Hearst Tower's Precast Façade Brings Elegance to Charlotte Skyline

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The latest dramatic addition to uptown Charlotte's (North Carolina) skyline is the striking architecture of the 47-story Hearst Tower. Architectural precast concrete, designed and produced with a variety of colors, textures, and forms, provides both the distinctive style and complementary architecture demanded by the owner. It was critical that the Hearst design complement its sister tower, the Interstate Johnson Lane Building, as well as nearby corporate campus structures. The precast concrete façade includes color pigments used in the exterior panels, which were sandblasted and polished to simulate the appearance of granite and natural stone. Collaboration between the project architect and precaster resulted in an innovative window panel unit that reduced production cost and erection time for the owner and general contractor. Demand for the rapid delivery and exacting design of this $150 million commercial building on a restrictive urban construction site made this precast concrete system the natural material of choice for this award-winning project.

Providing over 1 million sq ft (93000 m^2) of commercial office space in uptown Charlotte, North Carolina, the Hearst Tower is the second tallest building in this growing southern metropolis (see Fig. 1). Rising to a height of 659 ft (201 m) in the heart of the main business and financial district, the 47-story tower was designed to complement its sister tower, the Interstate/Johnson Lane (IJL) Fi-

nancial Center, and the 60-story Corporate Center (see Figs. 2 and 3).

Over 299,000 sq ft (28000 m^2) of architectural precast concrete, designed and cast with a variety of colors, textures, and shapes, was selected to clad the structure from top to bottom. Unique color pigments used in the concrete mixtures and specially produced precast concrete panels resulted in the dramatic color variations and intricate detailing of this award-winning structure.

The owner, Bank of America, wanted an architecturally distinctive building façade that captured several design elements of the surrounding building environs (see Fig. 4). They also wanted a fast turnaround for the project. The restricted area of the uptown Charlotte construction site meant that the contractor had little space for material storage and equipment (see Fig. 5).

The owner's rigorous design requirements and the short timetable, as well as the congested financial district site, led to a natural dominance of precast concrete components as the best choice for the primary façade materials for the tower. Only by making full use of the production and erection efficiencies inherent in a precast concrete system could the intricate detailing, color variations, and production deadlines be achieved within the project budget.

URBAN DESIGN CONSIDERATIONS

The design of the Hearst Tower is founded on the desire of the owner to complete the urban campus headquarters that began with the Bank of America Corporate Center and continued with the IJL Financial Center. At the onset of the project, Bank of America set forth a number of goals for the design team:

- The new tower would complement the first two buildings, bearing a "family resemblance" to the other structures, but it would also create its own strong identity.
- The new tower would be subordinate to the Corporate Center in height and level of finish.
- The Hearst Tower development would expand the urban campus environment that the owner had helped to create along North Tryon Street, with a pedestrian-friendly building scale, sidewalk and landscaping, and attractive retail space. Additionally, these planned environs would continue along the southeast College Street side of the project, supporting and extending the entertainment and retail district developing there.
- The project would have a strong relationship to nearby North Tryon Street despite the limited frontage available.
- The 5th Street overpass bridge connection to Founders Hall would be maintained and developed as a convenient means of travel between the campus buildings for Bank of America employees.

Fig. 1. Charlotte's Hearst Tower, a landmark 47-story commercial office structure in the heart of the city's financial district.

Based on the owner's specifications, project architects Smallwood, Reynolds, Stewart, Stewart & Associates of Atlanta, Georgia, sited the

Fig. 2. This remarkable photograph graphically depicts the graceful blending of the architectural design and geometry of the Hearst Tower with the nearby Corporate Center building.

Fig. 3. The 47-story Hearst Tower and the 60-story Corporate Center rise together harmoniously in uptown Charlotte's financial district. The IJL Financial Center is behind the Hearst Tower.

Hearst Tower on axis with the IJL Financial Center, maintaining the lot fronting North Tryon Street as an urban plaza. This approach provided a strong building presence on North Tryon and reinforced the plaza's importance as the main pedestrian corridor in uptown Charlotte. The remainder of the Hearst Tower block was developed as a 15-story podium to the tower, which houses the building lobby and services, a parking garage, and a three-story financial trading floor.

