

Sustainability Report

Phase 1

June 2009



Executive Summary

BVSD believes in green building and the benefits of integrating sustainability concepts into our daily operations. It is good for our kids, the environment and the bottom line. The Bond Program has provided us with a great opportunity to expand our current practices and employ new and innovative strategies.

In the 2006 bond issue ballot language the district committed to implementing cost-effective, environmentally-friendly and energy efficient design and construction strategies. The following measures represent some of the steps the school district took toward building sustainability in the phase 1 projects of the bond:

- We updated BVSD's technical specifications to include more sustainable elements. The revised technical specifications call for the use of materials such as low VOC emitting paints and carpets and high efficiency heating and cooling systems. In addition, our technical specifications encourage all design consultants to utilize the Sustainable Design Resource Guide which is compiled and released by the Colorado American Institute of Architects. This guide provides information on some of the green products available, and how to integrate them into design, as well as contact information for local representatives and manufacturers.
- We chose many of our architects because they had at least one Leadership in Energy and Environmental Design (LEED) Accredited Professional on their staff, and/or had designed a LEED Registered or LEED Certified Project as a company. We relied on the expertise of these professionals to incorporate sustainable design into the projects to the extent possible.
- Our bond buyer is responsible for obtaining quotes on furniture, fixtures and equipment (FFE) for new spaces and prioritizes 'green' products. The District purchases third party indoor air quality certified and in other ways environmentally friendly products where budget and availability allow. Our buyer asks potential vendors about their sustainability practices and we are looking into the possibility of establishing 'take back' programs with vendors. In these programs, vendors take back products at the end of their life cycles to recycle.
- Where possible we are re-using products and fixtures in remodels. We also are working with local company Resource to divert waste from landfills by salvaging furniture, fixtures and other materials that can be reused.
- We encouraged all design teams to incorporate daylighting into the projects—increasing the amount of natural light entering a building which reduces lighting and heating needs.
- We established environmental standards for portable classrooms used in the bond program.
- The District continues to implement energy- and resource-wise strategies implemented in previous bonds, such as low-maintenance landscaping, efficient irrigation systems, low-flow water devices, Energy Star appliances and recycled content materials.

Many additional green design elements were included in phase 1 projects and are highlighted in this report. Of particular note is Casey Middle School, which, thanks to a partnership with the City of Boulder, will be BVSD's first LEED certified building and is on track to receive LEED gold.

Our experience from phase 1 of the bond program will help us define what is possible and evaluate our goals around what we would like to achieve in terms of building sustainability. We are creating guiding principles to direct the remaining projects in phases 2 and 3 of the bond. In conjunction with the guiding principles, BVSD is creating a district-wide Sustainability Management System (SMS). The SMS is a

2 Sustainable Features in Phase 1 of the Bond Program

comprehensive approach for defining goals, visions and strategies around integrating sustainability into our operations and curriculum. The guiding principles and the SMS will be complete by June 2009.

The intent of this document is to highlight some of the sustainable design elements included in the projects completed or underway as part of Phase I of the bond. We asked architects to provide a summary of each project identifying sustainable features of the design, the results of which are included in this report. The report can be found online at:

<http://bvsd.org/bondproject/Documents/Sustainability%20Report%20Phase%20I%20Bond%20Projects.pdf>.

For more information about BVSD's Bond Program, go to:

<http://bvsd.org/bondproject/Pages/default.aspx>.

For more information about BVSD's Sustainability Programs and the Sustainability Management System, go to: <http://bvsd.org/green/Pages/default.aspx>.

Again, we appreciate your interest and encourage any comments and suggestions.

Sincerely,

The BVSD Bond Team



Boulder High School

Project Architect: Klipp Architects

General Contractor: Pinkard Construction

Project Manager: Dave Jorschumb

Budget: \$11,812,819

Projected Completion: Summer 2009

The Boulder High School project included the construction of a new 20,000 square foot (sf) main gym, a 2,700 sf office addition and a 2,000 sf stagecraft area, as well as extensive remodeling of classrooms and offices. The project design team included LEED accredited professionals. The new construction meets BVSD's technical specifications which were revised at the onset of the Bond Program to encourage a higher level of sustainability.



