High Performance & Sustainable Green Building Solutions

SustainAbility to the Power of Tate®

Northern Arizona University, ARD Facility
Flagstaff, AZ, 60,000 ft^2, **LEED**® *Platinum*

SustainAbility to the Power of Tate

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, significantly reducing VOC's from the paint line and implementing a 100% grey water recycling system on the auto-fill line. Our quest for continual improvement has recently lead us to ISO 14001:2004 & ISO 9001:2000 certifications and membership in the EPA's Climate Leaders program to set aggressive goals for reducing our GHG emissions.

SUSTAIN ABILITY

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 shipment of material 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.

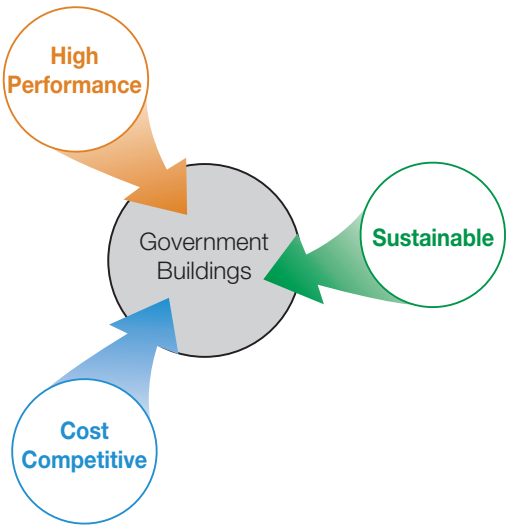
Company: Tate is ensuring the sustainability of our company through our graduate recruitment and mentoring program and by giving each employee adequate training in sustainability issues. Being sure that everyone from key suppliers to installation contractors are fully involved in helping maintain the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

To learn more about Tate's SustainAbility visit us online at **www.tateaccessfloors.com/sustainability.aspx**

Tate®

The Business Case for High Performance and Sustainable Buildings

The growing concern over the environmental impacts associated with green house gas emissions and rising energy costs have lead to greater public interest in how government facilities are built. Buildings which incorporate strategies to conserve resources, operate efficiently and improve the overall work environment for occupants are now today's front page news.



The popularity of these strategies is evident in the surge of high performance and sustainable buildings being constructed. For instance, the number of buildings receiving the USGBC's Leadership in Energy and Environmental Design (LEED) certification nearly doubled from 2006 to 2007. During the same year the number of EPA Energy Star buildings grew by 25%. This growth is expected to continue with McGraw-Hill projecting the value of green building construction to increase to $60 billion by 2010.

Meeting Public Demand

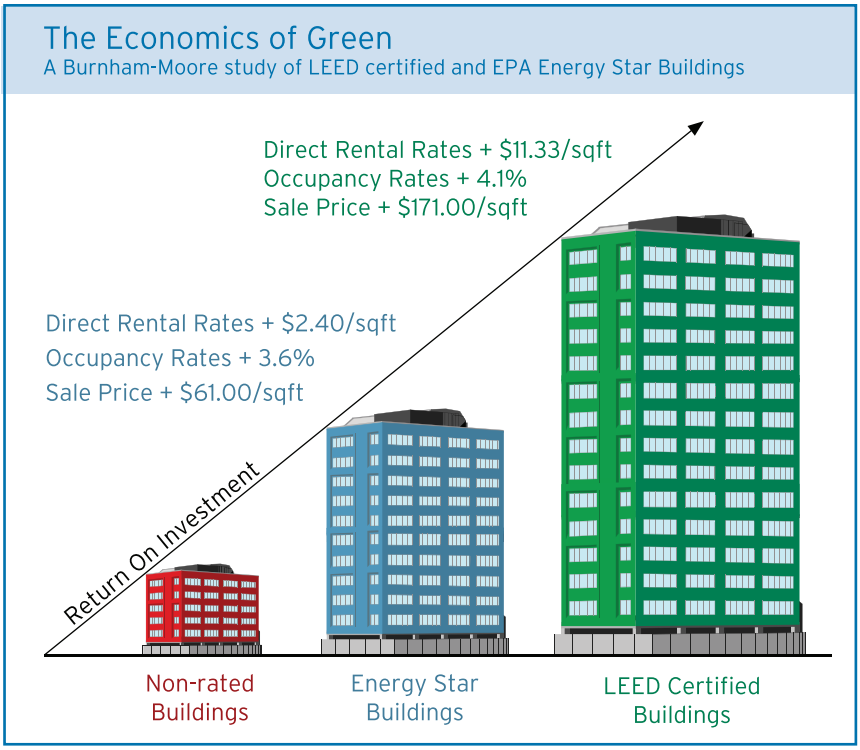
There are three key characteristics that should be standard in any well-designed building; they should be high performance, sustainable and relatively cost neutral. High performance features create a more flexible workspace while improving the indoor environmental quality for the occupant. Sustainable features reduce a buildings impact on the environment during construction, operation, and maintenance. Lastly, the building needs to be competitive in both first- and life-cycle costs compared to traditional buildings.

