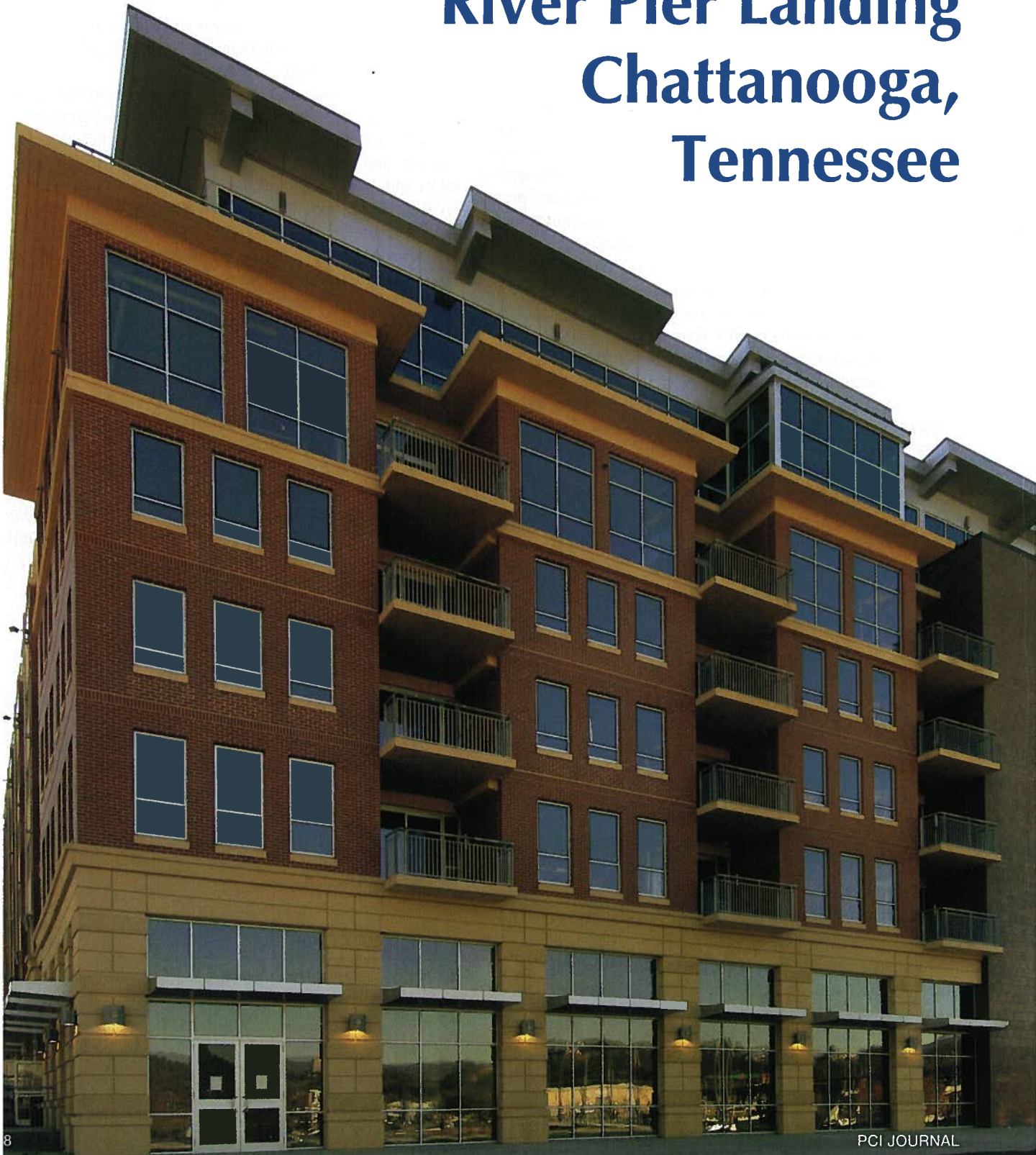


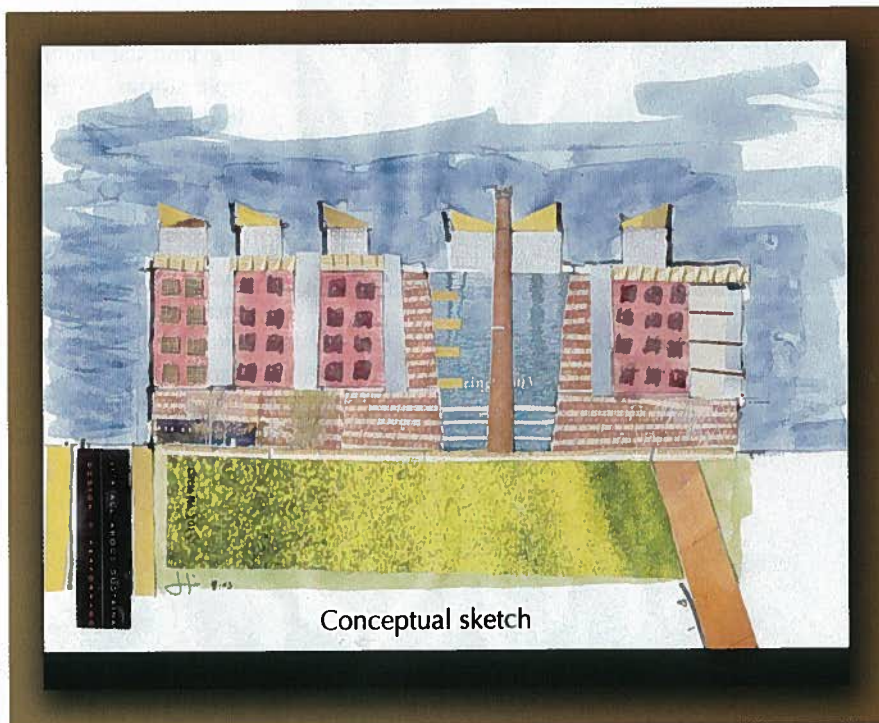
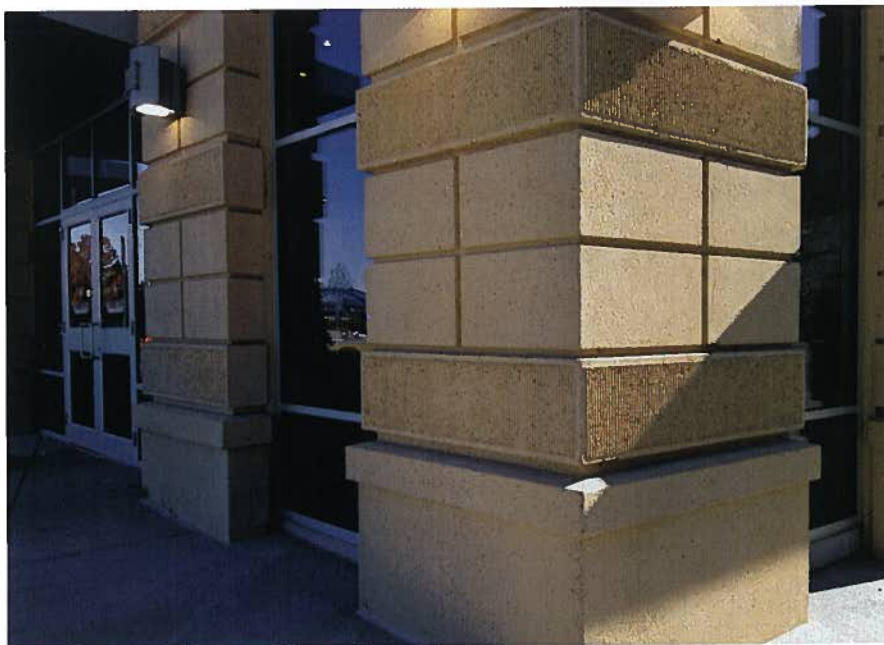
River Pier Landing Chattanooga, Tennessee



More than 1000 architectural precast and structural precast/prestressed concrete components were used in a six-story condominium/retail store and adjoining six-story parking structure in downtown Chattanooga, Tenn.

