



Assessment And Restoration Of An Iconic American Baseball Stadium

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Summary

In 2006, the authors were retained by the owner to perform a structural assessment of one of the few remaining American baseball stadiums built in the early 1900s. After a thorough condition assessment, it was concluded that the structure was safe, but required remedial work to insure its longevity. Restoration plans were subsequently developed based upon the findings of the condition assessment.

The restoration was performed over a five year period, from 2007 through 2011, during the baseball off-season. The scope of work included the restoration of many of the structural and architectural elements of the ballpark and reconstruction of some of these elements. The historic features of the ballpark including the façade and structural profile were preserved. One of the challenges of this project was to complete the construction during the off-season, when weather is less predictable and the available time to complete the work is limited.

This paper describes the structural assessment and restoration of an iconic American baseball stadium. The structural, construction, functional, preservation, and aesthetic considerations of this restoration project will be reviewed and discussed. At the request of the owner, the name of the stadium and some of the details of this project are not disclosed.

Keywords: Sport facilities, baseball stadium, reinforced concrete, condition assessment, seating bowl restoration, hydro-demolition, concrete overlay, waterproofing.

1. Introduction

After deliberating the future of the ballpark including potential replacement options, the current ownership determined in 2005 to save the ballpark, and developed a master plan for the renovation of the ballpark. The renovation addressed deteriorating conditions within the ballpark, improved sight lines and provided modern amenities while maintaining the historic character of the ballpark.

2. Restoration

The primary goal of the project was to extend the service life of the existing seating bowl structure by reducing water infiltration through the structure. Various concrete repair and waterproofing solutions were evaluated and considered. Two repair options were ultimately implemented, and consisted of a concrete overlay in the more exposed areas of the seating bowl, and a surface-applied membrane in the areas undercover and more protected from the weather. The seating bowl restoration consisted of three distinct structural components: demolition and surface preparation, the placement of a reinforced concrete overlay and reconstruction of the cross-aisle.

Demolition and surface preparation consisted of shoring the structure, removing the existing riser extensions, and removing deteriorated concrete. Hydro-demolition was used to remove a nominal depth of the exposed riser surface, or to the depth of sound concrete where the exposed riser

concrete was unsound and in poor condition. In some areas, the depth of concrete removal by hydro-demolition extended to the full depth of the structural slab. A section of the right field seating riser after completion of the hydro-demolition is shown in Figure 1.

The objective of the concrete overlay was to replace the existing tread and riser system, and to provide a durable, low maintenance wear surface. The overlay solution was developed so that the weight of the replacement material was equal to or less than the weight of the original material. This was achieved by creating voids with stay-in-place polystyrene where necessary. The durability of the overlay and its effectiveness as a barrier to water infiltration is subject to many variables including the quality of the concrete and jointing of the overlay, which were carefully considered and specified on this project. The contractor utilized a couple different forming methods during the course of the project, but ultimately settled on the “flying” form system shown in Figure 2.

The original cross-aisle elevation was nearly the same elevation as the row of seats behind the cross-aisle. This meant the two or three rows of seats behind the cross-aisle were generally obstructed views due to the patrons walking in front of the cross-aisle. In an effort to improve the seating capacity, reconfigure the seating areas for disabled fans, and eliminate the obstructed views, the cross-aisle was lowered and surrounding tread and riser seating elevations were adjusted to improve the sight lines.

3. Conclusions

The restoration of the seating bowl included a variety of design and construction challenges. An understanding of the history of the park and how the park was expanded and modified over time was necessary in developing an appropriate repair solution. In addition to performing the construction work on an open-air structure during the baseball off-season (winter), the structural repair and waterproofing solutions were required to be performed in a manner that preserved the historic character of the ballpark.

Innovative repair solutions included the installation of a buried membrane system at the cross-aisles to serve as a collection system for rain and snow melt that accumulates in the open seating bowl structure. This waterproofing combined with the surface applied waterproofing, expansion joints, joint sealants and waterstops serve to divert water to the drains and reduce water infiltration through the concrete structure.

Improvements to the existing sight lines were achieved with modifications to the existing structural system. The removal of the existing riser extensions and overlay of the original tread and risers with a durable concrete finish served to effectively reduce water infiltration through the structure, will reduce the amount of deterioration of the underlying structural system, and preserve the structure for many years to come.



Figure 1. Demolition and surface preparation of seating riser section.



Figure 2. “Flying” form system for overlay.