The Cost and Return on Investment

A recent study of LEED & Energy Star buildings conducted by the Burnham-Moores Center for Real Estate at San Diego University and The CoStar Group found significant advantages to using these strategies. The study shows an increase in rental & occupancy rates and sale price compared to Non-rated buildings.

In another study the GSA* estimated construction cost for achieving LEED certification to be between a 0.4% savings to a 2.1% premium in new courthouse construction and office building modernization projects.

*GSA LEED Cost Study, October, 2004



Setting the Standard for Building Design

There are many high performance & sustainable strategies available to achieve your goals however, very few deliver both, and do it cost effectively. A strategy such as thermal glazing offers both sustainable and high performance benefits because it helps to improve the indoor environment while reducing power lighting requirements. Other common strategies such as waterless urinals, improved building shells and green roofs have sustainable advantages, but really provide no performance benefit to the occupants. High performance features such as company gyms or full service cafeterias have little sustainable benefits and add cost. Once strategies that cost effectively provide both benefits are identified they should become standard building practices.

The Standard for High Performance & Sustainable

Tate Access Floors with underfloor power, cable and air distribution should be considered a standard feature in all government facilities. Underfloor service distribution provide numerous sustainable and high performance benefits in a cost competitive system.

Comparing High Performance & Sustainable Strategies

The chart below compares some of the top strategies used in high performance and sustainable buildings. The strategies are evaluated based on the benefits they provide over the life of the building. As you can see Underfloor Service Distribution (UFSD) provides benefits in many areas that make up a high performance and sustainable building.

Strategies	Daylighting	IAQ	Flexibility	Energy	Water	Material	Life-Cycle Cost	Total
Slab-to-Slab Thermal Glazing	✔			✔			✔	3
Building System Controls	✔			✔			✔	3
Modular Walls & Furniture			✔			✔	✔	3
Green Roofs				✔			✔	2
Rainwater Collection/Reuse					✔		✔	2
Underfloor Service Distribution	✔	✔	✔	✔		✔	✔	6

Tate Underfloor Service Distribution Solutions

Using underfloor service distribution to create a high performance and sustainable indoor environment will help to address a variety of needs that conventional construction cannot. These needs include maintaining high-quality clean air, improving personal comfort control, attenuating noise, responding to organizational and technology changes quickly and easily, reducing material and energy usage and supporting the overall aesthetic value of the facility – all while being cost-effective in both construction and operation.

With Tate's underfloor service distribution solutions, you'll be able to address all of the factors required to create the perfect environment that reflects the high performance and sustainable goals of your organization.

High Performance Advantages

- Enhanced indoor environmental quality through superior IAQ, ventilation effectiveness and improved acoustics
- Increased daylighting opportunities.
- Maximum occupant thermal comfort and control
- Easily adapts to technological and organizational changes over the building's life-cycle at low cost.
- Point-of-use services wherever you need them with complete flexibility, accessibility, and unlimited capacity.

Sustainable Advantages

- Reduce materials required to deliver HVAC, electrical and data services to the occupants
- Energy efficiency through greater economizer operation, and less fan energy.
- Reduce waste during reconfiguration by reusing wires, cables, diffusers and PosiTile carpet.
- Made in the USA requiring less shipping energy
- Made of over 30% recycled content.

Cost Competitiveness

- Reduced first cost and construction time due to significant reduction in HVAC ductwork and use of underfloor pre-fabricated 'plug & play' wire/cable services.
- Reduced operating costs and lower facility and maintenance costs through accessible, flexible, and adaptable services.

