Residential Concrete before 1910

Architects and engineers know that the terms “concrete” and “cement” are not interchangeable. Cement is a powder ground from a precise mixture of lime and clay that has been burned at a high temperature; when mixed with sand, gravel, and water, cement hardens into concrete. Some concrete is used as mortar between stones and, when mixed in a thin paste, forms a stucco-like material slathered onto walls. Concrete used structurally has to be poured into wall forms erected ahead of time, or poured on the ground into flats, dried, and then set in place as walls.¹

The ancient Egyptians and later the Romans (the Pantheon’s dome, for example) used concrete because they had access to a natural form of cement that they learned to harden into concrete. The technique, rarely used during the Middle Ages, was nearly forgotten until 1756 when English engineer John Smeaton applied Roman volcanic material as cement that dried underwater to build the Eddystone lighthouse (1756–1759). In the United States, the Erie Canal first used natural cement in 1818 when engineer Canvass White laid concrete in the locks of the canal. Several English engineers experimented with the material, and in 1824, Joseph Aspdin of Leeds, England, patented portland cement—a carefully measured chemical combination of calcium, silicon, iron, and aluminum. Contrary to popular belief, portland cement is not a brand name; it is a type of cement, its color resembling

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Engineer William E. Ward’s castle-like home in Port Chester, New York, used reinforced concrete poured into elaborate molds. Photo Mitch Wagner.
limestone quarried on the Isle of Portland. The listings in Pittsburgh directories show that while nearly 20 companies carried lime and cement as early as 1890, those advertising portland cement or concrete weren’t prevalent until 1895. By 1900 a half dozen companies offered portland cement. The companies selling it nationally increased rapidly between 1890 and 1910, from 16 to 110.

After a series of devastating fires in the early 1870s, engineers took notice of concrete as a fireproof building material. Mechanical engineer William E. Ward (1821–1900) had already noted on a trip to England in 1867 that laborers had trouble removing wet concrete from their tools. He realized that concrete and iron created a special bond, and he and others experimented with the combination. Ward’s home, built between 1873 and 1876, used reinforced concrete (concrete with metal bars or lath embedded in it) poured into elaborate molds. Designed by New York architect Robert Mook, the house exemplifies the material’s architectural capabilities.

While engineers used the fireproof material for industrial buildings as early as 1902, the earliest residential concrete construction discovered in Pittsburgh so far took place c. 1904, with a house at 5209 Harriet Street in the Friendship neighborhood. The house, built for stove company owner Richard Earl Edmonds and his wife Ella,\textsuperscript{1} is an interesting hybrid made of clay-colored concrete blocks, but not with a typical rock-faced finish. The massing of the house is American Foursquare, but with classical detailing such as paneled columns and dentils. The exterior consists of large concrete slabs with a smooth finish, scored to replicate stone. Only around the window openings, where the scoring disappears, is it apparent that the slabs are large enough to create a window surround of one piece. The Edmonds lived in the house from 1904 to about 1914.

Built for attorney Henry Grant Wasson c. 1907, the house at 706 Devonshire Street in Shadyside used another unusual concrete construction method. Called pebble dash, walnut-sized pebbles are pushed into wet cement and allowed to harden, creating a unique exterior wall texture. Chicago architect Lawrence H. Buck (1865–1929), known for Arts and Crafts buildings in Chicago’s suburbs, showed the house design in the Pittsburgh Architectural Club’s 1907 exhibition.
Reinforced concrete housing is mentioned in the preposterously named 1907 publication *Uptown: Greater Pittsburgh’s Classic Section: East End the World's Most Beautiful Suburb*, published by the Pittsburgh Board of Trade. Page 30 notes a series of apartments built at Maryland (actually Summerlea) and Holden “built of reinforced concrete...” While the buildings—named Berwyn, Delwood, and Elmont—are sheathed in a light beige brick, their foundations indicate the inner structure is reinforced concrete. No architect is listed, but they were built between 1904 and 1907 for the Atlas Land Company owned by John McSorley.1 Perusing foundations in the adjoining neighborhood reveals there may be many apartments sheathed with brick with reinforced concrete cores.

This brief Western Pennsylvania early concrete housing survey will be continued in a future column with workers’ plans in Midland and Donora built in 1913 and 1916, but if you have information about earlier examples of concrete housing, please pass them on. I welcome improvement on my knowledge of the subject.

The former home of Pittsburgh attorney Henry Grant Wasson at 706 Devonshire Street, Pittsburgh, is an example of pebble dash design. Lu Donnelly.
Lu Donnelly is one of the authors of *Buildings of Pennsylvania: Pittsburgh and Western Pennsylvania*, a forthcoming book in the 60-volume series on American architecture sponsored by the Society of Architectural Historians titled *Buildings of the United States* and published by the University of Virginia Press. She has authored several books and National Register nominations on Allegheny County topics and organized an exhibition on the barns of Western Pennsylvania for the Heinz Architectural Center at the Carnegie Museum of Art.

1 The material itself is fascinating as illustrated in Andrew Saint’s scholarly chapter on concrete in *Architect and Engineer: A Study in Sibling Rivalry* (Yale University Press, 2007).

2 The Isle of Portland is near Weymouth off the southern coast of England. Portland limestone was used to build St. Paul’s Cathedral in London.

3 Ella G. Edmonds (Mrs. Richard E.) is listed on pg. CXXI of the 1904 Blue Book as living at 5209 Harriet Street in Pittsburgh and a member of the Daughters of the American Revolution (DAR). Although they are not listed in the front of the Blue Book, Mr. Edmonds was a member of the Union Club in the Frick Building placing them in the upper middle class of Edwardian Pittsburgh.

4 Atlases show the three buildings at 5729-5737 Holden Street: Berwyn, Delwood, and Elmont—not in place in 1904, but in place by 1923. Their mention in the 1907 book narrows their building dates to between 1904 and 1907.