The 102,000-square-foot T.A. Huston building, designed in 1918, stood vacant prior to its purchase by the University of Southern Maine.

When the University of Southern Maine decided it was time to expand its library, school officials had two choices: Either renovate the existing library or construct a new facility from scratch. They started out planning to do one and wound up doing the other.

With $7 million from a 1988 bond issue, the original plan called for a 45,000-square-foot addition to the existing library. Then an opportunity no one could refuse presented itself: The 102,000-square-foot T.A. Huston Bakery building became available through a special arrangement for approximately $3 million. This left only $4 million for the complete renovation and reconstruction of the 100-foot by 100-foot, seven-story building. Although the new building represented a substantial value, it appeared to be well beyond the point of reclamation with the limited amount of available funds. The challenge for the architects was to make it all work, and they turned to Kalwall® Translucent Building Panels for the answer.

The Structure

The architectural firm of JSA Inc. of Portsmouth, N.H., was hired by the university in the fall of 1989 to design an addition to the existing library. Buying the new building, says architect Jim Warner, "really changed our focus from adding on to a somewhat nondescript building within the core of the campus to redesigning a very significant, highly visible, single, almost non-contextural building on the outskirts of the campus."

Located at the base of the campus on a 1.4-acre site, the building is surrounded by a mix of retail and industrial structures. Designed in 1918, the building was opened in 1921 by T.A. Huston and operated as a commercial bakery. The structure became known as the Nabisco building through late 1954. After the 1950s, the building was owned by the Johnson Supply Company. Because the building originally housed enormously heavy ovens and other heavy equipment, it was designed and built as a substantial structure.

Architect Mike Tague says, "At first glance, when you look at the exterior and walk through the building, it appears to be a very rigid pattern that's repeated on every floor."
Yet, in reality, every floor is different. The columns are different; the bays are different. It’s because the building was designed from the ground up for a very specific manufacturing process. We found many of the changes from floor to floor were subtle... we kept having to go back and remeasure everything again and again."

The biggest challenge in designing the library, according to Warner, was “its lack of context. It’s disassociated with the campus and, because of the highway, it is segregated from the downtown area. At the same time, this new building is probably the most visible one in the entire city and has become the college’s identity. If you subscribe to the Jeffersonian Theory that the center of learning is the American university, and the library is the center of the campus... it’s the focal point of the whole uni-

From the start of the renovation, it became evident that the existing structure had to be gutted and the entire exterior wall replaced.

The Clear Choice

From the start of the renovation, it became evident that the existing structure had to be gutted and the entire exterior wall replaced. However, the building’s foundation and concrete and steel substructure were in exceptional condition. The issue of cladding the building became the focus of attention. JSA explored all the options of traditional and non-traditional materials and the effect that each would create. Their final decision was an entire curtain wall wrap of translucent, diffused light transmitting panels.

The inspiration behind the design was the Beineke Rare Book Library at Yale University. Designed in 1963, that library uses a form of marble and translucent grids. Of course, the budget constraints of the USM project called for a less costly creation but a similar effect was designed. The budget allowed for the exterior facia was only $1 million; the full curtainwall wraparound high-rise application of Kalwall came in at $900,000. In total, the new library has a renovation cost of approximately $40 per square foot. The completed effect is priceless.

The panels that form the curtainwall are created by permanently bonding specially formulated, translucent fiberglass sheets to a grid core constructed of interlocked, extruded structural aluminum I-beams. The panels give a building a contemporary look, clean and attractive, while providing durable, maintenance-free, high energy efficient performance and total design flexibility,” explains Kalwall Vice President Bruce Keller.
According to architect Mike Tague, “At first glance, the building appears to be a very rigid pattern that’s repeated on every floor. Yet in reality, every floor is different. The columns are different; the bays are different.”

**Energy Efficiency**

“We consider ourselves to be an example when it comes to conservation efforts,” says David Early, director of USM Department of Facilities Management. “We are a partner in the Environmental Protection Agency’s Green Lights Program. Also, Central Maine Power is a Green Lights ally that has worked closely with us over the years on energy conservation projects.”

The new library is designed to save 568,417 KWH per year, above what is currently prescribed by the state of Maine for modern energy-efficient buildings. In use will be the most efficient equipment, such as T-8 lamps, electronic ballasts and compact florescent down-lighting.

The translucent material of the building panels transmits natural diffused light, allowing savings to be realized in energy consumption for internal lighting.

“Basically, we’re going with the most energy efficient lighting system available today,” says Early. “By utilizing the translucent wall system, we have ambient light-sensing systems so that as natural light comes in, our artificial light cuts out. We also have occupancy sensing lights even in the stacking areas.” Adds Somes, “The idea behind the translucent panel was to allow natural light to get as far back into the building as possible. It takes diffused light to accomplish this because the book stacks act like walls by segregating the space. We wanted to minimize artificial lighting.”

In addition to its diffused light transmission features, the translucent building panels are the most highly insulating energy efficient translucent technology available. The fiberglass insulation helps to control heat loss and cold air infiltration.

The building itself was heated with natural gas, which the University is continuing to use. It is the only institutional building on campus not tied into a common heating source.

Regarding the environmental systems, Warner says “We have 50 per-

There is no need for interior curtains or shades over the panels.
Panels come in a variety of face colors. The panels in the USM Library are crystal. The neutral color value of the wall is accented with blue panels across the top, brick across the bottom and a reddish grid facia; all of which pick up the feeling of the surrounding water and skyline. Early feels that “the colors are a real part of the whole design. It has a bold look to it.”

Architects may choose Kalwall Panels in any light transmission range between 3 percent to 74 percent, with shading coefficients from 0.85 to under 0.02, to suit their specific needs. For the application of the USM Library, two different grades of the panels were used: crystal white 0.24U with a 0.20 shading coefficient and non-light transmitting panels.

TRUE COLORS

The system’s panels filter out the ultraviolet light, which is damaging to interior furnishing, books, papers and other documents. When you look at issues such as transparency and the filtering feature, this is an ideal material for a library,” says Early. Because of diffused light properties, there is no need for interior curtains or shades over the panels.

CONCERNS WITH DAMAGING ULTRAVIOLET RAYS

percent relative humidity projection throughout the year on the inside, which is extremely high. If we went with conventional wall systems, we would have to provide a great deal of insulation and vapor barriers to prevent condensation on the exterior.”

All standard exterior faces include a permanent glass University — Cont’d on page 28
erosion barrier that is tough, durable and requires virtually no maintenance.

**Rare Cartographic Collection**

The USM Central Library is the second largest library in the University System. “Our total enrollment is about 10,500,” says Early. “As a whole, we also have approximately 70,000 to 80,000 visitors a year. The Southworth Planetarium, which is one of the top planetariums in the country, is here on the campus as well. We have many visitors for the Planetarium, including school children, who’ll now be able to tour both facilities.”

The new library will also house two rare antique cartographic collection. Museum-type displays of charts, maps and globes dating back to the time of Columbus are in the collection.

“We have been fortunate enough to have obtained the Osher and the Smith Cartographic Collections,” Parks says. “It is my hope to expand the collection and now, with the new library, space and proper handling of these extremely rare, priceless materials will not be a problem. The interest in the preservation of archival materials will receive ongoing attention.”

“At the same time that this collection represents something old, the new library is very much a symbol of the future,” says Parks. “The building was designed from the ground up for a very specific manufacturing process, many of the changes discovered from floor to floor were subtle.

NOTE: The new USM Central Library is due to open for the 1993-94 academic year in September. An official ceremony commemorating the building and the Cartographic Center is scheduled for October.