SUMMARY INFORMATION

CREATOR: Eugene F. Casey

TITLE: Eugene Casey Tunneling Collection

INCLUSIVE DATES: 1903-1990

BULK DATES: 1912-1921, 1969-1980s

QUANTITY: Includes 533 photographs, 15 drawings and cartoons, 34 bound reports and documents, approximately 110 articles, pamphlets, and reports.

ABSTRACT: The Eugene Casey Tunneling Collection contains documents reflecting the history of tunneling in North America and the World. The collection contains documents pertaining to tunnel methods for construction, early subway construction photographs, the 63rd Street Tunnel, and over one hundred photographs documenting the Hudson & Manhattan Railroad Tube from 1912, and most notably contains records regarding the construction of the Holland Tunnel, including signed reports by Clifford Milburn Holland.
ADMINISTRATIVE INFORMATION

ACCESS RESTRICTIONS: Access is based on archivist discretion

ACQUISITION: Gift of Eugene F. Casey

COPYRIGHT: Use of certain material in the collection may need copyright to be acquired from creating agencies.


PROCESSING INFORMATION: Finding aid prepared by Desiree Alden (updated from old finding aid written by Kathleen Collins)

HISTORICAL NOTE/BIOGRAPHICAL NOTE

Subway Tunnels in New York City

Early underwater subway tunnels (with the exception of the Harlem Tunnel; also referred to as the 149th Street Tunnel, which used a subaqueous tunnel method) were built by using a tunneling shield method in concurrence with a compressed air system. These underwater tunnels were excavated by laborers known as ‘sandhogs’ and the job was considered one of the most dangerous construction types for the building of the subways. The two biggest dangers of the position included the possibility of Caissons Disease, more commonly known as ‘the bends’, as well as the danger of working underground in a compressed air system where the tunneling structure could be unstable, causing what would be referred to as blowouts.

The majority of subway tunnels were built largely in part during what was referred to as the Dual Contracts Era from the 1910s-1920s. The Dual Contracts provided extensions, additions, and rehabilitation of lines for the then privately owned Interborough Rapid Transit Company and the Brooklyn Rapid Transit Company. These extensions saw the building of the Montague Street Tunnel, 60th Street Tunnel, Lexington Avenue Tunnel, 14th Street Tunnel, Clark Street Tunnel, and the purchase of the preexisting Steinway Tunnel. The next big wave of tunnel construction for the subways took place in the 1930s when the City of New York began running their own subway system known as the Independent System. The creation of another competing subway in New York led to the building of the Cranberry Street Tunnel, Rutgers Street Tunnel, 53rd Street Tunnel, and the Concourse Tunnel.

The last tunnel to be built for the New York subway system was the 63rd Street Tunnel which was originally done to enable New York City Transit and the Long Island Railroad east side access between Manhattan and Queens. The tunnel was built using an immersed tube tunneling method which allows sections of the tunnel to be created off site then later moved and
sunk into place. The tunnel was created as a 2 level and 4 track tunnel with subway service on the upper level and Long Island Rail Road service on the lower level. Construction for the tunnel began in 1969 but was put on hold during the fiscal crisis New York City suffered in the 1970s. The tunnel eventually would partially open for subway service in 1989 and full subway service in 2001. The lower level is still not in use but construction has resumed on the East Side Access Project to connect Long Island Rail Road commuter trains to Grand Central Terminal which is projected to be completed sometime around 2015.

**Railroad Tunnels in New York City**

The planning and construction of the Hudson River Tunnels, now referred to as the Hudson Tubes, began as early as 1874 but due to costly accidents, legal issues, and loss of financial backing the project was abandoned in 1882. After many attempts to build the tunnels, construction finally began again in 1902 and would see to the completion of the Trans Hudson Tubes. The original tubes known as the uptown tubes “Hoboken-Morton Tunnels“ would open in 1908 and a year later the downtown tubes “Montgomery-Cortlandt Tunnels“ would open for service. The Hudson Tubes would be the first transportation tunnel under a major river. The building of the Hudson Tubes incorporated sub aqueous tunneling methods, tubular cast iron construction, and cut and cover construction. The Tubes created by the Hudson & Manhattan Railroad Company are currently operated by the Port Authority Trans-Hudson Corporation (PATH) since their takeover in 1962.

