Canadian Intern Architect Wins 1st Place in USGBC Emerging Green Builders (EGB) Design Competition

Project Description:

Atlanta, GA, November 11, 2005 – The winners of the EGB Design Competition were announced during the LEED Certification Ceremony at Greenbuild 2005. Intern Architect Raminder Kanetkar and teammate Jixian Hu won first place in the "Natural Talent Design Competition," New Construction category. Both Kanetkar and Hu are employed with Canadian firm, Adamson Associates Architects.

The USGBC Natural Talent 2005 Design Competition provides an applied learning experience in the principles of integrated design, sustainability, innovation, and social consciousness; all of which are components of the LEED Green Building Rating System. Working with Boys & Girls Clubs of America, USGBC selected two planned Boys & Girls Club projects as the subjects of this year's competition.

The team's winning entry, "Sustainable Connectivity" is the theme behind the design of the Boys and Girls Club of America. The idea of physical, visual and environmental connectivity is expressed in design through interior spaces having visual and physical links to outside green spaces throughout the building, maximizing the potential for natural light, thermal comfort and views. The aim is to create a positive, hopeful, cheerful and comfortable learning environment.

The final judging responses to the winning design were: "A thoughtful integration of passive systems design. Beautifully sighted. Good integration of interior and exterior. Very good program organization. Wonderful renderings combined with diagrams. Very clear presentation." The interior spaces were cited by the judges as, "Very inviting that children would truly enjoy."

Unique Design Features:

The idea of connectivity is expressed into the interior layout through visual links and layering of the strategic spaces. The vertical visual connection between entrance foyer and art display area or visual link between the gymnasium and multipurpose room echo this idea. The aim is to achieve an open, safe and comfortable learning and play environment that fosters participation, creativity and hope in youth coming from disadvantaged circumstances.

The sustainable physical environment remains a constant, essential and silent backdrop, be it classrooms on the South with ample natural light, a gymnasium on the North with high glazing, play spaces that open on to an intimate and quiet interior court or the exterior rainwater collection pond that uses a natural filtration system of fish and plants and also functions as a focal point for the outdoor gathering space. The building design that relies mainly on passive elements to respond to various LEED categories also includes:

- Deep overhangs and exterior wood screens for shading that also help unify the building visually;
- Operable windows for natural ventilation;
- An extensive green roof that has many benefits; and,
- A living wall to improve the indoor environmental quality that also acts a prominent design feature in the entrance lobby.

Challenges Unique to the Project:

The first round of competition concluded on 15th of July 2005 with the selection of five finalists from each category. The designs in the first round had to respond to a given program and to six LEED categories, using only one presentation board. The selected finalists were required to work on a second presentation board with additional details and material information. The finalists were also asked to explore three more LEED categories at their own discretion. The competition drew 100 entries, half of which came from outside the United States.

Project Involvement/Role:

Worked in the capacity of Team Lead in:

-Design Concept formation
-Design drawings
-LEED Facilitation
-Presentation

Sustainable Connectivity

is the main theme behind the design of the Boys and Girls Club of America. The idea of physical, visual and environmental connectivity is expressed in design through interior spaces having visual and physical links to outside green spaces throughout the building, maximizing the potential for natural light, thermal comfort and views. The aim is to create a positive, hopeful, cheerful and comfortable learning environment.

The idea of connectivity is further carried into the interior layout through visual links and layering of strategic spaces. The vertical visual connection between entrance foyer and art display area or visual link between the gymnasium and multipurpose room echo this idea.The aim is to achieve an open, safe and comfortable learning and play environment that fosters participation, creativity and hope in youth coming from disadvantaged circumstances.

EAST VIEW

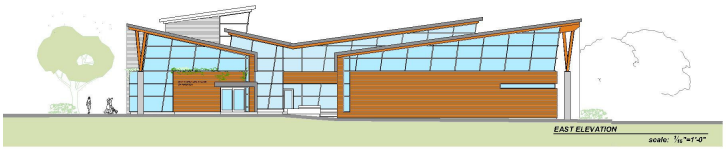
The sustainable physical environment remains a constant, essential and silent backdrop, be it classrooms on the South with ample natural light, a gymnasium on the North with high glazing, play spaces that open on to an intimate and quiet interior court or the exterior rainwater collection pond that uses a natural filtration system of fish and plants and also functions as a focal point for the outdoor gathering space. The following LEED categories are addressed through various design elements:

SITE DISTURBANCE IS REDUCED *by a two level design approach. Firstly by stacking the building program on two floors, the building footprint is kept small. Site coverage is 17 % of the site area.*
Secondly, since the site slopes towards the NE corner, the gymnasium is kept below the building ground level to take advantage of site contours.

