The Center for Design Research

School of Architecture, Design and Planning
The University of Kansas

Notable Features of the CDR

Over the last three years, Studio 804, Inc., has designed and built three LEED (Leadership in Energy and Environmental Design) Platinum buildings in Kansas; the 5.4.7.Art Center for tornado ravaged Greensburg, KS, (the first LEED Platinum in the state) and two LEED for Homes in Kansas City, KS. They have also completed their first Passive House Certification last fall (one of only about a dozen across all of North America that boast of a 90% reduction in energy costs when compared to conventional houses). It is expected that The Center for Design Research will also be LEED Platinum and the first Commercial Certified Passive building in North America. A few of the features that are involved in the pursuit of this achievement are called out below.

High Tech Shades - The broad southern facade is made up of electrochromic glass, a smart glass that assists in maintaining thermal comfort by mitigating solar heat gain through automated tinting technology. It lets the sun light in during the winter and keeps it out in the summer.

Smart Metering- With this new metering system the excess energy we produce during the day can be credited back to us for consumption at night when the sun isn't shining or the wind blowing.

Material responsibility- We keep accurate records of all of our materials and use environmentally friendly substitutes when possible. For example, our concrete contains an average of 20% fly ash, a waste product of coal burning, without compromising structural qualities.

Public Education of Sustainable Systems - We will educate the community about interactive and forthright building systems. A participatory screen is available in the entry to help explain the buildings systems.

Energy Recovery System- The two large hoods on the north side are for the ERV's (Energy Recovery Ventilators) and are the backbone of a very sophisticated heating and air conditioning system that provides a constant supply of fresh air into the very tight building.

Water Reclamation - Rainwater collected from the roof will be diverted to an underground cistern and used to irrigate the living wall, helping to reduce potable water demands and storm water runoff.

Curtain Wall- We built our own thermally broken support system for the glass wall that separates the inside from the outside materials to avoid thermal wicking.

Wind Turbine - Located to the west of the building, this tower will harness the wind energy that exists at the site and convert it to electricity for distribution.

Accounting for Waste- Integral to the LEED (Leadership in Energy and Environmental Design) process is being responsible for every aspect of the building construction including how much waste was generated. We used our waste stone along the north side for fill.

Cross Ventilation - Airflow can be manipulated to exhaust warm air out of the building through operable skylights along the north wall of the building. With built in rain sensors they can close atomatically.

Reclaimed/Recyclable Materials - Helping to conserve natural resources and reducing the load on landfills, a variety of reclaimed/recycled materials have been incorporated, such as stone tailings.

Photovoltaic Panels - Capturing light energy (photons) from the sun, these panels will help reduce the building's energy needs.

High-Performance Windows - The broad southern facade enables the building to trap the sun's heat inside during the winter months and through multiple layers of glass and thin films prevent it from flowing back outside.

Thermal Mass - Implementing the passive strategies of the trombe wall, this stone wall will absorb the sun's energy during the day and radiate the stored energy at night.

Blown Cellulose Insulation - Engineered lumber framing allows for more insulation, resulting in higher R-value. Cellulose is 75-85% recycled paper fiber produced from newspaper waste.

Xeriscaping - By using native plants that will require little maintenance, water needs for irrigation will be reduced.

Electric Car Charging Station - The goal is to promote the use and research of this alternative eco-friendly means of transportation. The station is the first in the region.

Intelligent Building Orientation - A narrow footprint positioned within the site maximizes passive strategies and takes advantage of a south face.

Energy Management System - Real -time energy feedback will be made available to the building's occupants to help curb energy consumption. Through a smart meter we save what we generate to use at a later time.

Green Roof- Functioning as storm water detention and a way to decrease urban air temperatures, plant life will help insulate the building, reduce the heat island effect, and preserve the life of the roof.

Energy Efficient LED Lighting - Light emitting diodes will help to reduce the building's overall power consumption by almost 80 %.

Cut Stone- In an effort to complement the existing stone Chamney Farm complex we cut more than 56 tons of stone we reclaimed from Kansas quarry sites.

North Side- In keeping with the Passive Institute's design strategies we purposely avoid any and all openings on the north side of the building.

Low V.O.C. Finishes - These improve the indoor air quality of interior spaces. Valcucine, a global leader in sustainable design, donated the cabinetry and tables to the project.

Living Wall - An installation of plants along the building's north wall will help improve the indoor air quality of the space while utilizing grey-water harvested from the site.

Alternative Transportation - Routes and facilities, such as bicycle racks and preferred parking for green vehicles, will help to reduce vehicular traffic.