The East River Tunnels and the North River Tunnels that served the Pennsylvania Railroad opened in 1910. The East River Tunnels would run from Pennsylvania Station in Manhattan to Long Island City in Queens allowing for the Pennsylvania Railroad Company access to a newly created Sunnyside Yards. Long Island Railroad was also a subsidiary of the Pennsylvania Railroad and the tunnels provided their only access from Queens into Manhattan. The North River Tunnels provide direct access between New Jersey and the newly built Pennsylvania Station in Manhattan. The tunnels were built by using a tunneling shield method in concurrence with a compressed air system. The Tunnels ownership would become under the jurisdiction of Penn Central in 1968 and Amtrak in 1976. The East and North River Tunnels are currently used as part of Amtrak’s Northeast and Empire Corridors, by New Jersey Transit, and by Long Island Railroad.

**Vehicular Tunnels in New York City**

The Holland Tunnel (originally referred to as the Hudson River Vehicular Tunnel) was the first vehicular tunnel to be built in New York, and the first to create an innovative transverse ventilation design. In 1920 the construction of the tunnel was awarded to Clifford M. Holland. The tunnel was constructed using the tunnel shield method and the tunnel consisted of a pair of tubes each containing two lanes for traffic. In October of 1924 Clifford M. Holland died and the Tunnel was aptly named for its original chief engineer. Holland was succeeded by Milton H. Freeman, who died of pneumonia in March 1925. Ole Singstad would become the chief engineer of the tunnel and create the innovative ventilation design of the tunnel. The Holland Tunnel would open to vehicular traffic in 1927.
The Lincoln Tunnel (originally referred to as the Midtown Hudson Tunnel) originally started under the New Deal’s Public Works Administration and designed by chief engineer Ole Singstad who previously helped to build the Holland Tunnel. Construction began on the first tube (center tube) in 1934 and was completed in 1937. The construction of the second tube (north tube) stopped in 1938 and due to WWII was not completed until 1945. Originally the tunnel was designed to only have two tubes, but a third would be proposed, eventually the third tube (south tube) was opened in 1957.

The Queens Midtown Tunnel and the Brooklyn-Battery Tunnel were also designed by engineer Ole Singstad. Both tunnels would use the tunneling shield method in concurrence with a compressed air system. The Queens Midtown Tunnel would start construction in 1936 amid political riffs between Mayor LaGuardia and Robert Moses. In 1938, Mayor LaGuardia ran out of funds and eventually would have to go to Robert Moses to fund the two East River vehicular tunnels. The Queens Midtown Tunnel would be completed in 1940 before LaGuardia’s New York City Tunnel Authority and Moses’ Triborough Bridge Authority merged into the Triborough Bridge and Tunnel Authority in 1946. During this merger the Brooklyn-Battery Tunnel was under construction, having started in 1940 but halted during WWII. When Moses took over the building of the tunnel in 1946 he fired Ole Singstad and replaced design features for the tunnel walls. This design caused leaks in the tunnel and eventually Singstad’s design was used. The Brooklyn-Battery tunnel opened in 1950 and is still the longest continuous underwater vehicular tunnel in North America.

**Eugene F. Casey**

Eugene F. Casey was a civil engineer who worked on several major projects for the Transit Authority including the 63rd Street Tunnel Connector.

The Eugene Casey Tunneling Collection was donated to the New York Transit Museum Archives in 1996.
SCOPE AND CONTENT NOTE

Notable items from this collection include hundreds of early subway construction photographs, original reports and documents pertaining to the Holland Tunnel signed by Holland himself, an early photograph of the “10-Car Train No. 3998”, Red Hook Interceptor Tunnel documents, and an original hand-drawn diagram of a “hospital lock.” Also very significant are two document boxes containing over one hundred photographs of the construction of the Hudson & Manhattan Railroad Tube from 1912. It is thought that these are the only photographs of this subject in existence, assuming that all others were destroyed in the Port Authority Archives at the World Trade Center.

Casey’s collection, when received by the Archives in at least 11 cubic foot storage boxes, appeared to be in no logical order. It was an extensive assortment of photographs & slides, publications, clippings, reports, engineering drawings, prints, and personal papers reflecting a well rounded history of tunneling and construction methods in North America and in the world. Rather than leave the collection “in situ,” it was necessary to arrange the material into a workable system for future research purposes.

