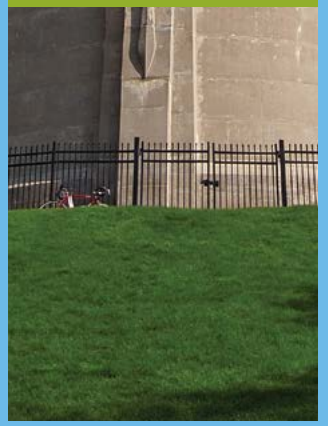
Notable Concrete in the Twin Cities

Runway 12L/30R

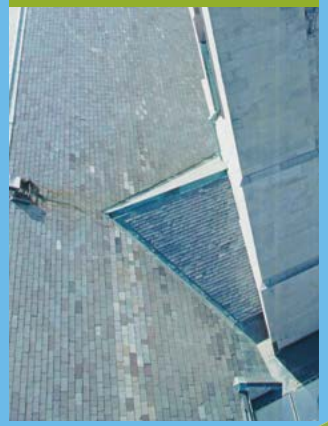
The Plymouth Building

Washburn Crosby Elevator No. 1

Washburn Park Water Tower



House of Hope Bell Tower



MAST Laboratory

Notable Concrete in the Twin Cities Map

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Questions or comments? Please e-mail the editor, Michael Paul, at mjp@builtform2.com

Runway 12L/30R

Minneapolis Saint Paul International Airport, Minneapolis, MN 55450

The airside project involved reconstruction of a 3700 ft runway and an associated 1000 ft parallel taxiway, plus the realignment of five connector taxiways, all in an aggressive 55-day schedule that minimized daytime impacts to airport operations. Project particulars include 300,000 yd^3 of excavation; 100,000 yd^2 of portland cement concrete pavement; 10,000 tons of bituminous material; 9200 ft of duct bank construction; 300 light and sign installations; as well as storm and sanitary sewer, natural gas, and water main work. The pavement section consisted of 20 in. of concrete on top of 12 in. of crushed aggregate base on top of a minimum of 3 ft of granular material. An on-site batch plant allowed continuous testing, mixture revisions, and concrete supply. Project credits include TDKA, Design Engineer, and Shafer Contracting Company, General Contractor.

Robert Engstrom, PE, Field Design Market Manager, TKDA, Saint Paul, MN, 651-292-4400, robert.engstrom@tkda.com

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The Plymouth Building

12 South Sixth Street, Minneapolis, MN 55402

The Plymouth Building was constructed in 1909-1910. Advertisements from that time proclaimed that the building was the "world's largest all-reinforced concrete office building." Although the veracity of this claim is unproven, the building was innovative in its early use of a true reinforced concrete "skeleton" frame. It was also an early, successful example of cold weather concreting and used an innovative integrated design-build delivery method. In 2012, the building was determined to be eligible for the National Register of Historic Places based on its significance in engineering and construction history, as substantiated through research conducted by Preservation Design Works, LLC.

Meghan Elliott, Founder and Owner, Preservation Design Works, LLC, Minneapolis, MN, 612-460-7860, elliott@pvnworks.com

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Side-by-side view

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Washburn Crosby Elevator No. 1

704 South Second Street, Minneapolis, MN 55401

Washburn Crosby Elevator No. 1 was constructed from 1906-1908 by the Haglin-Stahr Company of Minneapolis. The elevator bins are reinforced concrete, built using Haglin's patented slip-form method. The structure is comprised of 15 cylindrical bins—112 ft in height—which are topped by a headhouse that rises another 95 ft. The elevator is now part of the Mill City Museum. In 2012, extensive work was performed to stabilize the elevator, including replacing the bin roof with precast concrete panels. The stabilization project team included the Minnesota Historical Society, Owner; MacDonald & Mack Architects, and Meyer Borgman Johnson, Structural Engineers; CPMI, Owner's Representative; and CY-CON Inc., Contractor.

Meghan Elliott, Founder and Owner, Preservation Design Works, LLC, Minneapolis, MN, 612-460-7860, elliott@pvnworks.com

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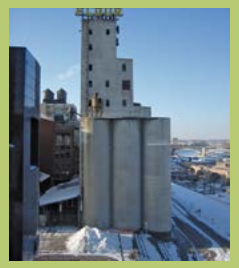

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Washburn Park Water Tower

401 Prospect Avenue, Minneapolis, MN 55419

The Washburn Park Water Tower was erected from 1931-1932 in the Tangletown neighborhood of South Minneapolis. Architect Harry Wild Jones and engineer William S. Hewett designed the visually striking reinforced concrete structure. Hewett's design incorporates a post-tensioned reinforcement system that he invented to prevent cracking of the concrete. The tower is adorned with eight pairs of 16 ft tall "guardians of health" and 8 ft tall eagles. The concrete figures were designed and created by sculptor John K. Daniels. The tower continues in service, filled with 1.35 million gal. of water in the summer to maintain pressure in the municipal water system.