Sandstone used for the veneer was recycled from the existing building

Sustainable Features

Sustainable Sites

- Updated and provided additional bike racks
- Reduced onsite parking by 27 spaces

Water Efficiency

- All new fixtures installed are low flow

Materials and Resources

- Reused 65 percent of the stone removed during demolition; the remainder of the stone needed for the exterior veneer was acquired from a local source.
- Recycled 50 percent of onsite construction waste
- Used carpet with recycled content

Energy and Atmosphere

- Installed high efficiency motors in HVAC systems
- Installed energy efficient lighting throughout and highly efficient T-5 lighting in the gym
- Installed motion sensors for lighting
- Used high performance glazing on windows which reduces glare and heat gain

Indoor Environmental Quality

- Used low-emitting paints and adhesives
- Installed thermostats that allow users thermal control within a set range

Broomfield High School

Project Architect: Anderson Mason Dale Architects

General Contractor: Haselden Construction

Project Manager: Steve Schumacher

Budget: \$21,242,210

Projected Completion: Summer 2009

The Broomfield High School Bond project will provide the school with a new 53,000 sf classroom addition, classroom renovations, new administrative and counseling offices and new special education classrooms and teacher work space. The project also included upgrades to building systems and athletic facilities improvements.

Early in the design phase, the design advisory team held a sustainability workshop and identified as priorities very good daylighting and a courtyard with an outdoor learning component. Weidt Group performed an energy analysis to guide decisions related to choosing more efficient systems and products. In considering the energy efficiency of the building, the design team was guided by the idea that it is worthwhile to spend a little more on more efficient systems and equipment with shorter payback periods.



The building design maximizes daylighting.

The project design team included LEED accredited professionals. The new construction meets BVSD's technical specifications which were revised at the onset of the Bond Program to encourage a higher level of sustainability.

Sustainable Features

Sustainable Sites

- Maximized open space by designing a two-story building with a courtyard

Water Efficiency

- Installed low flow urinals and toilets
- Used water efficient landscaping

Materials and Resources

- Asphalt from the demolished parking lot was reused around portables
- Construction waste from the demolition was separated and recycled

- Used carpet and ceiling tile with recycled content
- Used regional building materials

Energy and Atmosphere

- Installed more efficient mechanical systems
- Installed 81 percent efficient boilers which will payback in 4 years
- Installed Variable Frequency Drives (VFDs) on supply/return air fans and heating pump which adjust according to need

Broomfield High School

Sustainable Features (continued)

- Installed energy efficient cooling systems
- Utilized sun shades to reduce heat in the classroom
- Used dimming ballasts, which change the lighting based on the amount of sunlight in the room
- Used R-16 wall insulation and R-30 roof insulation (both above code) in the envelope design
- Used window glazing strategies for heat and glare reduction

Indoor Environmental Quality

- Installed operable windows to allow for natural ventilation instead of mechanical
- Used low-emitting paints and carpet
- Installed lighting systems that allow for a high level of user control
- Design maximizes daylighting—virtually every occupied space has daylighting and views
- The design employs a south-facing roof to increase daylighting and make rooms warmer in the winter months.
- Increased lighting in the core of the building through directed daylighting features
- Installed thermostats that allow users thermal control within a set range

Casey Middle School

Project Architect: RB+B

General Contractor: Saunders Construction

Project Manager: Lou Novak

Budget: \$32,922,650

Projected Completion: Summer 2010

The Casey Middle School project will provide a new 110,000 square-foot, Leadership in Energy and Environmental Design (LEED) certified building. The new building will be anchored on the site by the south and west walls of the original structure. The decision to retain these walls was the result of a community-based process that involved school community members in the design process. The pursuit of LEED certification was made possible through collaboration with the City of Boulder and use of the City's Educational Excise Tax funds.



The new building is targeted to receive a LEED Gold certification

Sustainable Features

Sustainable Sites

- Implemented an Erosion and Sediment Control plan
- Phase I Environmental Site Assessment (ASTM E1527-05) was conducted; Contamination possible so Phase II assessment conducted as well; If the site is contaminated, it must be remediated to meet local, state, or federal EPA region residential standards
- BVSD and the design team made the decision to keep a middle school in central Boulder; The location is easily accessed by public transportation and within walking and biking distance to residential housing
- Bike racks and showers will be provided onsite; Site is accessed by bike lanes
- Designated parking will be provided for alternative fuel vehicles and car pools; A reduced number of parking spaces will be provided

