GREEN SCHOOLS CASE STUDY
Gila Ridge High School

Name: **Gila Ridge High School** Yuma Union High School District

Address:	7150 East 24th Street, Yuma, AZ 85365
Contact:	Lynn Ware
Phone number:	928-502-4634
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General location:	East Yuma
Grade Levels: (K- 6, 9-12, etc.)	9-12
Number of students: projected:	1800 (currently 916, freshman/sophomore)
Number of staff:	82 current
Principal:	Jamie Sheldahl
Phone number:	928-502-6400

Physical descriptors:

Building area	274,000 sq ft	Number of stories	1 & 2
Number of buildings	3	Number of classrooms	75
Floor area of conditioned space	274,000 sq ft	Site area	47 acres
Landscape area	~ 24 acres (includes sports fields)	Building footprint area	212,900 sq ft

Date of "commissioning":	August 2007
School Cost: total cost	$44,900,000
per square foot	$163.86

Costs include in square footage cost are: All building and site construction.

Additional funding sources: SFB funding and Local School District bond money

SUSTAINABLE SITES GOALS

Building area used as Community Space
Light Pollution Reduction

Sustainable sites strategies used

The auditorium and athletic fields are used as community space
All outdoor lighting was designed per City of Yuma lighting ordinances which includes the requirement for fully shielded light fixtures to cut off lighting at the horizontal. The football field and tennis courts sports lighting included manufacturer shielding to cut off the lighting and to prevent light trespass at adjoining properties.

Results obtained
The football field is used jointly with the Community College and various events are held in the auditorium
Lighting design prevents light trespass to adjoining properties

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	10.8% - 29,500 sq, feet
Pervious Surface area replacing hard surfaces	152, 500 Sq. ft

WATER EFFICIENCY GOALS

Water efficient landscaping
Water Use Reduction

Water efficiency strategies used
Irrigation – water is diverted from the Colorado River to the nearby elementary school pond, it is then used to water the athletic fields
Urinals have flush sensors that are battery operated
Native trees

Results obtained
Water use figures will be supplied as obtained

Additional information:

Overall, incorporating water saving devices into the school was worthwhile
YES NO

ENERGY AND ATMOSPHERE GOALS

Energy sources: **electric, natural gas**

HVAC type		Number of Units		BTU Rating	
Insulation R-Values	roof	R-30	walls	R-19	
Window types	Low-E insulating glass, .41 shading coefficient, 0.30 U value				

Energy and Atmosphere strategies used

Chillers – Carrier evergreen 600 tons, VFD power fans also energy efficient, 134a Freon
Lighting – T-8 or T-5 fluorescent light fixtures with electric ballast or compact fluorescent lamps
Fluorescent high bay light fixtures - designed and installed at the new gymnasium and practice gymnasium. The fluorescent high bays were specified with T5 high output fluorescent lamps and electronic ballasts. The high bay lighting is controlled by occupancy sensors to shut off lighting during the day between classes and when not occupied. The high bay lighting is circuited with 3 different circuits to permit manual 30% to 70% reduction in lighting levels.
Fluorescent high bay light fixtures - designed and installed at the new dining hall. The fluorescent high bays were specified with compact fluorescent lamps and electronic ballasts. The high bay lighting is circuited with 2 different circuits to permit manual reduction in lighting levels.
Recessed downlights - specified with compact fluorescent lamps and electronic ballasts.
Classrooms, conference rooms, assembly areas, and many offices - designed with manual dual switching to allow for 30% to 70% reduction in lighting levels.
Corridors, and restrooms - designed with occupancy sensors for automatic shutoff of lighting when the areas are not occupied.
Accent lighting at trophy and display cases - designed with time clocks to shut off lighting after hours.
Outdoor lighting - efficient metal halide lamps specified. All outdoor lighting is controlled by automatic controls. Photocells are used for dusk to dawn control of security lighting. Time clocks are used with photocells to shut off normal lighting at designated times and to limit use between dusk and dawn.
Sports lighting at the new football field and tennis courts - specified and installed with the MUSCO “Light Structure Green” lamp technology. This new lamp and ballast technology and coordinated automatic control system results in significant energy savings.
All feeder and branch circuit wiring - designed to minimize voltage drop to NEC recommended levels. Properly sized wiring minimizes resistive energy losses in wiring.
Computer room receptacles for computers and monitors - set up with manual shut off controls to allow for nightly shut down.
Daylighting - All teaching spaces have North or South oriented daylighting and multi level discretionary switching, which allows lamps to be turned off.
Slanted classroom ceilings
Toilets battery operated
Motion sensors in some areas
Glass – low-e glass
Maintenance manages control system for climate
Motors are VFD (variable frequency drive)

Results obtained

Results will be provided as available.

MATERIALS AND RESOURCES GOALS

Storage and Collection of Recyclables
Construction Waste Management
Recycled Content

Construction waste management strategies used
Arizona School Furniture recycled cardboard

Integrated material strategies used
Carpet recycled content – is totally recyclable
School clubs will recycle – items unknown at this time

Results obtained
Less waste sent to the landfill

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

INDOOR ENVIRONMENTAL QUALITY (IAQ) GOALS

Standards for IAQ Performance
Environmental Tobacco Smoke Control
Carbon Dioxide (CO2) Monitoring
Ventilation Effectiveness
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
Controllability of Systems, perimeter
Controllability of systems, non-perimeter
Thermal Comfort (Comply with ASHRAE 55-1992)
Thermal comfort - permanent monitoring system
Daylight and views – daylight 75% of spaces
Daylight and views – views for 90% of spaces

Indoor environmental quality strategies used
Paints – water based
Entrances to classroom buildings have walk off carpet – 6’

Results obtained
A healthier environment for students and staff.

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

Students and staff ***like*** *dislike* (circle one) the daylighting aspects of the buildings.

Staff absenteeism has decreased: Yes No **To soon to tell**

Student absenteeism has decreased: Yes No **To soon to tell**

Asthma attacks have decreased: Yes No **To soon to tell**

INNOVATION AND DESIGN PROCESS GOALS

Innovation and design strategies used
Stadium joint use with Junior College
Auditorium joint use with community
Air conditioned dining room is downsized (can not seat entire lunchtime student load) by utilizing outdoor dining tables under fabric shading structures. Students have a choice to eat indoors or outside.
Student circulation and outdoor seating is on the North side of 2 story building to take advantage of shade.
Two “breezeway” corridors, one linking the music rooms with the auditorium and one linking the dressing rooms with the gymnasiums, buffer cooling losses from fully conditioned spaces. These corridors use limited air conditioning.

Result obtained
Results will be provided as available.

OVERALL BENEFITS

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

LESSONS LEARNED

Before design phase: The SFB does not fund enough for schools to promote green design. The local school bond made all of the energy saving items possible.

During design phase: The design team, including the consulting engineers (all from Yuma) worked hard to design and specify sustainable materials and systems, while meeting a very tight budget.

After completion: The mechanical engineer spent many hours “commissioning” the system with the plumbing and HVAC contractors, making sure the end product was functioning correctly.

If only one of your “Green Features” could be highlighted, it would be: (include why)

Building orientation is the single most important step in the design process. Placing 90% of the windows to the North or South so that direct heat gain and glare can be controlled is so simple and if done early absolutely free. Locating the student circulation on the North side of the 2 story classroom building allows shading opportunities.
Site layout and building orientation in the incredibly hot climate of Yuma, Az is critical.

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