

Crossroads College Prep tries to make a difference in the lives of our students and faculty, and our community, by creating an environmentally sustainable school focused on scholarship, imagination, and responsibility. With 46% students of color and 48% of our students receiving some form of financial aid, we are unique among independent schools. We are urban, land-locked, and lack significant financial resources but feel our achievements in environmental sustainability and environmental education are considerable.

Net Zero Environmental Impact

Winston Churchill said: "We shape our buildings; thereafter they shape us." Faced with a need to expand and renovate we sought to create not only the best possible learning environment but a building that would become a tool for environmental learning. In 2009 we completed a 9,079 square foot addition and renovated 18,047 square feet of the existing building. The project was certified by the U.S. Green Building Council as Leadership in Energy and Environmental Design (LEED) Platinum in January 2010. Crossroads was the 6th K-12 school in the nation to earn such a distinction and the only K-12 LEED Platinum Certified school in Missouri. Our students have all the health and learning benefits of green school, study the various components of our LEED-certified building, and grounds, and conduct tours of the building explaining all of the "green attributes".

In April 2012 we will have the largest solar photovoltaic installation on a school in the region (three 25KWh arrays and one 12KWh array) which will allow us to generate approximately 20% of our electrical power needs on site. The solar project includes an extensive education component for students, their families, and the surrounding community and web-based monitoring to provide information on solar power generated.

Ongoing efforts are focused on reducing waste and we continue to make progress in this area:

- 2001 — initiated recycling program
- 2003 — changed from a printed to an electronic parent's newsletter
- 2005 — converted printed documents e.g. report cards and faculty communications to students and parents to Edline, an online communication system.
- 2007 — eliminated bottled water from vending machines
- 2008 — student newspaper went digital.
- 2010 — switched to duplex printers that allow printing two sided documents
- 2011 — began composting yard waste

Positive Impact on Student and Staff Health

While our building benefits the health of our staff and students with excellent indoor air quality and natural light, we also emphasize the benefits of the outdoors and exercise. Over the past year 90% of our students engaged in at least 150 minutes of school-supervised physical education and/or outdoor time per week.

We are a urban school with very little land, so our "green spaces" are planned to accomplish multiple goals. Our bio-retention basin serves as a storm water catchment area, a native plant garden designed to attract and support insects, pollinators, birds and wildlife and to function as an outdoor learning area used for science and art classes. Benches facing the garden, our outdoor classroom, and outdoor seating and recreation areas provide spaces for learning, quiet time, and play.

Many of our environmental education and community service programs also provide outdoor time.

Learning and Environmental Literacy

We make every effort to insure that our graduates are civically engaged and environmentally literate. In our 2011 graduating class, 100% enrolled in college and 42% are pursuing a degree in a STEM field. Approximately 50% took more than the required four years of science courses.

Our students participate in:

- ECO-ACT sponsored by the Missouri Botanical Gardens, teaching ecology and sustainability at local elementary schools.
- FOCUS Saint Louis that works to better understand the role of civic engagement.
- Missouri Stream Team, # 3357 where 7th, 8th, 11th, and 12th grade students as citizen scientists analyze, clean and reclaim the Engelholm Creek in Wellston.
- National Audubon Society's Rivervision Leadership Project whose goal is to help students to understand the complexity of issues that surround stewardship of America's great rivers; to understand how effective leadership can result in positive environmental change; and to hone their own leadership skills in thinking through the issues to arrive at potential working solutions.

Last year, our school of 210 students contributed over 4,000 hours of community service in the Saint Louis metropolitan area by participating in our Good Work Program that partners with 16 nonprofits including these who focus on environmental issues:

- 13th Street Garden, growing organic food for the North City Farmer's Market
- Gateway Greening, working and learning at City Seeds Urban Farm
- Bicycle Works, recycling and reusing bikes
- River des Peres Watershed Coalition, working on habitat restoration, removal of invasive species, and rain garden construction

Introduction

Crossroads College Preparatory School (CCPS) is the most diverse independent school in the Midwest and one of only six LEED Platinum schools in the country. Located in the heart of St. Louis, MO, Crossroads College Prep is a vibrant school that truly reflects its culturally rich urban environment. Among exceptional independent schools in the region, Crossroads College Prep has a distinctive feel of a liberal arts high school within a warm and embracing educational community. Nearby are the highly respected educational and medical communities of Washington University in St. Louis and St. Louis University. Just five blocks away is the Missouri History Museum, St. Louis City Library, and Forest Park, and four blocks away is the DeBaliviere Avenue MetroLink stop which provides easy access for CCPS's students who come from over 60 zip codes across the St. Louis area.

School History

Crossroads College Preparatory School, known formerly as Crossroads School, was founded by Arthur and Carol Lieber as a middle school in 1974. Believing that students are energized and prepared by City life experiences, the Liebers located the school in the City of St. Louis to allow students access to the many resources the City has to offer. Their goal was to take learning outside the classroom and into the community.

In 1981, the Liebers moved the school to the Skinker DeBaliviere neighborhood and added a high school. Since then, the school has grown into a college preparatory middle and high school with a strong record of engaging students actively in their learning and of educating students to think critically and creatively.

In 2002, Crossroads College Preparatory School completed its first successful capital campaign and doubled the size of the campus. The school is now in its fourth decade, ready to build on the many successes of the school's past.

Enrollment has grown; students participate actively in a wide variety of extracurricular activities; colleges actively recruit the school's students; parents support the school in every way possible; and the Board of Trustees works to implement the school's strategic plans.

After much research, the Board voted in 2006 to change the name of the school to Crossroads College Preparatory School to reflect its commitment to challenging students academically, preparing them for college and to achieve success in life whatever endeavors they pursue.

In 2009 the school completed its second capital campaign to add a 9,079 square foot addition for science classrooms and renovate 18,047 square feet of the existing building. The addition and renovation were certified by the U.S. Green Building Council as Leadership in Energy and Environmental Design (LEED) Platinum. It is one of the only six K-12 schools in the nation to earn such a distinction, the only K-12 LEED Platinum Certified school in the Midwest, and the first LEED Certified K-12 school building in the St. Louis metropolitan region.

PILLAR ONE: Net zero environmental impact

You can choose to demonstrate progress towards elimination of GHG emissions and waste as well as water and energy conservation by completing one or more of the questions below, or by other methods (see final question).

Element 1A: Zero greenhouse gas (GHG) emissions

ENERGY

A. If you have received EPA's ENERGY STAR certification, in what year was the certification earned:

B. If you have reduced your total non-transportation energy use (i.e., electricity and temperature control) from an initial baseline, please provide:

Percentage reduction:

Measurement unit used (kBtu/Square foot or kBtu/student):

Time period measured: from to

What documents can you provide to document this reduction (such as ENERGY STAR Portfolio Manager Reports) if requested?

Usage reports from Ameren Electric and Laclede Gas

C. What percentage of your energy consumption is derived from:

On-site renewable energy generation:

Purchased renewable energy:

BUILDINGS

D. If you have constructed and/or renovated buildings in the past three years, what percentage of the building area meets Leadership in Energy and Environmental Design (LEED), Collaborative for High Performing Schools (CHPS), Green Globes or other standards?

What is the total constructed area?

What is the total renovated area?

Which certification (if any) did you receive and at what level (e.g. Silver, Gold, Platinum)?