- The design team worked to reduce the overall development footprint
- Implemented a storm water management plan
- Fifty percent of parking spaces will be underground/covered
- Installing highly reflective roof
- Using light pollution reduction strategies for interior and exterior lighting

Water Efficiency

- Project will reduce potable water consumption for irrigation by 50% over the local baseline
- Project will reduce water use by 40% compared to EPA 1992

Casey Middle School

Sustainable Features (continued)

Materials and Resources

- Collection and storage areas will be placed around the building for convenient occupant recycling and composting
- Project is recycling/diverting demo and construction waste through on-site separation, com-mingling program, and partnership with Resource. (53% diversion rate after demolition)
- Specifying products with high recycled content such as steel, concrete, gypsum, partitions, tile, etc.
- Specifying products harvested and manufactured within 500 miles of the site
- 50% of all permanently installed wood based products will be FSC certified

Energy and Atmosphere

- Building design will optimize energy performance by 42%
- Project will include an on-site solar system (20kW)
- Project will utilize geothermal heating and cooling
- Commissioning agent will perform enhanced commissioning and post-construction measurement and verification
- School district is considering buying two years of green power to offset 35% of the electricity use

Indoor Environmental Quality

- Designing classrooms and learning spaces to meet the listed Sound Transmission Class (STC) requirements, excepting windows, and to achieve

minimal background noise level in classrooms of 45 dBA

- Developing and implementing an Indoor Air Quality (IAQ) management plan that promotes good housekeeping practices, protects absorptive construction materials, and incorporates air filters during construction and prior to occupancy; Will prohibit smoking within 25 feet of the building entrances once building is closed
- Upon completion, will flush out the building with a designated volume of air to remove toxins prior to occupancy
- All adhesives and sealants within weather barrier shall meet the testing and product requirements for low-emissions
- All paints and coatings within weather barrier shall meet the testing and product requirements for low-emissions
- All flooring systems within weather barrier shall meet the testing and product requirements for low-emissions
- All composite wood and agrifiber products (including plywood, particleboard, MDF, etc.) within the weather barrier to contain no urea-formaldehyde

Casey Middle School

Sustainable Features (continued)

- Providing individual lighting controls for 90% (minimum) of administrative offices and regularly occupied spaces to enable adjustments to suit individual task needs and preferences. For classrooms and core learning spaces provide systems that operate in two modes: general/high(35 - 50 fc at desk level) and AV/low (10-20 fc)
- Providing thermal comfort controls or operable windows for 50% of occupants and for shared multi-occupant spaces
- Will implement thermal comfort survey of occupants 6-18 months after occupancy. Plan should be developed for all adults and students grade 6 and above
- Project will achieve a prescribed daylight level in 75 - 90% of all classrooms and core learning space; 75% of all other regularly occupied spaces

- Incorporating views to exterior for 90% of occupants
- Project will meet Impact Insulation Class and achieve a maximum unoccupied background noise level in classrooms of 35 dBA

Innovation and Design

- Using low impact cleaning and maintenance equipment
- Doubling the open space - 50%, currently at 131%
- Zero Waste - Cafeteria using food pulper and fully compostable items for food service
- Will design curriculum based on the high performance features of the building, and commit to implementing the curriculum within 10 months of LEED certification

Centaurus High School

Project Architect: CSNA Architects
General Contractor: Brown Schrepferman
Project Manager: Tom Blahak
Budget: \$5,948,991
Completed: Winter 2009

The Centaurus project includes construction of a 5,400 sf, two-story classroom addition and renovation of administration, counseling and special education classrooms and teachers offices. The project also included upgrades to building systems such as HVAC, fire alarms and intercoms, interior signage and exterior site work as well as athletic facilities improvements.

The project design team included LEED accredited professionals. The new construction meets BVSD's technical specifications which were revised at the onset of the Bond Program to encourage a higher level of sustainability.



The existing corridor was maintained between the old and the new building

Sustainable Features

Materials and Resources

- Reused existing casework
- Maintained existing corridor between the old and new areas of the building, maintained existing walls
- Used local concrete and brick
- Reused 100% of existing exterior walls, floor, and roof and 50% of interior non-structural elements

Energy and Atmosphere

- Replaced two primary boilers with high efficiency models
- Installed motion sensors for lighting in classrooms and offices
- Installed high efficiency lighting in new areas

Indoor Environmental Quality

- Used low-emitting carpets
- Installed thermostats that allow users thermal control within a set range
- New spaces have large windows to increase daylighting and views

Crest View Elementary

Project Architect: Eidos Architects
General Contractor: Tower One Construction
Project Manager: Dave Jorschumb
Budget: \$5,892,213
Completed: Fall 2008



A reflective roof was used on all new additions to reduce heat gain in the building.

