

Affordable Aesthetics

By Steve Myers



Steel provided necessary flexibility in construction and aesthetics for this 700-space parking structure in Lewiston, ME.

As the city of Lewiston, ME planned construction of its 700-space Park Street parking structure, aesthetics, as well as cost and the ability to be built in phases, were major design considerations.

Located 30 miles north of Portland, ME, Lewiston was once a mill town. Like many other mill towns, its downtown suffered as the mills closed. Renovation of a vacant downtown building for use as a district courthouse was seen as a potential boon to the area's comeback. The master plan identified a two-acre surface parking lot as the site for a new parking structure, as well as an incorporated city bus station, for the courthouse and other expected development.

Because few of the downtown buildings are over four stories high, skeptics worried that a new structure would overwhelm the surrounding buildings. In response to these worries, the RFP for design services specified that the structure be designed with a "brick façade treatment" to make it more compatible with its surroundings.

Steel's Advantage

Platz Associates architects and Shelley Engineering, Inc. structural engineers had worked together on many previous projects, including Lewiston's 612-space Chestnut Street steel-framed parking structure. The overriding criterion for the Chestnut Street project was cost, which is why structural steel was chosen over pre-cast concrete.

Cost was also a major consideration for the Park Street facility. The city's budget precluded a brick closed structure, which increased the challenge of designing a facility that would meet the city's stated design goals. It was also decided to build the structure in two phases, as the projected parking demand would not immediately require all 700 spaces that were programmed for full build-out.

From its experience with the Chestnut Street parking structure, the design team knew the advantages of structural steel. In addition to initial cost being less than other structural systems, maintenance costs could be reduced with proper planning at the construction stage. Building a

second vertical stage could be easily accomplished when the need arose, and the use of ornamental panels could provide a great deal of design possibilities. The design team was also confident that the expressiveness of painted structural steel could add visual interest to the city.

A city-appointed building committee called for the structure's perimeter walls to look like storefronts. By taking advantage of the flexibility afforded by structural steel, the designers were able to simulate the rhythm of a downtown streetscape within budget. Vehicular and pedestrian entrances, stair towers, arches, and ornamental panels were hung between the steel columns. Some of these panels are pre-cast to provide the texture of brick, while others are steel grills of several different patterns. This was meant to break up the façade into distinct vertical sections. With different heights, these sections reflect the scale and proportions of neighboring buildings.

The northeast corner of the facility is anchored by a 2,400 sq. ft city bus station. Although they are two distinct buildings,

separated by a load bearing masonry fire-wall, the bus station is integrated into the design of the parking structure both visually and structurally. It is constructed of the same structural steel system, which is exposed as a design element in the interior. The lower portion of the perimeter walls is brick, a tie-in to the ornamental panels of the parking structure. The integration of these two buildings is another indication of structural steel's flexibility.

Framing Plans

The basic framing arrangement for the three-level parking structure consists of wide-flange columns spaced 18' on center, with wide-flange girders spanning 60'. Filler beams span the girders at 8' on center. The perimeter spandrel beams are all W12s, giving the structure a light and airy feel.

Shelley Engineering designed all steel connections in advance of the shop drawings. Connections, such as shear tabs at the filler beams, were selected over double-angle clips so that when each filler beam was rotated into place it would not scratch the paint on the girder.

The lateral system consists of end plate moment connections and vertical braces.

The engineer and architect coordinated their design work to detail and locate all connections between the perimeter ornamental steel and the structural steel. The typical note, "coordinate with architect," was not used on this project. The coordination was done up front, which was reflected in the results—the steel fit-up was nearly perfect, with all field connections being bolted.

Megquier & Jones, an AISC member and the project's steel fabricator, worked closely with the architectural pre-cast panel subcontractor to ensure the connections between the structural steel and pre-cast panels would fit up correctly. By bringing the pre-cast subcontractor into the process early, misalignment and field welding were avoided, which reduced the need for field touch up of the paint. The structural and ornamental steel was protected with Tnemec's advanced Series 73 polyurethane paint system over Tnemec's 90-97 zinc primer. The paint was factory applied with minimal on-site touch up.

The floors of the parking structure are galvanized metal deck with cast-in-place 6" reinforced concrete slab. To reduce long-term maintenance costs, an elastic

wear layer was applied to the entire surface, and the deck is vented to allow the concrete to release moisture.

The Park Street parking structure was completed August 2003 at a per-space construction cost of \$8,350. Not only did it meet the city's strict budget and provide necessary parking, it also has made a positive contribution to the cityscape of Lewiston's downtown. ★

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