

PROVEN WAYS TO CONTROL COSTS AND REDUCE RISKS ON CAPITAL PROJECTS:

***SPOTLIGHT ON THUNDERBIRD SAMARITAN MEDICAL CENTER'S
MILLION-DOLLAR BED***

A capital project planned and managed effectively can transform a healthcare organization. A capital project planned and managed poorly can impair a healthcare organization. Executive stewardship and design service mandate the successful implementation of capital projects and accept nothing less.

By relating the capital project to service mission, by identifying value, and by applying strategies to reduce risk and costs, healthcare institutions can ensure that a capital project becomes a transformational asset rather than a detrimental liability.

The \$49.5 million campus expansion for Thunderbird Samaritan Medical Center on its 37-acre campus in Glendale, Arizona demonstrates how successful strategies can control capital projects, reduce risks, accelerate schedules, and achieve maximum scope by trading off lesser value. *Through an intense, hands-on planning process that involved partnering and value designing, Thunderbird Samaritan Medical Center and the design and building team not only successfully met budget and program requirements, but also went beyond project goals to capture exceptional value and additional enhancements -- and prove how even one bed can make a million dollar difference.*

A Total Healthcare Environment

The campus expansion for Thunderbird Samaritan Medical Center is a transformational and world-class facility with efficient, family-focused design. The project supports Banner Health System's core values, customer-centered service and philosophy of learning and healing.

Designed under the building team of architect/master planner/programmer van Dijk Westlake Reed Leskosky and construction manager Kitchell Construction, this new, total healthcare environment serves the hospital's strategic initiatives to accommodate growth through the year 2006, expand its core services, and position itself as the major medical center for its rapidly growing community.

Robert H. Curry, CEO of Thunderbird Samaritan Medical Center, relates the capital project to the hospital's service mission, "This project supports our mission of service excellence in every way. We desire a healing environment for all of our constituents – our patients, our staff, and our community at large. The impact of every design element on our commitment to a healing environment was profoundly important to us – from circulation and lighting, to the comfort and dignity of our patients. Through the perseverance and diligence of the entire team, we understood that value and never compromised our goal."

Master Planned for Controlled Growth

Thunderbird Samaritan Medical Center began in 1983 as a 150-bed community hospital, and expanded to 302 beds within little more than ten years. By the late 1990s, the hospital was

struggling with a population boom that increased admissions over 10% each year and kept the emergency department consistently exceeding capacity.

By focusing on core services, the project team efficiently completed phased implementation of the campus master plan, including the construction of a new patient tower housing one 20-bed intensive care unit, a 25-bed postpartum unit, and 25 medical/surgical beds, as well as shelled space for 24 future pediatric beds at the ground floor level of the patient tower. Highlighting this world-class facility is a Women's and Infants' Center that introduces a new paradigm in neo-natal intensive care unit (NICU) design, a special baby "gallery" displaying the normal newborn nursery, and a new entrance to the 50,480-square-foot bed tower addition.

Also included in the hospital expansion is a 10,000 square foot three story addition to expand emergency surgical services capacity. The first floor includes a new seven bed treatment zone added to the existing emergency department. This, coupled with renovation of existing space, increased capacity by 35%. Four new operating rooms were created adjacent to the existing surgical department on the second floor. The two largest operating rooms (600 s.f. each) create an effective environment for the use of state-of-the-art endovascular and neuro-stealth technology. The lower level houses materials management sterile supply and vertical transportation to expedite delivery of supplies to the new emergency and operating rooms.

The expansion project also relocates and consolidates cardiology services in a Cardiology Center of Excellence, adds a three-story, 45,230 square foot east addition serving as a community education center and provides significant expansion of the Women and Infants' services.

New infrastructure and support areas were designed to accommodate the hospital's growth to a 372-bed major medical center. A 4,150 square foot masonry and steel addition expands Central Plant to accommodate mechanical and electrical improvements, equipment replacements and additions to increase capacity of central utility services.

