Guide to the Cummings Structural Concrete Company Records

NMAH.AC.0218
Erin Molloy
2011
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Collection Overview

Repository: Archives Center, National Museum of American History
Title: Cummings Structural Concrete Company Records
Identifier: NMAH.AC.0218
Date: 1884-1952 and undated
Extent: 20 Cubic feet (25 boxes)
Creator: Cummings, Robert A., 1866-1962
Language: English
Some materials in French and German.
Collection text is in English.

Administrative Information

Acquisition Information
Unknown.

Provenance
Transferred to the Archives Center from the Division of Mechanical and Civil Engineering, now the Division of Work and Industry on July 31, 1986.

Processing Information
The collection was processed by Erin Molloy (intern) and supervised by Alison Oswald, archivist, April, 2011.

Preferred Citation
Cummings Structural Concrete Company Records, 1884-1952 and undated, Archives Center, National Museum of American History

Restrictions
The collection is open for research.

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Biographical / Historical

Robert Augustus Cummings (1866-1962) was a consulting civil engineer who worked primarily in Pittsburgh, Pennsylvania. He was born in Norfolk, England and attended the Gresham School at Holt in Norfolk. He trained as a civil engineer with William J. Brewster in his offices, located in Westminster, London, England. During his early career, he worked as a surveyor and field examiner at the Ordnance Survey of Great Britain and Ireland before he relocated to Canada to conduct engineering work on the Grand Trunk Railroad. During the late 1880s and early 1890s, Cummings was employed as a general draftsman for the Pennsylvania Railroad Company in Philadelphia. He worked later as a designer of heavy dredging machinery for the Bucyrus (Ohio) Steam Shovel and Dredge Company and as an assistant engineer of the Norfolk and Western Railroad in Roanoke, Virginia. Cummings established a firm as a civil and consulting engineer in Philadelphia in 1893 before relocating to Pittsburgh in 1899. He founded the Cummings Structural Concrete Company and the Electric Welding Company in 1900, and in 1902 he founded the Lehigh Valley Testing Laboratory, all of which were located in Pittsburgh, Pennsylvania. In 1936, he partnered with his son in the consulting firm of Robert A. Cummings, Jr. and Associates.

During his career, Cummings worked on the design and construction of a variety of projects, including bridges, warehouses, filtration systems, private residences, machine shops, dry docks and piers, factories, dams, and locks. He additionally conducted railroad and land surveys, researched various types of cement, and designed rock, hydraulic, and elevator dredges. Cummings is best known for inventing the "Cummings System of Reinforced Concrete," in which iron or steel bars are embedded within a mixture of Portland cement, water, sand, and gravel or broken stone. As Cummings stated in a 1904 presentation to the Member Engineers' Society of Western Pennsylvania, reinforced concrete "makes an excellent paint for preserving iron or steel, adhering to the metal very firmly and protecting it thoroughly against corrosion. It can easily be made water tight, and its durability is beyond question. These properties of cement mortar can be utilized in re-enforced concrete. This material is well adapted for molding into a monolithic structure, which does not disintegrate when subjected to shocks such as are produced by railroad trains and vibrates much less for a given load than structural steel. Correctly designed re-enforced concrete structures are not liable to sudden failures, as is the case with ordinary concrete, but gives warning by the falling off of the surface concrete long before the point of failure is reached."

Cummings belonged to a number of professional organizations, including the American Society of Civil Engineers, the Engineering Societies Library Board, the American Railway Engineering Association, the American Society for Testing Materials, and the Institution of Civil Engineers of London, England. He married Mary Eloise Hood on December 14, 1892, and had two children, Robert Augustus Jr. and Eloise Hood. Robert A. Cummings died on October 21, 1962, in Pittsburgh.

References

Cummings, Robert A. Presentation to the Member Engineers' Society of Western Pennsylvania, Meeting of Structural Section. November 22, 1904.