LEED NC v2.2 Platinum Certification was received in January of 2010.
 The total building area of the school is 56,909 making 48% of the school LEED Platinum Certified. Many of the energy saving features, such as motion detectors for lighting, used in the LEED certified portion of the building were added to the non-LEED portion of the building to reduce energy consumption.
 See Appendix A: LEED NCv2.2 Crossroads - Final Sustainable Features Report - 3-16-10.pdf for details on the LEED certification.

E. What percentage of your total existing building area has achieved LEED Existing Buildings: Operation & Maintenance, CHPS Operations, Green Globes or other standards?

What is the total building area?

Which certification (if any) did you receive and at what level (e.g. Silver, Gold, Platinum)?

F. If you reduce or offset the GHG emissions from building energy use, please provide:

Current Total GHG Emissions (MtCO₂e)
Baseline Total GHG Emissions (MtCO₂e)
Change from Baseline: GHG Emissions (MtCO₂e)
Time period: from to
Explain any offsets used?

G. Have you fully implemented the Facility Energy Assessment Matrix within EPA's Guidelines for Energy Management? Yes or No

Has the school building been assessed using the Federal Guiding Principles Checklist in Portfolio Manager? Yes or No

H. What percentage by cost of all your furniture purchases is certified under the Business and Institutional Furniture Manufacturers Association's "level" ecolabel?

BIFMA Standard was not launched until June 1, 2009. We last purchased furniture in March of 2009. 59% was Greenguard certified (\$46,641.25) and 41% was SCS Indoor Advantage certified at the Gold Level (\$32,728.47)

I. Is an energy and water efficient product purchasing and procurement policy in place? Yes or No

J. Other indicators of your progress towards elimination of GHG emissions (describe in detail and include metrics if available):

We are currently using solar thermal panels to heat water in the LEED addition. While the panels contribute less than 1% of our energy use, they provide a learning opportunity for our students.

A contract for solar power (three 25KWh arrays and one 12KWh array) was signed in December 2011 and construction will begin in March of 2012 which will allow us to generate approximately 20% of our electrical power needs on site. The solar project will include an extensive education component for students, their families, and the surrounding community. Fat Spaniel or Deck web-based monitoring will provide information on solar power generated and GHG Emissions offset to our flat screen monitor viewing station in the building lobby.

Element 1B: Improved water quality, efficiency, and conservation

Water use is a bigger issue in some regions of the country than others. Water should be conserved as much as possible and reused whenever possible, but a goal of zero use may not be realistic or even necessary in some areas.

A. If you can demonstrate reduced total water consumption intensity (measured in gal/square foot) from an initial baseline, please provide:

Percentage reduction:
Time period: from to

What documents will you provide to document this reduction (such as ENERGY STAR Portfolio Manager reports) if requested?

While we have not yet documented actual water usage. Water saving features on this project including dual-flush toilets, low-flow urinals and low-flow lavatory faucets were designed to use 39.3% less water than conventional restroom facilities.

B. How often do you conduct audits of facilities and irrigation systems to ensure they are free of significant water leaks and to identify opportunities for savings?

We have no irrigation system. All other facility's water systems are inspected annually. Staff, Faculty and students are instructed to report dripping faucets or leaks immediately.

C. Describe how your site grading and your irrigation system and schedule is appropriate for your climate, soil conditions, plant materials, and climate, with an emphasis on water conservation:

Our landscape was designed using all Missouri native plants so that once plants were established no watering is required. Water from the roof is diverted into our rain garden area and into rain barrels. Consequently we have no irrigation system and use only water from our rain barrels for watering landscape during extreme dry spells.

D. Do **all** your outdoor landscapes consist of water-efficient or regionally-appropriate (native species and /or adapted species) plant choices? Yes or No Yes

Describe:

See Appendix B: Bioretention Basin Guide

E. Are alternative water sources (e.g., grey water) used before potable water for irrigation? Yes or No Yes

Describe:

Three 55 gallon rain barrels capture water to use on the student vegetable garden and on those few plants that require water during the hot dry summer months.

F. If drinking water is acquired from the school's own well, are your drinking water sources protected?

Yes or No

Describe how they are protected:

G. Do you have a program to control lead in drinking water (including voluntary testing and implementation of measures to reduce lead exposure in drinking water) in place? Yes or No Yes

Describe:

The City of St. Louis Water Division has optimized its treatment process so that the corrosion of plumbing is highly unlikely. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. All service line to drinking fountains have been replaced within the last 10 years to insure that water is lead free.

H. Have you been cited within the past three years for failure to meet federal, state or local potable water quality standards? Yes or No NO

I. Are all taps, faucets and fountains used for drinking and cooking cleaned on a regular basis to reduce possible bacterial and other contamination; and are faucet screens and aerators regularly cleaned to remove particulate lead deposits? Yes or No

How often such cleaning is conducted?

Daily

J. Other ways you are working to improve water quality, efficiency, and conservation:

In December 2011 we received a donation of a half acre parcel of land across the street from the school. We are currently planning a student design charette with a landscape architect to develop a wildlife friendly, native planted, zero storm water runoff environmental classroom.

GROUNDS

K. What percentage of your school grounds are devoted to ecologically or socially beneficial uses, including those that give consideration to native wildlife?

Describe:

As an urban school we have 31,780 square feet of green space: 28,583 square feet is used for outdoor play and outdoor classroom space and 3197 square feet (10% of green space) is devoted to native plants.

Element 1C: Reduced waste production

WASTE

You can work towards elimination of all solid waste through increased, reduced consumption, reuse practices and recycling.

A. What percentage of waste is diverted from the landfill or incinerator by reuse, composting, and/or recycling? (total amount reused, composted or recycled)/(total amount reused, composted or recycled used + total sent to landfill or incinerator)

B. What percentage of total office/classroom paper content by cost is post-consumer material or fiber from forests certified as responsibly managed by the Forest Stewardship Council, Sustainable Forestry Initiative, American Tree Farm System or other certification standard? (If a paper is only 30% recycled, only 30% of the cost of that paper should be counted towards the recycled portion)

C. What percentage of total office/classroom paper content by cost is "totally chlorine-free" (TCF) or "processed-chlorine-free" (PCF)?

HAZARDOUS WASTE

Please answer all the questions below if possible regarding elimination of hazardous waste streams.

D. How much hazardous waste do you generate (lbs/student/year)?

Describe the types of hazardous waste, how hazardous waste is monitored and how the amount above is calculated.

Most of the hazardous waste generated is metal salts from chemistry lab and water testing kits. The maximum amount generated is equal to the amount used in particular experiments.

Please list each hazardous waste and the amount of each present at the end of the year.

Copper sulfate (150 g); Cadmium salts (250 mL of dilute solution); chromium salts (50 mL of 0.1 M solution)

E. Is a Hazardous Waste Policy for storage, management and disposal of chemicals in laboratories and other areas with hazardous waste in place and actively enforced? Yes or No YES

F. Have you been cited within three years for improper management of hazardous waste according to Federal and State regulations? Yes or No NO

G. What percentage of total computer purchases by cost are Electronic Product Environmental Assessment Tool (EPEAT) certified products:

How do you dispose of unwanted computer and other electronic products?

Donation to KIPP schools; others are donated to a WITS local recycling/e-cycling company that reconditions computer and electronics to give to families who cannot otherwise afford them.

H. What percentage by cost of all cleaning products in use are certified "green," or can otherwise demonstrate that they meet the environmental standards of established eco-label programs?

Which standard(s) are you using?

LEED standard for cleaning products.

