

Duke Sustainability

Pascal Multi Purpose Field House

Building Information

Tenant: Athletic Department

Architect: Beck LTD

Construction: Beck LTD

Purpose: Indoor practice athletic facility

Footprint: 79,442 sq ft

LEED™ Certification Standard: Silver (34 points)

LEED™ Version: v2.2

The 80,000-foot Pascal Multi-Purpose Field House opened in early August 2011, providing weather-independent space for the Duke football team. Aside from providing a fully-covered playing field, the facility includes retractable field posts, a filming tower, and state-of-the-art Musco sports lighting. The project was built to LEED™ Silver standards.

View the [Pascal Multi Purpose Field House LEED™ Scorecard](#)

Sustainable Site Features

The site selected was never designated as parkland or habitat for endangered species. The complex is set higher than the 5' National Emergency Management Association (NEMA) defined flood plain, reducing ecological impact. Furthermore, in order to minimize light trespass and light pollution, exterior lighting produces zero lumens above 90% of the perpendicular downward spatial plane. Covered bicycle storage facilities for 20 bikes are conveniently located less than 50 yards from the building entrance.

Water Efficiency

Water savings come primarily from the plumbing sector, as no landscaping was provided within the LEED™ boundary, eliminating the need for irrigation systems. All plumbing in the facility is low-flow or ultra-low flow, resulting in a potable water use reduction of 61.7%. Dual-flush toilets and low-flow showerheads were also selected in addition to efficient urinals and lavatories.

Energy Efficiency

ENERGY STAR rates the building's design energy performance results an 88/100. This is well above the average score of 50/100, resulting in a reduction of over 2 million kBtu in energy use over the average building. The building thus achieves an average overall energy reduction of 42%, which equates to a significant reduction in greenhouse gases.

Design featured a variety of measures to meet these reduction statistics. HVAC and lighting systems include high-efficiency technology. Roof construction, exterior wall construction, and window-to-gross wall ratio exceed baseline standards for efficiency. The economic cost improvement over a baseline building exceeds 47% improvement.

Indoor Air Quality

Low-emitting materials, including adhesives and sealants, were selected to achieve VOC limits well within LEED™ standards. Furthermore, a thorough Indoor Air Quality (IAQ) management plan was developed to ensure above-average indoor air quality for future building activity. No CFC-based refrigerants were used during any process of construction.

Resource Management

A variety of regional and highly recycled content materials were utilized in construction. Steel stands as a highlight, with 100% originating from scrap. Of this 100%, 90% is post-consumer. Masonry units comprised of 31% recycled material, and fiberglass insulation included 20% post-consumer bottle glass content. Furthermore, 76.9% of the fiberglass material is classified as regionally attained. In total, 41.4% of materials were regionally acquired, exceeding the 40% LEED™ threshold for exemplary performance.

Integration of Sustainability in Design & Construction Process

Project managers complied with strict standards for a sustainable design and construction process. Erosion and sediment control plans were followed to protect against site damage during construction, including guidelines to reestablish areas surrounding the LEED™ boundary with native turf following disturbance.

Several initiatives were adhered to in promoting IAQ and source control during construction. Overhead doors flushed the building of any residual toxins, and materials were staged outside. Source control included protecting materials from moisture, scheduling for roof insulation complying with weather protection, and promoting electric-only operation in interior spaces. For further compliance of a healthy, sustainable working environment, WATCO mechanical designed a construction indoor air quality management plan.

LEED Scorecard

Y	1
Not Earned	0

5 9 Sustainable Sites

Y	1	Prereq 1	Construction Activity Pollution Prevention
1	1	Credit 1	Site Selection
1	1	Credit 2	Development Density and Community Connectivity
1	1	Credit 3	Brownfield Redevelopment
1	1	Credit 4.1	Alternative Transportation, Public Transportation Access
1	1	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms
1	1	Credit 4.3	Alternative Transportation, Low-Emitting and Fuel Efficient Vehicles
1	1	Credit 4.4	Alternative Transportation, Parking Capacity
1	1	Credit 5.1	Site Development, Protect or Restore Habitat
1	1	Credit 5.2	Site Development, Maximize Open Space
1	1	Credit 6.1	Stormwater Design, Quantity Control
1	1	Credit 6.2	Stormwater Design, Quality Control
1	1	Credit 7.1	Heat Island Effect, Non-Roof
1	1	Credit 7.2	Heat Island Effect, Roof
1	1	Credit 8	Light Pollution Reduction