Tate PVD Servicenters™ provide point of use power, voice and data services anywhere on the floor plate

Tate ConCore® access floor system – welded steel floor panel, filled internally with lightweight cement for the ultimate in strength and acoustic performance

Modular and relocatable VAV or passive diffusers provide increased personal comfort control

Tate PosiTile® carpet providing one-to-one "indexable" fit to panel – no messy adhesive required

Underfloor VAV perimeter solutions provide both heating and cooling capability

'Plug & play' modular power wiring system saving valuable construction time and facilitating quick and easy reconfigurations

Underfloor service pathway accommodates any type of voice and data system approach, from homerun to passive or active zone cabling

Tate PosiLock™ understructure – positive positioning and lateral retention of floor panels with a wide range of finished floor heights

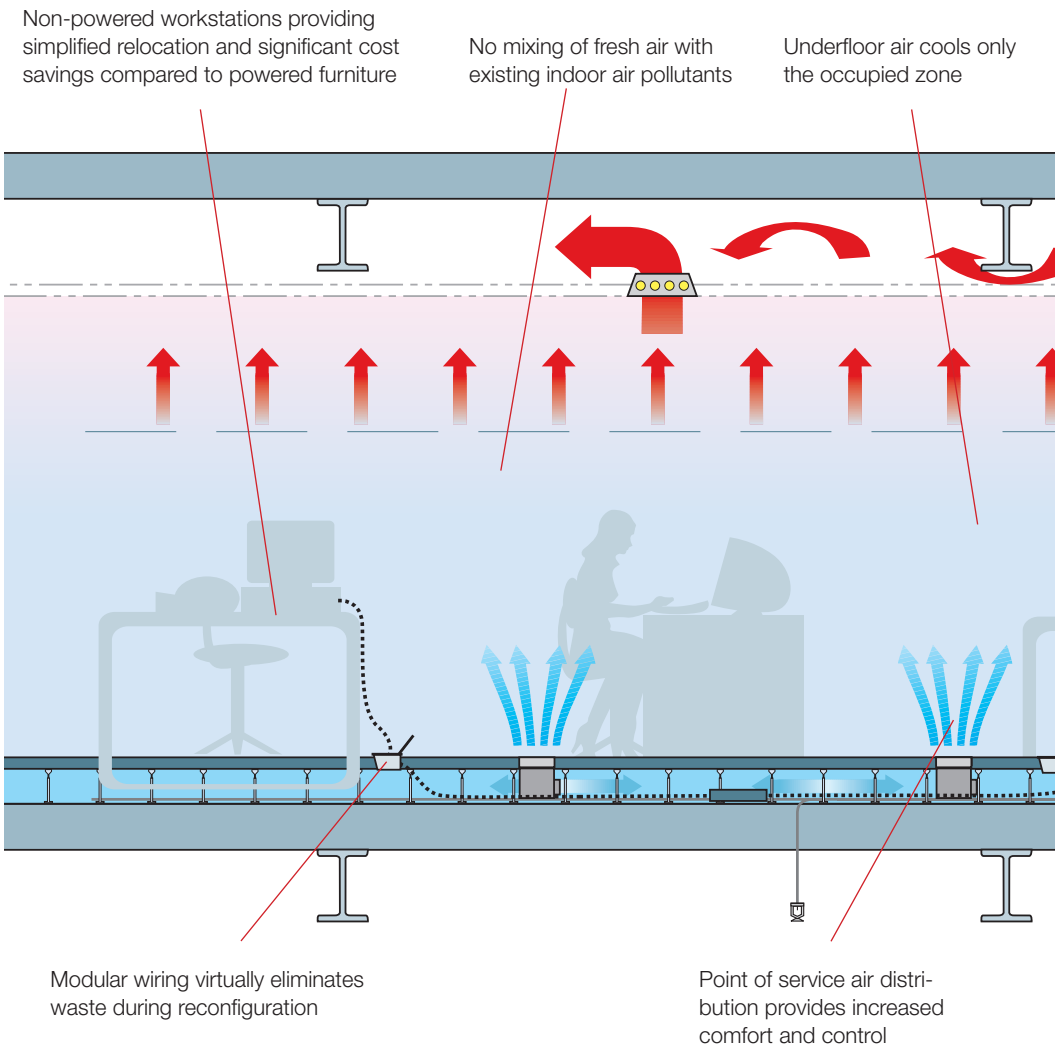
Tate®

High Performance, Sustainable and Cost Effective Indoor Environments

Effectively Achieve Design Goals

In order to create an high performance and sustainable indoor environment a variety of needs have to be addressed. These needs include maintaining high-quality clean air, improving personal comfort control, attenuating noise, responding to organizational and technology changes quickly and easily and without wasting existing resources – all while being environmentally friendly during construction and energy efficient in operation.