A four level, pre-cast parking structure completed in August 2000 adds 477 parking spaces to the campus. It includes one concrete masonry unit open-air stair tower and one combined open-air stair and elevator tower. Landscaping improvements include an "entry court" between the new East entry and the parking garage. New hospital construction was planned with a realistic approach to development, allowing the Medical Center to proceed with a complex building schedule while keeping all facilities and services fully and efficiently operational.

Meeting and then Exceeding Project Goals

Thunderbird Samaritan Medical Center brought national healthcare specialist firm van Dijk Westlake Reed Leskosky of Phoenix on board in 1998 to assist in the programming, master planning, and implementation of its campus expansion. At the same time, Kitchell Contractors was brought on as pre-construction manager, overseeing all construction scheduling, feasibility and operations.

"We wanted a healing environment, without compromise. We also needed to deliver revenue and clinical space, again, without compromise. We put an emphasis on having a clear and precise definition of scope, yet with enough flexibility to accept the input from our team. But in order to get the environment and scope we sought consistent to our projections, we also recognized we needed to make trade-offs from the beginning," relates Robert Curry.

He continues, “Our team all had a mutual understanding of the expectations. The combination of talent, experience and a collegial process allowed us to achieve that.”

Instituting a highly interactive planning process, van Dijk Westlake Reed Leskosky and Kitchell facilitated structured sessions of the steering group and design team to arrive at the best solutions to scope and budget requirements. This process included partnering meetings that lasted throughout the project and most often consisted of 25 – 30 representatives. The composition of the hospital group was broad-based, representing Thunderbird Samaritan’s leadership, planning, and facilities groups. Each session also incorporated input from a varied mix of day-to-day supervisors, assistant directors, physicians, and nurses of the hospital’s departments -- even information technology and public relations staff. As part of this process, the hospital called on an outside facilitator to assist as team individuals and groups set and then measured specific project goals. The firm also brought in experts at critical points of development to gain knowledge of the process and best realize the “big picture”.

By the end of the design development, the collaborative team had met program requirements and budget. Yet rather than be satisfied with what would be otherwise considered top performance, the team chose to exceed expectations and maximize the potential of the project. In so doing, Thunderbird Samaritan Medical Center was able to capture additional enhancements that were important to the hospital’s mission and priorities for the development of a healing environment. In all, the team captured nearly \$200,000 to augment the design and bring extraordinary value to the healthcare environment, the care partners and patient families, and the staff.

Interactive Building – Team Planning Meets Hospital and Patient Needs

The entire planning effort was a highly interactive process of the building team with Thunderbird Samaritan Medical Center planning committee representatives, administrators and department managers. Meetings were focused with specific agendas ranging from the quality, redundancy and safety of engineering systems to audits for healing environment and patient-focused design elements. Discussions addressed all aspects of operations -- even as detailed as descriptions of walking distances from parking and outlet connections for staff laptops. Weekly tours with hospital staff also helped to keep the staff involved in and informed of the construction process and helped bridge the gap between foam mock-ups and real-time construction to ensure that the final product would be most useable by its staff.

In the process, the team considered both community and public relations activities that would engage others in the expansion and better serve all audience needs. An example of this interaction arose mid-project, as community and hospital statistics showed an increased need for medical-surgical space among the hospital’s patients and, therefore, within the hospital. In response to this information, Thunderbird Samaritan made the significant decision to replace one of the hospital’s planned critical care units in the bed tower with added medical/surgical space. The revision embraced by the design and construction team and was a success on all fronts, serving to better meet the needs of the community and with no final affect on the project delivery.