Set along the banks of the Tennessee River in downtown Chattanooga, Tenn., this total precast, six-story, mixed-use development project includes retail on the first floor with sixteen residential condominiums above and an attached six-story parking structure. The residential units are connected to the adjacent parking structure by bridges in an open-air lightwell. The only part of the building that did not use precast concrete was the penthouse.

The project has a plan area of 216 ft 8 in. $\times$ 179 ft (66 m $\times$ 55 m) and is 80 ft (24 m) tall. The gross areas of the condominium/retail building and parking structure are 56,000 ft² (5200 m²) and 132,000 ft² (12,300 m²), respectively, amounting to a total area of 188,000 ft² (17,500 m²).



The following design features were incorporated into the structure:

- Brick veneer, which was $\frac{5}{8}$ in. thick (16 mm), embedded in the precast concrete walls;
- Cantilevered balconies;
- Precast concrete bridges in the lightwell connected the condominiums to the parking structure;
- Architecturally detailed cornices and columns; and
- Special concrete color that matched the limestone.

A large variety of precast/prestressed concrete components were used in this project, including columns, girders, raker beams, double tees, hollow-core, two-way slabs, brick-embedded panels, wall panels, cornices, and various other types of architectural pieces. A total of 481 pieces were needed for the condominium/retail building and 596 pieces for the parking structure.

Responsibility for planning and designing this project was assigned to ARTECH, an architecture firm with many years of experience in urban





renewal, particularly in designing commercial and residential buildings. The engineer of record was Bennett & Pless, which carried out the structural design and lateral analysis of the building to ensure compliance with the governing code. The contract for the project was awarded to Morgan Construction Co. The precaster, Metromont Corp., assisted the contractor and played the primary role in producing and erecting the precast concrete components. In addition to its technical expertise, Metromont contributed several cost-saving ideas.

Like many cities in the United States, Chattanooga has, in recent years, been involved in urban renewal and upgrading its riverfront and downtown area. Thus, a mixed-use project such as the River Pier Landing became a vital component to the city, allowing the integration of life, work, and play. These urban-renewal structures have to be designed for multiple uses, and they need to integrate into the existing fabric of the city.

The decision to use precast concrete was an essential part of the design solution in addressing the complex issues of this multiuse facility. Also, because Chattanooga has historically been a city of brick, the use of architectural precast concrete, and particularly that with brick veneer, was almost predetermined.