The Crest View Elementary Bond project provided the school with a new 4-classroom addition, new cafeteria and kitchen, new Kindergarten classrooms, remodeled administrative offices and a performance platform in the gym. The project also included building repairs and systems upgrades.

The project design team included LEED accredited professionals. The new construction meets BVSD's technical specifications which were revised at the onset of the Bond Program to encourage a higher level of sustainability.

Sustainable Features

Sustainable Sites

- Installed additional bike racks
- Used aluminum metallic reflective roof on all of the new roof addition to reduce heat gain; In addition, the product does not emit strong odors when installed as built up roofs do

Materials and Resources

- Maintained the floors, walls and roof in remodeled areas
- Some kitchen equipment was reused
- Recycled demolished concrete
- Design specified materials with recycled content where possible
- Used regional materials including masonry block and brick
- Used linoleum (vs. vinyl composition tile) which is a rapidly renewable material in the new hallways and cafeteria

Energy and Atmosphere

- Equipment meets extra standard for refrigerant management, beyond code
- Installed all new windows throughout; windows are one-inch insulated with low-e glass and integral blinds
- Installed motion sensors for lighting

Indoor Environmental Quality

- Installed individual controls for lighting
- Installed and updated thermostats to allow users thermal control within a range
- All new rooms have exterior walls to take advantage of daylighting and views
- Enhanced acoustical performance with a structural system with internal acoustical properties to eliminate the ceiling, additional acoustics in the cafeteria and concrete block walls to cut sound

Innovation and Design Process

- Created infrastructure to be solar ready

Fairview High School

Project Architect: RTA, Inc.

General Contractor: Golden Triangle

Project Manager: Steve Schumacher

Budget: \$10,910,579

Projected Completion: Summer 2010

The Fairview High School project includes classroom renovations, remodeling of the senior balcony and counseling offices, locker replacement and construction of a new two-story classroom addition. Also included in the project are upgrades to boilers, the HVAC system, the communication system and interior signage.

The project design team included LEED accredited professionals. The new construction meets BVSD's technical specifications which were revised at the onset of the Bond Program to encourage a higher level of sustainability.



Eco-friendly materials were used, including carpet and ceiling tiles with recycled content and low-emitting paints.

Sustainable Features

Water Efficiency

- Remodeled some bathrooms, and replaced all fixtures with low flow toilets and urinals
- Design uses native grasses instead of sod on 1/5 of the original turf grass

Materials and Resources

- Existing structure was reused where possible in the renovation to reduce demolition waste.
- Reused lockers
- Used carpet and ceiling tiles with recycled content
- Used some regional materials

Energy and Atmosphere

- Replaced existing boilers with high efficiency condensing boilers
- Installed economizers on the new rooftop units to provide cooling from outside air
- Used motion sensors for lighting
- Used dimming ballasts, which change the lighting based on the amount of sunlight in the room

Indoor Environmental Quality

- Used low-emitting paint
- Installed operable windows
- Installed Solatubes in the addition
- Used sloped ceilings in the classrooms to bounce light deeper into the room
- Used light shelves to bring light inside

Foothill Elementary School

Project Architect: Larson Incitti

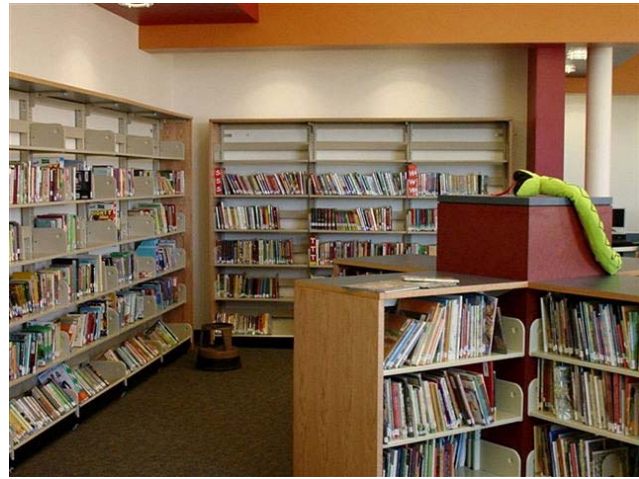
General Contractor: Haselden Construction

Project Manager: Dave Jorschumb

Budget: \$9,051,405

Projected Completion: Summer 2009

The Foothill Elementary project includes the construction of a new wing that houses classrooms, the IMC and work rooms. Classroom renovations, building systems upgrades and renovation and expansion of the administrative offices also are part of the project. The project design team included LEED accredited professionals. The new construction meets BVSD's technical specifications which were revised at the onset of the Bond Program to encourage a higher level of sustainability.