I. Is your custodial program based in the principles of effective management and "green" service? Yes or No YES

J. Has your custodial program been certified by the ISSA Cleaning Industry Management Standard - Green Building (or an equivalent standard)? Yes or No NO

K. Other indicators that you are reducing waste and eliminating hazardous waste:

Hazardous waste is disposed of through the Missouri Dept. of Conservation's programs. Near 100% of all paper, cardboard, glass, and plastic products are recycled, rather than sent to landfill collection.

Our primary focus has been on reducing waste by taking the following steps:

- We eliminated bottles water from vending machines in 2007.
- We stopped printing the parent's newsletter and went to an electronic version in May of 2003.
- We converted documents we had previously printed e.g. report cards, faculty comments to parents, and faculty communications to students and parents to Edline, an online communication and learning management system in 2005.
- Student newspaper went digital in 2008.
- We switched to duplex printers that allow printing two sided documents in 2009.
- We began composting yard waste in 2011.
- We initiated a green chemistry program in 2009 by using more environmentally benign reagents and solvents in order to in reducing hazardous exposures affecting human health and hazardous waste.

Element 1D: Use of alternative transportation to, during and from school

A. What percentage of students walk, bike, bus, or carpool (2+ students in the car) to/from school? %

Describe how this information been collected and calculated:

B, Do you have a no-idling policy on file and signs posted stating that all vehicles, including school buses and other vehicles dropping off and picking up students, are prohibited from idling on school premises? Yes or No

Policy **YES** Signage **NO**

Pick up and drop off areas were redesigned as part of the new construction/renovation to eliminate backups. Parents are reminded in the Parent Newsletter to park their vehicle in a parking place if they must wait for their child.

C. Are all vehicles loading & unloading areas at least 25 feet away from all buildings air intakes (including doors and windows)? Yes or No YES

D. Describe how your school transportation use is efficient and environmentally benign (e.g. the percentage of school-owned electric/hybrid/alternative fuel vehicles in your fleet, or other indicators of significant reductions in emissions):

We do not provide bus transportation to and from school. We are located one block from public light rail transportation and whenever possible use public transportation for field trips. When public transportation is not an option we rent buses.

E. Have "Safe Pedestrian Routes" to school or "Safe Routes to School" been designated, distributed to parents and posted in the main office? Yes or No NO

Describe any other accomplishments you've made under Pillar One towards eliminating your negative environmental impact or improving your environmental footprint which you feel should be considered:

In 2007 we were one of a small number of organizations, and the only school, to be named as an early adopter in the new Pure Power Program by Ameren UE program. Participants in this program pay a nominal fee as a part of their monthly utility bill to help create a wind farm that will ultimately provide the St. Louis metropolitan region with 30% of its energy.

In 2006 we initiated a Natural Light Project that significantly increased the number of windows and provided additional daylight to many of the classrooms and common areas.

PILLAR TWO: Net positive impact on student and staff health

Please answer all questions under Pillar Two

Element 2A: An integrated school environmental health program based on an operations and facility-wide environmental management system that considers student and staff health and safety in all practices related to design, construction, renovation, operations, and maintenance of schools and grounds.

INTEGRATED PEST MANAGEMENT

- A. Do you have an integrated pest management plan in effect to reduce or eliminate pesticides? Yes or No
- B. Do you provide notification of your pest control policies, methods of application and requirements for posting and pre-notification to parents and school employees? Yes or No
- C. Do you maintain annual summaries of pesticide applications, copies of pesticide labels, copies of notices and MSDSs in an accessible location? Yes or No
- D. Do you prohibit children from entering the pesticide area for at least 8 hours following the application or longer, if feasible, or if required by the pesticide label? Yes or No

VENTILATION

E. Does your school meet the stricter of: ASHRAE Standard 62.1-2010 (Ventilation for Acceptable Indoor Air Quality) OR your state or local code? Yes or No

Which one?

Our building was completed in 2009 consequently ventilation was designed in accordance with ASHRAE 62.1- 2004.

F. Are local exhaust systems (including dust collection systems, paint booths, and/or fume hoods) installed at all major airborne contaminant sources, including science labs, copy/printing facilities, chemical storage rooms?

Yes or No

G. Have you installed energy recovery ventilation systems where feasible to bring in fresh air while recovering the heating or cooling from the conditioned air? Yes or No

H. Radon: Have all ground-contact classrooms been tested for radon within the past 24 months? Yes or No

What percentage of all classrooms with levels greater than 4 pCi/L have been mitigated in conformance with ASTM E2121? %

I. Carbon Monoxide (CO): If you have combustion appliances, do you have an inventory of all combustion appliances & do you annually inspect these appliances?

Yes, No or No combustion appliances

Are CO alarms installed which meet the requirements of the National Fire Protection Association code 720?

Yes or No

J. Mercury: Have all unnecessary mercury containing devices been replaced with non-mercury devices?

Yes or No

Explain:

Students use alcohol thermometers. Light fixtures throughout the school were replaced 2009.

Do you recycle or dispose of unwanted mercury laboratory chemicals, mercury thermometers, gauges and other devices in accordance with federal, state and local environmental regulations? Yes or No YES

K. Chromated Copper Arsenate (CCA): Have all wooden decks, stairs, playground equipment or other structures treated with Chromated Copper Arsenate been replaced or sealed within the past 12 months? Yes or No N/A

L. Secondhand Tobacco Smoke: Is smoking prohibited on campus? Yes or No YES

M. Asthma Control: Do you have an asthma management program in place consistent with the National Asthma Education and Prevention Program's (NAEPP) Asthma Friendly Schools Guidelines? Yes or No NO

N. Indoor Air quality: Have you developed and implemented a comprehensive indoor air quality management program consistent with IAQ Tools for Schools? Yes or No NO

O. Moisture Control: Are all structures visually inspected on a regular basis and free of mold, moisture & water leakage? Yes or No YES

Is indoor relative humidity maintained below 60% (cold climates during freezing temperatures should target 20-30%)? Yes or No YES

Are moisture resistant materials/protective systems installed (e.g., flooring, tub/shower, backing, and piping)? Yes or No YES

P. Chemical Management: Do you have a chemical management program in place that includes the following elements?

- Chemical purchasing policy, including low- or no-VOC products
- Chemical inventory
- Storage and labeling
- Training and handling
- Hazard communication
- Spills, clean-up and disposal
- Select EPA's Design for the Environment
- Approved cleaning products

Yes or No YES

Explain:

The Board of Trustees adopted an environmental purchasing policy that requires low or no VOC paint products, green cleaning products, and environmentally certified e.g. the EPA Design for the Environment label. The school's administrative policies cover storage and labeling, training and handling, hazard communication and spills, clean-up and disposal.

R. Describe any other measures regarding the school building and natural environment that you take to protect student and staff health and which you feel should be considered:

We are a landlocked urban school in City of St. Louis. We have very little land available, so our “green spaces” are planned to accomplish multiple goals. Our bio-retention basis serves as a storm water catchment area, a native plant garden designed to attract and support insects, pollinators, birds and wildlife and to function as an outdoor learning area used for science and art classes. The Rain Garden Brochure (See Appendix B: Bioretention Basin Guide) that we provide to visitors explains the function of the bio-retention basis and identifies the native Missouri plants used in our landscape.

Element 2B: High standards of nutrition, fitness, and quantity of quality outdoor time for both students and staff

FITNESS AND OUTDOOR TIME

A. What percentage of your students over the past year engaged in at least 150 minutes of school-supervised physical education and/or outdoor time per week?

