



Smithsonian

National Museum of American History Kenneth E. Behring Center

Guide to the James Forgie Papers

NMAH.AC.0986

Alison Oswald

2017

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Collection Overview

Repository:	Archives Center, National Museum of American History
Title:	James Forgie Papers
Date:	1856-1952 (bulk 1900-1935)
Identifier:	NMAH.AC.0986
Creator:	Forgie, James
Extent:	38.8 Cubic feet (85 boxes; 33 map-folders; 18 volumes)
Language:	Collection is in English. Some materials in French and Spanish.

Administrative Information

Acquisition Information

Collection donated by Mrs. James Forgie, 1967.

Provenance

In a 2005 reorganization of the National Museum of American History, the engineering collections were transferred to the newly configured Division of Work and Industry. Subsequently they were transferred to the Archives Center.

Separated Materials

The Division of Work and Industry holds a model of a Ram for driving tunnel shields (1933). It was used in driving the Union Tunnel for the Pennsylvania Railroad, 1933-1934 by James Forgie. See accession #MC.329243.

Related Materials in the Archives Center, National Museum of American History

Materials at the Archives Center

- The Foundation Company Records (AC0974)
- Warshaw Collection of Business Americana, Series: Tunnels (AC0060)
- Herbert S. Grassman Papers (AC0955)
- Penn Station, New York Photographs (AC1048)
- Lawrence Talma Smith Papers (AC0988)
- Silas H. Woodward Papers (AC1038)
- Alfred Maevis Collection (AC0954)
- William R. Hutton Papers (AC0987)
- Montgomery C. Meigs Papers (AC0984)
- Henry Grattan Tyrrell and Mary Maude Knox Tyrrell Papers (AC0948)

Parsons, Brinckerhoff, Quade and Douglas Records Collection (AC0969)
Chicago Surface Lines Drawings (AC0212)
Grand Central Terminal Collection (AC1071)
Modjeski and Masters Company Records (AC0976)
Thomas Norrell Railroad Photographs Collection (AC1174)

Processing Information

Collection processed by Alison Oswald, archivist, 2017.

Preferred Citation

Archives Center, James Forgie Papers, 1890-1949, National Museum of American History.

Restrictions

Collection is open for research but is stored off-site and special arrangements must be made to work with it. Contact the Archives Center for information at archivescenter@si.edu or 202-633-3270.

Conditions Governing Use

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Biographical / Historical

James Forgie (1868-1958) was born in Longside, Aberdeenshire, Scotland. Forgie graduated from Gordon's Technical College, Aberdeen, Scotland (1881-1885) and apprenticed in the office of civil engineer George Gordon Jenkins from 1885-1889. Forgie came to the United States in 1902 to work as a chief assistant engineer to the Pennsylvania Railroad on tunnels in New York City. He joined the private engineering practice with partners Charles M. Jacobs and J. Vipond Davies of Jacobs and Davies, Inc. from 1909-1923. Forgie was awarded the Tedlford Gold Medal from the Institute of Civil Engineering (British) in 1915 in recognition of his paper "The Laxaxalpam Aqueduct Tunnels in Mexico." He authored numerous articles about tunneling and consulted as an expert witness and arbitrator in many legal cases involving tunneling. Forgie was a member of the American Society of Civil Engineers, Institute of Civil Engineers of Canada, and New York Section of the American Society of Civil Engineers.

Forgie married Martha Maitland Thom (1868-1936) in 1895. They had four children: Martha (b. 1900), Wilhelmina (b. 1902), James (b. 1904), and Christina (b. 1906). Forgie later married Anne McDougall (b. 1872) in 1937.

Scope and Contents

The papers contain correspondence, reports, drawings, blueprints, cost estimates, contracts, specifications, regulations, legal documents, photographs, profiles, diagrams, clippings, and publications concerning projects which Forgie worked on, especially the Holland and Lincoln Tunnels, the Midtown Hudson Tunnels in New York City. Also included are publications and patents on subaqueous tunneling, subway stations, and bridges, and material on the Forgie submarine.