The new library features high efficiency lighting and green seal certified carpet

Sustainable Features

Water Efficiency

- All new fixtures installed are low flow

Materials and Resources

- Trees removed from the site went to neighbor for firewood
- Used materials with recycled content such as masonry, roof and building insulation, concrete, tile, gypsum, carpet, metal toilet partitions and steel parts and pieces
- Used regional building materials such as brick, fly ash for concrete, mortar, cement, sand and steel joists

Energy and Atmosphere

- Installed high efficiency boilers
- Installed energy efficient lighting
- Installed motion sensors for lighting
- Surpassed State envelope requirements by 33% using high efficiency roof and wall insulation

- High efficiency glazing on windows

Indoor Environmental Quality

- Increased ventilation by upgrading and installing additional unit ventilators
- Used low-emitting sealants and paints
- Used green seal certified carpet
- Installed formaldehyde free case work
- Installed thermostats that allow users thermal control within a set range
- All new classrooms have daylighting and views

Innovation and Design Process

- Created infrastructure for school to be solar ready

High Peaks/Boulder Community School of Integrated Studies

Project Architect: Lantz-Boggio
General Contractor: W. O. Danielson
Project Manager: John Bollinger
Budget: \$7,042,039
Projected Completion: Summer 2009

The High Peaks/BCSIS project includes extensive remodeling as well as new construction. Through the project, the school will receive a new main gym, new art and music classrooms, new fifth grade classrooms and extensive renovations. The project also includes upgrades to building systems such as HVAC.



Building additions take advantage of opportunities to maximize daylighting

The project design team included LEED accredited professionals. The new construction meets BVSD's technical specifications which were revised at the onset of the Bond Program to encourage a higher level of sustainability.

Sustainable Features

Sustainable Sites

- Used a light colored membrane roof to reduce heat gain; in addition the product does not emit strong odors when installed as built-up roofs do

Water Efficiency

- All new toilets installed are low flow
- Used water efficient landscaping

Materials and Resources

- Recycled onsite construction waste
- Used carpet with 10% recycled content
- Used vinyl composition tile and roofing product with recycled content

Energy and Atmosphere

- Met the minimum energy performance needed for LEED credit
- Used high efficiency mechanical equipment
- Installed energy efficient lighting

- Installed motion sensors for lighting
- Specified glass insulation with high R values

Indoor Environmental Quality

- Used low-emitting adhesives, sealants, paints and carpets
- Gym included translucent glazing panel around the upper portions to reduce or eliminate the need for lighting
- All new and renovated spaces have views and increased daylight
- Used Solatubes in each remodeled classroom
- Tried to meet enhanced acoustical performance LEED standard for the gym
- Sunshades reduce glare

Innovation and Design

- Created infrastructure for school to be solar ready

Lafayette Elementary

Project Architect: Barker Rinker Seacat

General Contractor: Mark Young Construction

Project Manager: Tom Blahak

Budget: \$3,009,587

Completed: Fall 2008

The Lafayette Elementary Bond project included construction of a 4,800 sf classroom addition, a 1,767 sf multipurpose room and the expansion and remodeling of the administration suite. In addition, upgrades were made to building systems such as HVAC and intercom. The project design team included LEED accredited professionals. The new construction meets BVSD's technical specifications which were revised at the onset of the Bond Program to encourage a higher level of sustainability.

