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Meadow Brook Hall Historic Bridge Restoration

By Jessica S. Farley

Meadow Brook Hall was built in the early twentieth century from the successes of automobile mogul John Dodge, his widow Matilda Dodge, and Matilda's second husband Alfred Wilson. After John's death, Matilda purchased additional acreage at their farm property in Rochester, MI, expanding the home to include 1200 acres (490 hectares). The construction of the main house included 88,000 ft² (8200 m²) of space in the much-celebrated Tudor Revival style. Their home and surrounding acreage was donated to Michigan State University – Oakland, later to become Oakland University. Last year, the main house and 37 associated farm buildings and structures were recognized by the United States Secretary of Interior with a designation by the National Park Service as a National Historic Landmark.

RAM Construction Services was awarded the contract to restore the bridge adjacent to Meadow Brook Hall (refer to Fig. 1). The work consisted of wood, brick, and concrete repairs. The decorative wood railing was completely replaced with a new custom white oak railing. The deteriorated brick veneer on the piers was removed and replaced with a blend of three brands of brick for a perfect match to the existing masonry.



Fig. 1: Bridge approach to Meadow Brook Hall

The structural concrete beams under the bridge had deteriorated to such a degree that the bridge was considered unfit for large tour buses to pass. A coating was applied to the concrete on a previous repair that was not breathable and trapped all moisture and further deteriorated the concrete and reinforcing steel. The repairs necessary to restore



Fig. 2: Underside of bridge prepared for repair



Fig. 3: Placement of shotcrete under confined working conditions

Shotcrete Corner



Fig. 4: Close-up of shotcrete placement

the structural beams consisted of full- and partial-depth concrete removal and replacement (refer to Fig. 2). The use of shotcrete was an integral part of this repair. With the difficulty of access to the underside of the bridge, logistics, and the confined working space, dry-mix shotcrete was the smart choice (refer to Fig. 3 and 4).

All materials and equipment were at the top of the bridge and just the hoses were mobilized to the work area. The ACI certified nozzle men at RAM Construction repaired a total of 1200 ft² (110 m²) of concrete on the structural beams. All of the exposed reinforcing steel was cleaned and coated or replaced if deterioration was significant. All seven support beams were finished to the original historic “chamfered” profile (refer to Fig. 5).

One of the main concerns of the owner’s representatives at Meadow Brook Hall and Oakland University was to not impede the schedule of main events, including weddings that took place during the week and on weekends. According to Damian Farmer, Project Foreman for RAM Construction, planning the work around the schedule of events at Meadow Brook Hall was the most challenging part of this project. With the multiple mobilizations, using the dry-mix shotcrete method was an advantage to decrease the duration of the project while offering a cost saving to both the owner and contractor.

This project is reminiscent of the “glory days” of the automobile industry in Metropolitan Detroit. The triumph of the Meadow Brook Hall bridge renovation and revitalization symbolizes the historic turnaround of the auto industry and Detroit (refer to Fig. 6).



Fig. 5: Finishing the beams



Fig. 6: Oakland University's Meadow Brook Hall Bridge

Reference

Upward, G., “A Landmark Achievement,” *Meadow Brook Magazine*, Spring 2012, pp. 2-3.



Jessica S. Farley is a Project Manager at RAM Construction Services and has over 12 years of experience in the Masonry Restoration industry as a Project Manager/Estimator. She specializes in historic preservation of masonry buildings and structures, including replacing; repointing; and patching of brick, stone, terra cotta, and concrete. Farley is the Developer and Co-Chair of the Masonry Restoration Technical Committee, an in-house committee that focuses on standardizing work procedures in the field and educating on historic practices and techniques.