Incorporating Tate's access floors into the design of your building will enable you to create the perfect indoor environment. Many of today's leading architects, designers and corporations are partnering with Tate to gain the unparalleled high performance and sustainable benefits available through the use of underfloor service distribution.



Effectively Manage First Costs

Tate access floors are not only easy and cost efficient to install, they significantly reduces the time it takes to bring your facility online. Using underfloor air, wire and cable service distribution reduces the amount of materials required such as ductwork, cable trays, ceiling tiles, horizontal and vertical feeds, powered furniture and facade materials. This enables Tate access floors with underfloor service distribution to be first cost competitive with conventional construction.

Eliminate saturation wiring

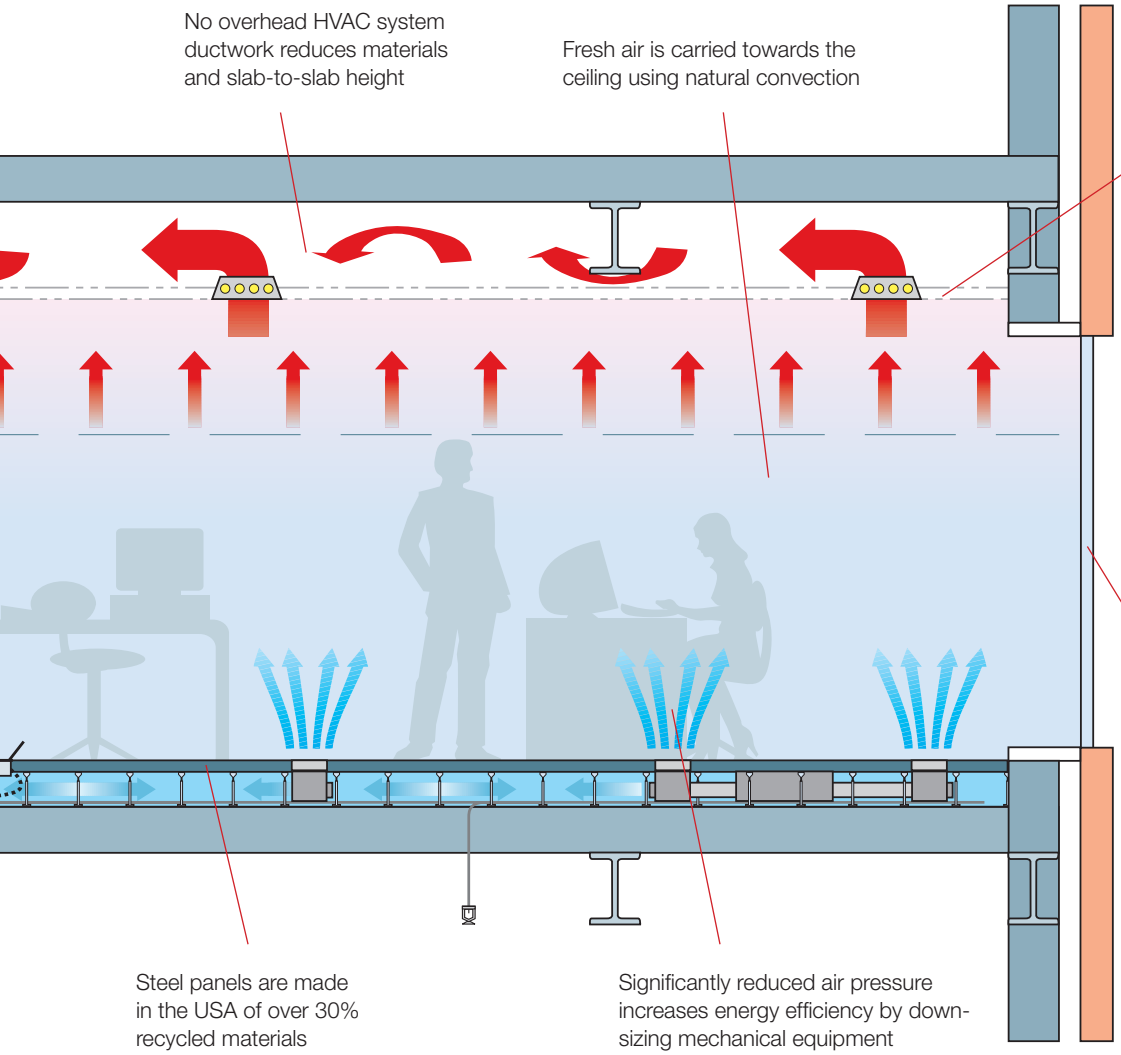
Running wiring and cabling in walls and furniture is rigid and expensive. PVD service-centers™ with modular 'plug & play' connectors provide point of use termination so that only terminals that will be used are installed.