STORM WATER IS MANAGED *through use of porous pavement, a rainwater collection pond and a green roof. Water runoff from roofs is collected in the rainwater pond and recycled for non potable uses. Porous asphalt used for parking also helps reduce the water runoff from the site.*

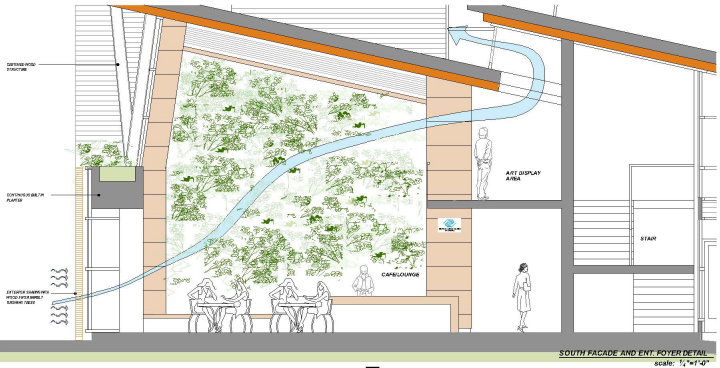
HEAT ISLAND EFFECT *is mitigated by keeping parking on the rear North side that remains in shadow from the building and trees. Light coloured paving is used throughout.*

SITE PLAN
scale: 1/16"=1'-0"

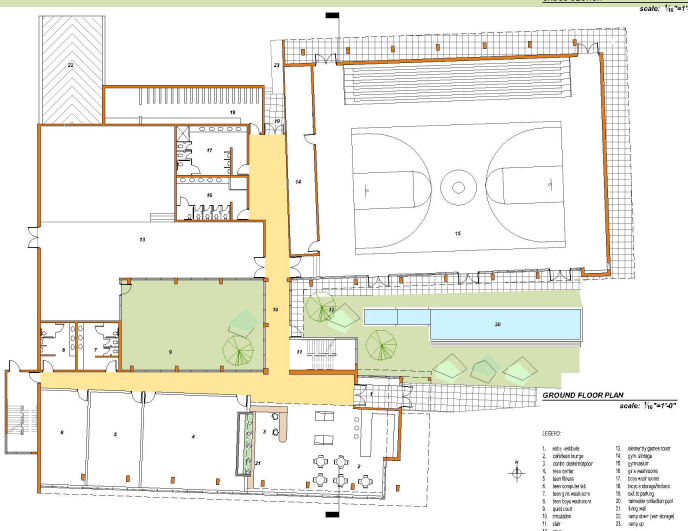


EAST ELEVATION
scale: 1/16"=1'-0"

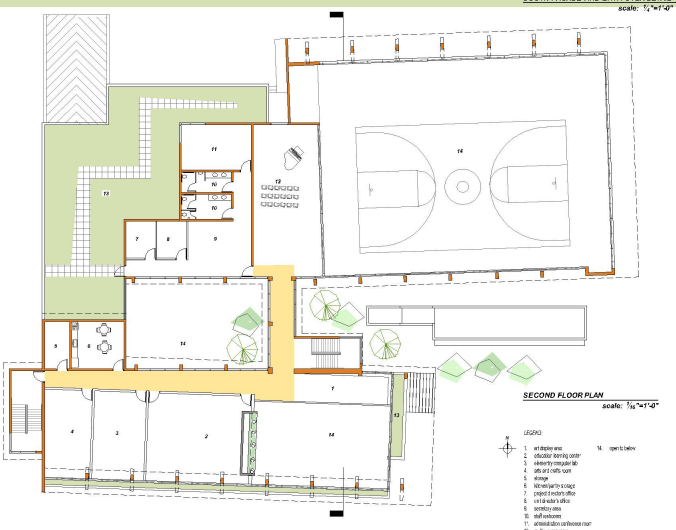
CROSS SECTION
scale: 1/16"=1'-0"