Scope and Contents

The Cummings Structural Concrete Company Records consists primarily of correspondence and business records documenting Robert A. Cummings' firm, consulting work, and participation in professional associations, especially the American Society of Civil Engineers, 1892-1893, circa 1900-1939; technical
data and publications on soils testing, 1900-1939; and drawings, blueprints, and photographs and glass negatives of construction projects.

**Series 1, Biographical, 1904-1936 and undated** documents the professional life of Robert A. Cummings. There are three subseries within this series: Subseries 1, Cummings System of Reinforced Concrete, 1904-1930 and undated; Subseries 2, Professional Organizations, 1908-1936 and undated; and Subseries 3, Writings, 1908-1939 and undated. This series includes documents related to the Cummings System of Reinforced Concrete, including patents, photographs, and advertisements. The series also includes documents relating to professional organizations such as the Allegheny County Authority, the American Society of Civil Engineers, and the World Engineering Congress. Cummings was also a member of the Soils Committee for the American Society of Civil Engineers, and those documents are included in this series. Cummings wrote published and unpublished articles regarding concrete, soil, and construction methods. His writings are also included in this series.

**Series 2, Operational Records, 1884-1952 and undated** consists of six subseries: Subseries 1, Administrative, 1901-1948 and undated; Subseries 2, Correspondence, 1884-1952 and undated; Subseries 3, Contracts (for projects), 1902-1930 and undated; Subseries 4, Legal Materials, 1907-1916; Subseries 5, Financial, 1894-1921 and undated; and Subseries 6, Personnel, 1918-1921. This series contains the bulk of the information about Cummings' concrete business. Within this series are administrative materials that document the running of the business, including daily reports, bond and insurance papers, specifications, supply notes, field requisitions, and design notebooks. Also included is correspondence to and from Cummings. Recipients of the correspondence include company employees and corporations that did business with the company. A portion of the correspondence is divided topically into subjects such as soil sampling apparatus and barge claims.

The bulk of this series consists of contracts for projects on which Cummings worked. The majority of the projects consist of bridges, water tanks, commercial buildings, and retaining walls. Materials include correspondence, receipts from vendors, hand-written notes, accident reports, blueprints, sketches, and laboratory test reports on materials. The contracts are arranged by contract number as assigned by Cummings. The unnumbered contracts are listed alphabetically. The legal materials consist of documentation that relate to legal matters Cummings dealt with, including the lawsuits Robert Cummings vs. William J. Stewart, Alexander Melville vs. Robert Cummings, and Lock Joint Pipe Company vs. Frederick Melber and Electric Welding Company. This series also contains financial and personnel records, including account books, bills, receipts, proposals, estimates, and business journals, as well as applications for employment, correspondence, and weekly progress reports.

**Series 3, Subject Files, 1891-1949 and undated** consists of correspondence, pamphlets, printed materials, and drawings. The topics within the subject files include soil testing and standards, roads, railroads, minerals, electricity, and concrete barges.

**Series 4, Publications, 1887-1955**, includes published material related concrete. The series is divided into two subseries: publications by title and publications by subject. Included are booklets, articles of incorporations, charters and by-laws, journals, and government publications. Some of the materials are in German or French.

**Series 5, Photographs, 1902-1916 and undated** includes 3" x 5", 8" x 10" and other various sizes of photographic prints. The series contains black and white and sepia toned prints. Some of the prints have been mounted onto cardboard or cloth, and some prints have tape on the corners. Some of the prints are annotated on the back. Most of the images are of construction sites in various stages of progress, the interiors of buildings being constructed, manufacturing equipment, and laborers working. Some of these images document early twentieth century methods of manufacturing, such as the use of rope pulleys.

**Series 6, Photograph Negatives, undated** includes about 75 photograph film negatives. The images in these negatives are primarily of construction scenes, including workers, equipment and work sites.
Series 7, Glass Plate Negatives, 1889-1918 and undated includes 8” x 10”, 5” x 8”, and 3” x 4” glass plate negatives containing images of bridges, slabs of concrete, construction scenes, the interiors and exteriors of hotels, and the interiors and exteriors of railroad stations.