The tower massing is developed along the same theme as its two sister buildings, which are square in plan with inset corners. The design team prepared 16 different concepts for the project in model form in order to study the Hearst Tower in visual context with the surrounding skyline. Of particular concern was the new tower's scale in comparison with the 60-story [869 ft (265 m)] Corporate Center Building, built in 1992 and designed by Caesar Pelli. It was clear from the massing studies that designs which had multiple setback crowns and more complex forms seemed diminutive in comparison to the Corporate Center, whereas schemes with bolder, simpler geometries held their own with the taller tower (see Fig. 6).

The selected design scheme is cruciform in plan, with corners that fill progressively more of the cross as the tower rises from its base. The resulting form spreads outward as it rises, making an open gesture to the sky that commands the space above the tower as a way of relating to the taller Corporate Center (see Figs. 7 and 8).

This theme is carried through in the six-story metal and glass crown, which comprises an array of triangular windows and metal ribs which thrust outward from the center of the tower. The art deco character of the building detailing and the treatment of the materials relates strongly to the Corporate Center, while the dramatic outward gesture of the composition is in counterpoint to the Hearst Tower's taller companion.

A critical issue for designers was the manner in which the Hearst Tower would meet the street. The final design resolves the array of vertical lines on

the tower into a series of arches that provide a lower scale base to the building and large glass areas for sidewalk storefronts. The approach also allows the individual retail tenants to have distinct identities without disrupting the unity of the building design.

The art deco theme of the building exterior is carried through in the interior design of the public spaces. The building has lobby access on three levels: College Street, the North Tryon Plaza, and the Overstreet Level. Linking these three entrances is a network of interlocking lobby spaces joined by monumental staircases. The palette of materials, bold massing, and the diagonal lines of the building exterior are incorporated into the interior design through the shaping of the spaces, floor patterns, metal doors and accents, and dramatic radiating ceiling designs.

DESIGN CHALLENGES AND TEAMWORK

The office tower was designed in a style that is in context with and complementary to existing and planned municipal buildings in the vicinity. The building façade consists of precast concrete panels that function as the exterior cladding and covers almost 300,000 sq ft (28000 m^2) of surface area (see Table 1).

The bottom floors were clad in exterior precast panels with a black-pigmented concrete mix design. The panels were sandblasted and polished to simulate more expensive granite or marble. The upper floors were clad using panels with a lighter, buff-colored concrete mix design, presenting the appearance and appeal of more expensive natural stone.

Built in close proximity to several architecturally distinctive structures, the building's finished design was required to blend with its surroundings and complement the other Corporate Center towers. As such, specially designed artistic architectural patterns were cast in precast panels that accentuate the fourth level surface details.

This beautiful art deco relief works effectively to break up the apparent mass of the larger footprint of the

