foot (30cm-180cm) long kits (easy to ship)
- 96"-182" (244cm-462cm) drop down length
- UL and FM rated fire suppression links
- 360 degree ceiling attachment
- Overlapping vinyl (prevents leaks)
- No tools required for installation



*ContainAire Sliding Door*

## ContainAire™ Hinged & Sliding Door

The Tate ContainAire Hinged & Sliding Doors are constructed on a sturdy aluminum frame designed to be durable and long lasting. Other features include a locking door, magnetic stays and no floor threshold, which eliminates a tripping hazard.

Each door kit includes all of the components and fasteners required to assemble and install the door. The door can be installed without having to 'hang it' onto the aisle end racks. Instead the door sits on the floor with two small attachments to the top of the racks.

### Features

- No threshold design prevents tripping
- Custom sizes & attachments (locks, stays)
- Left or right handed door
- Sturdy aluminum supports
- Clear see-through panel
- Side panels attach easily without hanging from the racks



For more information get Tate's ContainAire aisle containment systems brochure online at: [www.tateinc.com](http://www.tateinc.com)

# Other Airflow Management Products

## Improved Air Sealing Performance

Bypass airflow can have a significant impact on the cooling capacity and efficiency of any data center. Part of best practice design for raised floor data centers includes the elimination of by-pass air. By-pass air is any air delivered into the data center that is not consumed by the equipment and exhausted as waste heat. Some of the easiest and most commonly used products to reduce by-pass air include the use of containment systems, blanking panels, angular or directional air delivery, and air sealing grommets for all wire and cable penetrations in the floor.

### KoldLok

Tate offers the full range of surface mount and flush mount KoldLok grommets in addition to the co-branded Tate KOLDLOK air sealing grommet. Tate KOLDLOK is a 8.75"x11" (22.2cm x 27.9cm) injection molded ABS plastic grommet designed to mount in a raised floor panel. Supplied with an optional rigid lid capable of supporting up to 250lbs (113kg) this grommet is designed to be installed at the same time as the raised 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.

### HotLok

HotLok products consisting of blanking panels and rack mounted grommets reduce high intake air temperatures by preventing hot exhaust air from circulating to the front of the IT cabinets. This improves IT equipment reliability and supports cooling infrastructure optimization.

### AisleLok

AisleLok products such as under rack panels and expandable air sealing tape are engineered to seal a variety of openings in the aisle, blocking bypass airflow and maximizing cooling performance. Properly managed airflow in the aisle increases efficiency, capacity and reliability.

*KoldLok Surface Mount*



*Tate KoldLok w/ Optional Lid*



*HotLok Snap-In Blanking Panels*



*AisleLok Under Rack Panel*

# Other Airflow Management Products

## Rack Shield

The Tate Rack Shield isolation system is designed to capture subfloor supply and dedicate it to the IT hardware thermal load. The Rack Shield ensures that cold supply air will not spill from rack-to-rack across a row or around the ends.

Made with high-grade aluminum track and fire resistant clear panels on smooth rollers the Rack Shield can be created in several sizes depending on the area of isolation.



*Rack Shield*

## CRAC Hood

The CRAC Hood extension is a ceiling return duct that connects the top of the CRAC unit directly to a ceiling return plenum greatly increasing cooling capacity and efficiency by capturing hot exhaust air and channeling it directly into the CRAC unit. The CRAC Hood will eliminate hot and cold air mixture helping to maintain the proper Delta T. It will also balance the thermal load by drawing air from one common source.

The Tate CRAC Hood is a recommended extension for both cold and hot aisle containment because it combines cost-effectiveness and ease of installation. Over the long-term the CRAC Hood will also reduce “total cost of ownership” by improving the efficiency of the CRAC unit. The sturdy pre-painted metal frame is also equipped with a door system for AC units with pre-filters.



*CRAC Hood  
(shown with access door)*

## In-Floor Velocity Adjustor

The Velocity Adjustor™ is designed to slow subfloor air velocity so as to increase pressure. This simple scientific solution will balance subfloor pressure, enabling supply air to be delivered at any place in the data center. The Velocity Adjustor installs between subfloor stations. Careful placement is a must so as to properly affect the air stream and to ensure product longevity.

