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Photos courtesy of Rellihan Satterlee

Adaptive Reuse

By Marge O'Connor

A HUGE COMPLEX PROVIDES ENERGY AND COST SAVINGS

DOES ADAPTIVE REUSE REALLY SAVE MONEY? A massive mixed-used commercial and industrial complex in Austin, Texas, shows adaptive reuse can do that and more. • Known as Penn Field, the reconfigured campus has strong aesthetic appeal by visually reflecting the U.S. Army bi-plane and radio training base built on the site in 1918. After its decommissioning in the 1920s, the base became an industrial site occupied by a wood-truck-body-building company, furniture manufacturer, and air-conditioning and fireplace manufacturer. By the time Austin-based Majestic Partners Ltd. purchased the property in 1999, the mix of brick and timber structures and metal warehouses had been unoccupied for nearly a decade.

In designing the 16-acre (7-hectare), 265,000-square-foot (24619-m²) development, Michael Antenora, principal of Austin-based Antenora Architects LLP, combined sustainable design, historic preservation, historically sensitive renovation and mixed-use development.

Antenora's zeal for blending adaptive reuse with the site's history won his firm the work with Majestic Partners, which held a design competition for the project.

When Antenora heard about the project he recognized its potential. "The site had a substantial and beautiful palette of materials, architectural shapes and forms. We believed we would not have to add much in materials, but would simply reconfigure and reorganize what was there. Then the result was direct recycling of materials and buildings keeping them on-site and out of a landfill," he says.

With costs estimated at nearly half conventional new construction and 95 percent of the space rented to local and national groups, such as the National Academy of Recording Artists Grammy Awards and Clear Channel Radio, the project also is a financial success.

DESIGNING FROM HISTORY

Using research about the area gathered by Rob Lippincott, a partner in Majestic Partners, and his own studies, Antenora incorporated historical, aeronautical and industrial forms, such as wing-shaped canopies, into unique features of the project. The developers also decided to maintain the Penn Field name that honored Edward Penn, a cadet trained in Austin and killed in a World War I training mission.

Antenora reused 250,000 square feet (23225 m²) of the existing buildings' timber frame, wood, flooring, siding and lumber, brick, structural steel and corrugated metal. He purchased new materials only as needed.

Antenora explains: "Several of the buildings contained steel and corrugated metal. We cut, refabricated and welded the metal on-site into new forms. Pre-engineered purlins and Z-channels were reused in other parts of the buildings. The shading devices, awnings and canopies were fabricated on-site using new stock steel shapes. This direct recycling and site fabrication saved a lot of energy in the electricity, transportation and production of materials."

A canopy courtyard was formed by removing one structural bay from two connected, existing buildings. The courtyard offers views and natural daylight to enter tilted windows. A fountain and continuous trough water feature provide white noise and make the space more welcoming. The overhead steel frame will be covered with translucent panels to create shade.

Unique shade structures made from site-procured materials mark entries to buildings and offer shelter from the Texas sun in many areas of the complex.

Original Austin common brick also was reused. "Where we could, we took brick from one building and used it on another building," Antenora notes. "When our supply dwindled we found it less expensive to purchase brick elsewhere. Because true Austin common brick is rare and expensive, it was cheaper and easier to use recycled Chicago common brick, which is the same shape and size as Austin common brick. It was less expensive to have the brick we needed loaded onto a train and shipped here from Chicago than to buy Austin brick locally."

The 95-foot- (29-m-) wide wood trusses that graced the original brick armory building also were saved. Antenora realized it would be nearly impossible to aesthetically or financially recreate the 100-year-old trusses so he kept them in place.

When the site's original buildings became warehouses, the owners filled most of the arched windows with brick for security reasons. In adaptive reuse of the buildings, the arches were restored and double-insulated windows containing low-E glass were placed in the openings. A few original windows were reused. To reduce heat gain, most windows in the complex have exterior shading devices.

Four outward tilting windows add a unique touch. "We tilted them to diminish glare and heat gain and to expand the feeling of openness inside. Oddly enough, it also reflects the shape of an airport control tower," Antenora notes.

Not all areas emphasize reuse, but they do maintain sustainability. All HVAC equipment was specified as 12 SEER or better. The landscaping features native grasses, plants and trees that require low-water usage. And at least one building uses no recycled products.

Antenora explains: "You don't have to only use recycled or sustainable materials to achieve sustainable design. We need to get past the environmental-products-only concept. You can do simple things, such as buying local items, to save energy on production and transportation. It does not have to be a heroic or monumental effort. Doing five simple things can achieve as much as one big item."

LOWER COST

Although work on the project began in 2000 and 95 percent of the space is completed and occupied, 75,000 square feet (6968 m²) of warehouse space still is in ongoing redevelopment.

