

Contributions to LEED®-NC 2.1



TecCrete

TecCrete™ raised access flooring can play a key role in projects that are seeking certification under the LEED-NC (New Construction) Green Building Rating System®. TecCrete concrete and steel construction is extremely durable and adaptable to almost any space. It is 100% re-useable so changes are easy on the environment with little or no waste at initial installation or re-installation. TecCreate enables underfloor air distribution which offers improved comfort and reduced energy when compared to conventional overhead HVAC.

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Air Quality. The materials in TecCrete products do not adversely impact indoor air quality. Also, the concrete top surface of TecCrete can be sealed with low-or-no VOC sealers. TecCrete, combined with underfloor air distribution, can produce more efficient exchange of fresh air and individual temperature control.

Recycled Content. TecCrete products contain recycled content materials. Steel pedestals contain 25% recycled content and steel pans contain 80% recycled content.

Design for the Environment (DfE). TecCrete is a very durable product that is 100% re-useable. Designing products to maximize useful life is one of the many strategies related to Design for the Environment (DfE).

Contributing to LEED-NC. The following is a list of how TecCrete raised access flooring may contribute to the individual prerequisites and credits of the LEED-NC Rating System. Because LEED is a holistic building rating system and sustainable design guideline, there is no such thing as a LEED certified product. There are only ways of using and applying products to support meeting the criteria for various LEED prerequisites and credits.

In some cases, TecCrete product contributes directly to individual LEED points, but in other cases can only help contribute to the overall intent of the point. There are relatively few instances where selection of any one product from any manufacturer will lead directly to acquisition of a point(s) under LEED. The information provided below discusses direct impacts as well as application tips and strategies for helping customers maximize the contribution of TecCrete products toward their project's LEED certification.

Credit Description	Impact	
	Direct	Indirect
EA Prerequisite 2 - Minimum Energy Performance		X
EA Credit 1 – Optimize Energy Performance		X
MR Credit 1.1, 1.2 - Building Re-use, Maintain existing walls, floors and roof	X*	
MR Credit 1.3 – Building Re-use, Shell/structure and Non-shell/non-structure	X*	
MR Credit 2.1, 2.2 – Divert from landfill		X
MR Credit 3.1, 3.2 – Resource Reuse	X*	
MR Credit 4.1, 4.2 – Recycled Content	X	
MR Credit 5.1 – Regional Materials	X	
EQ Prerequisite – Minimum IAQ Performance		X
EQ Credit 2 – Ventilation Effectiveness		X
EQ Credit 3.1 – Construction IAQ Management Plan		X
EQ Credit 6.2 – Controllability of Systems – Non-perimeter of Spaces	X	
EQ Credit 7.1 – Thermal Comfort	X	
EQ Credit 8.1, 8.2 – Daylight and Views	X	

* When TecCrete is part of the existing building

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LEED-NC Credit

Intent/Requirement

TecCrete Contribution

ENERGY AND ATMOSPHERE

Prerequisite 2
Minimum Energy Performance

Intent: Establish the minimum level of energy efficiency for the base building and systems.

Requirement: Design the building to comply with ASHRAE/IESNA Standard 90.1 - 1999 (without amendments) or the local energy code, whichever is more stringent.

- TecCrete access flooring enables underfloor air distribution, which has been shown to reduce the energy costs required for cooling interior spaces by from 5-30%, thus helping to reduce the overall design energy cost of the building.

Optimize Energy Performance
Credit 1 (1-10 pts)

Intent: Achieve increasing levels of energy performance above the prerequisite standard to reduce environmental impacts associated with excessive energy use.

Requirement: Reduce design energy cost compared to the energy cost budget for energy systems regulated by ASHRAE/IESNA standard 90.1 1999 (without amendments), as demonstrated by a whole building simulation using the Energy Cost Budget Method described in Section 11 of the standard (points assigned based on percentages as outlined in LEED Green Building Rating System, version 2.1 Energy and Atmosphere credit 1).

- TecCrete raised access flooring enables underfloor air distribution, which has been shown to reduce the energy costs required for cooling interior spaces by 5-30%, thus helping to reduce the overall design energy cost of the building.

TecCrete Contributions to LEED-NC 2.1

LEED-NC Credit

Intent/Requirement

TecCrete Contribution

MATERIALS AND RESOURCES

Building Reuse

Maintain 75% (100%) of Existing Walls, Floors and Roof
Credit 1.1, 1.2 (1-2 pts)

Intent: Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste, and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirement: Maintain at least 75% (1 point) or 100% (2 points) of existing building structure and shell (exterior skin and framing, excluding window assemblies and non-structural roofing material).

- Contribution to this credit for the initial LEED NC is dependent on TecCrete being part of the prior structure. However, adding TecCrete and modular power and data systems will create value for buildings which pursue LEED for future major updates.

- Raised floors are typically left intact, with all changes to walls occurring between the raised floor and ceiling.

- TecCrete is 100% re-useable. It is designed for easy disassembly and movement from one space to another. The ability to reuse building materials significantly reduces budgets for new spaces, with an equivalent decrease in resource demands.