The collection has been divided into four series:

Series 1: Photographs – arranged by subway route then by subject (some photographs remain with the document series if attached to documents)
Series 2: Slides – arranged by subject in 3 ring binders
Series 3: Documents – arranged by subject then chronologically in document boxes
Series 4: Oversized Drawings and Prints – arranged by type of medium and format in oversized boxes.

BOX, LOCATION, AND FOLDER LISTING

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Route 101, Section 5: 1927, 1929
Route 101, Section 6: 1937-1939 (5 folders)
Route 101, Section 9: 1937

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Route 103, Section 1: 1930
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Route 131A, Section 1: ca. 1970s (7 folders)
Route 131A, Sections 1, 2, & 3: ca. 1970s
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Route 131A, Section 6: ca. 1970s
Route MB EX. 1: 1910-1911
Route Sea Beach: 1914
Route ?, Section 10-C: 1917

Box 5

Misc. Photographs
Beach Pneumatic Subway: 1940
Coney Island Shop/Yard: ca. 1970s
Drawings: no date
East River Bridges: ca. 1970s
East River Tunneling Project Diagrams:
Historical Prints: no date
Jamaica Bus Depot: ca. 1970s
Midtown Hudson Tunnel (Lincoln Tunnel): no date, 1934-1935, 1953
N.Y.C.D.E.P. Division of Sewers Construction: 1984
Port Authority Tunnel East: no date
Power (misc.): no date
P-208: Avenue Z Substation: ca. 1967
P-214: York Street Substation: 1975
Rock Tunnels: no date, 1940s
10-Car Train No. 3998: no date
Unidentified (Early): ca. 1900-1930s
Unidentified: 1928
Unidentified Tunneling Project-Lower Manhattan: 1910-1920
Unidentified with Gene Casey: ca. 1970s
Unidentified: 1950s-1960s
Unidentified: ca. 1970s
Vietnam-Dau Tieng Bridge-Military Personnel: 1967

Box 6

Hudson and Manhattan Railroad Tube
Photographs #1137-1350: 1912

Box 7

Hudson and Manhattan Railroad Tube
Photographs #5029 to 5471: 1912-1913, 1922-1923
2: SLIDES – 2 BWAY, ROW 4, UNIT D, SHELF 5

Binder 1
Contract #2; Route 4 & 38; Route 8, Sections 1 & 3; Route 33, Section 2; Route 48; Route 61; Route 101, Sections 1 & 12

Binder 2
Construction Methods

Binder 3
Hydraulic Pile-Washington D.C.; Austin, TX; University of Illinois

Binder 4
Mexico City; Hawaii; Japan; Montreal; Tokyo; Lisbon

Binder 5
Northfield (Mass); Grace Pine (PA); Climax Mine (CO); “U.S. Trip”; San Francisco; Chicago

Binder 6
Route 5

Binder 7
Route 131-A, Sections 1, 5A, 5B, 6, and 7

Binder 8
Route 131-D; Route 133

Binder 9
Red Hook

*(On Shelf) Video-“Joralemon Street Tunnel” TRK #2: 1983

3: DOCUMENTS – 2 BWAY, ROW 4, UNIT D, SHELVES 2 TO 4, AND UNIT C, SHELF 1

Box 8

Subways-General History
Correspondence-“A Short History of the 1st Division…”: 1914
Article-“Rapid Transit Development in New York” Public Service Record, By: Daniel L. Turner: 1915
Article-“Transportation in the City Plan” Public Service Record, By: Daniel L. Turner: 1915
Paper-“History of the Manhattan Railway Company’s System”: 1918
Pamphlet-“The Untermeyer Plan for Subway Unification”: 1931
Article-“Mike and Rosee” Public Service Record, By: James C. Meem: ca. 1910s
Report-“(typewritten copy) Annual Report of the Chief Engineer for the Period June 1, 1919 to December 31, 1919”: no date (ca. 1920s?)
Report-“(typewritten copy) Annual Report of the Chief Engineer for the Period June 1, 1919 to December 31, 1919”: no date (ca. 1920s?)
Paper-“(typewritten copy) The Dual System Contracts in Their Relation to Rapid Transit History in New York” By: Leroy T. Harkness: no date (ca. 1910s-1920s?)