Arrangement

The collection is arranged into four series.

Series 1: Professional Papers, 1892-1945

Series 2: Projects, 1914-1957

Series 3: Publications, 1856-1952

Series 4: Drawings, 1888-1951

Names and Subject Terms

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

Subjects:

- Bridges -- 1890-1940
- Civil engineering -- 1890-1940 -- U.S.
- Civil engineers
- Subways -- New York (N.Y.)
- Tunnels

Types of Materials:

- Blueprints -- 20th century
- Business records
- Clippings -- 1890-1960
- Contracts -- 1890-1940
- Correspondence
- Drawings
- Legal documents
- Patents
- Photographs -- 1890-1900
- Photographs -- 1900-1950
- Reports

Names:

- Pennsylvania Railroad.

Places:

- Hudson River
- New York (N.Y.) -- Transportation

Container Listing

Series 1: Professional Papers, 1892-1945

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Box 1, Folder 2	Survey notebook, City of South London Railway, triangulation downline, 1894
Box 1, Folder 3	Survey notebook, City of South London Railway, length of lines, 1894
Box 1, Folder 4	Survey notebook, Upline Tunnel, under and surface survey, 1896
Box 1, Folder 5	Survey notebook, Up Bank [Moorgate Station], London Underground, 1897
Box 1, Folder 6	Survey notebook, book of railway lines, angles and gradients for London Underground, 1898
Box 1, Folder 7	Skeleton Diary, history of great tunneling (compiled by Forgie), 1895
Box 1, Folder 8	Newspaper clippings, 1894 - 1897
Box 1, Folder 8A	Newspaper clippings (foundations, geophysics, highways, roads, harbors and drydocks), 1917-01-01-1941-01-01
Box 1, Folder 8B	Newspaper clippings, 1923-01-01-1941-01-01
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Box 4, Folder 5A	Grout machine (patent drawings), 1911 2 Glass negatives
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Box 5, Folder 5	Pennsylvania Railroad New York Extension, pocket index to plans as constructed, 1910
Box 5, Folder 6	Economic Necessity for the Pennsylvania Railroad Tunnel Extension into New York City, 1907
Box 5, Folder 7	Pennsylvania Tunnel and Terminal Railroad Company, general description of New York Terminal, 1908
Box 5, Folder 8	Pennsylvania Tunnel and Terminal Railroad Company, standard specifications for steel railroad bridges, 1908
Box 5, Folder 9	Pennsylvania Railroad Tunnels and Terminals in New York City, 1908
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Box 6, Folder 8	Pennsylvania Tunnels Alumni Association, the North River Division, 1911 - 1912
Box 6, Folder 9	The East New York Tunnel, 1916
Box 6, Folder 10	Pennsylvania Railroad, general information for New York tunnels and terminal, undated

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Series 2: Projects, 1914-1957

Scope and Contents: This series contains correspondence, handwritten and typescript notes, reports, drawings, blueprints, cost estimates, contracts, specifications, regulations, legal documents, photographs, profiles, diagrams, clippings, and publications concerning projects with which Forgie was associated as the project engineer or in expert testimony for legal actions. Series also includes information about a topic/subject related to Forgie's engineering work such as concrete or compressed air. These entries are listed with the notation "subject file." The materials are arranged alphabetically by title.

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Language: English.

Subseries 2.2: Air drills and hammers (subject file), 1917 - 1919

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Subseries 2.3: *Arundell Corporation vs. Pennsylvania Turnpike Commission* , 1940-1942

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Subseries 2.6: Australian Hardwoods (subject file), 1924 - 1925

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Subseries 2.8: Baltimore Water Tunnel, 1936 - 1936

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Scope and Contents: The Holland Tunnel under the Hudson River between Manhattan in New York City and Jersey City, New Jersey opened in 1927 as the first of two vehicular tunnels under the Hudson River. The Lincoln Tunnel opened in 1937. Originally known as the Hudson River Vehicular Tunnel or the Canal Street Tunnel, it was renamed the Holland Tunnel in memory of Clifford Milburn Holland, the chief engineer.