Flexible and inexpensive

Rigid, fixed ductwork requires slow labor-intensive installation. Using the space under the access floor for air distribution is faster to install and requires minimal ducting since the entire space is used as the service plenum.

Reduce building materials

Conventional construction requires a large ceiling void space for fixed service pathways. Using underfloor service distribution can eliminate wasted space and reduce slab-to-slab height significantly reducing initial build materials costs.



Effectively Reduce Operating Costs

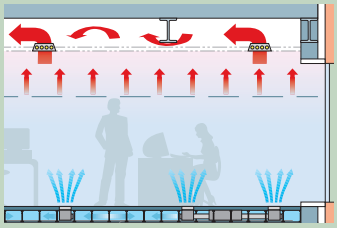
Tate's underfloor service distribution system has been designed to provide optimum value, flexibility, and trouble-free service now, and in the future. The modular design allows you to adapt to change easily and at a low cost. With Tate, adapting to changing technologies and frequent organizational shifts will no longer demand expensive facility investment and construction costs. Tate underfloor systems allow you to update your technical capabilities, floor plan, HVAC controls, and image, using your own low-cost resources.

Healthier workspace

Underfloor air delivery offers the ultimate in personal comfort control. Individual volume and air direction controls along with improved ventilation can reduce absenteeism and increase productivity.

Complete flexibility

Wiring and cabling in walls and columns makes reconfiguration expensive, disruptive and wasteful. As your business changes access flooring enables you to inexpensively reconfigure your space.



Saves energy

Hot air rises, yet conventional HVAC distribution is designed to force cool air from the ceiling. By suppling cool air from the floor using natural convection and warmer temperatures you can reduce your HVAC energy costs 20% or more.

Tate®

Social Security Administration
Auburn, WA, 110,000 ft^2, **LEED®** *Silver*

LEED® Ratings and Tate's Underfloor Service Distribution System

Designing and managing large facilities carries significant responsibilities. There is a growing public interest in building and operating green to increase energy and resource efficiency, cut waste, and to make these facilities work more efficiently.

Proactive design can transform conventional building practices into an approach that reduces the environmental impact of construction while producing meaningful savings to the owner or tenant. With the appropriate use of materials, building green can increase day-lighting and ensure improved indoor air quality, which can help to reduce absenteeism, employee turnover and improve work performance.

Many LEED Certified buildings utilize Underfloor Service Distribution as a key ingredient to achieving these goals. Underfloor air distribution provides improved personal comfort control, enhanced ventilation effectiveness, and improved indoor air quality while saving energy. An underfloor modular wire and cable distribution system provides complete flexibility, and reduces material waste throughout the life-cycle of the building.

This integrated approach and the fact that Tate uses recycled material to manufacture its components in the USA helps our products gain or contribute to points in four LEED® rating system categories; Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, and Innovation in Design.