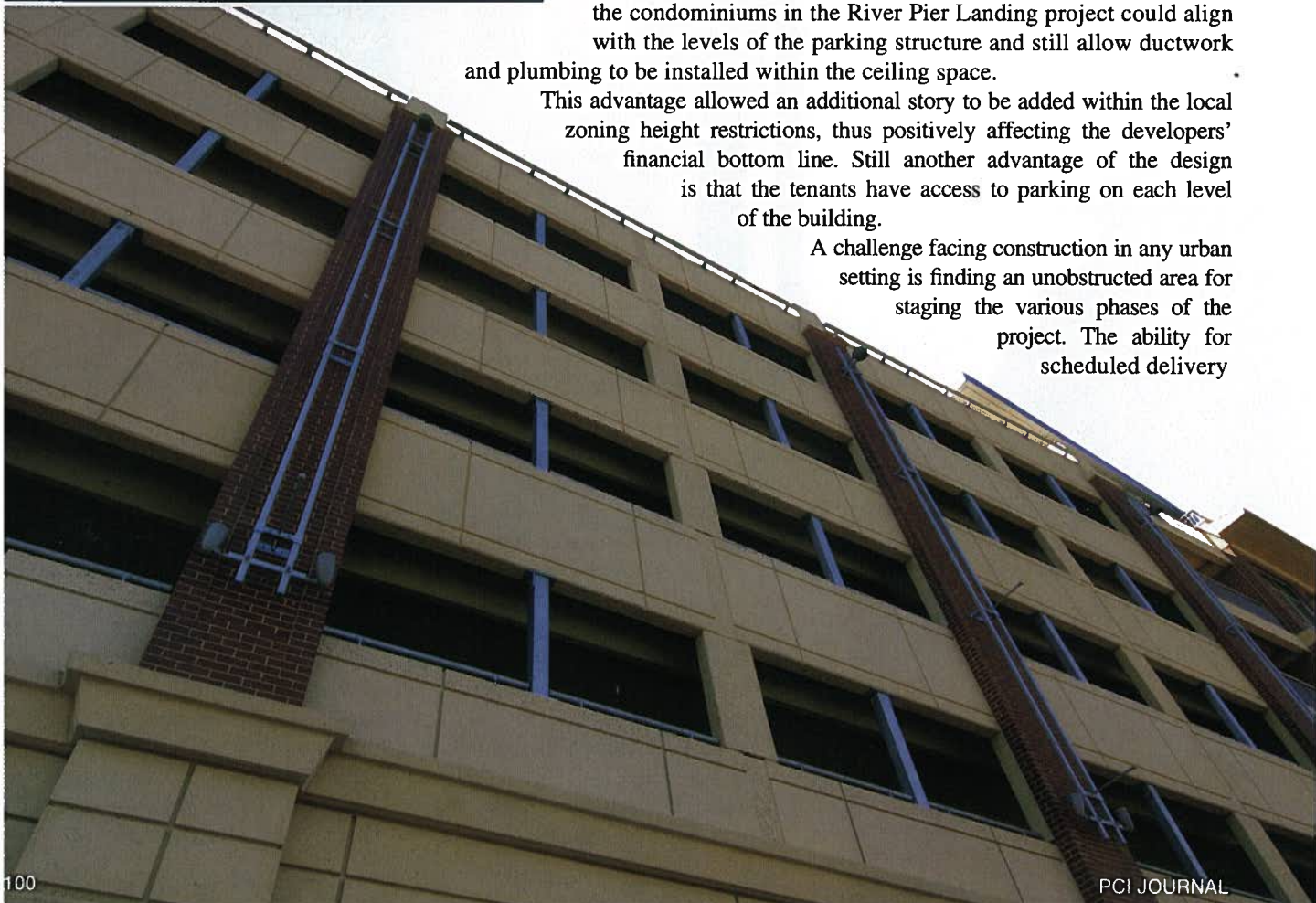
Due to the high cost of land in urban development, maximizing land use means expanding the project vertically with multiple stories. With restrictions of codes and local zoning on the building's height, the floor-to-floor height then becomes a major design consideration in determining the number of stories in an urban development project.

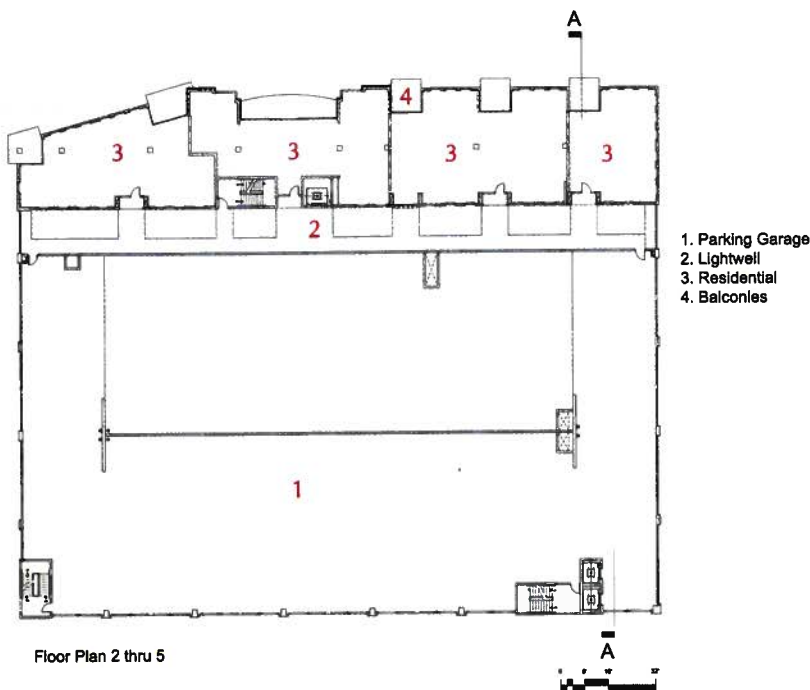
The shallow depth of most precast concrete products, especially hollow-core, allows the floor-to-floor heights to be reduced. By using 8-in.-thick (200 mm) hollow-core, the levels of the condominiums in the River Pier Landing project could align with the levels of the parking structure and still allow ductwork

and plumbing to be installed within the ceiling space.

