

Greenbrier Middle School

Greenbrier, Arkansas

Architect

Jackson Brown King Palculict Architects, Inc.



Photos Courtesy of Tim Sittler, Sittler & Henry

The site plan of Greenbrier Middle School presented a number of challenges. First, the new middle school was to replace an existing building built in the 1950's, while taking advantage of contemporary sustainable design practices. There was a need to connect the District administration building at the northeast to the rest of the campus. There was also a desire to form a connection between the south campus buildings with the cafeteria/band building to the west. To accommodate those goals, the building acts as a hub that provides access to the campus while establishing an anchor to the east side of the central campus plaza.

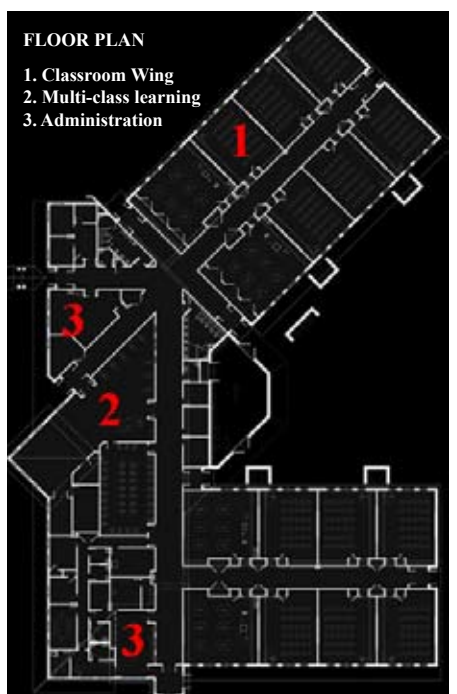
The building is organized in three "bars". There are two classroom wings or "bars" built on a double loaded corridor with clerestories running the length of the building. Masonry up to ten feet high gives durability and reduces maintenance. The third "bar" contains the administration and

multi-class learning functions. This bar has masonry up to the window sill height and clad with cementitious siding above. The educational spaces in the Greenbrier Middle School include twelve classrooms, four science labs, one computer lab, one multi-media center and support spaces. The administrative spaces include reception office, nurses' station, principal's office and vice principal's office, teacher work room, a guidance suite and support

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Product Information

Fiber Cement Siding: HardiPlank®
Sheathing: **GlasRoc® by CertainTeed**
Acoustic Wall Panels: Tectum
Drywall & Acoustical Treatment: USG
Metal Roof: McElroy
Entrances & Storefronts, Windows: United States Aluminum



Greenbrier Middle School: a Model of Good Design

Jackson Brown King Palculict Architects of Little Rock is dedicated to delivering projects that meet their client's goals and needs. Their client, the School District of Greenbrier, Arkansas wanted a new middle school that followed the sustainable practices of today.

Greenbrier Middle School radiates sustainable practices coupled with the cost savings from low-maintenance materials. Huge amounts of natural light, rooms equipped with state-of-the-art motion sensors, environmentally friendly and low maintenance stained concrete, and other materials were used to produce a facility that is a model of sustainability and cost savings.

"The top two items that come to mind about Greenbrier are the huge amounts of natural light in the school and the beauty of the polished concrete floors with their low maintenance," said Randy Palculict, AIA of Jackson Brown King Palculict. "We used large windows in the class rooms and clerestories in the corridors for maximum natural light." Studies show that students perform better in natural light compared to electric lighting.

"We coupled the natural lighting with motion sensors in every room for efficiency," continued Palculict. Motion sensors not only save energy turning off the system but also prolong the life of the lighting system. The National Clearinghouse for Educational Facilities reported in *Lighting for Schools*, Dec. 2001 that by reducing the use of the electric lights by 50 percent, their life span will be doubled and associated maintenance costs cut in half.

Many public spaces are now looking into and using concrete flooring instead of carpet and VCT. The environmentally friendly aspects of using concrete were put to use at Greenbrier. "The maintenance of the polished concrete floors at Greenbrier is easy – they just wet mop the floors," explained Palculict. Bruce Carothers of American Concrete Concepts, Russellville, Ark. installer of the polished concrete at Greenbrier estimates the life of properly maintained polished concrete floors can last 20 years or more and the maintenance cost is between 28 to 40 cents per square foot – quite a savings for schools. "Polished concrete is a low-maintenance floor and uses a maintenance plan that uses no dangerous chemicals and doesn't contribute to VOCs." stated Carothers.

In addition to the natural lighting and polished concrete flooring Jackson Brown King Palculict Architects incorporated other building products for a greener and healthier school facility. GlasRoc® by CertainTeed, a high performance exterior sheathing contributes to mold resistance. Palculict likes working with CertainTeed, "They are helpful to architects, they provide technical support and have readily available information concerning the sustainability aspects of their products. Their products are high quality and priced competitively and we appreciate that." Other products used for the sustainable design was metal roofing by McElroy Metals to reflect solar radiant heat which can help save on cooling costs. Cementitious siding by James Hardie, uses raw materials that are low in toxicity and are longer lasting leading to reduced maintenance and repair costs. These and other products all team together for sustainability and cost savings for the School District. The Greenbrier School District and its students will reap the benefits of sound design by Jackson Brown King Palculict Architects for years to come.