Maintain 100% of Shell/Structure and 50% of Non-Shell/Non-Structure
Credit 1.3 (1pt)

Intent: Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste, and reduce environmental impacts of new buildings as they relate to manufacturing and transport.

Requirement: Maintain 100% of existing building structure and shell (exterior skin and framing, excluding window assemblies and non-structural roofing material) AND at least 50% of non-shell areas (interior walls, doors, floor coverings, and ceiling systems).

- Underfloor air distribution systems are inherently reusable. Tiles with diffusers need only be relocated, and not discarded and replaced in order to accommodate changes in mechanical loads. In addition, underfloor air distribution reduces the need for ductwork (up to 80% less ductwork than conventional HVAC), so changes to the cooling system do not generate additional waste.

- Flooring finishes used with Haworth raised floors, such as carpet, are also modular tile systems, which can be removed and re-laid in new configurations and locations.

- Though not recognized yet by LEED for the initial installation, raised floors minimize life cycle costs and address future material conservation and reuse. This will create value for buildings which pursue LEED for future major updates.

TecCrete Contributions to LEED-NC 2.1

LEED-NC Credit

Intent/Requirement

TecCrete Contribution

MATERIALS AND RESOURCES

Construction Waste Management
Divert 50%-Credit 2.1 or
Divert 75%-Credit 2.2 from Landfill
(1-2pts)

Intent: Divert construction, demolition, and land clearing debris from landfill disposal. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

Requirement: Develop and implement a waste management plan, quantifying material diversion goals. Recycle and/or salvage at least 50% (75%) of construction, demolition and land clearing waste.

- TecCrete does not directly impact this point. However, waste reduction through intelligent design can decrease the amount of construction waste generated in installation and prevent additional waste generation during changes to the space or when moving to a new space.
- Modular power and data systems used with raised access flooring allow the installation of technology infrastructure with near zero waste. This eliminates conduit, electrical wiring, and data wiring waste.
- Raised floor systems generate very little construction waste, with only a few tiles that need to be trimmed to size or need to have penetrations installed on-site that generate scrap. Even this waste can be minimized with careful planning.
- TecCrete is also 100% reusable, eliminating waste on future reconfigurations.

TecCrete Contributions to LEED-NC 2.1

LEED-NC Credit	Intent/Requirement	TecCrete Contribution
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MATERIALS AND RESOURCES

<p>Resource Reuse Credit 3.1 - 5%, 3.2 - 10% (1-2 pts)</p>	<p>Intent: Reuse building materials and products in order to reduce demand for virgin materials and reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources.</p> <p>Requirement: Use salvaged, refurbished, or reused materials, products and furnishings for at least 5% or 10% of building materials (1-2 pts).</p>	<ul style="list-style-type: none"> • Contribution to this credit for the initial LEED-NC is dependent on these products being part of the prior structure. However, adding TecCrete and modular power and data systems will create value for buildings which pursue LEED for future major updates. • TecCrete is 100% re-useable. It is designed for easy disassembly and movement from one space to another. The ability to reuse building materials significantly reduces budgets for new spaces, with an equivalent decrease in resource demands. • Underfloor air distribution systems are inherently reusable. Tiles with diffusers need only be relocated, and not discarded and replaced in order to accommodate changes in mechanical loads. In addition, underfloor air distribution reduces the need for ductwork (up to 80% less ductwork than conventional HVAC), so changes to the cooling system do not generate additional waste. • Modular power and data systems used with raised access flooring are also 100% re-useable. It is designed for easy disassembly and movement from one space to another. This replaces conduit, electrical wiring, and data wiring that is not recoverable or re-useable.
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<p>Recycled Content Credit 4.1 and 4.2 5% or 10% (1-2 pts)</p>	<p>Intent: Increase demand for building products that incorporate recycled content material, therefore reducing impacts resulting from extraction and processing of new virgin materials.</p> <p>Requirement: Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 5% -1 pt. (or 10% - 2 pts.) of the total value of the materials in the project.</p>	<ul style="list-style-type: none"> • TecCrete has recycled content values as listed in the chart below:
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Haworth Products - With Recycled Content	Total Recycled Content % BY WEIGHT	Post-Consumer Content % BY WEIGHT	Post-Industrial Content % BY WEIGHT	LEED RC (PC+1/2PI) % BY VALUE
TecCrete	16.7%	12.5%	4.2%	14.6%