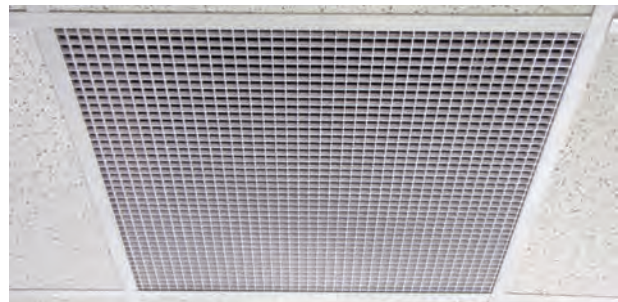
The Velocity Adjustor is made of Sandel “The fire fighting fabric”. This completely non-flammable cover ensures that the Velocity Adjustor is completely safe to use in a supply plenum and comes in three sizes that accommodate most common subfloor height.



*In-Floor Velocity Adjustor*

## In-Ceiling Return Grille

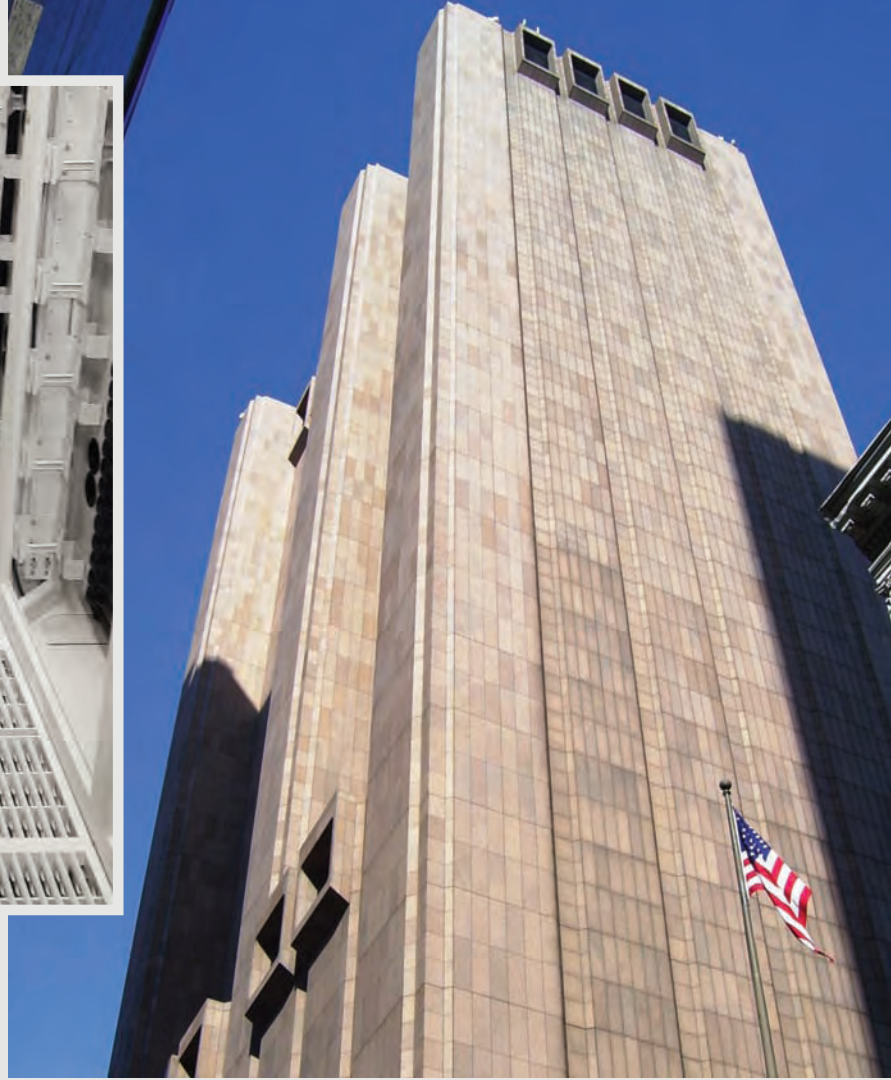
Tate’s high volume ceiling return grille directs large volumes of hot exhaust air into the drop ceiling plenum enabling the hot air to exit freely minimizing mixing with the cooling air flow.