2 3 Water Efficiency

1	1	Credit 1.1	Water Efficient Landscaping, Reduce by 50%
1	1	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation
1	1	Credit 2	Innovative Wastewater Technologies
1	1	Credit 3.1	Water Use Reduction, 20% Reduction
1	1	Credit 3.2	Water Use Reduction, 30% Reduction

10 5 Energy & Atmosphere

Y	1	Prereq 1	Fundamental Commissioning of the Building Energy Systems
Y	1	Prereq 2	Minimum Energy Performance
Y	1	Prereq 3	Fundamental Refrigerant Management
9	1	Credit 1	Optimize Energy Performance
1	1	Credit 2	On-Site Renewable Energy
1	1	Credit 3	Enhanced Commissioning
1	1	Credit 4	Enhanced Refrigerant Management
1	1	Credit 5	Measurement & Verification
1	1	Credit 6	Green Power

Responsibility Key

Duke	Duke University
Civil	Larry Barker - Civil / LHPA - Landscape
LHPA	Landscape Architect
PDC	PDC Engineers - MEP
Arch	Beck Group Architect
Beck	Beck Group - Contractor

Y	1
Not Earned	0

6 7 Materials & Resources

Y	1	Prereq 1	Storage & Collection of Recyclables
1	1	Credit 1.1	Building Reuse, Maintain 75% of Existing Walls, Floor, and Roof
1	1	Credit 1.2	Building Reuse, Maintain 95% of Existing Walls, Floor, and Roof
1	1	Credit 1.3	Building Reuse, Maintain 50% of Interior Non-Structural Elements
1	1	Credit 2.1	Construction Waste Management, Divert 50% From Disposal
1	1	Credit 2.2	Construction Waste Management, Divert 75% From Disposal
1	1	Credit 3.1	Materials Reuse, Specify 5%
1	1	Credit 3.2	Materials Reuse, Specify 10%
1	1	Credit 4.1	Recycled Content, Specify 10% (post-consumer + 1/2 pre-consumer)
1	1	Credit 4.2	Recycled Content, Specify 20% (post-consumer + 1/2 pre-consumer)
1	1	Credit 5.1	Regional Materials, 10% Extracted, Processed, and Manufactured Regionally
1	1	Credit 5.2	Regional Materials, 20% Extracted, Processed, and Manufactured Regionally
1	1	Credit 6	Rapidly Renewable Materials
1	1	Credit 7	Certified Wood

9 6 Indoor Environmental Quality

Y	1	Prereq 1	Minimum IAQ Performance
Y	1	Prereq 2	Environmental Tobacco Smoke (ETS) Control
1	1	Credit 1	Outdoor Air Delivery Monitoring
1	1	Credit 2	Increased Ventilation
1	1	Credit 3.1	Construction IAQ Management Plan, During Construction
1	1	Credit 3.2	Construction IAQ Management Plan, Before Occupancy
1	1	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants
1	1	Credit 4.2	Low-Emitting Materials, Paints & Coatings
1	1	Credit 4.3	Low-Emitting Materials, Carpet Systems
1	1	Credit 4.4	Low-Emitting Materials, Composite Wood and Agrifiber Products
1	1	Credit 5	Indoor Chemical & Pollutant Source Control
1	1	Credit 6.1	Controllability of Systems, Lighting
1	1	Credit 6.2	Controllability of Systems, Thermal Comfort
1	1	Credit 7.1	Thermal Comfort, Design
1	1	Credit 7.2	Thermal Comfort, Verification
1	1	Credit 8.1	Daylight & Views, Daylight 75% of Spaces
1	1	Credit 8.2	Daylight & Views, Views for 90% of Spaces

3 2 Innovation & Design Process

1	1	Credit 1.1	Innovation in Design: Exemplary Performance WE 3.2 40% savings
1	1	Credit 1.2	Innovation in Design: Exemplary Performance - Regional or Recycled
1	1	Credit 1.3	Innovation in Design: Green Housekeeping
1	1	Credit 1.4	Innovation in Design: 100% Certified Wood
1	1	Credit 2	LEED™ Accredited Professional

32 Project Totals

35 Total Documented

35 Total Points LEED Certification Achieved: SILVER

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points