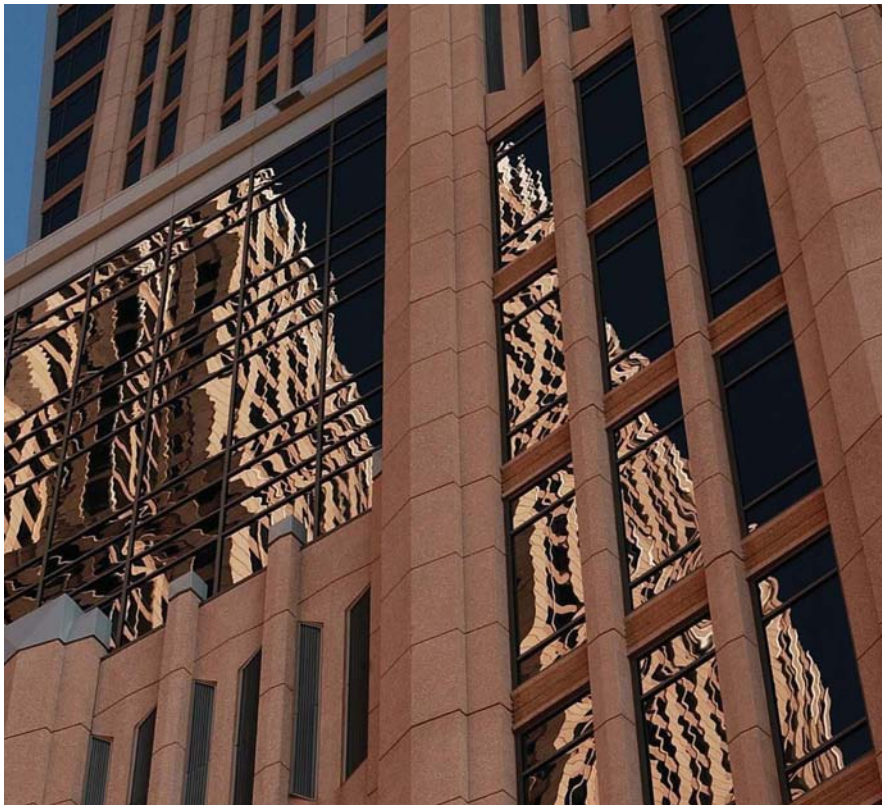

Fig. 4. Shimmering reflections mirror the patterns of nearby architecture, illustrating the beautiful contrast of the of buff-colored precast façade finish with the glass fenestrations in the Hearst Tower.

Fig. 5. With a sidewalk-to-sidewalk footprint, the urban site limitations meant little storage space and maneuvering room for equipment and construction trades.

Fig. 6. Bold geometry in design allows the Hearst Tower to hold its own against the taller nearby structures.

lower tower elevations. The molds for these intricately detailed pieces with a high degree of surface relief took almost two weeks to fabricate. These specialty molded panels provide material artisanship and simulate a flame-finished granite surface in some areas (see Figs. 9 to 11).

Once the building's exterior was designed as a precast concrete system, the general contractor, Shelco/Baston-Cook, JV, of Charlotte, North Carolina, presented another challenge to the precaster, Metromont Prestress Company of Greenville, South Carolina. Metromont was charged with developing ideas on how to make the exterior skin cost package even more economic and provide additional erec-

