Photo by Ron Solomon

Melding Function and Design

A new women's hospital features large bays for efficient layouts and warm finishes to create a comfortable setting

By David R. Beard AIA

VISITORS TO THE NEW REBECCA M. CLATANOFF WOMEN'S HOSPITAL QUICKLY DISCOVER that health care design has changed greatly from the sterile—though efficient—traditional construction. From an entry canopy cantilevered to appear to be suspended in mid-air to rooms with all the ambiance of a fine hotel, it's clear that this 114,000 sq. ft. facility for women's services is not just concerned with providing good physical care, but with also providing a comfortable environment.

The new facility is located on the Anne Arundel Medical Center's park-like campus in Annapolis, MD. Designed by RTKL Associates Inc., a Baltimore-based international architectural firm, it is the newest structure of the hospital's ongoing master planning efforts that have been underway for more than a decade.

The second phase of construction on the 50-acre medical park campus, the opening of the facility last October mark's AAMC's biggest expansion since it added a wing to its downtown campus in 1969. The three-level, $14.5 million facility is expected to be the premier facility for women's health care services in the area.

Design Concept

The primary facility of the Anne Arundel Medical Center is located in within a historical district. Because there was no room for expansion, the center decided to acquire a 100-acre parcel just outside the downtown area, with the intent of developing a long range masterplan for the site. The masterplan included a 50-acre parcel specifically designed to house the new campus-like medical center. The remaining 50 acres were earmarked for future expansion with other types of commercial development, such as hotel, office and retail, which would be completed as a joint venture with an outside developer.

The master planning efforts,

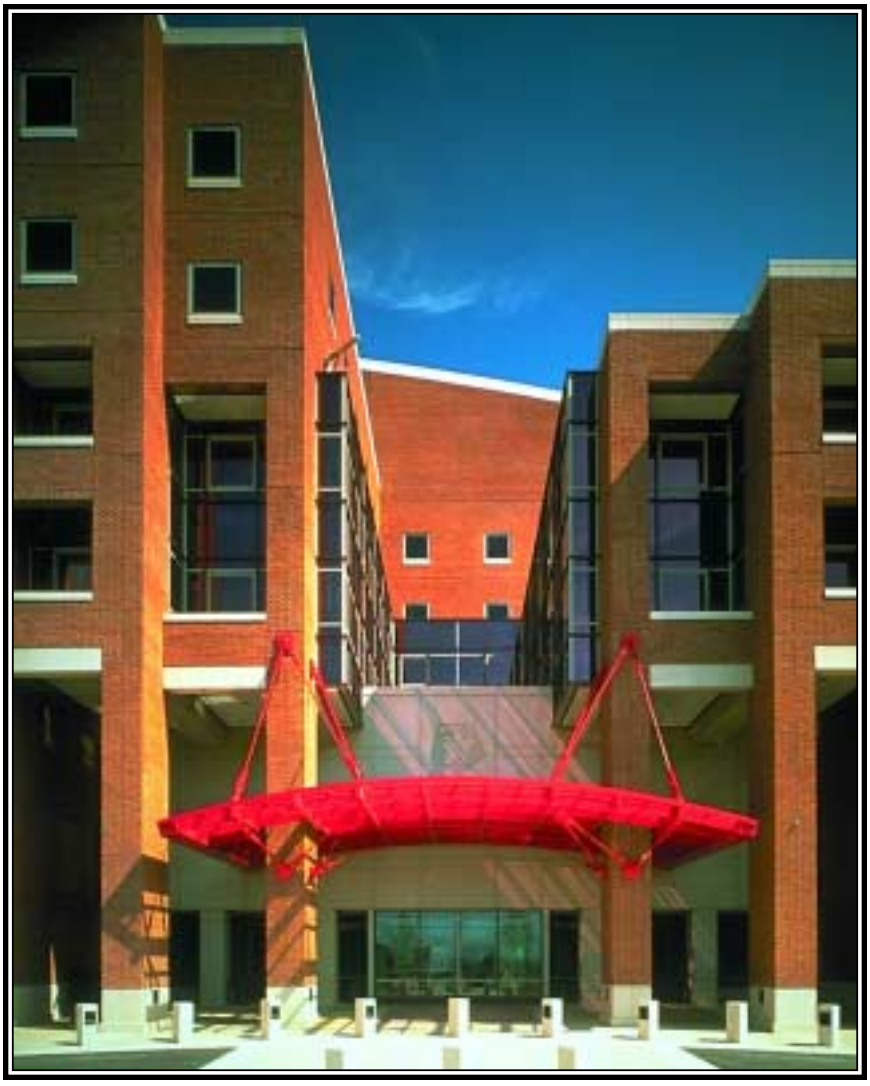
which began in 1984, called for a U-shaped complex of buildings. More than a decade in the making, the completion of the masterplan will create a cohesive, integrated complex, which includes four structures. All of these are linked at the basement level, which houses services and utility distribution, and at the ground level which provides for public and staff access, but on the second level as well.