The planning team reviewed current service relationships, patient and workflow, space allocation and adjacencies, as well as potential future levels of service and operational efficiency. They analyzed site capacity, access, parking, utility services, and projected a potential growth pattern. The architects developed a capacity study that placed the master plan in the context of the ultimate growth potential of the campus. This capacity plan indicated the potential expansion of the hospital’s centers of excellence. At each meeting, problems were summarized; feedback

analyzed; budgets revisited; and goals continually reviewed. Communication and information exchange were emphasized at all levels and down to every detail.

Seeking Maximum Value for Each Dollar

Following the programming and master planning phases, the cross-sectional team met weekly throughout design development to begin the arduous process of analyzing the allocations for each dollar and making the tough decisions that accompany matching budget to scope. Once design was approved and budget met, the team used value design to seek for even more value.

The hospital placed clinical expansion and the needs of its community as priority one within the financial parameters outlined by the Board of Directors. Reductions then were taken from areas that would not be critical to clinical spaces, such as food services, administrative support, conference, and materials management.

The hospital asked members of each respective discipline of the design and construction team – from architect and engineer to contractor and equipment supplier – to come to the table with a 10% reduction list, that is strategies and items to capture money to return to the project for enhancements without compromising quality design. The team scrutinized specifications of materials and fabrication techniques to secure similar performance and quality for less cost. An audit of every design element allowed the building design team to focus on opportunities and quality of a healing, sensory environment for patients, their care partners and hospital staff alike. Extensive value analysis allowed the team to decrease the cost of the project scope and thus add items that were not originally part of the project –specifically, the incorporation of a number of additional healing enhancements desired by the steering committee.

Robert Curry summarizes the process, “Capital in today’s healthcare environment is very critical. Therefore, it was critical that we looked at every dollar spent with diligence and perseverance. We had capped the project from a financing point of view, but were still seeking maximum scope. We identified activities of lesser value across all disciplines, and made trade-offs based on knowledge. These trade-offs added value, not just in construction terms, but operational terms as well.”

Kim Burke, project administrator for Thunderbird Samaritan Medical Center, elaborates on the rigorous process used to analyze value. “By having a comprehensive list of cost reduction ideas, we were able to prioritize where we spent our money. For example, we reallocated \$75,000 to design the nursing station as a non-traditional, friendlier, more patient-oriented environment. We gained a layout with common work areas where patients and visitors can talk with staff, and enjoy greater accessibility to their care providers. We added \$100,000 for amenities in patient rooms. We have better quality furniture and fixtures that create a home-like feel, such as high quality wood finishes. Instead of conventional fluorescent lighting we have indirect lighting which adds to the hospitality ambience. It is exciting to see these ideas come to fruition – ideas that reflect our mission and our clinical priorities.”

Challenging the Program to Get More: The Story of the Million Dollar Bed

One specific example dramatically illustrates how the building design team’s search for optimum solutions continually brought value to the process. The example lies in the design of the four story patient tower – the main feature of the expansion project. The tower had disparate programs for critical care units, a postpartum unit, a medical/surgical unit and a future pediatric

care unit. As van Dijk Westlake Reed Leskosky began to explore various alternatives and configurations accounting for the many dynamic variables within the bed tower, principal designers Paul E. Westlake, Jr., FAIA, FACHA and Vince Leskosky, AIA asked searching questions and seized upon the dynamic relationship of core support to perimeter patient rooms (for various bed types arranged at the four levels) as a cost-saving device.

Architect Paul Westlake, describes the challenge, “We asked how we could shape the bed tower to optimize operating and planning efficiency. We had noted that different elements of the program called for different bed counts, sizes and core support. We wanted to capture as much natural light from the perimeter for the patient rooms, and we needed to fit in certain room widths. But we also realized that the perimeter of the postpartum floor was the key determinant governing the shape of the tower. By taking out *one* postpartum bed, we could manipulate the shape of the bed tower to optimize bed to core relationships on all floors. The effect was radical – about \$1 million when you added up hard and soft costs -- *‘the million dollar bed.’*”

“We had made an important discovery: by questioning the number of postpartum beds per floor required in the program – an item that otherwise might have been seen as inviolate, we were able to demonstrate how we could save money. It was all due to the rigor we applied to studying a problem. We were determined to bring value and make this project the best it could be,” Westlake continues.