Series 8, Lantern Slides, undated includes images of the work of the Cummings Structural Concrete Company on 4.5” x 5” glass slides. The images are of industrial machinery, construction sites, and workers.

Arrangement

The collection is arranged into eight series.

Series 1: Biographical, 1904-1936 and undated
Subseries 1.1: Cummings System of Reinforced Concrete, 1904-1930 and undated
Subseries 1.2: Professional Organizations, 1908-1936 and undated
Subseries 1.3: Writings, 1908-1939 and undated

Series 2: Operational Records, 1884-1952 and undated
Subseries 2.1, Administrative, 1901-1948 and undated
Subseries 2.2: Correspondence, 1884-1952 and undated
Subseries 2.3: Project Contracts, 1902-1930 and undated
Subseries 2.4: Legal Materials, 1907-1916
Subseries 2.5: Financial, 1894-1921 and undated

Series 3: Subject Files, 1891-1970 and undated
Subseries 3.1: Alphabetical, 1891-1970
Subseries 3.2: Testing, 1904-1916

Series 4: Publications, 1887-1955
Subseries 4.1: By title, 1887-1953
Subseries 4.2: By subject, 1902-1940 and undated

Series 5: Photographs, 1902-1916 and undated

Series 6: Photograph Negatives, undated

Series 7: Glass Plate Negatives, 1889-1918 and undated

Series 8: Lantern Slides, undated
Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:

Subjects:
- Civil engineering
- Concrete construction
- Engineering
- Reinforced concrete

Types of Materials:
- Blueprints
- Business records
- Drawings
- Glass negatives
- Negatives
- Photographs -- 1900-1950
- Research (document genres)

Names:
- American Society of Civil Engineers.

Geographic Names:
- Pittsburgh (Pa.)
Container Listing

Series 1: Biographical, 1904-1936 and undated

Subseries 1.1: Cummings System of Reinforced Concrete, 1904-1930 and undated

Box 1, Folder 1  Cummings System of Reinforced Concrete, undated

Box 1, Folder 2  Cummings System of Reinforced Concrete, 1905-1906 and undated

Box 1, Folder 3  Cummings System of Reinforced Concrete, 1907-1930 and undated

Image(s)

Welding reinforcement for concrete by Electric Welding Company [photoprint], Circa early 1900s
1 Item (3.8" x 4.8")

Image(s): Welding reinforcement for concrete by Electric Welding Company [photoprint],
Cummings Structural Concrete Company, Collector
From US Shipping Board, Concrete Ship Construction Department.

In box 1 ?, folder ?

Unrestricted research use by appointment. Photographs must be handled with cotton gloves unless protected by sleeves.

Silver gelatin on paper.

Local Numbers

AC0218-0000003 (AC Scan No.)

Topic: Concrete construction
Reinforced concrete
Shipbuilding

Genre/ Form: Photographs -- 1900-1950

Reinforced Concrete - The Cummings System [pamphlet], Circa 1907
1 Item (ink on paper.; 3.5" x 2.6")

Image(s)

Cummings Structural Concrete Company, Collector
In box 1, folder ?

Local Numbers

AC0218-0000001 (AC Scan No.)

Topic: Concrete construction
Reinforced concrete

Genre/Form: Pamphlets

Cummings System of Reinforced Concrete [pamphlet], undated
1 Item (*ink on paper.; 1.6” x 3.1")

Image(s)
Cummings Structural Concrete Company, Collector
Scan of interior page.

In box 1, folder ？

Local Numbers
AC0218-0000002 (AC Scan No.)