What is LEED®

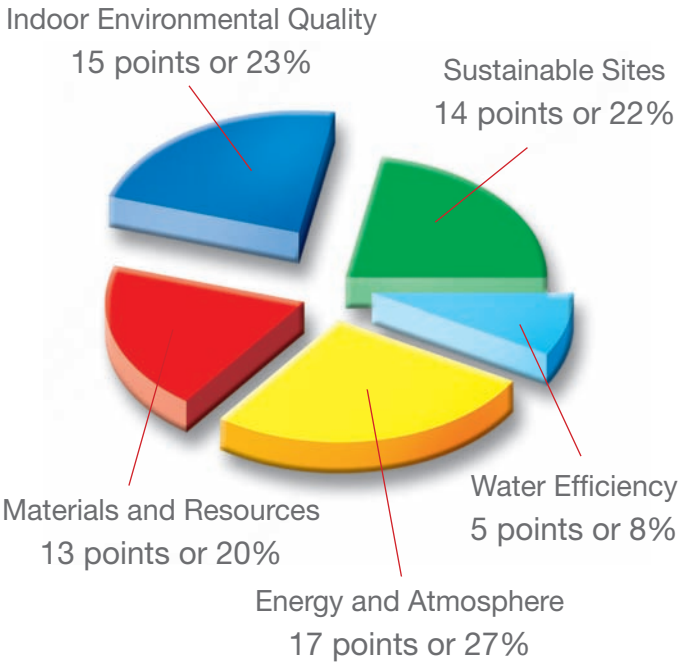
The U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED®) program is a leading-edge system for designing, constructing, operating and certifying the world's greenest buildings. As the influence of the USGBC accelerates, the LEED® program is transforming the marketplace, by increasing recognition of and value for high-performance building, providing market incentives for healthy and sustainable buildings, setting higher standards for building performance, and affecting commercial, federal, state and local market segments' building guidelines.

How LEED® works

Once a builder decides to create a green building and have it LEED® Certified, the architect and designer will have to achieve points identified in the LEED® rating system. As seen in the adjacent chart the LEED® rating system is divided into five environmental categories in which points can be earned. There is also an opportunity to gain additional points for innovation in design.

LEED™ Environmental Goals and Rating System

For more information about how the LEED™ program can be applied to your environment, visit **www.usgbc.org**.




Harvard School of Public Health
Boston, MA 40,000 ft², **LEED®** *Certified*


Santa Monica Public Safety Facility,
Santa Monica, CA, 70,000 ft², **LEED™** *Silver*

Energy and Atmosphere (EA)

Buildings consume approximately 37% of the energy and 68% of the electricity produced in the United States annually, according to the U.S. Department of Energy. These statistics make this category an essential part of LEED certification. By evaluating a buildings energy load and using methods such as daylighting and efficient HVAC systems, points can be gained toward LEED certification.

Materials and Resources (MR)

Choosing the proper building materials is important due to the environmental impact associated with installation, processing and transportation. Reusing existing building materials is an effective way to reduce this impact, however taking advantage of recycled material content and locally manufactured materials when new materials are needed can also contribute to LEED certification.

Indoor Environmental Quality (EQ)

The World Health Organization states that most of a person's daily exposure to many air pollutants comes through inhalation of indoor air. This coupled with the large amount of time we spend indoor has contributed to the significance of IEQ in creating a green and sustainable building. Factors such as low emitting materials, controllability of HVAC systems and thermal comfort, lighting quality, acoustics, and access to views are some of the issues that can enhance IEQ and contribute to LEED certification.

Tate®

Tate LEED-NC Certification Contribution

A Tate access floor system and underfloor service distribution can contribute toward achievement of numerous credits for LEED-NC certification. When all components of Tate's Underfloor Service Distribution Solution are utilized—the access floor, underfloor wiring & cabling, underfloor air (UFAD) as well as PosiTile® carpet—they greatly contribute to the LEED Scorecard of a project striving for certification. The Tate solution can help to achieve prerequisites and accumulate points in the following categories and credit areas of LEED-NC Version 2.2. For further information and support documentation on this system and its contribution towards achieving valuable LEED points, please contact our Technical Hotline at 1-800-231-7788 or refer to our website www.tateaccessfloors.com/tate_leed.aspx.

