GREEN SCHOOLS CASE STUDY
Verrado High School

School name: **Verrado High School** - Agua Fria Union High School District
Address: 20050 W. Indian School Road, Buckeye 85396
Contact: Gary Gable
Phone number: 623-932-7019
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General location: Buckeye
Grade Levels: 9-12
Number of students: 302 current projected 1,600 capacity 2,137
Number of staff: 160
Superintendent/Principal: Tom Huffman
Phone number: 623-853-0369

Physical descriptors:

building area	220,000 sq ft.	number of stories	2
number of buildings	1	number of classrooms	74
landscape area	30 acres*	site area	53 acres

*includes all fields

Date of "commissioning: August 2006
School Cost: total cost $36 million, $36 construction budget $163 per square foot
Additional funding sources: SFB funds: $24,968,000.00; 50 acre site and $2,250,000 donated by developer; school funding bond $9,000,000

SUSTAINABLE SITES GOALS

Erosion and Sedimentation Control
Site selection
Alternative Transportation - public transportation access
Alternative Transportation - bicycle storage and changing rooms
Alternative Transportation - parking/carpooling
Reduced Site Disturbance - Development Footprint
Stormwater Management - rate and quantity

Sustainable sites strategies used

Results obtained

Considering building orientation on the site improved cost effectiveness of maintaining the school **YES** NO N/A

Environmental Benefits	**Measurement**
Building Area used as Community Space	200,000 sq, feet

WATER EFFICIENCY GOALS

Water efficient landscaping reduce by 50%
Water Use Reduction (20%)
Water Use Reduction (30%)

Water efficiency strategies used
Low-flow fixtures
Waterless urinals
Low-flow showers
Handwash Stations

Results obtained
Cuts water use by roughly 23 % though low-flow fixtures, waterless urinals and low-flow showers and hand-washing stations.
30% water savings as compared to the Energy Policy Act of 1992 requirements

Additional information:
Including water saving devices increased overall cost YES **NO**
Overall, incorporating water saving devices into the school was worthwhile
YES NO

ENERGY AND ATMOSPHERE

Energy sources: electric, natural gas

HVAC type	Central	Number of Units	2	BTU Rating	800 tons/9.6 million BTUs
Insulation R-Values	Roof	R-30	walls		
Window types	Dual pane/ low e tinted				

List performance measurement equipment installed in this facility:
CO2 monitoring
Building BTU measurement for heating and cooling

ENERGY AND ATMOSPHERE GOALS

Fundamental building systems commissioning
Minimum Energy Performance
CFC Reduction in HVAC & R Equipment
Optimize energy performance
EA Credit 1.1a, 20% New 10% Existing
EA Credit 1.1b, 20% New 10% Existing
EA Credit 1.2a, 25% New 15% Existing
EA Credit 1.2b, 30% New 20% Existing

Renewable energy 5 %
Renewable energy 10%
Renewable energy 20%
Ozone depletion
Measurement and verification

Energy and Atmosphere strategies used
Daylighting
Integral shading devices
East/west orientation of main wings
High efficiency central chiller facility
Insulated block wall system w/ furring (R-19)
Insulated roof construction (R-30)
High Efficiency Indirect Lighting
Daylighting/Occupancy sensors
High-efficiency glazing w/ shading devices
Daylighting and lighting controls
Variable Speed Drives on Chilled & Hot Water Pumps
Demand Control Ventilation
Energy Management system
High Efficiency Chiller in Central Plant

Results obtained
The school is 28 % more energy-efficient and a savings of $50,000 per year is expected. It has high-efficiency lighting, daylight and occupancy sensors and daylighting and light controls. It also has insulated block walls and roof.

MATERIALS AND RESOURCES GOALS

Storage and Collection of Recyclables
Construction Waste Management (Divert 50%)
Recycled Content – Specify 10% (post consumer + ½ pre-consumer)
Recycled Content – Specify 20% (post consumer + ½ pre-consumer)
Local/regional materials, 10% manufactured locally
Local/regional materials, of 20% above, 50% harvested locally
Rapidly renewable materials
Certified wood

Integrated material strategies used
Local brick and steel used
Ultra-durable porcelain tile floor
Structural Steel
Hollow metal doors
Local Brick and masonry
Low VOC adhesives, sealants, paints and Coatings
CRI certified carpet
Composite panels with no added Urea Formaldehyde

Results obtained
About 85 % of the building materials used on the project are local materials. Materials include structural steel, hollow metal doors, brick and masonry, sealants, paints and coatings and carpet.

Additional information:
Recycling during the construction phase was
Very easy easy **average** difficult very difficult n/a

Finding materials with recycled content was
Very easy easy **average** difficult very difficult n/a

Finding materials to "reuse" was
Very easy easy **average** difficult very difficult n/a

INDOOR ENVIRONMENTAL QUALITY GOALS

Minimum IAQ Performance
Environmental Tobacco Smoke Control
Carbon Dioxide (CO2) Monitoring
Construction IAQ management plan (During construction)
Construction IAQ management plan (Before Occupancy)
Low emitting Materials (Adhesives and Sealants)
Low Emitting Materials (Paints)
Low emitting materials (Carpet)
Low Emitting materials (Composite wood & Agrifiber)
Indoor Chemical & Pollutant Source Control
Thermal Comfort (Comply with ASHRAE 55-1992)
Daylight and views – daylight 75% of spaces
Daylight and views – views for 90% of spaces

Indoor environmental quality strategies used
CO_2 monitoring

Additional Information:
Finding materials with low VOC content was:
Very easy **easy** average difficult very difficult n/a

The benefit from incorporating daylighting as been:
Very beneficial beneficial no change not worth the effort

Students and staff ***like*** *dislike* the daylighting aspects of the buildings.

Staff absenteeism has decreased: **Unknown** Yes No

Student absenteeism has decreased: **Unknown** Yes

Asthma attacks have decreased: **Unknown** Yes No

INNOVATION AND DESIGN PROCESS GOALS

Green Cleaning/Housekeeping
EPA IAQ tools for Schools Program
Innovation in Design, Organic Landscaping
Innovation in Design, Shared Use Facilities,
Neighborhood Park Facilities & School Playfields
LEED® Accredited Professional

Innovation and design strategies used

Result obtained

OVERALL BENEFITS

The green projects included in the design and operation of this school have improved the overall efficiency of the campus: **Yes** No

We have used the "green" features of our school as teaching tools: **Yes** No

Specifically we have:
Students are aware of the green building design and features and answer visitors questions about the building.

TRAINING

Did staff attended trainings on Design for Green Schools? **Yes** No

Staff attended trainings on Green Schools Operations and Maintenance? **Yes** No

Has staff attended trainings on energy efficient operations? **Yes** No

Has staff attended trainings on IPM? Yes **No**

Staff has attended trainings on water conservation? Yes **No**

Has staff attended trainings on pollution prevention for transportation? **Yes** No

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Construction Co.: Adolfson and Peterson Construction. 5002 S. Ash Avenue, Tempe, Arizona, 85282, 480-345-8700