This advantage allowed an additional story to be added within the local zoning height restrictions, thus positively affecting the developers' financial bottom line. Still another advantage of the design is that the tenants have access to parking on each level of the building.

A challenge facing construction in any urban setting is finding an unobstructed area for staging the various phases of the project. The ability for scheduled delivery





of the individual precast concrete components from the precasting plant as needed during construction allowed the contractor to erect the building efficiently without requiring a large on-site area for staging. This is another advantage of precast concrete construction.

As with any project of this size and complexity, cost was a vital issue. The project was priced two ways, one using standard steel construction with typical masonry veneer and the other using a precast/prestressed concrete frame together with precast concrete panels with embedded brick veneer. The precast concrete option proved to cost less than the steel one, which made the developer's choice easy. Also, the quality and durability of the precast concrete added further justification for the developer's decision.

Not only did the precast concrete option cost less, but it also provided value to the general contractor in erection time and safety by eliminating extensive scaffolding on the exterior and shortening the erection time of framing. Because the structure was also the exterior skin, the building could be enclosed sooner, allowing interior work to begin earlier.

The complexity of integrating different functions and managing public versus private spaces requires the ability to minimize effects from elements such as noise and fire. The properties of precast

concrete create sound and fire barriers.

As cities across the nation embark on rebuilding their downtown areas, providing attractive places to live are key components to the success and



longevity of this renaissance. Located in the heart of a growing entertainment district, this River Pier Landing was designed to introduce the residential component that had been absent for decades. Precast concrete was an important ingredient to the success of this enterprise.

As part of any residential living in an urban environment, access to the outdoors is essential. With large 10 ft x 11 ft (3.1 m x 3.4 m) balconies, each condominium practically has another room that allows access to the outside and additional views of the river and city. Hollow-core allowed the balconies to be cantilevered 3 ft (0.9 m) beyond the face of the building, providing 180-degree views while allowing an area for private seating without direct view from the street level. This feature provides added value to the residence and further value to the overall project.

For an urban project, a building's facade is a big part of the tapestry of the city's fabric. People experience and engage the building's facade at street level. It is important, then, to use texture, color, and pattern to create interest and visual depth with the building, especially at the ground floor, where pedestrians interact with the architecture. This is where the aesthetics and flexibility of precast concrete become apparent.

The columns along the base were designed to reflect layers of limestone rock along the river where the building was built. With additions to the concrete, the precaster was able to match the color of the concrete to a sample of an actual piece of limestone. In addition, alternating bands of light sandblasting with $\frac{1}{4}$ in. (6 mm) ribbed formwork with a bush-hammered finish gave texture to the columns of the building and further developed the look of limestone. To separate the layers, $1\frac{1}{2}$ in. x $\frac{1}{4}$ in. (38 mm x 6 mm) joints were used between the layers, giving depth and shadow to the facade.

All of these elements were integrated into one piece of formwork, eliminating the need for individual pieces while still providing the visual effect. Similar techniques were used on the parking structure bays to create patterns on panels using light and heavy sandblasting on the spandrel beams. The flexibility of

precast concrete allowed the architect to express different aspects of the facade with a single material.

In addition to concrete finishes and textures, the project also uses brick veneer in an unconventional way. Because of Chattanooga's long tradition with brick buildings, brick veneer was a natural choice. With 5/8-in.-thick (16 mm) brick cast into the 8-in.-thick (200 mm) precast concrete wall panels, the exterior of the building had the look of brick with the benefit of erecting only one structural component. Brick patterns with soldier coursing and windowsills were also cast into the wall panels to add the desired detail to the facade.