What is the average amount of time over the past year that each student engages in school-supervised physical education and/or outdoor time per week (minutes/week)?

FOOD

B. Have you earned USDA's Healthier US School Challenge award for school food? Yes or No

List award level earned:

C. What percentage (by cost) of food purchased is certified as environmentally preferable (e.g. Organic, Fair Trade, Food Alliance, Rainforest Alliance, etc.)? %

D. What percentage (by cost) of food purchased is grown and processed within 200 miles of the school (including food grown on school grounds)? %

Does the school have an onsite garden in which the students participate? Yes or No

UV SAFETY

E. What percentage of your current student body has participated in EPA's Sunwise Program or an equivalent program? %

PILLAR THREE: 100% of the school's graduates are environmentally and sustainability literate

There are many pathways to achieving a 100% environmental and sustainability literacy rate. Please answer all of the questions below, and you may supplement this information by also describing alternative benchmarks of progress (see final question).

LEARNING AND ENVIRONMENTAL LITERACY

Element 3A: Interdisciplinary learning about the key relationships between dynamic environmental, energy and human systems

A. What percentage of last year's graduates scored proficient or better during their high school career on state or school?

Environmental education assessments:

Sustainability assessments:

Environmental science assessments:

Briefly describe the assessment(s):

Percentage is based on only Upper School students who achieved a C or better in Course and unit assessments in Biology (11th grade); AP Environmental Science (11th grade); AP Biology (12th grade); and does not include Middle School Earth and Environmental Science.

B. Does your school or your state have an environmental or sustainability literacy graduation requirement?

Yes or No

Describe:

We are an independent school and do not follow these state guidelines. However, all students attending Crossroads College Prep take Biology, in which students study environmental science in the high school and Earth and Environmental Science, a middle school class, as seventh graders.

C. Are environmental and sustainability concepts integrated throughout the curriculum? Yes or No

Describe:

Students in all grade levels study the various components of our LEED-certified building and grounds. Students also conduct tours of the building explain all of the “green attributes”.

Most grade levels participate in the National Audubon Society’s Rivervision program (See Appendix C), which exposes students to outdoors education at the Riverlands Migratory Bird Sanctuary, the effects of public policy, and the Mel Price Locks and Dam in Alton, Illinois.

Our students also participate in the ECO-ACT program sponsored by the Missouri Botanical Gardens, teaching ecology and sustainability to local elementary school programs.

Crossroads College Prep also has an active Missouri Stream Team, # 3357 which includes students in 7th, 8th, 11th, and 12th grade.

The Bioretention Basin has been frequently used for photography, sketching, and painting by the Art Department.

The English department focuses on the environment by including books on sustainability such as “Coal” by Michael Logan for the All-School read.

Our Environmental Justice Activity put on a Water Night, showing the film Flow, having a variety of hands-on activities e.g. carrying various containers of water to illustrate their weight , and having a panel of “experts” from local environmental groups as well as the Metropolitan Sewer Department to answer students questions.

D. What percentage of your eligible graduates last year had completed Advanced Placement Environmental Science during their school career?

What percentage of these students scored 3 or better on the Advanced Placement Environmental Science assessment?

E. If neither your state or school conduct environmental science, sustainability or environmental education assessments, what percentage of your students scored proficient or better on science education assessments in the last year?

F. Are professional development opportunities in environmental and sustainability education available to all teachers at least every other year? Yes or No

Describe a few of these opportunities:

The Missouri Botanical Garden offers monthly workshops for teachers; the Missouri Stream Team holds seasonal workshops for field training; teachers have also attended training sessions through the Rivervision program described in Appendix C.

H. Does your environmental education program pay particular attention to scientific practices, such as asking questions, developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, constructing explanations, and engaging in argument and applications based on evidence? Yes or No

I. Do your students have meaningful outdoor experiences (an investigative or experiential project that engages students in critical thinking, problem solving and decision making) at every grade level? Yes or No

Element 3B: Use of the environment and sustainability to develop STEM content knowledge and thinking skills to prepare graduates for the 21st century technology-driven economy

A. Do your students graduate with a robust science education that includes a deep understanding of life, physical, and earth sciences? Yes or No

Describe(e.g., percentages of enrollment in environmental and other earth sciences, assessments and post-secondary school or career intended focus):

100% of last year's graduates enrolled in college and 42% of last year's graduating class is pursuing a college degree in a STEM field. Approximately 50% of last year's graduating class took more than the required four years of science courses. Most students graduating from Crossroads College Prep have completed our required, six year course sequence that includes Earth and Environmental Science, Chemistry, Biology, Physics, and one or more elective science classes.

B. Does your curriculum provide a demonstrated connection between classroom content and college and career readiness, particularly to post-secondary options that focus explicitly on environmental and sustainability fields, studies, and/or careers? Yes or No

Describe:

See 3B, part A. Over 40% of the graduating class of 2011 is majoring in a STEM field. Numbers on environmental or sustainability fields are not readily available, but students are currently employed by the US Green Building Council, and working in the forestry field. Additionally students are exposed to STEM career possibilities through the Rivervision Leadership Program.

COMMUNITY AND CIVIC ENGAGEMENT

Element 3C: Development of civic engagement knowledge and skills, and students' application of these to address sustainability and environmental issues in their community

A. What percentage of last year's graduates scored proficient or better on a community or civic engagement skills assessment? %

B. Are your students required to conduct an age-appropriate civic/community engagement project around a self-selected environmental or sustainability topic at every grade level? Yes or No

What percentage of students satisfactorily completed such a project last year? %

C. Do you partner with local academic, businesses, government, nonprofits, informal science institutions and/or other schools to help advance the school and community toward the 3 Pillars and/or assist the progress of other schools, particularly schools with lesser capacity in these areas? Yes or No

Briefly describe the scope and impact of these partnerships:

Last year, our school of 210 students contributed over 4,000 hours of community service in the Saint Louis metropolitan area.

Prior to 2009 we required all Seniors to complete a 60 hour internship with a local business or not-for-profit. Two years ago we expanded our community service/engagement to the school with the motivation “to apply our hearts’ desires to the work of our hands.” In our Good Work Program, we partner with 16 different nonprofits in the St. Louis metro area focusing on their work and their organizations as models of civic engagement. Many of our Good Work Partners work on sustainability/environmental issues. We are working with the 13th Street Garden, growing food using organic methods for the North City Farmer’s Market, located in a “food desert;” with Gateway Greening, working and learning at City Seeds Urban Farm; with Bicycle Works, recycling and reusing bikes; with Last year we also worked with River des Peres Watershed Coalition, working on habitat restoration, removal of invasive species, and rain garden construction. Other Good Works partners are focused on social justice issues, such as Southside Day Nursery, St. Patrick’s Center, The Scholar Shop, and Herbert Hoover Boys and Girls Club. All Upper School students select a site at which to work based on a Good Work Fair in the beginning of the year; there is universal participation, although not all sites have an environmental focus.

D. Do you have outdoor classrooms on your grounds which include native plantings and do you use them to teach an array of subjects in context, engage the broader community and develop civic skills? Yes or No YES

What other indicators or benchmarks (quantified whenever possible) of your progress towards the goal of 100% of your graduates being environmental and sustainability literate do you feel should be considered?