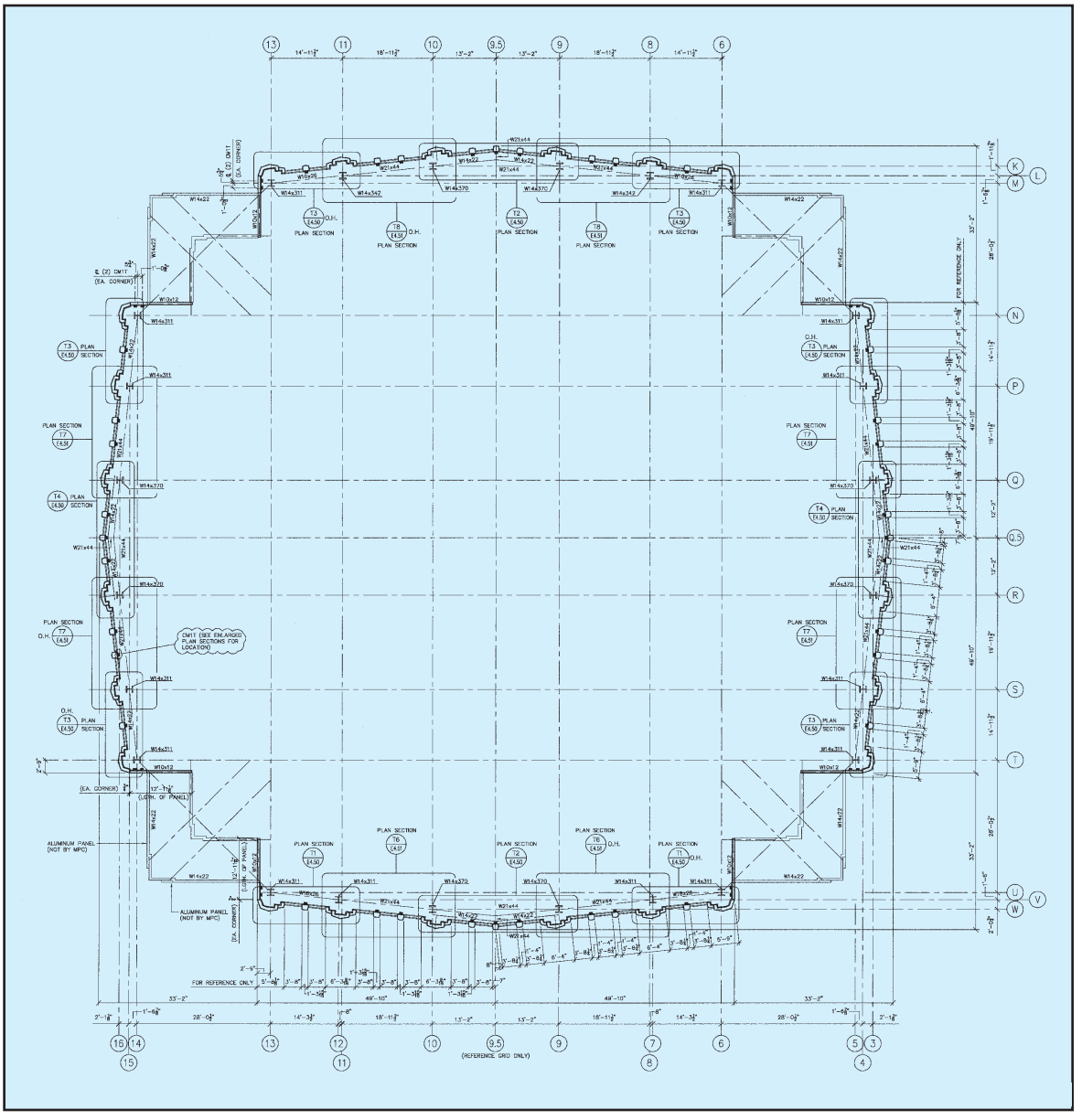

Fig. 7. Floor plan of the Hearst Tower at Level 19.

Fig. 8. The cruciform plan results in corners that progressively fill more of the city skyline as the tower rises.