Box 9

Subways and Tunneling – New York City
Journals-“Public Service Record”: 1914
Journals-“Public Service Record”: 1915
Journals-“Public Service Record”: 1916
Journals-“Public Service Record”: 1917
Journals-“Public Service Record-Dual Contracts”: 1914-1917
Journals-“Public Service Record-Steinway Tunnel”: 1915
Pamphlet-“How a Twenty Million Dollar Railroad was Built in Mid-Air: Third Tracking the New York “L” By: IRT Co.: 1917
Paper-“Construction Problems of the Manhattan-Bronx, and Lexington Avenue Subway Junction and Queens borough Tunnel Connections” By: George Perrine: 1917
Estimates: 1919
Report-“Stopping Leaks in the BRT Subway at Broadway-Canal Street Station”: 1920
Correspondence-“The Narrows Tunnel”: ca. 1920s
Memorandum-“Vehicular Tunnels and Rapid Transit Tunnels”: ca. 1920s
Contract Book- “Contract No. 4: The Narrows Tunnel – New York Bay Section – Shield Method-Invitation to Bid” By: Board of Estimates: 1925
Contract Book-“Contract No. 4: The Narrows Tunnel– New York Bay Section – Shield Method-Drawings #1-45” By: Board of Estimates: 1925
Correspondence-“Additional Construction Costs” By: Tunnel Division: 1927
Correspondence-“Re: Construction of the East River Tunnel from Fulton to Cranberry Streets”: 1927
Paper-“The Rapid Transit Subways of New York City” By: Robert Ridgway: 1929
Drawing-“Method of Constructing Subways”: 1936
Journal-“The Municipal Engineer’s Journal: Discussion on Construction of 6th Avenue Subway” Vol. 26: 1940
Articles-“The Delaware Water Supply for the City of New York: A Series of 14 Articles”: 1942
Reports-“Under River Tunnels: Brooklyn Battery Tunnel and Queens Midtown Tunnel”: 1942 and 1944
Seminar Lecture-“Subway Construction Methods” By: William Stuart: 1949
Box 10

Subways and Tunneling – New York City

Report-“Major NYC Subaqueous Vehicular Rapid Transit and Railroad Tunnels”
By: NYCTA, 1970
Report-“Major NYC Subaqueous Vehicular Rapid Transit and Railroad Tunnels-
Key Plans and Profiles” By: NYCTA, 1970
Report-“Welfare Island Subway Station Flat Jack Tests” By: Foundation
Sciences, Inc.: 1970
Booklet-“The Tunnel: Transportation Link to New York’s Future”: 1971
Article-“Major Queens Subway Link with Twin Tunnels Due for Completion this
Year” By: Constructioneer: 1978
Article-“The $1 Billion Tunnel to Nowhere” New York Magazine: 1979
Report-“City of New York, Office of the Comptroller: Procedural Guidelines for
the Pre-audit of Contracts”: 1981
Report, Litigation-“Claim Analysis and Report of Clark-Fitzpatrick vs. Long
Island Rail Road, Contract #5130, Line Improvements, Phase 1A, Amott to
Huntington”: 1986
Report-“City of New York, Office of the Comptroller: Policy-Payment
Vouchers”: 1987
Report-“City of New York, Office of the Comptroller: Personal Expenses”:1988
Correspondence-“Compressed Air Tunnel Work (Route 104)”: no date
Report-“Board of Transportation: Construction” By: Charles M. Madden and E.A.
Thompson: no date
Report-“Hudson and Manhattan” By: George D. Snyder: no date
Report-“Model Making” By: Arthur Weindorf: no date
Reports-“Tunnels, Harlem River”: no date

Box 11

Tunneling-Domestic Projects

Notebook-“American Tunneling Projects”: no date
Paper (photocopy)-“Construction Methods on the Moffat Tunnel” By: Dr. R.H.
Keays: 1927
Domestic Newsletter-“Tunneling Technology”:1977, 1979, 1980
Report-“Calumet Intercepting Sewer (Ill.)” (oversize): ca. 1970s
Article-“Cities Look Hopefully to Chicago’s TARP” Constructioneering Magazine:1979
Booklet-“A Research Program for Rapid Underground Construction/Stillwater
Tunnel: A Practical Laboratory” By: US Dept. of Interior: 1971
Conference Program and Correspondence-“Stillwater Tunnel Research
Conference”: 1972
Magazine-Article-“Birthplace of Modern Rock-Tunneling: Hoosac Tunnel,
Mass.”: 1981
Article- “Camden’s Composting Project Requires a King Size Slab”  
Constructioneer Magazine: 1978
Report-“Cut and Cover Data Report” By NFTA (Buffalo, NY): 1978
Article-“Movements around Soil Tunnel on the Washington Metro” By: E.J. Cording: 1973