Our juniors and seniors participate in ECO-ACT, an environmental leadership program operated by the Missouri Botanical Garden in partnership with St. Louis area schools and districts. Students enroll for a full year and receive course credit or community service credit from their schools. ECO-ACT stands for Ecology in Action and includes investigation, education, and the presentation of knowledge acquired to other by teaching ecology classes at local elementary schools

We have a student group with FOCUS Saint Louis that works all year to better understand the role of civic engagement.

We have had a Missouri Stream Team where students as citizen scientists analyze, clean and reclaim the Engelholm Creek in Wellston.

Additionally, all seniors contribute an additional 40 hours of community service to a variety of organizations as part of their senior year.

For Public Schools only (Check all that apply): Charter Title I Magnet Choice

Name of Principal (Specify: Ms., Miss., Mrs., Dr., Mr., etc. as it should appear in official records):

Clark J. Daggett Head of School

Official School Name (As it should appear in the official records):

Crossroads College Preparatory School

School Mailing Address (If address is P.O. Box, also include street address):

500 DeBaliviere Avenue

City, State, Zip

St. Louis, MO 63112

County

State School Code Number

Telephone Number

Fax Number

Website

E-mail

I have reviewed the information in this application, including the award and eligibility requirements on pages 2-4, and certify that to the best of my knowledge all information is accurate.

Principal's Signature

Date

Name of Superintendent* (Specify: Ms., Miss, Mrs., Dr., Mr., Other)

N/A

District Name*

N/A

Telephone Number

I have reviewed the information in this application, including the award and eligibility requirements on pages 2-4, and certify that to the best of my knowledge all information is accurate. I concur that this is one of the highest performing green school applicants in our state.

Superintendent's Signature

Date

**Private Schools: If the information requested is not applicable, write N/A in the space.*



1. The school meets all applicable federal civil rights and federal, state, tribal and local health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

Name of Nominating Agency _____ Department of Elementary and Secondary Education _____

Name of Nominating Authority _____ Mrs. Robin Coffman, Chief of Staff _____
(Specify: Ms., Miss, Mrs., Dr., Mr., Other)

I have reviewed the information in this application, including the award and eligibility requirements on pages 2-4, and certify, to the best of my knowledge through a documentary verification assessment, that the school meets the provisions in this Part of the Nominee Presentation Form.

A handwritten signature in black ink that reads "Robin Coffman".

Date March 22, 2012

(Nominating Authority's Signature)

Note to Nominating Authority: The application, including the signed certifications and documentation of evaluation in the three pillars should be converted to a PDF file and emailed to Director, ED-Green Ribbon Schools at green.ribbon.schools@ed.gov according to the instructions in the Nominee Submission Procedure.

Public Burden Statement

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this information collection is 1860-0509. Public reporting burden for this collection of information is estimated to average 37 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The obligation to respond to this collection is required to obtain or retain benefit P.L. 107-110, Sec. 501, Innovative Programs and Parental Choice Provisions. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education, 400 Maryland Ave., SW, Washington, DC 20202-4536 or email ICDocketMgr@ed.gov and reference the OMB Control Number 1860-0509. Note: Please do not return the completed ED-Green Ribbon Schools application to this address.

Appendix A: LEED-NCv2.2 Certification Report

Crossroads College Preparatory School LEED-NCv2.2 Final Certification Report Saint Louis, MO

Introduction

The following report has been prepared by Vertegy, an Alberici Enterprise in an effort to provide the project team with background information on the LEED® and sustainable features of Crossroads College Preparatory School in Saint Louis, MO. In the first section, we will provide an overview of USGBC and the LEED Rating System as well as specific LEED information for this project. In the second section, we will highlight the LEED/sustainable features of the Crossroads project, broken down by LEED categories and credit points. This section will be based on those points which were submitted to the USGBC and awarded in the certification process.

USGBC, LEED and the GBCI

The U.S. Green Building Council, (USGBC) is a national nonprofit organization based in Washington, DC. The USGBC was formed with a purpose to:

- **Integrate** building industry sectors
- **Lead** market transformation
- **Educate** owners and practitioners

USGBC has a diverse membership of organizations. It is important to note that the USGBC does not grant individual membership on the national level. The USGBC is consensus-driven among their membership using a committee-based approach during product development.

The USGBC is guided by six principles. These principles were made a portion of the governance of the USGBC through an executive committee resolution.

- Promote the Triple Bottom Line
- Establish Leadership
- Reconcile Humanity with Nature
- Maintain Integrity
- Ensure Inclusiveness
- Exhibit Transparency

USGBC is also the developer of GBCI, LEED and the LEED Green Building Rating Systems. The Green Building Certification Institute (GBCI), established in January 2008, provides third-party project certification and professional credentials for green building performance and practice. GBCI administers project certification for commercial and institutional buildings and tenant spaces under the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Green Building Rating Systems addressing new construction and ongoing operations. GBCI also manages the professional credentialing programs based upon the LEED Rating Systems including the LEED Green Associate and LEED AP credentials. LEED is a suite of products which can be used for designing, constructing, operating, and certifying green buildings. The following rating systems are currently in use:

- LEED for New Construction and Major Renovation: LEED-NC
- LEED for Commercial Interiors: LEED-CI
- LEED for Existing Buildings: LEED-EB
- LEED for Core and Shell Buildings: LEED-CS
- LEED for Schools: LEED-S
- LEED for Homes: LEED-H
- LEED for Neighborhood Developments: LEED-ND

The intent of using the LEED principles as a part of design and construction practices is to significantly reduce or eliminate the negative impact of buildings on the environment and occupants in five broad, “core” areas (Based on LEED for New Construction, Version 2.2):

- Sustainable Sites
- Safeguarding Water and Water Efficiency
- Energy Efficiency and the Use of Renewable Energy
- Conservation of Materials and Resources
- Indoor Environmental Quality
- LEED then provides for a sixth “non-core” area:
- Innovation in Design

LEED Product Type

This project is seeking certification under LEED for New Construction, Version 2.2 (LEED-NCv2.2).

LEED Rating Systems are point-based. For LEED-NCv2.2, there are:

- Seven prerequisites
- Two mandatory points
- Sixty-seven voluntary points

A team must achieve all seven prerequisites, the two mandatory credits and at least twenty-four to become certified.

LEED Certification Levels

There are four levels of certification for buildings under the LEED-NC Rating System:

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

LEED Prerequisites

There are seven prerequisites within LEED-NCv2.2. All seven prerequisites must be met for a project to be eligible for certification.

- SSp1: Construction Activity Pollution Prevention - Compliance with EPA-832R-92-005 Chapter3 or Local Code
- EAp1: Fundamental Building Commissioning - Provided by a qualified and experienced commissioning authority
- EAp2: Minimum Energy Performance - As defined by ASHRAE/IESNA 90.1-2004
- EAp3: Fundamental Refrigerant Management - Zero use of CFC-based refrigerants
- MRp1: Storage and Collection of Recyclables - Paper, Glass, Plastics, Cardboard and Metals
- EQp1: Minimum Indoor Air Quality Performance - As defined by ASHRAE 62-2004
- EQp2: Environmental Tobacco Smoke (ETS) Control - Zero exposure of nonsmokers to ETS

Project Specific LEED/Sustainable Features

Sustainable Sites: 14 possible points total, 1 prerequisite

Points achieved by Crossroads: 12

Development and construction processes are often destructive to the local environment. Credit points in this category address such issues as impact on local geology, hydrology, and microclimate; occupant effects such as automobile use; storm water control; and utility infrastructure.