Metromont Corp. manufactured the precast/prestressed concrete components at its plant in La Vergne, Tenn. It also prepared the detailed engineering and shop drawings for the precast concrete products at its offices in Greenville, S.C. A tractor-trailer transported the precast

concrete components about 130 miles (210 km) to the project site.

The precast concrete design phase began in January 2004 and ended in May 2004. Production of the precast concrete components began shortly thereafter, followed by erection in August 2004. Erection was completed in January 2005. In June 2005, the project was completed, and tenants started moving into River Pier Landing.

The condominium/retail building's and parking structure's construction costs were \$6.2 million and \$4.9 million, respectively, for a total project cost of \$11.1 million.

All parties involved (owner/developer, architect, engineer, contractor, and precaster) in the project are pleased with their choice of building material and construction method. Erection proceeded smoothly with minimal problems.

During the past couple years, the condominium/retail building and parking structure have been operating with

total satisfaction of the owners. The tenants have been enjoying their new living quarters and are benefiting from the advantages that precast concrete has brought to the facility.

CREDITS

Owner/Developer: River Pier Landing LLC; Chattanooga, Tenn.
Architect of Record: ARTECH; Chattanooga, Tenn.
Engineer of Record: Bennett & Pless; Chattanooga, Tenn.
General Contractor: Morgan Construction Co.; Chattanooga, Tenn.
Precaster: Metromont Corp.; La Vergne, Tenn.
Precast Specialty Engineer: Metromont Corp.; Greenville, S.C.
Photo Credits: Metromont Corp.; Greenville, S.C.

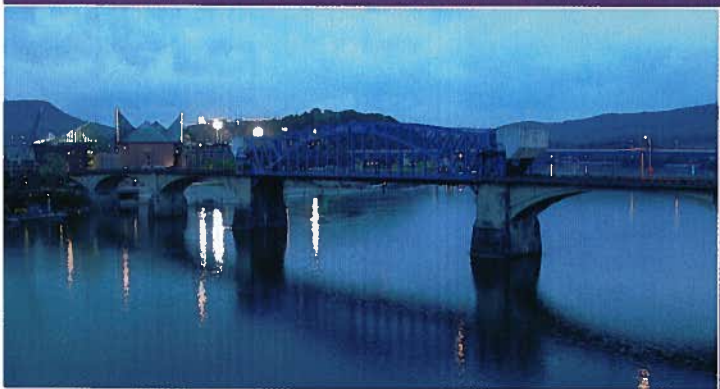
[GDN]

CHATTANOOGA: AMERICA'S SCENIC CITY

With a population of about 160,000 people, Chattanooga is one of the largest and most picturesque cities in Tennessee. Cherokees lived in the Chattanooga area for many years, and John Ross founded the Rossville Landing settlement in 1815 on the banks of the Tennessee River.

Then in 1837, this landmark was designated the end of the railroad line, and the following year settlers officially renamed the town Chattanooga after the Creek Indian word for *rock coming to a point*. From 1837 to 1850, while the Western and Atlantic Railroad was being built, the city became a bustling town on America's frontier.

During the American Civil War, several fierce battles took place in the Chattanooga area, including the battles of Chattanooga and Lookout Mountain. After the war ended, the city became a major manufacturing center and by the 1930s was known as the Dynamo of Dixie.



Music always played a major role in the history of the city. The start of the 20th century saw one of the first recorded female blues artists, Bessie Smith, singing on the streets of Chattanooga. However, it was bandleader Glenn Miller who gave Chattanooga its signature song. Miller introduced "Chattanooga Choo Choo" in the 1941 movie *Sun Valley Serenade*. With the onset of World War II, this song became famous across the nation and around the world.

After the war, downtown Chattanooga fell into decline and disrepair and many of its old structures needed total renovation. In particular, the city's beautiful and historic brick buildings were deteriorating quickly.

In recent years, private and governmental resources have been invested to transform the city's tarnished image and gain momentum for a metamorphosis of its downtown and riverfront areas. An early cornerstone of this effort was the restoration of the historic Walnut Street Bridge, the oldest surviving bridge of its kind in the southeastern United States. Projects to improve the city include the 21st Century Waterfront Plan, a \$120 million redevelopment program for the Chattanooga waterfront and downtown area.