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Box 68, Item 5	Volume 9, Number 20, Pennsylvania Railroad New York Tunnel Extension, North River Division, Question of foundations for North River tunnels, experimental and exploratory work, undated
Box 69, Item 1	Volume 9, Number 20, Pennsylvania Railroad New York Tunnel Extension, North River Division, Question of foundations for North River tunnels, experimental and exploratory work, undated
Box 69, Item 2	Volume 9, Number 21, Pennsylvania Railroad New York Tunnel Extension, North River Division, Question of foundations for North River tunnels, experimental and exploratory work, undated
Box 69, Item 3	Index to Pennsylvania Railroad Report, undated
Box 69, Item 4	Pennsylvania, New York and Long Island Railroad and Pennsylvania, New Jersey and New York Railroad, North River Division, Triangulation of North River and routine alignment work, undated
Box 70, Folder 1	Pennsylvania Tunnel Extension to New York City (blueprints), undated
Volume 1	Volume 1, Pennsylvania, New York and Long Island Railroad, East River Division, record drawings, 1909-1910 1 Volume (20" x 28")
Volume 2	Volume 2, Pennsylvania, New York and Long Island Railroad, East River Division, record drawings, 1909-1910 1 Volume (20" x 28")
Volume 3	Volume 1, Number 22 (Copy 1), Pennsylvania Railroad New York Tunnel Extension, North River Division, Chief Engineers Report to Management, Plans as Constructed, 1908-1910 1 Volume (20" x 28")
Volume 4	Volume 2, Number 23 (Copy 1), Pennsylvania Railroad New York Tunnel Extension, North River Division, Chief Engineers Report to Management, Plans as Constructed, 1904-1910 1 Volume (20" x 28")
Volume 5	Volume 3, Number 24 (Copy 1), Pennsylvania Railroad New York Tunnel Extension, North River Division, Chief Engineers Report to Management, Plans as Constructed 1 Volume (20" x 28")
Volume 6	Volume 4, Number 25 (Copy 1), Pennsylvania Railroad New York Tunnel Extension, North River Division, Chief Engineers Report to Management, Plans, Miscellaneous Drawings Including Studies and Original Contract Drawings, 1903

	1 Volume (20" x 28")
Volume 7	Volume 5, Number 26 (Copy 1), Pennsylvania Railroad New York Tunnel Extension, North River Division, Chief Engineers Report to Management, Plans, Surveys and Observations of River Tunnels in Diagram Form, 1906-1910 2 Volumes (20" x 28")
Volume 8	Number 27, Pennsylvania Tunnel and Terminal Railroad, North River Division, Cross Sections of Concrete Walls, Terminal Station West as Constructed, undated 1 Volume (20" x 28")
Volume 9	Pennsylvania, New York and Long Island Railroad, and Pennsylvania, New Jersey and New York Railroad, North River Division, Proposed Shield for Sub-aqueous Tunneling, 1904-02 1 Volume (20" x 28")
Volume 10	Pennsylvania New Jersey and New York Railroad Company, North Division, Contract Drawings, 503-558, 1903 2 Volumes (20" x 28")
Volume 11	Pennsylvania New Jersey and New York Railroad Company, North Division, Contract Drawings, 1000-1060, 1903 1 Volume (20" x 28")
Volume 12	Pennsylvania, New York and Long Island Railroad, and Pennsylvania, New Jersey and New York Railroad, East River Division, Contract Drawings, 5-72, 1903 1 Volume (20" x 28")

Subseries 2.35: Hooghly River Tunnel, Calcutta, India, 1910 - 1915

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Subseries 2.36: Hudson and Manhattan Railroad Company, 1907-1957

