



ENGINEERED WOOD MAKES THE GRADE IN CALIFORNIA SCHOOL PROJECTS

Project Summary

PROJECT

Liberty High School

LOCATION

Bakersfield, California

OWNER

Kern High School District

ARCHITECT

KPA Klassen Pechin Architects

CONTRACTOR

S.C. Anderson, Inc.

STRUCTURAL ENGINEER

Warren A. Minner & Associates

ROOF ERECTOR

L.G. Ralls – Builder

SIZE

195,000 square feet
(19 buildings)

GLULAM & I-JOIST MANUFACTURER

Standard Structures Inc.

PLYWOOD MANUFACTURER

Superior Lumber Company

COMPLETED

Summer 1999

Three new California high schools are using engineered wood products to set a modern standard for architectural design and favorable economics. The model for these new schools is Centennial High School in Bakersfield.

Tax-payers, educators, and students were all excited with the results, a beautiful school that was extremely cost efficient. The success of this project can be attributed to the use of engineered wood products, and a great architectural design which was also used at Central Fresno High School with the same celebrated results.

The paint hadn't dried at Centennial when Bakersfield applied the same plan to another project, Liberty High School. Several engineered wood products – glulam, I-joists, and plywood – are used throughout this 19-building campus that

will accommodate over 2,100 students. Completion of the project is scheduled for summer 1999.

Because it possesses greater strength and stiffness than comparable dimensional lumber, glulam gives designers and builders virtually unlimited design flexibility. Glued laminated timber members can span long distances with minimal need for intermediate supports. This capability was put to the test in the school's performing arts building, where glulam beams provide expansive clear spans.

“Using glulam and wood I-joists is an extremely cost effective way to support the larger spans in these buildings,” reported John Karnes, project architect. “This type of construction is a major step up from conventional wood framing – because it supports larger loads,” Karnes added.



The architectural design incorporates bright colors and columns outside and a variety of engineered wood products inside.

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The use of APA trademarked glulam beams, I-joists, and plywood sheathing create a cost-efficient campus.



Glulam header provides strength above a window.

The glulam members are being produced by Standard Structures Inc. of Santa Rosa, California in accordance with APA EWS lay-up combination 24F-V4. The project incorporates a total of 160,800 board feet of glulam.

Standard Structures Inc. also supplied over 124,000 lineal feet of I-joists for the project. For commercial projects such as these schools, I-joists are produced in depths of up to 32 inches and can span 40 feet or more.

In addition to the use of glulam and I-joists, nearly 150,000 square feet of APA trademarked plywood, from Superior

Lumber Company, is used for roof and wall sheathing. Plywood, when correctly installed in wood-framed construction systems as a component of shear walls and diaphragms, is able to absorb and resist the lateral forces of earthquakes and high winds.

Engineered wood frame construction makes it easy for building professionals to construct strong, durable buildings that meet code requirements and ensure good performance in severe weather and earthquakes. Resistance to Mother Nature is vital for buildings in the Bakersfield area, which is located in seismic zone 4.

In fact, as a result of the Northridge earthquake, the plans for Liberty were modified to increase seismic safety compared to Centennial High School. In the design phase the architect required that all walls be sheathed in plywood, rather than only in specified areas.

“The plywood has provided all the buildings with additional rigidity and an increased resistance to earthquakes,” concluded structural engineer, Warren Minner.

All this strength comes without sacrificing aesthetics. KPA Klassen Pechin Architects also considered presentation when designing the school. The architectural

style used pillars and bright colors to give the buildings a very modern, inviting look that is important in the creation of a site that encourages attendance and learning.

According to Warren Minner, most of the schools in the Bakersfield area are using a combination of engineered wood products in their new buildings.

“In the Bakersfield area, wood is always the most economical,” Minner noted, “We always design using wood where economics are involved, and earthquake-wise, wood has always been the superior product.”

Compared with the cost of steel and concrete block, the \$115/sq. ft. (approximate) cost of this engineered wood project is exceptional. Low cost, structural performance, and pleasant appearance illustrate why architectural plans featuring the use of engineered wood products are being used by other California school districts in their new construction.

We have field representatives in most major U.S. cities and in Canada who can help answer questions involving APA trademarked products. For additional assistance in specifying APA panel products, get in touch with your nearest APA regional office. Call or write:

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