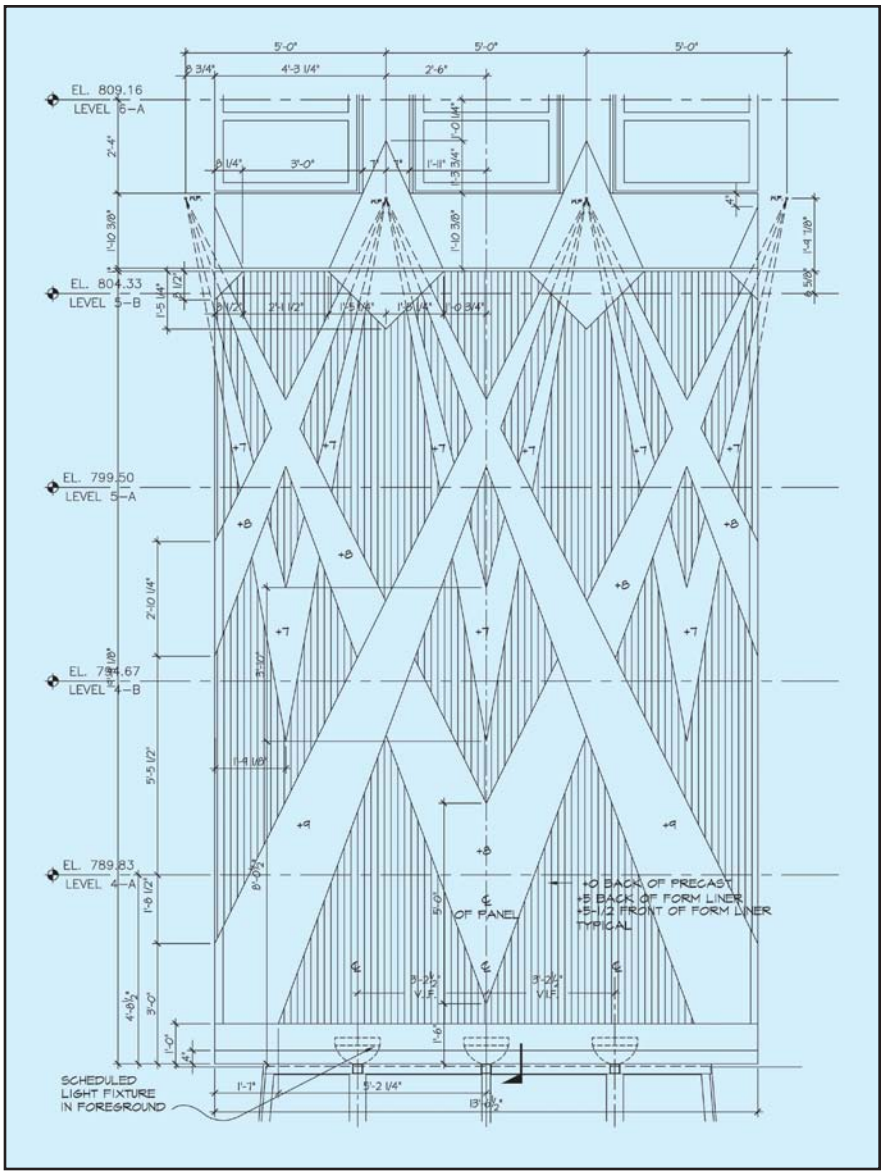

Fig. 9. Detail of the artistic patterns cast in the precast panels.

tion efficiencies to meet the construction schedule and budget constraints.

After numerous meetings with the design team, the precaster and designers were able to develop a window unit panel that allowed the architectural panels to span from floor to floor (see Figs. 12 and 13). The use of these new window units reduced the total number of precast pieces necessary to be produced and erected by several hundred units, thus making the precast panel manufacturing process more efficient and saving valuable time during the erection phase.

The existence of a private parking deck at the bottom of the structure presented a design challenge. While the Hearst Center project is a 47-story building accommodating commercial offices on its upper levels, a parking structure occupies the lower floors, with a three-story trading floor for 800 people above this lower level.

An important design requirement of the project was that the building present the appearance of an elegant 47-story office tower, rather than an office building sitting on top of a parking garage. A design solution was developed by enclosing the parking structure and the trading floor with a skin similar to that of the upper office floors (see Fig. 14).

STRUCTURAL SYSTEM

A variety of structural systems for the building were studied early in the design, including all-steel and all-concrete schemes. Concrete was the preferred material for the parking structure because of its durability. Structural steel was the preferred material for the structure of the office building because of the favorable market conditions for steel at the time. However, the heavy steel shapes required at the base of the building were not available domestically. While these steel members were available in other countries, delivery would have required almost six months.

PRECAST COMPONENTS

The 47-story Hearst Tower, a commercial building constructed in the business district of in uptown Charlotte, North Carolina, features 1.1 million sq ft (102000 m^2) of office space. Designed as a sister tower to the Interstate Johnson Lane Building and as the second tallest building in the area, the Hearst Tower is a visually defining element of the city skyline with colored architectural precast concrete creating the distinctive exterior finish, texture and art deco design. The building façade consists of precast concrete panels that function as exterior cladding, covering over 299,000 sq ft (28000 m^2) of the surface. Precast components are listed in Table 1.

Table 1. Architectural precast concrete components for Hearst Tower.

Component	Number of pieces	Area
Column covers	1197	118,010 sq ft (10963 m^2)
Architectural fin panels	268	7768 sq ft (722 m^2)
Architectural flat panels	377	46,270 sq ft (4298 m^2)
Architectural spandrels	508	19,381 sq ft (1800 m^2)
Window units	1134	108,450 sq ft (10075 m^2)
Totals	3484	299,879 sq ft (27858 m^2)

Fig. 10. A finished panel at the precaster's yard.

Fig. 11. The molds for these intricately detailed art deco pieces with a high degree of surface relief took almost two weeks to fabricate.

It became clear that the best system would be a concrete structure for the first 14 floors and a steel structure for the remainder of the building. With this system, the problem with the delivery time associated with ordering and receiving steel would be solved because the lower concrete levels could be constructed while waiting for the imported steel for the upper floors to arrive.

As all designers know, connection details can be a challenge, particularly in a hybrid building. Likewise, the mixing of a concrete and steel structure solved some logistical problems but created other concerns, such as the connections at the transition level. In the Hearst Tower, the transition from concrete to steel occurs in the lower third of the building, resulting in significant transfer forces between the two materials.

The solution was to extend the concrete columns and walls from Floor 14 to Floor 16, thereby embedding the steel into the concrete for two consecutive floors. Headed studs welded to the steel members and reinforcing steel placed in pre-drilled holes transferred the forces from the steel to the concrete.