Included in future plans, a second level link will allow pedestrian bridges to be built to link the facilities to a future 300-bed hospital which is also slated for the site. The first two structures, a 24,000-sq.-ft. ambulatory surgery center, and a 38,700-sq.-ft. oncology treatment center, were both completed in 1989. The second phase included the completion of the Clatanoff Pavilion, and a five-story Ambulatory Care Center, which opened concurrently with the Pavilion.

The overall program objective for the Rebecca M. Clatanoff Pavilion was to create a facility that provided the ambiance found in some of the finest hotels, coupled with the warmth of a residential environment. This was accomplished by using some of the more traditional materials and architectural treatments within an environment that is as residential-like as possible, within an institutional setting.

Because of the patient focus criteria, the facility was designed with 100% LDRP (labor, delivery, recovery, postpartum) rooms for an expected volume of over 3,000 deliveries a year.

The three-story facility includes 22 LDRP rooms, 14 medical/surgical beds, radiology, pre-admission testing, laboratory, baby nursery, two cesarean section rooms, a dining room and a breast disease clinic. In addition, 21,000 SQ. FT. of the facility, located on the third floor, was masterplanned for future growth for either LDRPs or medical/surgical use. The building includes a dedicated father's parking area, which is located directly underneath the building, with a direct elevator to the second floor. This area has the option of conversion for diagnostic and support facilities in the future, if necessary.



The Francis Scott Key Medical Center in Annapolis, MD, is part of the new breed of hospitals that emphasize stylistic design along with medical functionality. Photo by Max MacKenzie

Because Annapolis is a very traditional town, the palette of materials included the use of traditional brick and cast stone, with mullioned windows. These are seen consistently throughout all of the structures on the campus, offering a visual link throughout. The exterior skin of brick and concrete block finished to resemble cut stone, cast stone trim, provided materials that were familiar to the region, yet reflected the impression of permanence and strength.

Structural Design

A steel frame was chosen for the structure not only because it provides flexibility throughout the design, but also because it can create unusual, and even whimsical, design as well. A concrete slab on composite metal desk provides the floor slab, which is supported by composite filler beams and girders. ASTM 572 Gr. 50 steel was selected, in order to use a higher strength of steel, which reduced the weight

of the structural steel required to support design loads. In addition, while this higher grade of steel is approximately 38% stronger, it actually proved to be more cost effective, simply because less steel is required to complete the structure and because there is no significant cost difference between A572 Gr. 50 and A36 steel. The structure used approximately 750 tons of structural steel, and the composite floor system includes 828 square of 2-in. twenty-gauge steel deck.

One of the key areas involved the framing of the LDRPs, which were located on the second floor, and the planning of the third floor, which was to be left as "free space" for the immediate future. While the LDRPs are not as large as a conventional delivery room, it must be larger than a conventional patient room. The difference in space design resulted in a careful analysis of bay sizes, which needed to be adjusted accordingly to provide for the unobstructed space.