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Box 7, Folder 2	Plans and details for the railroad, 1908
Box 7, Folder 3	Illustrations of Incidents in Tunnel Construction (souvenir presented at dinner), 1909
Box 7, Folder 4	Reports related to possible war damage in the tunnel property, 1931 - 1953
Box 7, Folder 5	Journal (maintained by James Forgie), 1942

Box 7, Folder 6	Journal (maintained by James Forgie), 1939 - 1941
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Box 7, Folder 7	Miscellaneous, 1943
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Box 7, Folder 8	Reorganization and bankruptcy, 1957
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Subseries 2.37: Hudson River Tunnel/North River Tunnels

Scope and Contents: This sub-series contains 8" x 10" black-and-white construction photographs documenting the work of tunneling and the installation of tunnel shields. The images depict construction workers, especially "sandhogs," defined by the Merriam-Webster Dictionary as, "a laborer who works in a caisson in driving underwater tunnels."

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Box 14, Folder 3	Inspection of tunnel, 1930 - 1945
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Box 14, Folder 4	Dredging by US Army, 1936 - 1936
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Box 14, Folder 5	Design of shield for subaqueous tunnelling, 1904 - 1904
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Box 14, Folder 6	Correspondence and articles in Engineering News, 1906 - 1907
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Box 14, Folder 7-8	Protection of tunnel, 1905 - 1933
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Box 14, Folder 9	Inspection reports and data, 1914 - 1936
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Box 15, Folder 2	Quarterly reports, 1938 - 1938
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Box 15, Folder 3	Stability of tunnel, 1936 - 1936
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Box 15, Folder 4	US Army dredging cover, 1935 - 1935
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Box 15, Folder 5	Protection of tunnel, 1910 - 1934
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Box 15, Folder 6	Miscellaneous, 1911 - 1935
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Box 16, Folder 1	Photographs, 1904 - 1904
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Box 16, Folder 2	Photographs, 1905 - 1905
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Box 16, Folder 3	Photographs, 1905 - 1907
Box 16, Folder 4	Photographs, 1905 - 1907
Box 17, Folder 1	Photographs, 1904 - 1905
Box 17, Folder 2	Photographs, 1906
Box 17, Folder 3	Photographs, 1905 - 1906
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Box 18, Folder 3	Photographs, 1907 - 1908
Box 27, Folder 1	Photographs, 1902 - 1909
Box 27, Folder 2	Photographs, 1907 - 1908
Box 27, Folder 3	Photographs (copy prints), 1906 - 1909
Box 27, Folder 4	Photographs, 1924 - 1924
Box 27, Folder 5	Photographs (shield fabrication), 1905
Box 27, Folder 6	Photographs, 1902 - 1907
Box 28, Folder 1	Photographs, 1907 - 1909
Box 27, Folder 2	Photographs, 1902 - 1910
Box 27, Folder 3	Photographs, 1902 - 1908
Box 39, Folder 1	Pennsylvania Railroad Station (tunnels), correspondence, 1941 - 1942
Box 39, Folder 2	Pennsylvania Railroad Station (tunnels), cost estimates, 1941 - 1942
Box 39, Folder 3	Pennsylvania Railroad Station (tunnels), miscellaneous memos, 1941 - 1942
Box 39, Folder 4	Pennsylvania Railroad Station (tunnels), shield labor costs, 1941 - 1942
Box 39, Folder 5	Pennsylvania Railroad Station (tunnels), land tunnels, 1941 - 1942