Box 12

Tunneling-International
Correspondence-“English Tunnels”: no date (ca. 1920s?)
Journal-“Discussion on the Ilford Tube (England)” Journal of the Institution of Civil Engineers, no. 5: By: Geoffrey Lancaster Groves: 1946
Paper-“U-Bahnstrecken der Stadtwereraltung” By: Schnellbahn and Referat: 1970
Paper-“Construction of Tunnels in Japan” By: Dr. Matsutaro Fujii: no date
Booklet-“Major Tunnels in Japan” By: Japan Society of Civil Engineers: 1967
Report-“Undersea Tunnel and its Influence in Economy” By: Japan Railway Construction: 1970
Report-“The Outline of Rapid Transit Railways (Under Operation, Construction, or Planning) of Principal Cities in Japan”: 1970
Notebook-“Articles Relating to Tunneling”: ca. 1970s
Notebook-“International Tunnels”: no date

Box 13

Tunneling Methods
Article-Boring-“Tunnel Boring Machines Grow Bigger, Stronger” Construction Equipment Magazine: 1979
Report-Earth Tunnels-“Construction of Earth Tunnels” By: NYCTA: 1971
Conference Paper-Grouting-“Construction of Large Underground Openings and Use of Grouts” By: Mongilardi & Tornaghi: 1986
Conference Paper-Grouting-“An Illustrated Review of Recent Developments in Ground Treatment” By: D.A. Bruce: 1987
Paper-Grouting-“New Developments in Ground Reinforcement and Treatment for Tunneling” By: Bruce, Boley, & Gallavresi: 1987
Paper-Grouting—“Repair and Rehabilitation of Concrete Structures” By: American Railway Engineers Association: 1983
Paper-Grouting—“Structural Repair by Grouting” By: D.A. Bruce: 1987
Technical Bulletin and Correspondence-Grouting—“Surface Seal for Subway Leak Repairs”: 1987
Article-Rock Bolting—“New Method Allows for Anchorage Check for Rock Bolts” Mining Engineering, By: Matilla and Boyd: 1985
Book-Rock Tunnels—“Rock Tunnel Methods” (photocopy) By: Hercules Powder Company: 1931
Article-Soft Rock—“Soft Rock Exploration with Pressure Equipment” Civil Engineering-ASCE Magazine: 1968
Article-Shafts—“Shaft Sinking Can Be Chilling” By: Engineering News Record: 1962
Catalog-Shield Driven Tunnels—“Mitsubishi Machine Production List”: no date
Manual-Shield Driven Tunnels—“Mitsubishi Confined Soil Shield”: no date
Manual-Shield Driven Tunnels—“Mitsubishi-Outline of Slurry Shield”: no date
Reports and Manuals- Shield Driven Tunnels—“Slurry Shield”: no date