Lateral loads from potential wind and earthquake forces are resisted by a 70 x 70 ft (21 x 21 m) box located at the core of the building. This box at the lower concrete-framed levels consists of 2 ft (0.61 m) thick concrete shear walls. At the upper steel-framed levels, braced frames consisting of steel columns, beams and diagonal braces create the load resistance box. The columns at the perimeter of the building do not participate in resisting lateral loads and therefore support only gravity loads.

The trading floor is a spectacular two-story volume of space with the main roof framing consisting of 120 ft (37 m) long steel king-post trusses. The roof envelope consists of flat and sloped surfaces as well as vertical window walls that allow natural light to enter the space. A 50 ft (15 m) high wall built entirely of glass and steel connectors, without any mullions, encloses one end of the trading floor. The floor beneath the trading floor houses the nerve center of the trading

floor, including hundreds of computers and multiple mechanical and electrical back-up systems.

PRECAST PRODUCTION AND SCHEDULE

Standard precast concrete production was used with the exception of the intricate precast molds used to produce the intricate relief and design of the fourth floor panels. Regular curing procedures were used, with form stripping occurring about 12 hours after casting, or when the concrete reached a compressive strength of about 3500 psi (24 MPa). Steel reinforcing bars and welded wire fabric were used in some of the precast panels. A set retarder was used with lower precast panels to simulate flamed granite, sandblasting created the color variation on the decorative panels.

Compressive strength for the concrete at 28 days was 5000 psi (35 MPa), and was achieved using a high-early-strength cement. Black pigment was incorporated in the concrete in some of the lower panels, but a buff color pigment was used for the majority of the precast exterior panels. Because the distance from Metromont's precast plant to the uptown construction site was only 7 miles (11 km), transportation considerations and delays did not adversely affect precast deliveries or erection sequencing.

Production challenges were more the result of the tight site conditions. Because the Hearst Tower was built in the heart of Charlotte's bustling uptown financial district, the construction footprint ran from sidewalk to sidewalk for the distance of almost an entire city block. This left little room for material laydown and storage, or the positioning and maneuvering of erection equipment and other construction activities. This restricted jobsite required careful planning of the precast erection sequencing to make efficient use of available space and maximize erection efficiency.

The rapid delivery time required by the owner led designers to develop specialty window panels to save production time. Project design for the Hearst Tower began in August 1999 and was completed in December of

Fig. 12. The precaster and designers worked together to produce an innovative window unit panel that allows the architectural element to span from floor to floor, thereby reducing the total number of panels for erection.