Topic: Concrete construction
Reinforced concrete

Genre/Form: Pamphlets

Box 1, Folder 4 Patents, 1904 and undated

Subseries 1.2: Professional Organizations, 1908-1936 and undated

Box 1, Folder 5 Allegheny County Authority, general, 1934-1936
Box 1, Folder 6 Allegheny County Authority, bridge stone, 1935
Box 1, Folder 7 Allegheny County Authority, boring and sampling soils, 1935
Box 1, Folder 8 Allegheny County Authority, clippings , 1935
Box 1, Folder 9 Allegheny County Authority, concrete piling, 1935-1936
Box 1, Folder 10 Allegheny County Authority, low heat hardening cement, 1935
Box 1, Folder 11 Allegheny County Authority, report on Wichhart truss and Homestead bridge , 1935
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Box 1, Folder 23  American Society of Civil Engineers, progress reports, 1922-1925
Box 1, Folder 24  American Society of Civil Engineers, secretary, 1920
Box 1, Folder 25  Soils Committee, circular, correspondence, general, 1913-1916 and undated
Box 1, Folder 26  Soils Committee, circular, correspondence, to Soils Committee members, 1914-1916
Box 1, Folder 27  Soils Committee, circular, correspondence, to local societies, 1915
Box 1, Folder 28  Soils Committee, circular, Number 1 questionnaire, 1914-1915 and undated
Box 1, Folder 29  Soils Committee, committee member: Frank M. Kerr, 1913-1915
Box 1, Folder 30  Soils Committee, committee member: E.C. Shankland, 1913-1915
Box 1, Folder 31  Soils Committee, committee member: Samuel T. Wagner, 1913-1915
Box 1, Folder 32  Soils Committee, communication investigating work of Soils Committee, 1916
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Box 1, Folder 34  Soils Committee, correspondence with Walter Douglas, 1915-1918
Box 1, Folder 35  Soils Committee, correspondence, 1912-1914
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Box 2, Folder 7  Soils Committee, equipment tests, 1914-1917 and undated
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Box 2, Folder 9  Soils Committee, equipment tests, sand and clay, 1916-1917 and undated
Box 2, Folder 10 Soils Committee, financial, 1914-1926
Box 2, Folder 11 Soils Committee, investigation of soils, correspondence to university professors, 1917-1918
Box 2, Folder 12 Soils Committee, meeting minutes, 1917-1926
Box 2, Folder 13 Soils Committee, reports of committee meetings, 1915-1925 and undated
Box 2, Folder 14 Soils Committee, resolution to be presented to the American Society of Civil Engineers, 1908-1912
Box 2, Folder 15 Soils Committee, progress reports, 1920-1922 and undated
Box 2, Folder 16 Soils Committee, progress reports, 1922-1924 and undated
Box 2, Folder 17 Soils Committee, progress report, plan and scope of investigation, 1916-1921 and undated
Box 2, Folder 18 Engineers’ Society of Western Pennsylvania, 1910
Box 2, Folder 19 World Engineering Congress, general, 1929
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Box 2, Folder 21  World Engineering Congress, lists of members, 1929

Box 3, Folder 1  World Engineering Congress, publication, *Authors' Index*, 1929

Box 3, Folder 2  World Engineering Congress, publication, *International Engineering*, George Otis Smith, 1930

Box 3, Folder 3  World Engineering Congress, publication, *The Port of Yokohama from an Engineering Point of View*, 1929

Subseries 1.3: Writings, 1908-1939 and undated

Box 3, Folder 4  "Bearing Value of Soils", 1921

Box 3, Folder 5  "Construction Methods Used on the Plant of the National Casket Company at Ashville, North Carolina," , 1910

Box 3, Folder 6  "The Engineer in the Community," Address to Youngstown Engineers' Club , December 17, 1914

Box 3, Folder 7  "Flow of the Hydraulic Fill at Fort Peck Dam", May 1939

Box 3, Folder 8  "Large Hydraulic Testing Machine for Uniform Loads", 1905

Box 3, Folder 9  "Mineralogical Composition of Some Important Soils", undated

Box 3, Folder 10  "Notes on the Bearing Value of Rods Embedded in Concrete", undated