Box 39, Folder 6	Pennsylvania Railroad Station (tunnels), calculations and tax assessments, 1941 - 1942
Box 39, Folder 7	Pennsylvania Railroad Station (tunnels), taxation papers, 1911
Box 39, Folder 8	Pennsylvania Railroad Station (tunnels), inspection of panhandle tunnels, 1942
Box 39, Folder 9	Pennsylvania Railroad Station (tunnels), declining to be expert witness, 1921
Box 39, Folder 10	Pennsylvania Railroad Station (tunnels), franchise assessment, 1941
Box 39, Folder 11	Pennsylvania Railroad Station (tunnels), drawings, 1907
Box 40, Folder 1	Illustrations for paper on Question of Foundations for North River Tunnels, 1907
Box 40, Folder 2	Photographs, 1909 - 1935 Notes: Includes photograph of the first passenger automobile to pass under the Hudson River, June 21, 1909.
Box 40, Folder 3	Photographs of tunnel shield, 1904
Box 40, Folder 4	Photographs of tunnel shield, 1906 - 1910
Box 40, Folder 5	Photographs of tunnel shield, 1905 - 1906
Box 40, Folder 5A	Contract drawings, #501-558, 1903-01-01
Box 40, Folder 5A	Contract drawings, #1000-1060, 1903-01-01
Box 85, Folder 6	New York and New Jersey Railroad Company, Hudson River Tunnel, 1904-03-11 Notes: Caption reads, "The first men in the history of the world to walk from New Jersey to New York under the waters of the North River." Photograph signed by the men depicted in the photograph.

Subseries 2.38: Interstate Commerce Commission (Board of Consultants), 1919 - 1920

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Subseries 2.39: *Jahn and Bressi vs. City of Seattle* (Lake Youngs Tunnel), 1923-1930

Box 18, Folder 4	US Fidelity Guarantee Company, bonding, 1925 - 1925
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Box 18, Folder 7	Court notes, 1930 - 1930
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Box 41, Folder 6	Estimate of reasonable value, 1930
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Box 41, Folder 8	Complaints and answers, 1929

Subseries 2.40: *Jersey City and Mayor and Alderman v. Jersey City Water Supply Company*, 1908 - 1909

Box 42, Folder 1

Subseries 2.41: Kent Collieries Company, 1905 - 1905

Box 42, Folder 2

Subseries 2.42: Lafayette College v. Edwards Dunn Company, 1927 - 1929

Box 42, Folder 3

Subseries 2.43: Laxaxalpan Aqueduct Tunnels (Mexican Light and Power Company), 1910-1946

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Box 42, Folder 5	Consultation and inspection report, 1912
Box 42, Folder 6	Final inspection, 1913
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Box 42, Folder 9	Nexcaxa Dam and Reservoir (photographs), 1910
Box 42, Folder 9A	Instructions for staff working on Laxaxalpan project, undated

Subseries 2.44: Lincoln Tunnel (Midtown Hudson Tunnel), 1930-1939

Scope and Contents: Consists of a set of three tunnels under the Hudson River. Connects Weehawken, New Jersey and Midtown Manhattan in New York City. Includes correspondence with Chief Engineer, O.H. Ammann (1879-1965), a Swiss structural engineer also responsible for the bridge designs for the George Washington Bridge, Verrazano-Narrows Bridge, and Bayonne Bridge.

Box 29, Folder 1	Port of New York Authority, Joint Conference of New York and New Jersey Special Committees on Interstate Transportation Facilities, 1930
Box 29, Folder 2	New York State Bridge and Tunnel Commission, New Jersey Holland Tunnel Commission, Proposed Weehawken Midtown Tunnel, 1930
Box 29, Folder 3	Midtown Hudson Tunnel, vertical and lateral clearance, 1930
Box 29, Folder 4	Midtown Hudson Tunnel, traffic and revenue studies, 1931
Box 29, Folder 5	Port of New York Authority, Report on Preliminary Investigation for the Midtown Hudson Tunnel, 1931
Box 29, Folder 6	Report of the Chief Engineer on the Preliminary Investigation for the Midtown Hudson Tunnel, 1931
Box 29, Folder 7	Reconstruction Finance Corporation, Midtown Hudson Tunnel, a self-liquidating project, 1932
Box 29, Folder 8	Midtown Hudson Tunnel, agreement, conveyance and supporting documents
Box 30, Folder 1	Midtown Hudson Tunnel, Contract MHT 1A, 1933
Box 30, Folder 1	Midtown Hudson Tunnel, Land Borings, New Jersey approach, Contract MHT 1C, 1934
Box 30, Folder 2	Midtown Hudson Tunnel, Land Borings, New Jersey approach borings, Contract MHT 1D, 1935
Box 30, Folder 2	Midtown Hudson Tunnel, Land Borings, New Jersey approach borings in North Bergen Township, Contract MHT 1E, 1936
Box 30, Folder 2	Midtown Hudson Tunnel, Land Borings, New Jersey approach, borings in Union City and North Bergen, Contract MHT 1F, 1937
Box 30, Folder 3	Midtown Hudson Tunnel, manufacture, storage and delivery of cast iron and cast steel tunnel lining, Contract MHT 2, 1933
Box 30, Folder 4	Midtown Hudson Tunnel, manufacture, storage and delivery of bolts, nuts and washers for tunnel lining, Contract MHT 3, 1933
Box 30, Folder 5	Midtown Hudson Tunnel, shield driven tunnel shafts, Contract MHT 4, 1934