Sustainable Features

Water Efficiency

- All new toilets installed are low flow

Materials and Resources

- Used local brick for veneer

Energy and Atmosphere

- Installed energy efficient lighting
- Installed motion sensors for lighting
- New windows have high efficiency low E glass

Indoor Environmental Quality

- Increased ventilation and thermal control with operable windows in all new spaces
- Used low-emitting paints
- Utilized southern orientation to incorporate daylighting



The classroom addition at Lafayette Elementary features ample

Louisville Middle School

Project Architect: SLATERPAULL Architects

General Contractor: Adolfson & Peterson
Construction

Project Manager: Dave Compton

Budget: \$16,632,864

Projected Completion: Summer 2009

The Louisville Middle School project will provide the school with a new two-story addition to house the auditorium, music, art, applied technology and IMC. The addition also will feature a new student commons area. Also included in the project are classroom renovations, new signage, IT improvements and a new intercom system.

The project design team included LEED accredited professionals. The new construction meets BVSD's technical specifications which were revised at the onset of the Bond Program to encourage a higher level of sustainability.



Brick was salvaged from the old building and reused in the new construction

Sustainable Features

Sustainable Sites

- New construction did not increase light pollution
- Auditorium may be used jointly by the community

Water Efficiency

- New fixtures installed were low flow

Materials and Resources

- Used stained concrete to finish the floors instead of floor covering
- Used brick salvaged from the demolished building in the new addition
- Diverted construction waste materials from landfills
- Used interior finish materials with high recycled content such as carpet, ceiling tiles and acoustic tiles

- Used regional brick

Energy and Atmosphere

- Installed high efficiency boilers
- Installed efficient fans and pumps
- Installed 85 percent efficient domestic hot water heaters
- Installed motion sensors in all new rooms to control lighting
- Used efficient wall insulation (R-15) and roof insulation (R-38)
- Used glazing strategies to reduce glare and heat gain

Indoor Environmental Quality

- Used low-emitting paints and sealants
- Classrooms have dimmable lights

Louisville Middle School

Sustainable Features (continued)

- Installed thermostats to allow users control of temperature within a set range
- Maximized daylighting with interior light shelves that bounce light into the classroom and exterior sun shade devices to reduce glare and heat gain
- Installed Solatubes in halls and classrooms
- Maximized views in the new spaces
- Used acoustic insulation in classroom walls to create quieter teaching space
- Used acoustic panels in the auditorium, music rooms and common area

Innovation and Design Process

- School/construction project is being used as a teaching tool
 - Taking old boiler covers and using them for display
 - Construction club is ongoing, contractor is participating.
 - Creating a display in library of start to finish

Manhattan Middle School

Project Architect: OZ Architecture
General Contractor: Adolfson & Peterson Construction
Project Manager: Tom Blahak
Budget: \$11,061,508
Completed: Winter 2009



A 9.8 kilowatt photovoltaic system was installed on the roof of the new wing

The Manhattan Middle School project will provide the school with a new six-room science wing, a new 2,286 sf band room and extensive remodeling to classrooms, offices and other spaces. The project also includes extensive upgrades to the building systems such as HVAC and electrical.

The project design team included LEED accredited professionals. Incorporating sustainable features into the design was a high priority for the design professionals and the design advisory team. The new construction meets BVSD's technical specifications which were revised at the onset of the Bond Program to encourage a higher level of sustainability.

Sustainable Features

Sustainable Sites

- Reduced light pollution by capturing light in the building and aiming exterior flood lights down

Water Efficiency

- Water efficient landscaping was achieved through the use of ditch water
- Updated irrigation lines and used the existing the cistern and ditch
- Installed master irrigation controller with weather station to monitor water requirements

Materials and Resources

- Reused as much as possible including doors, frames, cabinets, ceiling tiles, lockers and 30 percent of casework.
- Recycled steel and other metal
- Used materials with recycled content

Energy and Atmosphere

- Installed onsite renewable solar to provide power to select systems in the new Science wing. When demand is low electricity is fed back into the grid.
- Installed two solar and wind powered light poles onsite
- Installed motion sensors for lighting in all new spaces

Indoor Environmental Quality

- Used low-emitting paints, door stain and concrete floor finishes
- Installed thermostats to allow users control of temperature within a set range
- Designed for daylighting and views in 75 percent of new classrooms

Manhattan Middle School

Sustainable Features (continued)

- Polished concrete floors utilized a certified green system with no off gassing and sustainable maintenance which does not need chemical stripping

Innovation and Design Process

- Corridor ceilings are exposed so students can see building systems making the building a learning tool
- Teachers plan to integrate the renewable systems into the curriculum.