SSp1: Construction Activity Pollution Prevention

This prerequisite required the project team to install and maintain erosion control measures during construction. Actions were taken to control erosion and sedimentation including silt fencing to control runoff.

SSc1: Site Selection

The project is being built on a previously developed site. In its immediate past, the site was not farmland, natural habitat/wetland or any other restricted land type as defined by LEED.

SSc2: Development Density & Community Connectivity

The project is on a previously developed site and is within ½-mile of a high density residential zone and as least 10 basic services. Some of these services include a restaurant, museum, park, hardware store and a medical office.

SSc3: Brownfield Redevelopment

The Crossroads building is located on the former site of a grocery store. Due to the presence of asbestos in the renovated portion of the building, the site was declared a Brownfield by the local authority. This designation was based on the presence of real and perceived contaminants on site and the subsequent remediation of such materials.

SSc4.1: Alternative Transportation, Public Transportation Access

The school is located within ½-mile of the Forest Park Metrolink stop allowing students, visitors and employees to use public transportation.

SSc4.2: Alternative Transportation, Bicycle Storage and Changing Rooms

The project includes bike racks for students, visitors and employees who choose to ride their bicycles to the site. For students/employees commuting by bicycle, showers have been made available for them to use.

SSc4.3: Alternative Transportation, Low-Emitting and Fuel-Efficient Vehicles

The project has set aside one preferred parking space (out of the four new spaces constructed during the project) specifically for occupants that drive Low-Emitting and Fuel-Efficient Vehicles (LE/FEV) to work.

SSc4.4: Alternative Transportation, Parking Capacity

The school did not increase parking on site from pre-development levels (it was decreased) and thus achieved the fourth compliance path for this credit, which is “No New Parking.”

SSc5.1: Site Development, Protect or Restore Habitat

This credit requires that at least 50% of the project’s site area be restored to native or adapted vegetation. In this case, 66% of the Crossroads site (excluding the building footprint) has been restored to native plantings (including a large rain garden) which will promote biodiversity and conservation of resources. In addition, these areas do not require permanent irrigation.

SSc5.2: Site Development, Maximize Open Space

In addition to restoring areas to native plantings, Crossroads has also set aside further areas for open space. 34.1% of the project’s site area is considered open (without building structure or paving).

SSc6.2: Stormwater Design, Quality Control

Stormwater on site is treated through a large rain garden. The system captures and treats 90% of the average annual rainfall by removing at least 80% of the total suspended solids contained within the runoff.

SSc7.1: Heat Island Effect, Non-Roof

The purpose of this credit is to minimize the heat island effect caused by dark absorptive surfaces that create unnaturally warm microclimates where they are installed. The newly paved areas of the Crossroads site are all constructed with light colored concrete to address this issue. In total, 100% of the paved areas contribute to a reduction of the heat island effect.

SSc8: Light Pollution Reduction

All exterior fixtures have been designed with the minimum lighting required. They are also shielded and classified as full-cutoff to ensure that light does not spill into the night sky and effect nocturnal environments through excessive glare.

Water Efficiency: 5 possible points total, no prerequisites

Points achieved by Crossroads: 4

Water is one of our most precious resources. Globally, we are facing water shortages and while shortages do not currently exist in this region, it is this team's responsibility to conserve this resource to the highest level possible.

WEc1.1: Water Efficient Landscaping, Reduce by 50%

And

WEc1.2: Water Efficient Landscaping, No Potable Water Use or No Irrigation

All plantings on site are native and/or adapted species that do not require permanent irrigation.

WEc3.1: Water Use Reduction, 20%

And

WEc3.2: Water Use Reduction, 30%

The team chose low-flow faucets and high-efficiency fixtures to decrease potable water consumption. These fixtures resulted in a 39.3% savings in water use over the baseline. The baseline is determined by established flow rates for fixtures as determined by the Energy Policy Act of 1992.

Energy & Atmosphere: 17 possible points total, 3 prerequisites

Points achieved by Crossroads: 14

LEED recognizes efforts to improve the envelope, electrical, and mechanical systems in order to conserve the use of energy, predominately served by non-renewable sources. Through energy conservation, a building owner can realize benefits to the environment, building life cycle costs, property value, and reduced operating costs.

EAp1: Fundamental Commissioning of the Building Energy Systems

The prerequisite requires third-party verification that fundamental building elements and systems are designed, installed and calibrated to operate as intended. The commissioning authority provided and executed a commissioning plan, which includes the systems that were commissioned, team member roles and responsibilities and manual/warranty information.

EAp2: Minimum Energy Performance

This prerequisite requires that the building and its systems be designed in accordance with the requirements of ASHRAE/IESNA 90.1-2004, an energy performance standard covering architectural features and energy consuming systems.

No chlorofluorocarbons (CFCs) were used as refrigerants in the HVAC equipment. CFCs are substances that contribute to ozone depletion in the atmosphere. The refrigerants used in the facility were mostly R-410a with selected equipment utilizing R-407c, both of which the EPA has approved as acceptable replacements for the phase-out of CFCs.

EAc1: Optimize Energy Performance

This credit is worth 10 points, with a minimum of 2 points required for LEED certification. EAc1 requires going beyond the ASHRAE standard referenced in EAp2. An energy model was created for a baseline building and a separate model was created for Crossroads as it was designed. The model shows that the design is 37.4% more energy efficient (based on cost) than the standard baseline building, allowing for the eventual achievement of all 10 points.

EAc3: Enhanced Commissioning

In addition to verifying that fundamental building elements and systems are designed, installed and calibrated to operate as intended, the commissioning authority also completed further commissioning activities. These additional activities included a review of design documents prior to construction, review of contractor submittals during construction and development of a systems manual for future operating staff at the School. The commissioning authority will also complete operational assessments of the building throughout the year following occupancy to ensure that the building is functioning optimally through all four seasons.

EAc4: Enhanced Refrigerant Management

The cooling equipment for Crossroads was carefully selected according to refrigerant impact. This calculation looks at a variety of factors including amount of refrigerant charge in the unit, the refrigerant's specific global warming and ozone depleting potentials and replacement timing of the product.

EAc5: Measurement and Verification

This credit provides a means to verify performance of energy and water using systems in the building on a continual basis. Operational features of the building that affect energy efficiency include occupancy sensor lighting controls, heat recovery, system scheduling for building occupancy and solar thermal hot water generation, to name a few. The owner will be able to verify that these features are performing as defined in the design and energy model.

EAc6: Green Power

The School is committed to offsetting 100% of the power purchased through the utility provider by renewable energy certificates (RECs). These RECs encourage development and use of gridsource renewable energy.

Materials & Resources: 13 possible points total, 1 prerequisite

Points achieved by Crossroads: 9

Building materials are important to the sustainability of a project because of the extensive network of extraction, processing, and transportation required in producing and delivering them. Irresponsible manufacturing processes pollute the water and the air. Transportation of these products to the end user consumes non-sustainable fossil fuels and creates additional pollution.

MRp1: Storage & Collection of Recyclables

A recycling program has been developed for use in the building. It includes recycling of paper, glass, plastic, cardboard and metal. There are bins for the collection of recyclables located at each employee's desk, in classrooms, copy areas, the kitchen, cafeteria and faculty lounge. The individual bins are picked up by custodial staff and taken to the main collection area in the parking lot.