SOUTH FACADE AND ENT. FOYER DETAIL
scale: 1/4"=1'-0"



GROUND FLOOR PLAN
scale: 1/16"=1'-0"



SECOND FLOOR PLAN
scale: 1/16"=1'-0"

POTABLE WATER USE REDUCTION *is an important consideration in this building. Water is a valuable resource and is treated with great care. There is a three tier strategy for potable water use reduction.*

a. *Demand reduction: use of waterless urinals, low-flush, pressure-assist toilets, infrared sensors for all lavatories urinals*
b. *Rainwater collection and treatment for non potable uses such as irrigation and flushing of toilets.*
c. *On site grey water treatment for potable and non-potable uses.*

ENERGY REDUCTION *: dependence on fossil fuels is minimized with a combination of passive and active strategies.*

a. *Since these will be heat generating and sedentary activity areas in this building, they are allocated based upon their expected heating and cooling needs. For example, high activity areas such as gymnasium and play room are located on the cooler North side whereas learning centre and classrooms are kept to the South, also optimizing the benefit of natural light.*
b. *The wood screen on the South facade with carefully calculated spacing of slats, combined with deep overhangs will modulate excessive high summer sun & low winter sun, the wood screen will also serve as a formal and textural element unifying the south facade. Overhangs will help unify the entire building on all sides visually.*
c. *Solar hot water heating is provided as a passive strategy.*
d. *As part of mechanical strategy, the geothermal heating and cooling system makes use of the ground for rejecting heat and also as a heat source. A horizontal geothermal system will be provided outside, under the parking, supplemented by water to air heat pumps for all areas. With the heat pump system, in the shoulder seasons (spring/fall) heat from rooms requiring cooling will be transferred to rooms requiring heating. In addition, lighting fixtures will be provided with dimming controls where possible. In rooms of infrequent use, occupant sensors are proposed to control lighting.*

INDOOR ENVIRONMENTAL QUALITY *is improved in this building with a combination of following design features:*

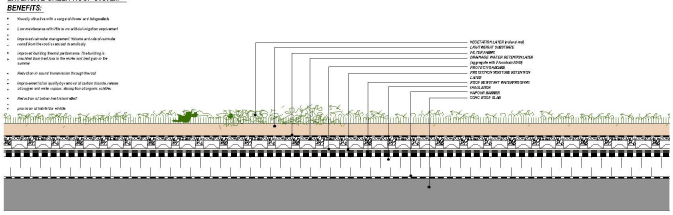
a. *A living wall is a part of entrance lobby/cafe space as an aesthetically pleasing and prominent design feature. The plants comprising this wall will purify the air which is distributed throughout the public spaces. Many studies support that plant biofilters are capable of removing up to 90 % of common pollutants from the air. The club building is also intended to educate and increase awareness of environmental and sustainable issues, such that the kids may take the valuable lessons learned with them to their careers and daily life.*
b. *90% of all regularly occupied areas in this building will have access to views and natural light.*
c. *Low emitting materials such as paints, adhesives, sealants, carpets and composite wood will be used everywhere.*
d. *CO2 monitoring system will provide feedback on space ventilation performance with operational adjustments.*

MATERIALS AND RESOURCES:

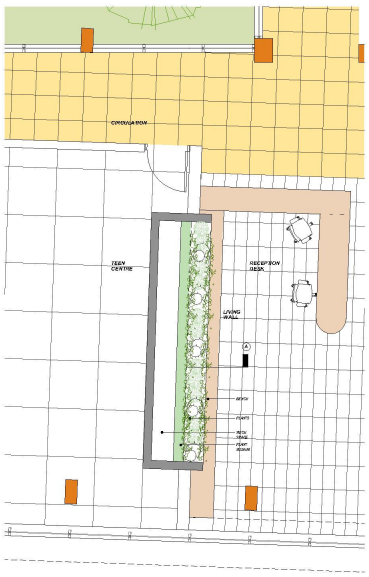
a. *The intent in this building is to use a minimum of 20 % of the materials and products that are manufactured regionally within a radius of 500 miles. Materials for interior finishes will be selected based upon this criteria.*
b. *5% of the total value of all building materials used in this building will be harvested within 10 year cycle or shorter. For example the exterior shading screens will be made from rapidly renewable materials.*
c. *50 % of the wood based materials and products will be made from certified woods.*