Box 3, Folder 11  "Proposed Methods for the Reinforcement of Concrete Compression Members", undated

Box 3, Folder 12  "Reinforced Concrete Piles", 1909-1914 and undated

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Box 3, Folder 16  Miscellaneous, 1908-1910 and undated
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1.4: Photographs, 1905-1918 and undated

Image(s)

Robert A. Cummings, Jr. holding Cummings reinforced system [photoprint], Circa 1905
1 Item (4.1” x 3.5”)

Image(s): Robert A. Cummings, Jr. holding Cummings reinforced system [photoprint], Cummings Structural Concrete Company, Collector
In box 3, folder ?

Unrestricted research use by appointment. Photographs must be handled with cotton gloves unless protected by sleeves.

Silver gelatin on paper.

Local Numbers

AC0218-0000006 (AC Scan No.)

Topic: Concrete construction
Reinforced concrete

Genre/ Form: Photographs -- 1900-1950

Cummings system of concrete column reinforcing [photoprint], 1913
1 Item (4.4” x 3.4”)

Image(s): Cummings system of concrete column reinforcing [photoprint], Cummings Structural Concrete Company, Collector
In box 3, folder ?

Unrestricted research use by appointment. Photographs must be handled with cotton gloves unless protected by sleeves.

Silver gelatin on paper.

Local Numbers

AC0218-0000007 (AC Scan No.)

Topic: Concrete construction
Reinforced concrete

Genre/ Form: Photographs -- 1900-1950

Robert A. Cummings [photoprint], undated
1 Item (4.7” x 3.3”)

Image(s): Robert A. Cummings [photoprint], Cummings Structural Concrete Company, Collector
In box 3, folder ?
Unrestricted research use by appointment. Photographs must be handled with cotton gloves unless protected by sleeves.

Silver gelatin on paper.

Local Numbers

AC0218-0000008 (AC Scan No.)

Names: Cummings, Robert A., (civil engineer), 1866-1962

Topic: Concrete construction
       Reinforced concrete

Genre/ Form: Photographs -- 1900-1950

Cummings reinforced system [photoprint], Circa 1905
1 Item (3.8" x 4.9")

Image(s): Cummings reinforced system [photoprint],
Cummings Structural Concrete Company, Collector
In box 3, folder ?

Unrestricted research use by appointment. Photographs must be handled with cotton gloves unless protected by sleeves.

Silver gelatin on paper.

Local Numbers

AC0218-0000009 (AC Scan No.)

Topic: Concrete construction
       Reinforced concrete

Genre/ Form: Photographs -- 1900-1950

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Image(s)

Box 15, Folder 8  
Scott Paper Company, Chester, Pennsylvania [scrapbook], 1916-1917
1 Item (Photoprints mounted on scrapbook paper pages.; 4.9" x 6.0")

Image(s)

Cummings Structural Concrete Company, Collector
Pages of labeled construction photographs and blueprint.

Unrestricted research use by appointment. Photographs must be handled with cotton gloves unless protected by sleeves.

Local Numbers
AC0218-0000010-01 (AC Scan No.)
AC0218-0000010-20 (AC Scan No.)
AC0218-0000010-46 (AC Scan No.)
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Names:  
Scott Paper Company
Topic: Concrete construction
Reinforced concrete

Genre/Form:
Blueprints
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1 Item (Silver gelatin on paper.; 3.8" x 4.9")
Image(s): Concrete work by Cummings for a Pittsburgh commercial building [photoprint].
Cummings Structural Concrete Company, Collector
Unrestricted research use by appointment. Photographs must be handled with cotton gloves unless protected by sleeves.

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| Genre/Form                      | Photographs -- 1900-1950                          |

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Concrete work by Cummings for a Pittsburgh commercial building [photoprint], 1911
1 Item (Silver gelatin on paper.; 3.8" x 4.8")
Image(s): Concrete work by Cummings for a Pittsburgh commercial building [photoprint].
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