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LEED-NC Credit	Intent/Requirement	TecCrete Contribution
MATERIALS AND RESOURCES		
<p>Credit 5.1 Regional Materials 20% manufactured regionally (1 pt)</p>	<p>Intent: Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the regional economy and reducing the environmental impacts resulting from transportation.</p> <p>Requirement: Use a minimum of 20% of building materials and products that are manufactured regionally within a radius of 500 miles.</p>	<ul style="list-style-type: none"> TecCrete products are produced in Kentwood, Michigan. TecCrete is manufactured within a 500 mile radius of approximately 50% of the population of the United States. Contribution to this credit depends on the location of the project.
INDOOR ENVIRONMENTAL QUALITY		
<p>Prerequisite 1 Minimum IAQ Performance</p>	<p>Intent: Establish minimum indoor air quality (IAQ) performance to prevent the development of indoor air quality problems in buildings, thus contributing to the comfort and well-being of the occupants.</p> <p>Requirement: Meet the minimum requirements of voluntary consensus standard ASHRAE 62-1999*, Ventilation for Acceptable Indoor Air Quality and approved Addenda (see ASHRAE 62-2001, Appendix H, for a complete compilation of Addenda) using the Ventilation Rate Procedure.</p>	<ul style="list-style-type: none"> Underfloor air distribution systems (UFAD) are inherently likely to meet or exceed the requirements of ASHRAE 62-2001 because their much higher ventilation effectiveness makes delivery of high quality air into the occupied zone easier. Underfloor air distribution also operates at much lower air velocities, which reduces the risk of airborne contaminants. TecCrete raised floor product can accommodate UFAD systems and help meet this prerequisite.
<p>Ventilation Effectiveness Credit 2 (1 pt)</p>	<p>Intent: Provide for the effective delivery and mixing of fresh air to support the safety, comfort and well-being of building occupants.</p> <p>Requirement: For mechanically ventilated buildings, design ventilation systems that result in an air change effectiveness greater than or equal to 0.9 as determined by ASHRAE 129-1997.</p>	<ul style="list-style-type: none"> Underfloor air distribution is a preferred strategy to meet the requirements of this credit. Raised floor systems combined with underfloor air distribution and user controlled swirl diffusers typically have air change effectiveness of .9 or greater. This is significantly easier to achieve with underfloor air systems than it is with overhead air distribution (air change effectiveness typically <.7) because air is discharged directly into and all mixing of air occurs within the occupied zone. TecCrete raised floor product can accommodate UFAD systems and help meet this credit.

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LEED-NC Credit	Intent/Requirement	TecCrete Contribution
INDOOR ENVIRONMENTAL QUALITY		
Construction IAQ Management Plan During Construction Credit 3.1 (1 pt)	<p>Intent: Prevent indoor air quality problems resulting from the construction/renovation process in order to help sustain the comfort and well-being of construction workers and building occupants.</p> <p>Requirement: Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and preoccupancy phases of the building.</p>	<ul style="list-style-type: none"> Underfloor air distribution systems (UFAD) installed along with raised access floor solutions eliminate 80% of the overhead ductwork and produce much less construction waste and dust than conventional overhead HVAC systems. TecCrete raised access floor product can accommodate UFAD systems and help meet this credit.
Controllability of Systems Non-Perimeter Spaces Credit 6.2 (1 pt)	<p>Intent: Provide a high level of thermal, ventilation and lighting system control by individual occupants or specific groups in multi-occupant spaces (i.e. classrooms or conference areas) to promote the productivity, comfort and well being of building occupants</p> <p>Requirement: Provide controls for each individual for airflow, temperature and lighting for at least 50% of the occupants in non-perimeter, regularly occupied areas.</p>	<ul style="list-style-type: none"> Underfloor air distribution systems (UFAD) using swirl diffusers provide every occupant and/or group within a building the ability to control the airflow and temperature within their space. TecCrete raised floor product can accommodate UFAD systems and swirl diffusers to help meet this credit.
Thermal Comfort Compliance with ASHRAE 55-1992 Credit 7.1 (1 pt)	<p>Intent: Provide a thermally comfortable environment that supports the productivity and well-being of building occupants.</p> <p>Requirement: Comply with ASHRAE Standard 55-1992, Addenda 1995, for thermal comfort.</p>	<ul style="list-style-type: none"> Buildings with raised access floors that utilize underfloor air distribution (UFAD) have an inherent advantage in meeting and exceeding ASHRAE Standard 55-1992, Addenda 1995. Discharge temperatures are much closer to normal ambient temperatures, minimizing the presence of hot and cold spots in the environment. Systems operate at lower pressures and lower air velocities than overhead systems, eliminating drafts and excess heating/cooling for occupants who sit immediately adjacent to HVAC diffusers. TecCrete raised access floor product can accommodate UFAD systems to meet this credit.

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LEED-NC Credit

Intent/Requirement

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DAYLIGHT AND VIEWS

Daylight 75% and Views
90% of Spaces
Credit 8.1, 8.2 (1-2 pts)

Intent: Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

Requirement:

- Credit 8.1 - Achieve a minimum Daylight Factor of 2% (excluding all direct sunlight penetration) in 75% of all space occupied for critical visual tasks.
- Credit 8.2 - Achieve direct line of sight to vision glazing for building occupants from 90% of all regularly occupied spaces. (2 pts)

- TecCrete raised access flooring used in conjunction with under floor air distribution can reduce the amount of overhead ductwork (up to 80% reduction in ductwork over conventional HVAC) and increase the overall height of the wall space available for exterior glazing.

Intent and Requirement information is paraphrased from the U.S. Green Building Council publication "Green Building Rating System for New Construction and Major Renovations, Version 2.0". For exact wording consult the U.S.G.B.C website at www.usgbc.org