*In-Ceiling Return Grille*



**Data Center AT&T, New York, NY, 25,000 ft<sup>2</sup>**



**DATA CENTER AIRFLOW  
MANAGEMENT SOLUTIONS**



**Data Center Manassas, VA, 100,000 ft<sup>2</sup>**

# Underfloor Service Distribution



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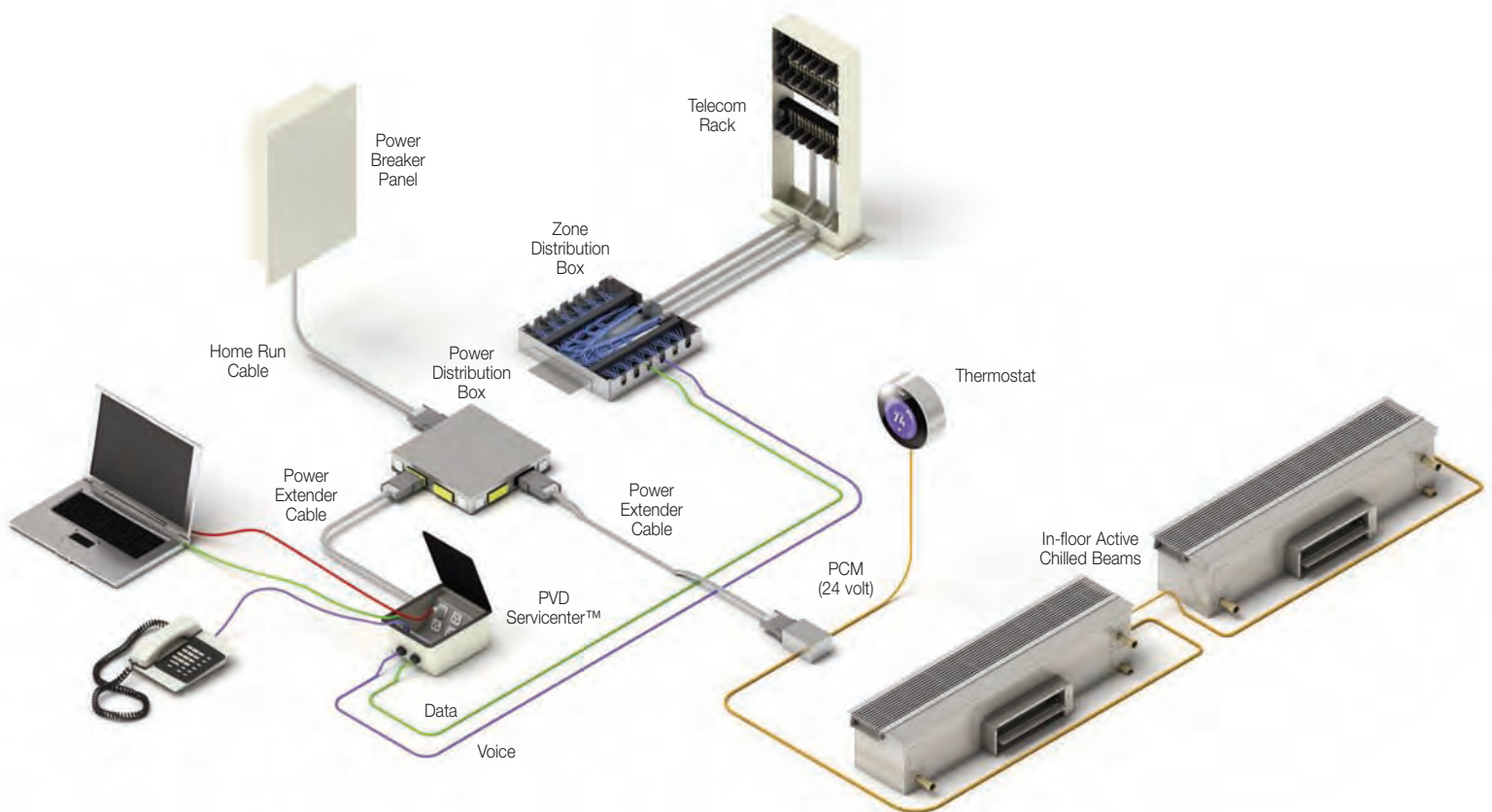
# Underfloor Wire & Cable Management

Tate's has partnered with Cii, the leading manufacturer of modular power and voice data systems to provide 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