Energy and Atmosphere (EA)

EA Prerequisite 2 Minimum Energy Performance	An underfloor air delivery (UFAD) system's energy performance will easily exceed the requirements of Prerequisite 2 and significantly contribute toward achievement of Optimize Energy Performance credits—for which up to 10 points may be awarded to standard commercial office buildings. Energy performance is enhanced by several major benefits of UFAD.
EA Credit 1 Optimize Energy Performance	• **Fan Power Savings:** Fan power is reduced because UFAD systems operate at lower static pressures (between 0.05" and 0.10" wg) compared to 1.5" to 2.0" wg for overhead systems. According to the Center for the Built Environment located at the University of California, the average fan-power savings with a variable air volume UFAD system can range from 25 to 50% depending on the amount of CFM required. • **Higher Air Supply Temperature for Cooling:** Because air is delivered directly to the occupied zone, supply temperatures for cooling are typically 10°F higher than in overhead systems. • **Free Cool Air from Outside:** By using higher-temperature air for cooling, the system can use economizer mode (free outside air) to cool the building for a longer period of time each day, thereby reducing the central plant energy consumption. • **Reduced Air Volume Requirement:** By delivering conditioned air directly to the occupied six-foot vertical zone rather than to the entire volume of space, the amount of air required to provide thermal comfort is lower.

Materials and Resources (MR)

MR Credit 1.3 Building Reuse	A Tate access floor system will last the lifetime of a building and accommodate a variety of future occupant requirements. Although an access floor will not help a LEED-NC project to achieve Building Reuse credits immediately, it can significantly help to do so later in the building's life. Walls on access floors are easy to detach and erect elsewhere. In-floor air diffusers and electrical boxes are moved by relocating the floor panels that they are mounted in. Additional floor panels and understructure components can be purchased to complete new occupant fit-out requirements.
MR Credit 3.1 & 3.2 Materials Reuse	Access floor panels, pedestals and stringers can be uninstalled in their original locations and be reused in other buildings. Be aware that just as with the Building Reuse credit, the materials reuse strategy will not likely help to achieve LEED points immediately. Rather, it is a long term sustainability strategy that an access floor can contribute towards.
MR Credit 4.1& 4.2 Recycled Content	The standard Tate floor system used in commercial offices contains 32.8% recycled material consisting of 10.2% post-consumer and 22.6% pre-consumer content. All office and data center floor systems manufactured by Tate contain recycled content in excess of the 10% (post-consumer/pre-consumer) credit requirement. Documentation to verify recycled content is available on Tate's web site at www.tateaccessfloors.com, under SustainAbility.
MR Credit 5.1 & 5.2 Regional Materials	Tate access floor systems are manufactured in Red Lion, Pennsylvania. Steel used for Tate components are recovered/manufactured in Sparrows Point, Maryland and Delta, Ohio. To obtain documentation verifying the location of Tate's manufacturing facility and to view the location on a map, visit Tate's Website, www.tateaccessfloors.com, under SustainAbility.

Indoor Environmental Quality (EQ)

EQ Credit 2 Increased Ventilation	A Variable Air Volume UFAD system may alone qualify the building for the Increased Ventilation credit. The key to exceeding the ASHRAE rate by 30% is to provide higher rates of outdoor air to the breathing level of the occupied space. A variable air volume UFAD system does exactly that — it delivers fresh air from below directly to the occupants six-foot breathing zone. As the fresh air enters the zone it replaces existing contaminated air (rather than diluting it). Pollutants and stale air in the zone are carried to the ceiling by natural convection and removed through return outlets.
EQ Credit 6.2 Controllability of Systems	By locating diffusers in an access floor, occupants gain control over volume and direction of airflow. Since this LEED point is so difficult to achieve without the use of an UFAD system, the LEED-NC V2.2 Reference Guide suggests using floor diffusers as a potential technology/strategy toward achieving this credit. Providing adjustable floor air diffusers to just 50% of regular occupants contributes toward achieving this credit. And, occupant control is easily maintained when layouts change because floor panels with diffusers are easily relocated.
EQ Credit 7.1 & 7.2 Thermal Comfort	Thermal comfort is enhanced by several major benefits of UFAD: • **Efficient Heat Removal:** UFAD supplies air from floor diffusers which creates an upward flow efficiently forcing air out of the zone that's been heated by people and equipment. Natural convection carries the heated air to the ceiling where it is exhausted through return outlets. This system is considerably more efficient than an overhead system which mixes cool air with heated air near the ceiling and forces it down to the occupied zone before it is exhausted. • **Air Velocity & Cold Spot Reduction:** UFAD systems discharge cool air at higher temperatures (60 - 65°F), and at lower velocities than overhead systems, therefore the likelihood of occupant discomfort due to high air speed and cold spots is minimized. • **Comfortable Proximity:** The use of higher temperatures and lower velocities allows diffusers to be located nearer to occupants for optimal personal comfort. Diffuser locations are easily changed to suit personal preferences. • **Occupant Control:** UFAD allows control over the volume and direction of air flow in the immediate workspace thereby increasing occupant satisfaction with thermal conditions.
EQ Credit 8.1 & 8.2 Daylight & Views	An obvious strategy to maximize daylight and views is to increase window area and height. Integration of access floors with underfloor service distribution facilitates this by reducing the ceiling cavity space allocated for supply ductwork and cables, thereby allowing the ceiling to be raised and window heights to increase without increasing a building's height.

