



WARM SPRINGS PARKING STRUCTURE

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CASE STUDY



GROUNDING IN STRENGTH.

Forterra Structural & Specialty Products

Pre-Engineered Thin Brick Parking Deck

Customized to Match Existing Medical Center

Project Description

To accommodate increasing demand for health care services in the Boise, Idaho, area, the St. Luke's Regional Medical Center has found the need for continual expansion of its operations. More patients means more doctors, more staff and a growing demand for parking spaces.

Expansion in recent years has included the construction of two major parking facilities, joining the hospital's original parking deck and designed to handle the increased number of employee and patient cars. Both the Warm Springs Parking Deck, completed in 2004, and the St. Luke's Medical Center Parking Ramp, completed in 1995, are total precast concrete structures. Both decks include precast concrete columns, beams, spandrels, lite walls, shear walls, double-tees, stairs, stringers, column caps and architectural cladding from Forterra.

The Warm Springs garage is located 1.5 blocks south of the hospital and is currently assigned primarily for employee use. Built over a former surface parking lot, the site has room left for a planned professional office building. When the medical office is built, an elevated walkway will connect it to the parking deck, and the deck will then handle both staff and patient parking. The St. Luke's center garage has direct access to the hospital via an elevated walkway over an adjacent street. Originally providing both staff and patient parking, this facility now offers mostly patient parking.

A six-level structure, the Warm Springs garage provides 1,131 car spaces, including handicap spaces. At 10 feet, 8 inches, ceiling heights are taller than normal to provide access for handicap-accessible vans. Circulation is handled by a continuous ramp design. Forterra precast components include columns, beams, spandrels, shear walls, double-tees, stairs risers and elevator shafts, stringers, column caps and architectural cladding with a field-cast topping slab. These consist of 42 columns, 48 interior bearing wall panels, 16 shear walls, 102 bearing spandrels, 81 non-bearing spandrels and 490 10-foot-wide double-tees. Typical spandrels measure 4 feet, 8 inches high. The precast spandrel panels and exterior walls have a thin brick facing that was cast into the panels in the plant.

The deck measures 183 feet by 335 feet. On the shorter side, outer bays are 60 feet long with a center bay of 63 feet. Lite-walls run along each side of the center bay. Shear walls are placed perpendicular to the lite walls. On the long side of the structure typical bays are 30 feet.



Project Type:	Parking Structure
Location:	Boise, ID
Owner:	St. Luke's Regional Medical Center, Boise, ID ZGA, Architects & Planners, Boise, ID
Structural Engineer:	Walker Parking Consultants, Greenwood Village, CO
General Contractor:	St. Luke's Construction Management, Boise, ID
Precaster:	Forterra Structural & Specialty Products, Mountain Region, Boise, ID facility
Precast Products:	Columns, beams, spandrels, shear walls, double-tees, stairs, stringers, column caps, and architectural cladding

Brick-inlaid bearing spandrels, 10 inches thick and 30 feet long, support the double-tees. Corbels to support the double-tees were either cast into the columns and bearing walls or were created by welding steel units to steel plates cast into the components at the plant. Non-bearing spandrels, 60 feet long, are set at the ends of the 183 feet by 335 feet structure.

The 10 feet, 8 inch bearing walls measure 30 feet long and 10 inches wide and include three 7-foot-high by 4-foot-long openings for ventilation. Horizontal strands of 3/8-inch galvanized steel were cast into the panels spanning the ventilation openings to provide security while allowing visual sight lines and air movement.

Two glass-enclosed elevator towers house high-tech elevators that do not require machine rooms. A light well provides daylighting into the decks lower levels, provides passive security lighting and assists in wayfinding.

All Forterra precast components were sourced from within 500 miles, mostly from Forterra's Boise, Idaho, facility. To speed construction and prevent any delays, some components were cast at the Forterra Salt Lake City, Utah, facility. Use of precast construction greatly reduced the amount of construction waste that had to be directed to landfills. Erection of the precast components took just four months.

A blend of plant-applied brick cuts construction time and costs

According to the architect, a major design challenge was to match, as closely as possible, the brick buildings on the main hospital campus. To accomplish this, three different thin brick colors were selected by the architect: 75% a deep red brick with matte finish; 20% a deep red brick with a flash of lighter red; and 5% a burnt-orange brick. The three different color bricks were blended together and cast into the spandrels in the plant. Self-consolidating concrete was used in the mix. The panel design features a concrete frame surrounding the bricks. A cream- or light-buff-colored stain was applied after the panels were erected.



Forterra thin brick panels can be load-bearing, insulating, shear, or a combination of these.

This unique three-color combination is a prime example of the unlimited options in colors and textures possible with Forterra thin brick panels, allowing designers the ability to match or complement nearby buildings and better fit a project into its context. The construction of Forterra precast pre-engineered parking structures is simple to manage. After footings are poured, the precast elements are erected in construction order. Topping slabs are poured and the structure is complete.

“By including us in the early design phase, the project owners helped ensure that there would be little or no construction issues,” says Roland Wright, sales manager for Forterra’s Idaho facility. “Forterra’s production capabilities resulted in a 20% to 30% reduction in the construction schedule. The Warm Springs Parking structure is a testament to our product and engineering capabilities and to our ability to provide high quality, plant-produced product at a lower cost than other building materials. The success of the project was instrumental in our being awarded two additional parking structures: Boise Plaza and Regency Parking.”

In an article on the project in the summer 2005 issue of Ascent magazine, published by the Precast/Prestressed Concrete Institute, Tim Austin, construction manager for St. Luke’s Regional Medical Center, notes that the use of precast concrete construction for the Warm Springs garage was 4% less expensive than a cast-in-place, post-tensioned parking structure would have been and allowed the project to be built in 20% to 30% less time. “We looked at the cost and scheduling for both precast and cast-in-place, post-tensioned structures,” said Austin, “and precast was faster and less expensive.”