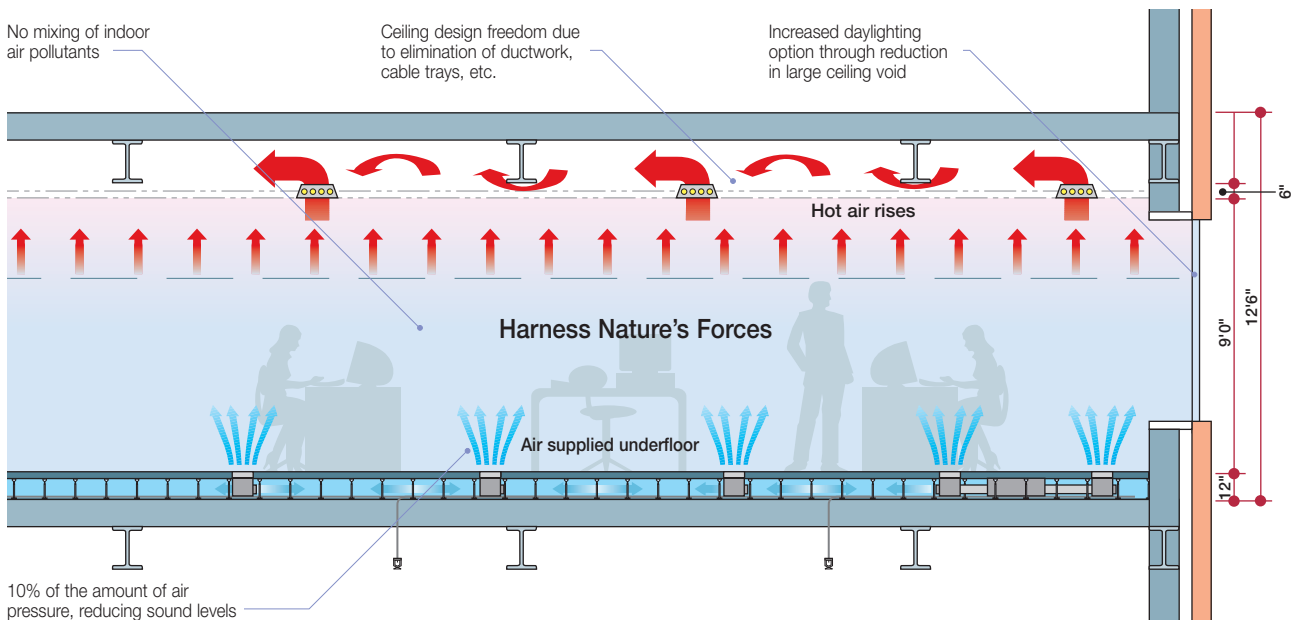
Underfloor Air Distribution (UFAD) has become a popular strategy for heating and cooling an office building due to the significant HVAC energy savings it offers while addressing a variety of other indoor environmental needs. These needs include maintaining high-quality clean air, improving personal comfort 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 during construction and 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 design to improve UFAD perimeter design.

### Advantages of UFAD

- Enhanced 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.
- Reduced first cost and construction time due to significant reduction in HVAC ductwork.
- Reduced operating costs and lower facility and maintenance costs through accessible, flexible, and adaptable services.

### Tate underfloor air distribution system



# In-Floor Active Chilled Beam

With a wide product range the 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 a seamlessly 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
- Ability to use water below dew point and control condensation
- Easily manage shoulder season conditioning
- Gain advantages of stratified airflow vs. overhead chilled beams

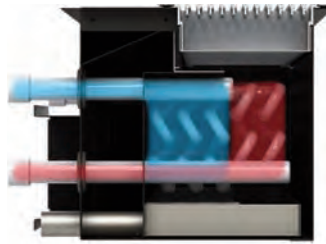


*In-floor Active Chilled Beam for heating and cooling*



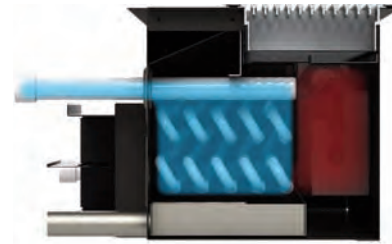
### 2-Pipe

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 and water valves to meet the perimeter demands.