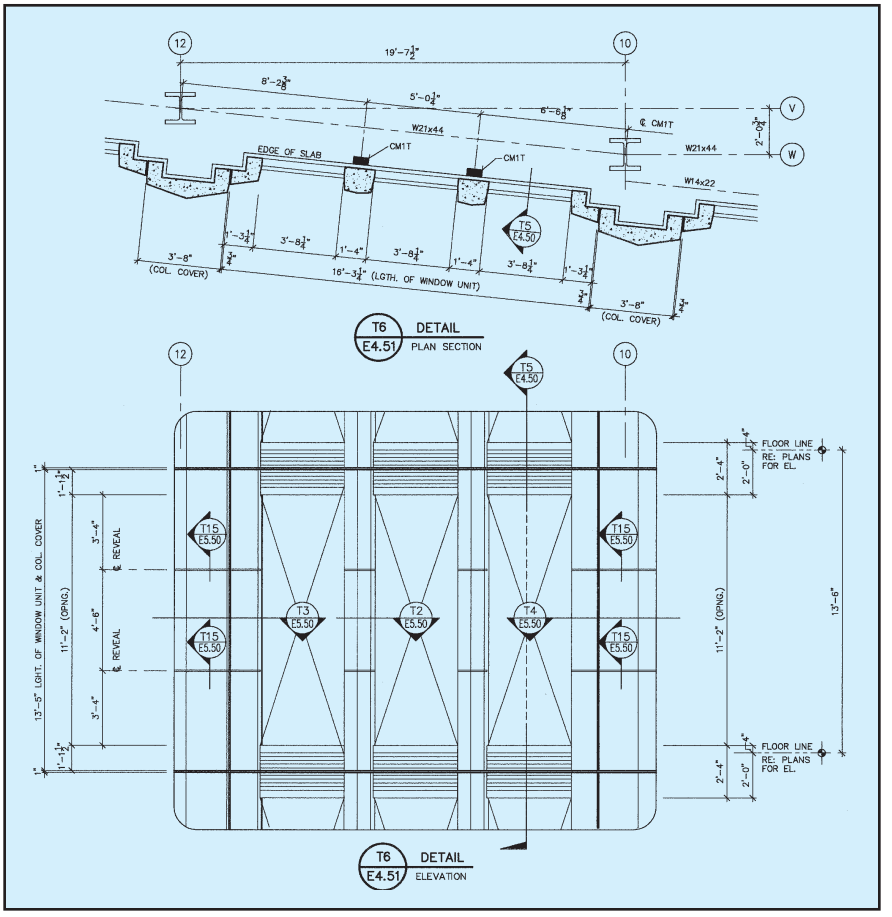

Fig. 13. Detail plan and elevation of an architectural window unit panel.

CHARLOTTE'S SKYLINE

By Doug Smith
Charlotte Observer Business Columnist

Charlotte's skyline is a testament to the intense competition between its homegrown banks for dominance. Most of the landmark office towers were built from the early 1970s through the early 1990s to accommodate the rapid growth of Bank of America and First Union Corporation.

First Union (which has since become Wachovia in a merger) escalated the skyscraper wars with a 32-story tower in 1971. Bank of America followed with a 40-story headquarters in 1974. First Union topped that in 1988 with a 42-story building. Bank of America opened uptown's tallest skyscraper — the 60-story Corporate Center — in 1992 and has held the lead since.

The 47-story Hearst Tower, developed by Bank of America as its companion IJL tower, forms a "dynamic duo'' — some say a Batman and Robin — symbolizing both strength and stability.

Fig. 14. View from the IJL Financial Center, showing construction of the lower levels of the Hearst Tower.

2001. Tower construction started in January 2000 and was completed in 28 months, in April 2002. In November of 2000, the precast concrete erection phase began, and the building cladding was completely installed by February 2002.

CONCLUDING REMARKS

The owner's goals included two major requirements. The first was for an exceptional tower design that would be both architecturally distinctive and also capture or blend with several elements of the surrounding building environs. The second was rapid project delivery, with a construction window of 28 months.

To meet the owner's needs, the use of a precast concrete façade and a team concept worked successfully on this unique office tower in that everyone involved in the project derived significant benefits from the collaboration. The owner and general contractor saved money, the architect and precaster advanced their professional reputations with innovative solutions, and all can be proud of adding a dramatic point of distinction to the Charlotte skyline. The Hearst Tower has become a lasting contribution to the quality of urban life and a Charlotte skyline landmark (see Fig. 15).

This project recently won the award for Best Office Building in PCI's 2002 Design Awards Program, which was presented at its annual convention last October. The judges commented:

"This project was a unanimous choice because of its very creative use of precast in a high-rise office building. The precast offers a lightness that aids the soaring visual style while integrating well with the building's overall design. It is very distinctive while blending with surrounding structures. The detail of the precast provides a nice quality, allowing the lower floors to provide a human scale for passersby."

ACKNOWLEDGMENTS

The architectural firm Smallwood, Reynolds, Stewart, Stewart & Associates was graced with a client with a strong sense of civic duty and a desire

Fig. 15. The Hearst Tower rises boldly, standing as a proud landmark structure for the Charlotte skyline.

to create a project that would make a lasting contribution to the quality of urban life in Charlotte. The architects are grateful to have had the opportunity to collaborate with Bank of America, the Trammell Crow Company and The Keith Corporation on such an extraordinary project. SRSS&A would also like to thank the entire design team: Howard H. Stewart, principal in charge; Charles G. Hull, design principal and author; Keller Smith, project manager; Jim Van Duys, project architect; and Michael Brown, project designer.

CREDITS

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Architect: Smallwood Reynolds, Stewart, Stewart & Associates, Inc., Atlanta, Georgia
Engineer: Stanley D. Lindsey & Associates, Atlanta, Georgia
General Contractor: Shelco/Baston-Cook, JV, Charlotte, North Carolina
Precast Concrete Manufacturer: Metromont Prestress Company, Greenville, South Carolina