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spaces. The building increases campus connectivity, separates parent drop-off from bus drop-off, and is designed to be an energy efficient, healthy learning environment.

The materials used require little or no maintenance and meet VOC (Volatile Organic Compounds) requirements set by the USGBC LEED® certification process. In addition, to decrease material transportation and to keep jobs in Arkansas, the primary and secondary structure of the building is Arkansas produced Lumber.

Large windows in the instructional spaces and clerestories in the corridors flood the interior spaces with natural light providing ideal learning conditions. The lighting system accounts for daylighting and decreases the energy used to meet work surface foot candle requirements. All rooms are equipped with motion sensors and auto shut-off switches to turn off lights when they are not in use. The combination of technological control systems designed along with fixed building efficiency elements creates savings to the District for years to come, with tutorial attributes for the students. Test scores will increase and absenteeism will decrease as a sense of "ownership" from the users produces positive results.



Architect

Jackson Brown King Palculict Architects, Inc.
12921 Cantrell Road, #201, Little Rock, AR 72223
www.jbkparchitects.com

Construction Team

Structural Engineer:

Engineering Consultants, Inc.
401 West Capitol Avenue, #305, Little Rock, AR 72201

General Contractor:

Nabholz Construction Services
612 Garland Street, Conway, AR 72032

Mechanical Engineer:

Innovative Solutions Group, Inc.
136 Apple Blossom Loop, Maumelle, AR 72113

Electrical Engineer:

Lucas, Merriott & Associates
2225 West 7th Street, Little Rock, AR 72201

Project General Description

Location: Greenbrier, Arkansas

Date Bid: July 2009

Construction Period: Aug 2009 to July 2010

Total Square Feet: 33,659 **Site:** 3.5 acres.

Number of Buildings: One; 16 classrooms.

Building Size: First floor, 33,659; total 33,659 square feet.

Building Height: First floor, slopes from 13'8" to 9'8"; top of structure, 28'6". **Basic Construction Type:** New/Wood frame.

Foundation: Reinforced concrete, slab-on-grade.

Exterior Walls: CMU, siding, GlasRoc® sheathing. **Roof:** Metal.

Floors: Concrete. **Interior Walls:** Wood stud drywall.



DIVISION

	COST	% OF COST	SQ.FT. COST
PROCUREMENT & CONTRACTING REQ.	732,296	16.23	21.76
GENERAL REQUIREMENTS	318,134	7.05	9.45
CONCRETE	307,225	6.81	9.13
MASONRY	192,000	4.26	5.70
METALS	26,879	0.60	0.80
WOOD, PLASTICS & COMPOSITES	646,721	14.34	19.21
THERMAL & MOISTURE PROTECTION	197,818	4.39	5.88
OPENINGS	363,643	8.06	10.80
FINISHES	435,227	9.65	12.93
SPECIALTIES	61,849	1.37	1.84
FURNISHINGS	25,437	0.56	0.76
FIRE SUPPRESSION	89,158	1.98	2.65
PLUMBING	—	—	—
HVAC	614,295	13.62	18.25
ELECTRICAL	500,109	11.08	14.85
TOTAL BUILDING COSTS	4,510,791	100%	\$134.01
EXISTING CONDITIONS	274,600		
EXTERIOR IMPROVEMENTS	141,903		
UTILITIES	50,762		
TOTAL PROJECT COST	4,978,056		

SPECIFICATIONS

—
Price & payment procedures, administrative requirements, temporary facilities & controls, execution & closeout, performance.
Cast-in-place.
Unit.
—
Rough carpentry, architectural woodwork.
Dampproofing & waterproofing, roofing & siding panels.
Doors & frames, windows.
Plaster & gypsum board, ceilings, flooring, wall finishes, acoustic treatment, painting & coating.
—
Included in HVAC.
Piping & pumps, air distribution, air cleaning devices, central heating, central cooling, central HVAC.
—
—
—
(Excluding architectural and engineering fees)

UPDATED ESTIMATE TO OCTOBER 2011: \$142.37 PER SQUARE FOOT

Regional Cost Trends

This project, updated to October 2011 in the selected cities of the United States.

EASTERN U.S.	Sq.Ft. Cost	Total Cost	CENTRAL U.S.	Sq.Ft. Cost	Total Cost	WESTERN U.S.	Sq.Ft. Cost	Total Cost
Atlanta GA	\$163.54	\$5,504,425	Dallas TX	\$163.54	\$5,504,425	Los Angeles CA	\$209.71	\$7,058,615
Pittsburgh PA	\$178.93	\$6,022,488	Kansas City KS	\$169.31	\$5,698,699	Las Vegas NV	\$190.47	\$6,411,458
New York NY	\$230.87	\$7,770,953	Chicago IL	\$205.86	\$6,929,100	Seattle WA	\$203.94	\$6,864,342

For more information on this project and similar projects visit www.dcdarchives.com