Innovation in Design with Tate (ID)

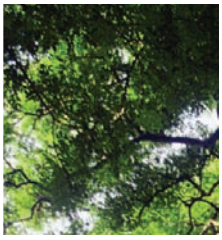
In addition, several major benefits of access floor and underfloor service distribution technologies not addressed by the LEED rating system provide opportunities to pursue points for Innovation in Design. We have drafted ID credits to provide design teams and projects the opportunity to be awarded points for innovative performance in areas not specifically addressed by the LEED Rating System. Full details can be found on www.tateaccessfloors.com/tate_leed.aspx, or if you have concerns specific to your particular project you can contact Tate to speak with one of the many LEED accredited professionals on staff.

Tate ID Credit 1.1	Power Distribution Systems: Reduction of Materials and Waste
Tate ID Credit 1.2	Voice & Data Distribution Systems: Reduction of Materials and Waste
Tate ID Credit 1.3	Building Materials: Reduce Building Height and Construction Materials
Tate ID Credit 1.4	Elimination of Carpet Waste
Tate ID Credit 2	LEED Accredited Professionals

Tate Access Floors
Sustainable Projects & Testimonials

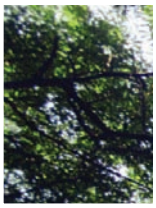
RAND Corporate Headquarters
Santa Monica, CA
LEED™ Gold
242,000 ft²

The William & Flora Hewlett Foundation
Menlo Park, CA
LEED™ Gold
50,000 square feet

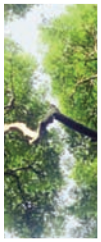


"It's more efficient since individuals can control their own vents. It also puts the air where it's needed, at employee level."

Palacios, DMJM Design
Architects of RAND Corporate Headquarters



Great River Energy
Maple Grove, MN
LEED Platinum
166,000 ft²



Johnson County
Sunset Drive
Olathe, KS
LEED™ Gold
102,000 ft²

"The full underfloor HVAC system uses fresh filtered air, which is distributed under the office floor. This allows occupants to control the air temperature of their workspace."

Fernando Quintero
Chong Partners Architecture
Tenant at Foundry Square

Bick Group
St. Louis, MO
LEED™ Gold
30,000 ft²

PNC Firstside Center
Pittsburgh, PA
LEED™ Silver Level
647,000 ft²

"If you are interested in occupants' comfort, you'll go with underfloor air, hands down. Underfloor air makes it easier to produce a green building. I would not be surprised to see underfloor air become as common to green building strategy as daylighting and energy efficiency."

Malcolm Lewis, President of Constructive Technologies Group, Chair of the USGBC Green Committee, Consultant on Premier Automotive Group

Tate®

Tate Access Floors, Inc.

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

tateaccessfloors.com
kingspan.com

International Sales & Support Office:
169 Jalan Jurong Kechil
#7-011, Sherwood
Singapore 598669
Tel: 65-6468-1332 Fax: 65-6468-6681

tateglobal.com

Tate Access Floors, Inc. components are proudly made in the U.S.A.

Tate ASP Access Floors, Inc.

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

tateasp.com

A member of the Kingspan®

Printed on 50% Recycled Paper