Southern Hills Middle School

Project Architect: MOA Architects
General Contractor: Golden Triangle Construction
Project Manager: Lou Novak
Budget: \$10,169,858
Projected Completion: Summer 2009



The new additions were designed with attention to daylighting and views.

The Southern Hills Middle School project includes extensive remodeling as well as new construction. Through the project, the school will receive a new main gym, new band and orchestra classrooms, new science and special education classrooms, a larger IMC and larger, remodeled administrative and counseling offices and remodeled classrooms. The project also includes upgrades to building systems such as HVAC, irrigation and fire sprinklers. These systems upgrades should result in greater energy efficiency.

The project design team included LEED accredited professionals. The new construction meets BVSD's technical specifications which were revised at the onset of the Bond Program to encourage a higher level of sustainability. In addition to specifying products that were eco-friendly, the design team also was conscious of not specifying any products where possible. For example, floors in the new and remodeled areas of the school are 'finished' as stained concrete rather than using a floor covering product such as tile.

Sustainable Features

Sustainable Sites

- Added new bike racks and relocated them
- Used built-up roofs, with a light colored aggregate to reduce heat gain

Water Efficiency

- Installed low flow fixtures

Materials and Resources

- Salvaged many of the large boulders and bricks for reuse onsite
- Recycled all materials possible; had sorting bins for recycling and reuse

Energy and Atmosphere

- Upgraded the mechanical and electrical systems
- Limited air conditioning in the building
- Installed energy efficient lighting
- Installed motion sensors for lighting
- Sundolier daylighting technology*

Indoor Environmental Quality

- Replaced existing ventilation systems
- Installed thermostats that allow users thermal control within a set range
- The new additions were designed with attention to daylighting and views.

* The Sundolier was installed on the new Science wing in conjunction with Bond construction but was not paid for with Bond funding.

Summit Middle School

Project Architect: Hutton Architecture Studio

General Contractor: Golden Triangle Construction

Project Manager: Dave Compton

Budget: \$5,200,000

Completed: Fall 2008



Large windows in the new library provide ample daylighting

The Summit Middle School project will provide the school with a new IMC and support spaces, new science labs and art studio space, expanded and remodeled health clinic and faculty areas and new carpet and floor finishes throughout the building. The project also includes extensive upgrades to the building's systems including mechanical and electrical systems, a new fire sprinkler system, irrigation and communications.

The project design team included LEED accredited professionals. Incorporating sustainable features into the design was a high priority for the design professionals and the design advisory team. The new construction meets BVSD's technical specifications which were revised at the onset of the Bond Program to encourage a higher level of sustainability.

Sustainable Features

Water Efficiency

- Installed low flow fixtures

Materials and Resources

- Reused existing light fixtures and duct work to the extent possible
- Recycled existing asphalt where possible
- Recycled existing pea gravel through a contractor negotiated exchange of old gravel from the site for clean
- Used carpet with an overall post consumer recycled content of 30% or more
- Used bio-based tile made from corn or similar natural material; this product includes 10% pre-consumer recycled

content, affords low VOC emissions, and offers enhanced performance over traditional vinyl composite tile

- Used linoleum tile flooring which has natural content
- Used local brick as primary exterior finish material

Energy and Atmosphere

- Installed geothermal heating and cooling for the new addition
- Installed high performance (8' diameter) ceiling fans to de-stratify IMC volume while also reducing both cooling and heating needs
- Installed high efficiency electric lighting

Sustainable Features (continued)

- Installed dual switched (50%/100%) motion sensors for lighting
- Used glazed triple pane windows which significantly increase efficiency
- Included a continuous layer of rigid insulation in wall assembly (R6 per inch thickness)
- Upgraded to higher efficiency 100% cotton fiber insulation (recycled blue jeans)
- IMC form and roof design has been articulated to provide solar protection for east, west, and southern exposure
- Utilized sunshades on windows with east and west exposure to reduce heat in the classrooms
- Performance tuned window glazing in classrooms to each specific exposure
- Window glazing in the IMC maximizes natural light while providing glare control through diffusion and specific levels of transmittance

Indoor Environmental Quality

- Installed operable windows to allow natural ventilation in lieu of mechanical system
- Used low-emitting paints
- Casework was manufactured using low-emitting formaldehyde wood products
- Solid core wood doors were manufactured using low-emitting adhesives and sealants and no added urea-formaldehyde
- Installed Solatubes (w/ dimming capability) in each classroom