Patient Focus Through a High Quality, Healing Environment

With the focus on service mission, the expansion and development at Thunderbird Samaritan was based on two key considerations: hospital efficiency and service, and the comfort of hospital patients and their families.

The new building construction was organized along a main spine, with two corridors separating public traffic from the flow of inpatients, staff, and services. Support spaces, offices and elevator cores are centrally located to increase efficiency.

Both interior and exterior building features are based on clean and simple forms. Exterior building materials are synthetic stucco, curtain wall, aluminum clad steel canopy and painted steel sunshades. The new tower is a convergence of simple and clean forms in a modern architectural vocabulary that extends and yet updates the existing hospital. The crisp geometry is also reinforced through the continuation of synthetic stucco, pre-cast and glass used elsewhere on campus. The parking garage keeps the same interest but as a background structure.

Vince Leskosky of van Dijk Westlake Reed Leskosky notes, “The total environment advances the notion of a healing and sensory environment, from the hospitality feel of the patient rooms to the natural elements in the landscaped courtyards...What is truly transformational is the creation of a new entrance to the campus, with its a highly recognizable entrance canopy that welcomes patients and visitors. Once inside, the refined contemporary details give way to color, warmth, and human scale that immediately comfort and reassure.”

Comfort and care are forefront in areas such as the nurseries at the Women’s and Infants’ Center, where the development team has introduced a new concept in NICU design. Instead of one large room with bassinets, the unit is organized in pods, with smaller groupings of four bassinets. This new design gives families privacy with their babies, while providing visual continuity for nursing staff. It also reduces noise from the specialized equipment supporting the infants. Families also

have nesting rooms – places where they can spend the night with their newborns, all within reach of medical care. The main viewing area has angled glass sections with a bassinet in each, and opens up to the public corridor overlooking the atrium.

“The high quality and innovative approach at Thunderbird Samaritan Medical Center is a model for others to follow, especially in regard to family and infant services. The baby gallery is one example of the distinctive expression of the hospital’s family-centered focus—it celebrates and showcases new life,” notes Hocine Imadali, associate and project director for the van Dijk Westlake Reed Leskosky team.

A Shared Commitment to Service Excellence and a Healing Environment

Partnering and collective vision were key to making the planning and design process successful for Thunderbird Samaritan Medical Center. All of the owner, design, and contractor team members were committed to the mission of the partnering charter, which emphasized working together as a unified team -- in a spirit of trust, cooperation, and respect. Partnering set the stage for the project and how the participants would interact. It also sparked new ways of working, such as a benchmarking visit of staff members to new Planetree hospitals and the organization of the “DUM” team – Disruption Unprecedented Minimization – a multi-functional group working through operations to keep Thunderbird’s patient, employee, and physician satisfaction scores as high as possible during the construction.

Through this project, hospital and building team worked together to determine value, and then use available capital to achieve the desired program and to shelter contingency to even gain additional scope for the hospital’s campus expansion project. By rigorous analysis and challenging the capital program by one bed, and by directing the savings back into the project to capture enhancements, this successful process exceeded expectations to provide extraordinary value.

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Successful Strategies to Control Capital Projects:

- understanding value and determining trade-offs
- relating capital projects to mission and service excellence
- defining scope through a rigorous cost reduction analysis of the physical program
- building a team based on expertise, communication, and accountability
- selecting the right project delivery method
- balancing construction and operational value.

Innovative Ways to Save Costs and Time:

- project acceleration and “streaming” of capital outlays and revenues
- control of soft costs
- control of inevitable change within the process
- use of life cycle analysis to reduce operating costs and capital expenditures – reaping long term payback through planning and design
- control of the approval processes.