Box 30, Folder 6	Midtown Hudson Tunnel, New Jersey land sections and plaza, Contract MHT 5A and 5B, 1935
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Box 32, Folder 1	Midtown Hudson Tunnel, New York land ventilation building, Contract MHT 14, 1936
Box 32, Folder 2	Midtown Hudson Tunnel, electrical installation, Contract MHT 15, 1936
Box 32, Folder 3	Midtown Hudson Tunnel, tunnel finish, Contract MHT 16, 1936
Box 32, Folder 4	Midtown Hudson Tunnel, south tube and New York approach finish, Contract MHT 17, 1937
Box 32, Folder 5	Midtown Hudson Tunnel, south tube and tunnel and plaza brick paving, Contract MHT 18, 1937
Box 32, Folder 6	Midtown Hudson Tunnel, permanent field office building, Contract MHT 19, 1936
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Box 33, Folder 1	Lincoln Tunnel, toll booths, floodlight towers and miscellaneous construction in New Jersey, Contract MHT 22, 1937
Box 33, Folder 2	Lincoln Tunnel, New Jersey approach, Contract MHT 23, 1937
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Box 33, Folder 4	Lincoln Tunnel, New Jersey approach, marginal streets, Contract MHT 25, 1937
Box 33, Folder 5	Lincoln Tunnel, toll signaling and recordings equipment, Contract MHT 26, 1937
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Box 34, Folder 4	Lincoln Tunnel, New Jersey approach, demolition of walls and grading on west side of King's Bluff, Contract MHT 33, 1938
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Box 34, Folder 5	Midtown Hudson Tunnel, manufacture, storage and delivery of cast iron and cast steel tunnel lining, Contract MHT 50, 1936
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Box 34, Folder 7	Midtown Hudson Tunnel, North Tunnel, borings for New York River shaft, Contract MHT 52, 1936
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Scope and Contents: Contains issued patents for others.

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Series 3: Publications, 1856-1952

Scope and Contents: This series contains printed materials, the majority of which were published and relate to engineering projects, specifically tunneling, and concern Forgie's work. Other publications were clearly maintained as reference and used by Forgie during the course of his professional career. Forgie wrote about tunneling developments for the *Encyclopedia of Britannica Yearbook*. Some of those entries are represented here.

The publications include articles, lectures, speeches, addresses before professional societies such as the American Society of Civil Engineers, papers, especially about materials reports, and legal documents such as briefs or testimony. In some instances, Forgie annotated the publications, presumably in connection with his own consulting and expert testimony in several legal actions. Many of the publications relate to specific projects worked on such as the Hudson River Tunnel, and similar publications can be found in Series 2: Projects. The materials are arranged alphabetically.

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Series 4: Drawings, 1888-1951

Scope and Contents: This series consists primarily of blueprints, working drawings, and tracings. Also included are bidding information, studies of approaches to bridges and tunnels, contract information, construction costs, track layouts, longitudinal and elevation sections, and topographical data for projects Forgie worked directly on or consulted for. Some of the materials are annotated. Materials are arranged alphabetically by project.

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