

The South Side Market House

By Ted Sofis

Sometimes old buildings get a second life. In the case of the South Side Market House, the old structure has had many different reincarnations. Located in Pittsburgh,

Pennsylvania's South Side neighborhood, the building is in a lively, vibrant section of the city. The South Side lies just across the Monongahela River from downtown Pittsburgh and is a popular destination for young people who frequent its restaurants and shops. The South Side Market House was originally built in 1893 and the historical building was rebuilt again in 1915 after a fire. It is listed on the National Register of Historical Places and has served many different uses over the years (Fig. 1). In its earliest days, the Market House held livestock for auction that were kept in pens in the basement. There is a stone bull's head on the front of the building's façade attesting to those days long ago. In subsequent years, the 12th Street location was used as a fresh food market. According to the Pittsburgh History and Landmarks Foundation and the *Pittsburgh Post-Gazette*,^{1,2} the uses of the building since that time have been many and varied—it has been used for dances, roller skating, and even basketball tournaments. Most recently, it has served as a recreational center for senior citizens and is often used by local residents for activities, social events, and meetings.

The Market House was closed in March 2011 when the City Public Works Department discovered structural problems with the floor system on the front side of the building. The floor system, as was common for the period, is supported by a series of shallow brick arches. Over time, the mortar joints of the brick arches deteriorated (Fig. 2 to 4). We encountered a similar problem with the damaged terra cotta tile arches supporting the floor system of Union Station in Washington, DC. On the Union Station project in 1987, we repaired the damaged terra cotta arches with a dry-process, shotcrete-applied repair mortar, gunned overhead to restore the integrity of the supporting structural arches.

In January 2012, Craig Bolinger of A&A Consultants, Inc., called Sofis Company to look at the brick arches of the Market House floor system to see if a shotcrete repair would be a viable option. After inspecting the basement and looking at the floor system, we concluded that gunned shotcrete repair would solve a lot of the problems. Because dry-process shotcrete can easily be sprayed in



Fig. 1: The shotcrete crew prepares to start in front of the South Side Market House in Pittsburgh, PA. The structure, which was built in 1893, is listed on the National Register of Historic Places



Fig. 2: In this access hole, which was cut to gain access into the building's basement, a side view of a supporting brick arch is visible

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place overhead, the repair could be accomplished from the underside without removing the existing floor. Shotcrete would conform to the existing shape of the arches and, by spraying the repair mortar in place, we would fill any holes and voids where there were missing bricks and gaps (Fig. 4). By gunning a monolithic overlay over the brick arches, the shotcrete would fill in all the deteriorated mortar joints, tightening up and stabilizing the floor system support. With a sprayed shotcrete installation, we could efficiently work around all obstructions, piping, conduit, and supports, which would not be possible with a formed repair and would be much more productive than hand troweling (Fig. 5). Parging the arches with troweled in-place material would be a slow, laborious undertaking and would have to be applied in multiple layers (Fig. 6). With a shotcrete application, the pneumatically applied mortar could be gunned to full depth in one pass. The nozzleman has more control with dry-process shotcrete and he can easily make the sensitive adjustments that are necessary for placing material overhead. In dry-process shotcrete, material is conveyed by air through the hose in a dry or slightly dampened state, and water is injected into the material stream in the nozzle with fully wetted material impacting the receiving surface. An additional advantage of using dry-process shotcrete is that it is easier to stop and start shooting without worrying about wet material in the hose setting up. This was particularly important when contending with the various obstructions on this particular project.

Prior to the shotcrete placement, the brick arches were water-blasted to remove loose mortar and remove dust, dirt, and other particulates from the receiving surface. A galvanized 3 x 3 in. (76 x 76 mm) No. 11 gauge (MW5.6/5.6) steel mesh was installed and anchored in place with expansion-sleeve J-hook anchor bolts. Shotcrete MS, a microsilica-enhanced repair mortar manufactured by Quikrete, was used for the overhead shotcrete work. The material was gunned in place quickly and efficiently and provided a very inexpensive yet durable method of repairing the floor system.

On June 25, 2012, City of Pittsburgh Public Works Director Rob Kaczorowski announced that the Senior Citizens Recreational Center was once again open to the community. Pittsburgh Mayor Luke Ravenstahl; Bruce Krause, City Councilman of District 3; and other city officials also attended the “re-opening” ceremony. The overall project included extensive renovations to the entire building, including flooring, painting, windowsills, and a general interior facelift. The



Fig. 3: These brick arches are in one of the open sections of the supporting floor system



Fig. 4: The general condition and configuration of the brick arches. There were also places with holes or missing bricks

majority of the renovation was done in-house by the city’s public works employees for a total cost of \$230,000—a cost substantially less than the lowest bid received of \$726,000. Of that cost, only a very small portion covered the cost of the shotcrete repairs. Although the South Side Market House was taken out of service because of the structural issues with the brick arches of the floor system, the shotcrete repairs turned out

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to be one of the least expensive costs in the overall renovation project.

Historical Background References

1. Smydo, J., "South Side's Market House Reopening after Renovations," *Pittsburgh Post-Gazette*, 2012, <http://www.post-gazette.com/stories/local/neighborhoods-city/south-sides-market-house-reopening-after-renovations-641814>. (last accessed July 14, 2012)



Fig. 5: Working around the structural supports, piping, conduit, and other obstructions added to the difficulty of the overhead shotcrete placement



Fig. 6: The nozzleman is placing shotcrete overhead in an especially congested area of the basement behind the elevator shaft

2. Riely, K., "Pittsburgh Seniors Flock to Reopened South Side Market House," *Pittsburgh Post-Gazette*, 2012, <http://www.post-gazette.com/stories/local/neighborhoods-city/senior-citizens-flock-to-reopened-south-side-market-house-641903>. (last accessed July 14, 2012)

Acknowledgments

Owner

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Sofis Company, Inc.



Ted Sofis and his brother, William J. Sofis Jr., are the Principal Owners of Sofis Company, Inc. After graduating from Muskingum College, New Concord, OH, with his BA in 1975, Ted began working full-time as a shotcrete nozzleman and operator servicing the steel industry. He began managing Sofis Company, Inc., in 1984, and has over 34 years of experience in the shotcrete industry. He is the Treasurer for ASA, Chair of the ASA Publications Committee, and a member of multiple ASA committees. Over the years, Sofis Company, Inc., has been involved in bridge, dam, and slope projects using shotcrete and refractory installations in power plants and steel mills. Sofis Company, Inc., is a member of the Pittsburgh Section of the American Society of Highway Engineers (ASHE) and ASA.