MRc1.1: Building Reuse, Maintain 75% of Existing Walls, Floors and Roof

And

MRc1.1: Building Reuse, Maintain 95% of Existing Walls, Floors and Roof

In the renovated portion of the project, the team was able to retain over 99% of the existing building, including structural walls, floors and roof.

MRc2.1: Construction Waste Management, Divert 50%

And

MRc2.2: Construction Waste Management, Divert 75%

The team developed and implemented a detailed Construction Waste Management plan and by the end of the project, the team had diverted 95.623% (over 600 tons) of the construction and demolition waste generated on the site from local landfills. Materials were donated, salvaged or recycled and included concrete, wood, drywall, metal and crushed concrete among other items.

MRc4.1: Recycled Content, 10%

And

MRc4.2: Recycled Content, 20%

When new materials were purchased for the building, attention was paid to buying products that contain recycled content. The product information gathered throughout the project documents that 23.537% of the total construction materials by cost contain recycled content. Some examples include concrete, steel, gypsum and doors.

MRc5.1: Regional Materials, 10%

And

MRc5.2: Regional Materials, 20%

For this project, local materials were given preference over products with high-embodied energy. For this credit, local is classified as being extracted/harvested and manufactured within a 500-mile radius of the project site. A few examples of the regional materials include concrete, brick, doors and glazing for the windows. Of all the materials purchased for this project (based on total materials cost excluding labor), 26.453% were considered to be local.

MRc7: Certified Wood

Over 83% of all new wood in the building was certified by the Forest Stewardship Council (FSC). The FSC products consisted of the lab casework in the science classrooms. FSC wood comes from forests that are managed responsibly and the stamp of approval follows a chain-of-custody from the manufacturer to the supplier and finally to the owner.

Indoor Environmental Quality: 15 possible points total, 2 prerequisites

Points achieved by Crossroads: 11

Humans spend almost 90% of their lives inside of buildings. The intent of this category of points is focused on improving the quality of those indoor surroundings. Indoor Environmental Quality (IEQ) addresses the building's air quality, thermal comfort, daylighting and views to the outdoors.

EQp1: Minimum Indoor Air Quality (IAQ) Performance

The building's ventilation design has been created in accordance with ASHRAE 62.1-2004. This standard requires specific ventilation rates (i.e., the amount of fresh outdoor air) based on occupant load and building space type (office, conference, etc.), which leads to better indoor air quality inside the building spaces.

EQp2: Environmental Tobacco Smoke (ETS) Control

Crossroads previously designated the building and grounds as smoke-free to ensure better air quality for staff, students and all visitors.

EQc1: Outdoor Air Delivery Monitoring

Each space with a design occupant density greater than or equal to 25 people per 1000 sq. ft. has a CO2 sensor installed that will alarm if CO2 levels rise above a specified set point. Direct airflow measurement devices have been provided for each mechanical ventilation system serving nondensely occupied spaces.

EQc3.1: Construction IAQ Management Plan, During Construction

The construction team followed a strict indoor air quality management plan during construction of the building. This included covering ductwork to prevent dust collection, keeping absorptive materials off the ground and away from moisture and keeping the site clean and in order.

EQc3.2: Construction IAQ Management Plan, Before Occupancy

Just before occupancy of the School, testing was conducted to verify the air quality in the building. This ensured that contaminants from construction activities would not pose a problem once the building was in operation.

EQc4.1: Low-Emitting Materials, Adhesives and Sealants

EQc4.2: Low-Emitting Materials, Paints and Coatings

EQc4.3: Low-Emitting Materials, Carpet Systems

EQc4.4: Low-Emitting Materials, Composite Wood and Agrifiber

Volatile Organic Compounds (VOCs) are present in many construction materials. VOCs have been shown to aggravate respiratory ailments and can lead to other health problems. By sourcing low or no VOC containing products, the building's indoor air quality is improved greatly. Adhesives, sealants, paints, coatings and carpet systems were all chosen to meet strict VOC thresholds. In addition, composite wood products were specified with no added urea-formaldehyde which can also affect air quality.

EQc6.1: Controllability of Systems, Lighting

The building affords occupants a high level of control over the lighting. 100% of building occupants are able to adjust lighting levels to suit individual task needs and preferences. All multi-occupant spaces (classrooms, seminar room, library, etc.) allow some form of lighting control as well.

EQc6.2: Controllability of Systems, Thermal Comfort

The building affords occupants a high level of control over thermal comfort. 75% of building occupants are able to adjust temperature to suit individual task needs and preferences. All multi-occupant spaces (classrooms, seminar room, library, etc.) also allow some form of temperature control as well.

EQc7.1: Thermal Comfort, Design

The new facility is designed with air temperatures and humidity levels specific to the seasonal outdoor ambient conditions. This design meets ASHRAE 55-2004 and also includes occupant adjustable controls within the space for maximum comfort and control.

EQc7.2: Thermal Comfort, Verification

The entire design pays particular attention to user-friendliness. Crossroads College Preparatory School is committed to providing an occupant-friendly environment and intends on surveying occupants regarding overall comfort in the School within 6 to 18 months following occupancy. A few important items that will be addressed by the survey are humidity, temperature and air flow specific to each occupant's area as well as the common areas of the building. If greater than 20% of the occupants surveyed are dissatisfied with their thermal comfort, corrective action will be implemented.

Innovation & Design Process: 5 total possible points

Points achieved by Crossroads: 5

This category covers performance not addressed in other areas of the LEED Rating System and rewards innovative strategies, exemplary performance, and team expertise in sustainable design. Five credit points are available in this category including one for a LEED Accredited Professional on the project team.

The team exceeded established percentage thresholds in several LEED categories and achieved two ID credits for Exemplary Performance in SSc7.1: Heat Island Effect, Non-Roof and MRC2: Construction Waste Management. The School has also committed to a green cleaning management plan in order to maintain the healthiest indoor environment possible. In addition, the School has implemented an education and outreach program that will teach students, staff and visitors about the sustainable features of the building. The project also captured an ID credit for the inclusion of one or more LEED Accredited Professionals as part of the development team.

Summary

Crossroads College Preparatory School was awarded 55 points, which equates to a **Platinum** level LEED-NC certification. The project team accepted the USGBC's final review and the certification became final on January 13, 2010.

Appendix B: Bioretention Basin

Bioretention Basin

The basin was designed to prevent overloading the storm water sewer system and incorporates many of the pollutant removal mechanisms that operate in forested ecosystems.

Pretreatment

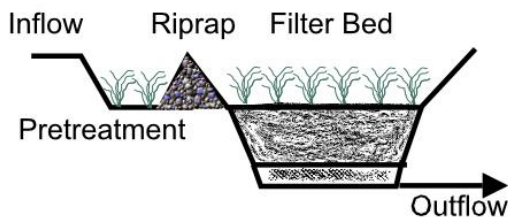
The pretreatment area captures and removes coarse sediment particles, while the riprap acts to spread flow evenly and drop out larger particles.

Filter Bed

The filter bed is designed to pond 6" to 9" inches of water. Water is filtered through a soil bed that is a sand/soil matrix with a mulch layer above the soil.

Outflow

An underdrain system collects filtered runoff at the bottom of the filter bed and directs it to the storm drain system. An underdrain is a perforated pipe in a gravel bed, installed along the bottom of filter bed.



Crossroads College Prep



Native Landscaping

The Landscaping Guide for Stormwater Design requires the use of native plants in stormwater management facilities.

Native plants are defined as those species that evolved naturally to live in this region. Native species are those that lived in Missouri before Europeans explored and settled in America and brought many common, but non-native species, with them.