EXTENSIVE GREEN ROOF SYSTEM

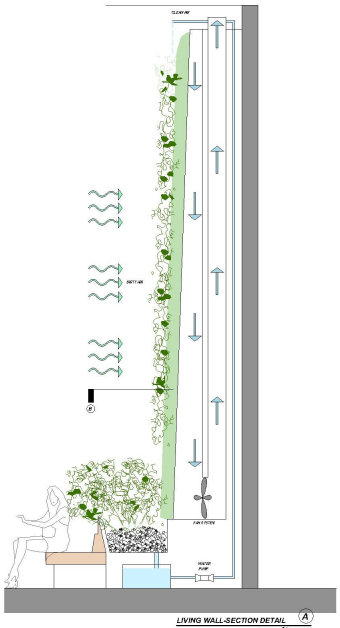
BENEFITS:



GREEN ROOF-SECTION DETAIL
scale: 1"=1'-0"



LIVING WALL-PLAN DETAIL (B)
scale: ½"=1'-0"

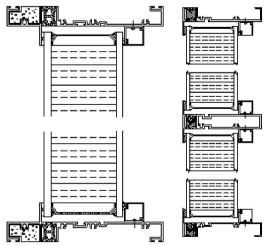


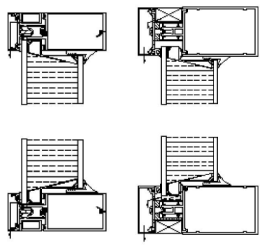
LIVING WALL-SECTION DETAIL (A)
scale: ½"=1'-0"

ENTRANCE LOBBY

COURTYARD

GYMNASIUM





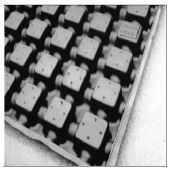
Solera-S in a window

ADVANCED GLAZINGS

Construction

Solera glazing units consist of a transparent honeycomb insulation plus light diffusing veils sandwiched between two tiles of architectural glass. An energy-efficient metal spacer and structural silicone surround the structure and a breather tube assures air pressure equilibrium.

HYDROTECH

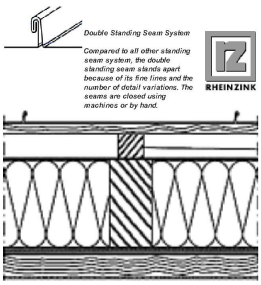


GENERAL DESCRIPTION

Floradrain FD60 is made of recycled polyethylene, molded into a three-dimensional panel. The unique design provides retention cups on the top side, drainage channels on top and bottom and holes in the tops of the "domes" for ventilation and evaporation.

BASIC USE

Floradrain FD60 is specifically designed to act as a drainage and water retention element in Hydrotech's Garden Roof® Assembly. It is typically utilized under "intensive" landscaping. The cups are typically filled with mineral soil.



Double Standing Seam System

Compared to all other standing seam system, the double standing seam stands apart because of its fine lines and the number of detail variations. The seams are closed using machines or by hand.

RHEIN ZINK

Ventilated design

Ventilated design – layers of components RHEINZINK® - design recommendations, variations:

** RHEINZINK® standing seam roof*
** Wood sheathing 24 / max. 160 mm*
** Ventilation space (see below)*
** Breather membrane Sd-value, 0.2 m*
** Thermal insulation (DIN 4108 requirement)*
** Vapour barrier, airtight connection, Sd-value depending on length and pitch of roof*
** Inner cladding / installation level*

Other solutions can be found in RHEINZINK® design recommendations. These are available upon request.

Height of ventilation space depending on roof pitch
Roof Pitch Ventilation space Minimum height mm Ventilation intake and exhaust openings Minimum net width mm
(3°) 7° - 20° 80 40
> 20° 50 30

Gable roofs with a roof pitch of < 10° can be ventilated from eave to eave.

** Height of ventilation space: 100 mm*
** Width of building: max. 30 m*

Ventilation cross-sections are standard values. Deviations are possible in isolated cases if sufficient evidence is provided!