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House of Hope Bell Tower

797 Summit Avenue, Saint Paul, MN 55105

The House of Hope Presbyterian Church was designed by Ralph Adams Cram and was built in 1914. The Gothic structure is constructed of Chaska brick bearing walls and Indiana limestone cladding. The tall bell tower is topped by corner pinnacles, finials, and lattice parapets. Damage caused by water infiltration required the deconstruction of the decorative structures. Supplementary reinforced concrete walls and columns were designed to provide lateral support for the more than 1300 stone pieces. Careful detailing of the concrete was required to closely match the decorative stone profiles. Project credits include Meyer Borgman Johnson, Structural Engineer, and Building Restoration Corporation (BRC), Contractor.

Chris Hartnett, PE, Structural Engineer, Meyer Borgman Johnson, Minneapolis, MN, 612-604-3600, chartnett@mbjeng.com

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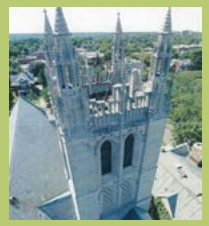

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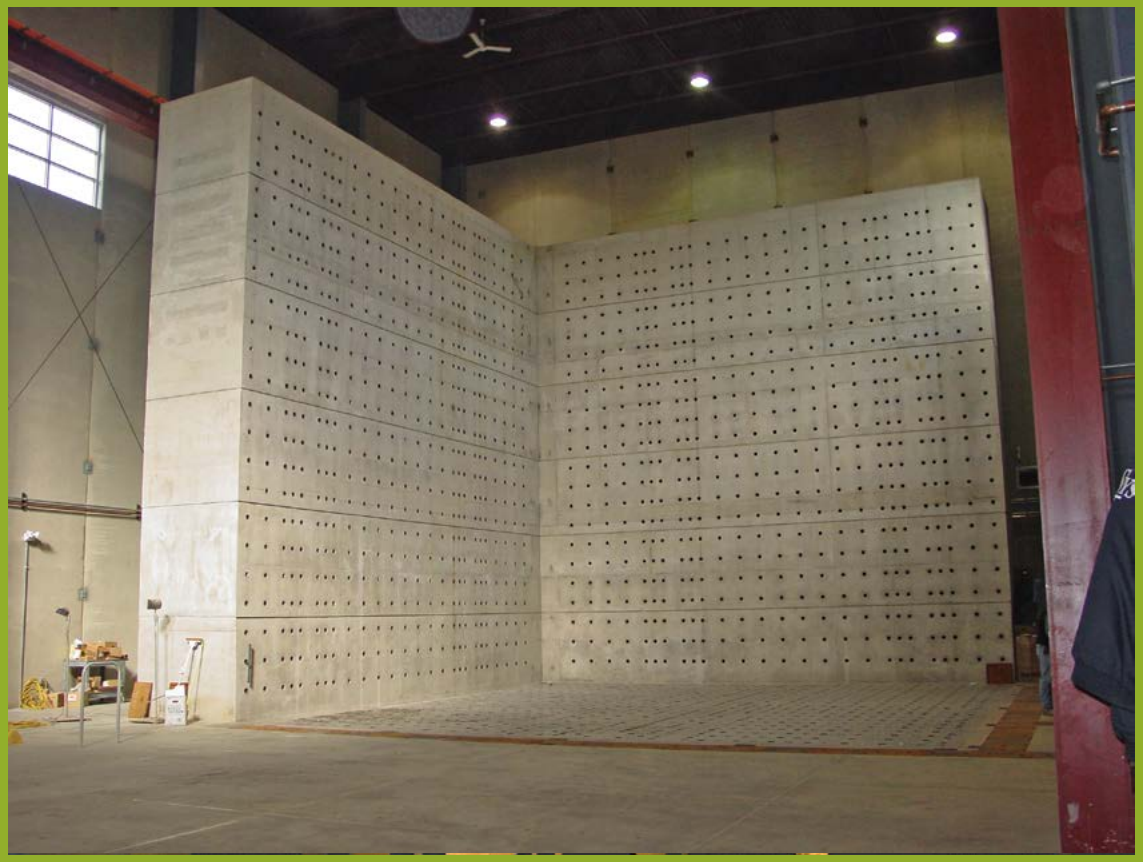
MAST Laboratory

University of Minnesota, 2525 4th Street SE, Minneapolis, MN 55455



The Multi-Axial Subassemblage Testing (MAST) Laboratory is part of the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES). Researchers use the MAST system to apply high forces to large structural assemblages to study behavior during earthquakes and other extreme events. The concrete structure consists of a 9 ft 6 in. deep strong floor, 35 ft square in plan, and two 42 ft long x 35 ft high x 6 ft thick strong walls. The capacity of the strong floor load is 1320 kip vertical load with less than 0.10 in. deflection. The post-tensioned strong wall capacity is 880 kip horizontal load on each wall with less than 0.50 in. deflection. Credits include ESI Engineering, MAST Structural Engineer; MTS Systems, Test Equipment Supplier; BKBM Engineering, Building Structural/Civil Engineer; Studio Five Architects, Building Architect; and Knutson Construction Services, Design-Build Contractor.

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Notable Concrete in the Twin Cities Map

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