### 4-Pipe

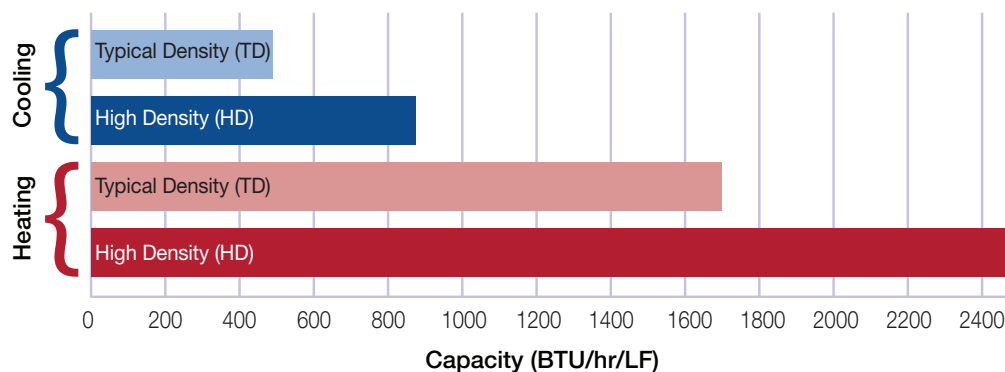
The 4-Pipe model has the ability to supply hot and chilled water to the unit without switch over. Two supply and two return water connections are located on opposite ends of the beam. Time modulated air and water valves allow the unit to meet demand based on a thermostat located in the space.



### 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 is located on the device. The perimeter demands are met by time modulating the air valves, water valves, and electric heat.

## In-floor Active Chilled Beam Performance Chart



For more information get Tate's In-floor Active Chilled Beam brochure online at: [www.tateinc.com](http://www.tateinc.com)



# EcoCore

## Phase Change Technology for Energy Efficiency

EcoCore access floor panels are steel welded shells filled with a 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 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 75° F melting point.



### Benefits of Phase Change in a Raised Floor

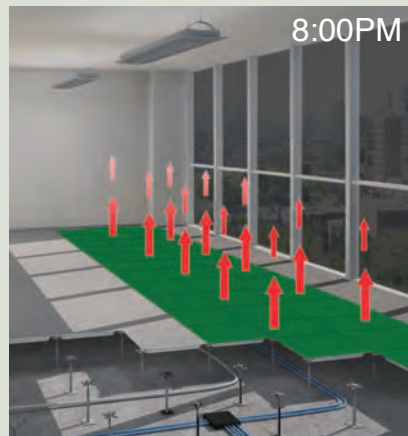
- Reduce perimeter heating and cooling loads during normal business hours
- Use free or low cost cooling to handle the thermal load stored in the panels during non-business hours
- PCM lasts the life of the building (over 100,000 changes)
- Tate's raised floor panels provide a safe solution for applying 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

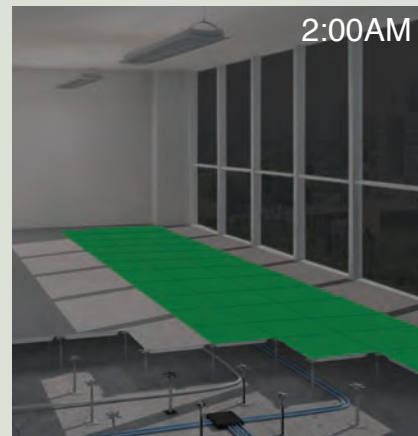
Using EcoCore in the perimeter zone of the office will help to reduce the overall peak load in the space and delay the occurrence of the peak load to later in the day. By reducing the overall peak load the amount of cooling required to keep the space comfortable is reduced. In addition, by delaying the peak 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.

# Casino Air»Connect

## Creating A Healthy Gaming Environment

Tate's **Air»Connect** provides significant advantages in maintaining air quality, flexibility and the aesthetic integrity of a Casino's gaming environment. **Air»Connect** uses a variable-air-volume damper or flexible duct to tap into the pressurized plenum of an underfloor air distribution system. The air is then delivered at or near the floor through diffusers mounted in slot bases and other structures built on top of the raised floor. **Air»Connect** offers the same flexibility and improved indoor air quality of a typical floor mounted diffuser only the diffusers can be concealed out of sight for a more appealing aesthetic.

### Features

- Easily mounts under any slot base cabinet or pit boss stand.
- Can be used with any air diffuser provide by a third party vendor or custom fabricated by the slot base manufacturer for a seamless integrated look.
- All components are quick connect for easy installation and removal during casino layout configuration changes.
- **Air»Connect's** 'plug and play' placement flexibility ensure maximum comfort is maintained.
- Delivers air near floor level to maximize acoustic performance, energy efficiency, and help eliminate smoke in the occupied zone.



**Air»Connect** with a concealed diffuser



**Casino:** FireKeepers Casino,  
Battlecreek, MI, 107,000 ft<sup>2</sup>



**Owner:** BASF Headquarters,  
Florham Park, NJ, 325,000 ft<sup>2</sup>



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made in the U.S.A.

A member of