MATERIALS: GLAZING, GREEN ROOF, METAL ROOFING

69	36	10	3	10	TOTAL PROJECT CREDITS
Available	Likely	Possible	Difficult	No	
		(Total of 58)	(Total of 53)	(Total of 69)	Certified = 24 - 29, Silver = 30 - 35, Gold = 36 - 47, Platinum = 48-69

15	7	6	0	2	SUSTAINABLE SITES
Available	Likely	Possible	Difficult	No	
Required					Prerequisite 1 Erosion & Sedimentation Control
1	1				Credit 1 Site Selection
1				1	Credit 2 Development Density
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
1	1				Credit 4.3 Alternative Transportation, Parking Capacity
1		1			Credit 4.4 Alternative Transportation, Preferred Parking for Low Emitting and Fuel Efficient Vehicles
1		1			Credit 5.1 Reduced Site Disturbance, Protect or Restore Open Space
1		1			Credit 5.2 Reduced Site Disturbance, Development Footprint
1	1				Credit 6.1 Stormwater Management, Rate and Quantity
1	1				Credit 6.2 Stormwater Management, Treatment

5	2	2	1	0	WATER EFFICIENCY
Available	Likely	Possible	Difficult	No	
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

19	11	1	0	2	ENERGY + ATMOSPHERE
Available	Likely	Possible	Difficult	No	
Required					Prerequisite 1 Fundamental Building Systems Commissioning
Required					Prerequisite 2 Minimum Energy Performance
Required					Prerequisite 3 CFC Reduction in HVAC&R Equipment
10	10				Credit 1.1-1.10 Optimize Energy Performance
1				1	Credit 2.1 Renewable Energy, 5%
1				1	Credit 2.2 Renewable Energy, 10%
1				1	Credit 2.3 Renewable Energy, 20%
1	1				Credit 3 Additional Commissioning
1	1				Credit 4 Ozone Depletion

13	5	2	1	5	MATERIALS + RESOURCES
Available	Likely	Possible	Difficult	No	
Required					Prerequisite 1 Storage & Collection of Recyclables
1				1	Credit 1.1 Building Reuse, Maintain 75% of Existing Shell
1				1	Credit 1.2 Building Reuse, Maintain 100% of Existing Shell
1				1	Credit 1.3 Building Reuse, Maintain 100% Shell & 50% Non-Shell
1					Credit 2.1 Construction Waste Management, Divert 50%
1					Credit 2.2 Construction Waste Management, Divert 75%
1				1	Credit 3.1 Resource Reuse, Specify 5%
1				1	Credit 3.2 Resource Reuse, Specify 10%
1	1				Credit 4.1 Recycled Content, Specify PCI = 1/2 of PI >=5%
1	1				Credit 4.2 Recycled Content, Specify PCI = 1/2 of PI >=10%
1	1				Credit 5.1 Local/Regional Materials, 20% Manufactured Locally
1				1	Credit 5.2 Local/Regional Materials, of 20% Above, 50% Harvested Locally
1		1			Credit 6 Rapidly Renewable Materials
1		1			Credit 7 Certified Wood

13	9	3	1	0	INDOOR ENVIRONMENTAL QUALITY
Available	Likely	Possible	Difficult	No	
Required					Prerequisite 1 Minimum IAQ Performance
Required					Prerequisite 2 ETS Control
1	1				Credit 1 Carbon Dioxide (CO2) Monitoring
1	1				Credit 2 Increase Ventilation Effectiveness
1	1				Credit 3.1 Construction IAQ Management Plan, During Construction
2	2				Credit 4.1 Low-Emitting Materials, Composite Paint Score
1	1				Credit 5 Indoor Chemical & Pollutant Source Control
1		1			Credit 6.1 Controllability of Systems, Perimeter
1		1			Credit 6.2 Controllability of Systems, Non-Perimeter
1	1				Credit 7.1 Thermal Comfort, Comply with ASHRAE 55-2004
1			1		Credit 7.2 Thermal Comfort, Permanent Monitoring System
1	1				Credit 8.1 Daylight & Views, Daylight 75% of Spaces
1	1				Credit 8.2 Daylight & Views, Views for 90% of Spaces

5	1	4	0	0	INNOVATION + DESIGN
Available	Likely	Possible	Difficult	No	
1		1			Credit 1.1 Innovation in Design
1		1			Credit 1.2 Innovation in Design
1		1			Credit 1.3 Innovation in Design
1		1			Credit 1.4 Innovation in Design
1	1				Credit 2 LEED™ Accredited Professional

LEED MATRIX