Because they have evolved to live here naturally, native plants are best suited for our local conditions. This translates into greater survivorship when planted and less replacement or maintenance during the life of a stormwater management facility. Both of these attributes provide cost savings for the facility owner.

The deep root systems help develop pore space in the soil to promote infiltration of rainfall and sustain them during dry periods.

Natives also provide benefits to native wildlife such as birds and butterflies.

Source: MSD Landscape Guide for Stormwater Best Management Practices

Number	Plant Common Name	Plant Scientific Name	Height	Spread	Color	Months of Interest	Butterflies	Birds	Hummingbirds	Showy Flowers	Fragrant Flowers	Showy Fruit	Fall Color	Winter Interest	Will Naturalize
1	Grama side oats	Bouteloua curtipendula	1-2'	1'	tan	7-8		x		x			x		
2	Butterfly milkweed	Asclepias tuberosa	1-2'	1.5'	orange	6-8	x			x					x
3	Orange coneflower	Rudibeckia fulgida	2'	2'	yellow	6	x	x		x					
4	Copper Iris	Iris fulva	3'	1-2'	copper	5-6			x	x					
5	Winterberry Holly	Ilex verticillata	3'	3'	red	6-7						x		x	
6	Prairie blazing star	Liatris pycnostachya	2-5'	1-2'	lilac/purple	7-8	x	x	x	x					
7	Wild Bergamot	Monarda fistulosa	3-4'	2'	pink	7-9	x	x	x						x
8	New England Aster	Aster Novae-angliae	3-5'	2-3'	purple	8-9	x			x					
9	Ravenfoot sedge	Carex crus corvi	2-2.5"	1.5-2'	blue	5-8		x						x	
10	Pale Purple Cone flower	Echinacea pallida	2-3'	1'	purple	6-7	x			x	x				
11	Beard's tongue	Penstemon digitalis	3-5'	1.5-2'	white	4-6	x	x							x
12	Southern blueflag iris	Iris virginica	2-3'	2'	violet blue	6				x					x
13	Culver's root	Veronicastrum virginicum	4-7'	2-4'	white/ blue	5-8	x			x					
14	Little blue stem	Schizachyrium scoparium	2-3'	1'	Purple/bronze	8-2			x				x	x	
15	Sweet Coneflower	Rudbeckia subtomentosa	4-6'	2-3'	gold	7-10				x	x				
16	Switch grass	Panicum virgatum	2.5-5'	2-3'	pink tinged	7-2	x	x		x				x	x
17	Buttonbush	Cephalanthus occidentalis	5-10'	6-10'	white	6	x			x	x			x	
18	Blue wild indigo	Baptisia australis	3-4'	3-4'	blue	5-6	x			x		x			
19	Wild quinine	Parthenium integrifolium	3-4'	1.5'	white	5-8					x				
20	Short's sedge	Carex shortiana	2'	1.5'	bluish	6	x	x		x					
21	Bluestar	Amsonia illustris	2-3'	2-3'	lt blue	5	x			x			x		x
22	Palm sedge	Carex muskingumensis	2-3'	2-3'	tan	5-9									x
23	American beautyberry	Callicarpa americana	3-6'	3-6'	pink	6-8			x			x		x	

Appendix C: Riversionvision Leadership Program

Program Overview

The goal of the Riversionvision Leadership Project is for Crossroads students to understand the complexity of issues that surround stewardship of America's great rivers; to understand how effective leadership can result in positive environmental change; and to hone their own leadership skills in thinking through the issues to arrive at potential working solutions.

The RVL program includes the following:

- Field site monitoring over several visits, at Riverlands Migratory Bird Sanctuary, to showcase the effects of seasonality on factors such as; river, wetland, and prairie ecosystems, and migratory bird populations.
- Tours of both Metropolitan Sewer District and American Water sites to connect how we, in St. Louis, interface with the River for our drinking and waste water needs.
- Visits to Riverlands to interface with US Army Corps of Engineers (USACE) professionals installing Least Tern barge in Ellis Bay via interview and multi-media documentation, as well as opportunities to monitor the USACE habitat barge for returning terns, nesting sites, and subsequent fledglings.
- Viewing the film *Big River* in conjunction with Riverwatch Discovery activities
- Canoe and fishing workshops in conjunction with Department of Natural Resources and Big Muddy Adventures
- Bi-monthly project working days with Audubon staff on Crossroads campus
- Several industry and professional speakers (detailed below)

External Speakers & Resources

Speakers include, but are not limited to, representatives from the following:

- U.S. Army Corps of Engineers Biologists
- Missouri Department of Natural Resources
- Metropolitan Sewer District and American Water
- Big Muddy Adventures
- Missouri Botanical Gardens
- St. Louis River Keepers
- Barge Industry
- Fishing Industry

Resources necessary for programming include, but are not limited to, the following:

- Water sampling supplies
 - Water quality test kits, collection tubes, thermometer
- Macro-invertebrate study supplies
 - D-Net, Petri dishes, pipettes, hand lenses, and macro-invertebrate I.D. charts
- Birding supplies
 - Binoculars and field guides
- Notebooks (detail below)

River Vision Notebooks

Each student is given a spiral bound notebook to use in the Riversionvision Program. Students are expected to have their notebooks at each field trip/site visit and school visit, making at least one entry for each Riversionvision activity. Some activities will include specific instructions for entering data in notebooks. When not otherwise specified, students are encouraged to make journal entries (notes, sketches, etc.) during or after scheduled activities and presentations.

Dedicated notebooks for each participating student offer a measure of cohesiveness over time. We know that students are busy, having multiple pulls on their attention and focus. These notebooks will serve as reminders of past activities and accomplishments while also serving the following functions:

- Increased observation and description skills (data entry, journaling, drawing, labeling, etc.)
- Guides student inquiry
- Encourages self reflection
- Integrates science and literacy
- Formative assessment tool for teachers (either notebook itself or assignments generated from notebooks)

Least Tern Work Detail

- Students are briefly introduced to the Least Tern Habitat Project at Riverlands in their initial Dec. field trip
- USACE wildlife biologist presentation on the history and development of the successful program at Riverlands (students are able to interface with a Q & A session at that time)
- In March, students travel to Riverlands to document (journaling, photos, video) barge placement and preparation, and to interview USACE wildlife biologists.
- Late spring and summer will provide opportunities to monitor the barge for tern activity, nesting sites, and subsequent fledglings.
- Student working groups coordinate to produce either a multi-media presentation (using their own photos, recordings, etc.) or performance piece based on their recommendations for Least Tern habitat restoration and preservation solutions on the upper Mississippi River.
- Student's will showcase their knowledge of river issues, including the Least Tern project, at the Rivervision Recognition Day.

Expected Learning Outcomes Participants

Content knowledge as evidenced, by pre- vs. post-assessments and student projects, of the conceptual knowledge of course content including:

Major local industry and economic interfaces with the River, water quality parameters, flyway concept, geography of Mississippi River, invasive species concept, basic birding skills, river and wetland ecosystems/habitats, seasonal bird migration.

Technical abilities and appropriate use of equipment to complement content knowledge and solidify concepts and ideas including:

Water quality testing equipment, D-nets, binoculars, prism scopes, basic canoe skills, dichotomous keys, and field guides.

Proficiency in expressing project content in both written and multi-media forms.

Improved confidence and student attitudes toward science in general and environmental stewardship in particular.