The solution was a 36-ft. bay space, rather than the conventional 25-ft. spacing, which allowed three medical/surgical units to fit directly above two of the LDRPs. As a result, the design allowed each function to fit like a puzzle.

Because of this, the structural design is almost like that of two separate buildings, joined together at the juncture. The above-ground column layout was changed to accommodate the extra large bay widths which were needed to accommodate the larger LDRP layouts into the overall design.

The structure is designed with vertical wind trusses in one direction, and it is supported by moment resistant frames, which are welded for continuity, in the other direction. To create the required 'free-area' only one line of vertical wind trusses were called for; the resulting twist was resisted by the moment resistant frames, which ran in the other direction. In addition, diagonals were used from the lower floor to the upper floors.

Although the building typically uses W10 columns, all columns in the wind system are W14s. The truss diagonals are double angles, back-to-back, ranging in size from 6x4x$^1/_2$ at the upper portion of the three-story building to 8x6x$^1/_2$ at the base of the building.

Supporting The Canopy

Steel can also be seen throughout the project as a functional yet cosmetic element. The first place that this is noticed is the curved canopy overhang that shelters patients as they enter the three-story lobby area.

The "floating" canopy is suspended by steel tie-backs, which are actually threaded rods linked to the actual structure. The effect is that of a freely suspended entry cover, which creates a free-flowing impression at the entrance to the structure. This design avoids the more traditional route of columns to support the extended canopy arm into the driveway.

The entrance leads into the lobby/atrium area that actually serves as an orienting space for the entire building. Visible from all three floors, it is a strong contributor to the hotel like impression found throughout the building.

Once inside the three-story lobby area, the unusual curve of the atrium roof adds architectural interest to the main entrance of the structure. A design element that was achievable only through the use of steel, the delicacy of the curved steel framing adds yet another architectural detail that contributes to the final effect.

The three-story atrium/lobby area also adds another dimension to the overall design of the structure. It allows patient rooms, located away from the perimeter of the structure window, views that face the atrium area instead. In addition, this particular design provided functional floor plates, while enhancing the hotel-like image that was part of the original design concept which centered on an

upscale hospitality type of hotel rather than the more traditional, and sterile, hospital.

One element that links the interior atrium and the exterior of the structure is the use of "whimsical" sails. Providing a link to the area's strong sailing heritage, these sails were used as a common design element in the atrium and on the exterior of the building. These sails are actually steel plates welded to the side, complete with a steel tubing to form the mast, and are lit from the top to create a dramatic effect for passers-by, and on ceiling lighting elements within the atrium.

Completing the medical park master plan is a five-story, 78,000-sq.-ft. Ambulatory Care Center which opened concurrently with the Clatanoff Pavilion. This outpatient pavilion, which was designed by RTKL for flexibility of use, can accommodate a variety of individual physician suites as well as large group practices that may occupy an entire floor or more.

In keeping with the campus design elements, it features curved metal roof forms, rose and buff masonry, and large windows to allow natural light to filter into the building.

The spacious two-story public and patient entry lobby leads directly into the central elevator core and provides easy patient and physician access.

Today, the Rebecca M. Clatanoff Pavilion stands as a proud member of the Anne Arundel Medical Center campus. Its design elements provide the comfort of traditional architecture within a state-of-the-art medical campus.

Project Team

James Posey Associates, Inc., Baltimore, provided mechanical, electrical and plumbing engineering design services; McCrone Inc., Annapolis, provided civil engineering; J. Vinton Schafer & Sons, Inc. served as the general contractor for the Clatanoff Pavilion, and Gardiner & Gardiner, Inc., served as the construction manager for the Medical Pavilion. AISC-member Southern Ironworks, Inc., served as the structural steel fabricator and L.R. Willson & Sons, based in Gambrills, MD, completed erection of the steel.

David R. Beard, AIA, is senior vice president of RTKL Associates Inc., an international architectural firm based in Baltimore. He is responsible for the firm's health and science group. RTKL maintains offices in Washington, D.C., Dallas, Los Angeles, Tokyo, Hong Kong and London.