Antenora estimates the project's cost at about half of typical new construction. "The project cost about $13 million. Space costs in the area using conventional construction range from $85 to $100 per square foot; that means this size project would have been about $22 million."

Because adaptive reuse is direct recycling, it is highly energy efficient and a viable alternative to tearing down and replacing

A before photo of Penn Field illustrates the steel and corrugated metal buildings that were cut, refabricated and welded into new forms.

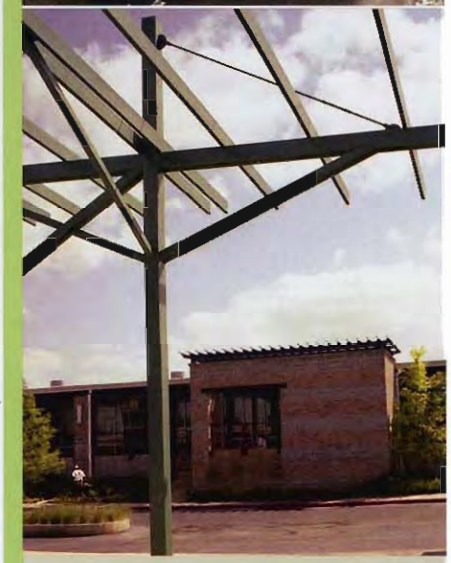
older buildings. "Consider the typical recycling process where a building or object is deconstructed, the materials trucked to another location, reprocessed and trucked elsewhere for use. The amount of energy we saved by using materials on the site and in their current form is substantial and one of the main reasons this project is sustainable and green," Antenora notes.

MORE ADAPTIVE REUSE

The success of Penn Field has fueled Antenora's drive for adaptive reuse. "A lot of owners and developers have been operating under a rule of thumb that is no longer valid—that it is cheaper to build new than renovate," he says. "With this project, we've proven that is not true. You can keep the old building, have a clever design and do without inordinate expense."

Adaptive reuse also can cut development costs because municipalities frequently grandfather older structures. It can cost substantially less to use an existing building shell than to demolish a building, remediate conditions, or lose viable and valuable land to new zoning restrictions.

Antenora explains: "On this project, the developer was cognizant of the effect of sprawl and interested in adaptive reuse; together we found a balance between what to spend on a project and what they could rent the space for. This is the new role an architect must take in urban revitalization. Our profession has to start rethinking making monuments to architectural prowess. Those days are over, and we can't afford to do that anymore. This type of adaptive reuse is viable and as market rental rates increase, it will be even more valuable."



PRODUCTS

REUSE OF EXISTING BRICK, METAL, WOOD AND WINDOWS

NEW WINDOWS—VIRACON INC., Owatonna, Minn., www.viracon.com

HEATING SYSTEM—TRANE, Piscataway, N.J., www.trane.com

AIR-CONDITIONING SYSTEM—CARRIER CORP., Farmington, Conn., www.carrier.com

LOW-FLOW LAVATORY FIXTURES—AMERICAN STANDARD CO., Piscataway, N.J., www.americanstandard-us.com

 (continued from page 44)

PROJECT TEAM

ARCHITECT—ANTENORA ARCHITECTS LLP, Austin, Texas, www.antenora-archs.com
OWNER—MAJESTIC PARTNERS LTD., Austin, (512) 443-9841
LANDSCAPE ARCHITECT—WINTEROWD ASSOCIATES INC., Austin, (512) 442-0100
INTERIOR DESIGN (various spaces)—ANTENORA ARCHITECTS
STRUCTURAL ENGINEERS—STRUCTURES INC., Austin, www.structurestx.com;
ARCHITECTURAL ENGINEERS COLLABORATIVE, Austin, www.aecollab.com; and
POWER QUALITY ENGINEERING INC., Cedar Park, Texas, www.pqeinc.com
CIVIL ENGINEERS—MARTINEZ, WRIGHT & MENDEZ, Austin, www.mwminc.com
FOUNTAIN DESIGNS—ANTENORA ARCHITECTS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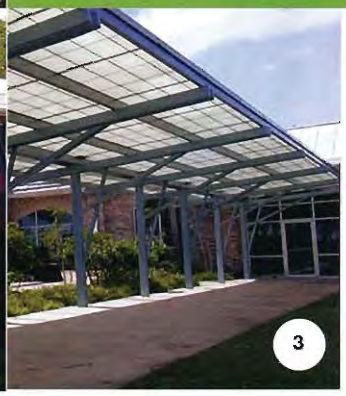
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1. The major components of this hanging metal fountain are reminiscent of bi-plane wings. The area where the fountain is located and the materials used had been inside one of the site's buildings. **2.** Extensive use of native grasses, plants and other low-water-use landscaping were employed as an environmentally sound method to soften the industrial materials and forms. **3.** Structural frames were left in place and used as a trellis element and support structure for the hanging metal fountain. The shells of some brick buildings were maintained while others were modified with brick and metal from other structures.