Box 14

**Tunneling Methods**

Draft Report-Shield Driven Tunnels—“East River Tunnels”: no date
Surveys-Shield Driven Tunnels—“Tunnel Surveys-Battery-Joralemon Street” By: Frederick C. Noble: no date
Report-Shield Driven Tunnels—“Report of Shields Used in Joralemon Street Tunnel (copy)”: no date
Paper-Shield Driven Tunnels—“East River Tunnel from Joralemon Street” (photocopy) Brooklyn Engineer’s Club, By: Frederick C. Noble: 1908
Article-Shield Driven Tunnels—“Land and River Borings-Routes of the Dual System” Public Service Record, By: W.F. Stevenson: 1914
Article-Shield Driven Tunnels—“Breaking Ground for the East River Tunnels” Public Service Record: 1914
Paper and Correspondence-Shield Driven Tunnels—“History of New York Subway-Battery Tunnel-Sec. 2A” By: James Sanborn: 1921
Paper-Shield Driven Tunnels—“Blowout in Tunnel”: no date (ca. 1910s?)
Article-Shield Driven Tunnels—“Standard Types of Roadbed for the Dual System” Public Service Record, By: R.H.M. Canfield: 1916
Correspondence-Shield Driven Tunnels—“Excavation Progress Rates”: 1922
Article-Shield Driven Tunnels—“Two Lines of the Dual System in Operation” Public Service Record: 1915
Article-Shield Driven Tunnels—“East River Tunnels Approach River Front” Public Service Record: 1915
Article-Shield Driven Tunnels—“Design of Shaft at Furman and Clark Street, Brooklyn” Public Service Record, By: Ole Singstad: 1916
Paper-Shield Driven Tunnels—“History and Design of Whitehall Street Subway, R.33, S.1” By: C.E. Conover: 1921
Article-Shield Driven Tunnels—“16ft. Diameter Shield Driven Tunnel” By: Fred F. Voit: 1967
Draft Paper—Tunnels—General—“Soft Ground Tunneling”: no date
Paper—Tunnel Linings—“Tunnel Linings with Reference to a New Form of Reinforced Concrete Lining” By: G.L. Groves: ca. 1943
Standards Report—Tunnel Linings—“Building Code Requirements for Reinforced Concrete” By: American Concrete Institute: 1963
Reports, Articles, Publications—Tunnel Linings—Miscellaneous: 1960s-1970s
Reports and Brochures—Tunnel Supports: 1970s
Article—Tunnel Supports—“Setting a Rib in Four Steps” Engineering News Record: 1951
Article—Tunnel Supports—“Sheet Piling Braces Complicate Forming of Textured Walls” Construction Methods Magazine: 1969
Article—Tunnel Supports—“Mechanical Splices of Reinforcing Bars” Concrete Construction Magazine, By: Harry Lancelot: 1985
Reports, Articles, and Publications—Underpinning: no date, 1970s-1980s

Box 15

Tunneling Methods—Trench Tunnels
Articles—Clippings—Slurry Trenches—“Miscellaneous Notebook Clippings”: 1960s-1970s
Correspondence and Manual—Slurry Trenches—“Diaphragm Walls”: 1970
Articles and Reports (photocopies)—Trench Tunnels—“Detroit River Tunnel”: no date
Report and Photographs—Trench Tunnels—“Harlem River Tunnel of the Lexington Avenue Line”: 1917
Articles—Clippings—Trench Tunnels—“International” (2 Folders): no date, 1940s-1970s
Reports and Correspondence—Trench Tunnels—“Report of Trench Tunnel Investigations” By: C.M. Holland, C.E.: 1920
Articles, Reports, Correspondence, and Publications—Trench Tunnels (5 folders): 1950s-1970s
Box 16

Tunneling Projects-Capital Project PW 101
Report—“Port Richmond Water Pollution Control Project, Contract 3B: Proposed Method of Evaluation of Intercepting Sewer Tunnel Lining” By: Soil and Rock Instrumentation, Inc.: 1973
Report—“Tunnel Report-Port Richmond Water Pollution Control Project, Contract 3A-East Branch Intercepting Sewer from Victoria’s Boulevard to Sailor’s Snug Harbor” By: Mason & Hanger-Silas Mason Co., Inc.: 1976
Report—“Tunnel Report-Port Richmond Water Pollution Control Project, Contract 3B-East Branch Intercepting Sewer from Sailor’s Snug Harbor to Taylor Street” By: Mason & Hanger-Silas Mason Co., Inc.: 1976
Report—“Final Report-Port Richmond Water Pollution Control Project, Contract 3A-East Branch Intercepting Sewer from Victoria’s Boulevard to Sailor’s Snug Harbor” By: Mason & Hanger-Silas Mason Co., Inc.: 1977
Report—“Final Report-Port Richmond Water Pollution Control Project, Contract 4A-East Branch Intercepting Sewer from Nautilus Street to Hannah Street Pumping Station” By: Mason & Hanger-Silas Mason Co., Inc.: 1977
Report—“Final Report-Port Richmond Water Pollution Control Project, Contract 3C-East Branch Intercepting Sewer from Taylor Street to Dongan Street” By: Mason & Hanger-Silas Mason Co., Inc.: 1979
Report—“Final Report-Port Richmond Water Pollution Control Project, Contract 3B-East Branch Intercepting Sewer from Sailor’s Snug Harbor to Taylor Street” By: Mason & Hanger-Silas Mason Co., Inc.: 1980

Box 17

Tunneling Projects-WP 152-Red Hook Interceptor Tunnel
Report—“Analysis of Transit Authority Tubes Crossing Joralemon Street” By: Parsons, Brickerhoff, Quade, and Douglas: ca. 1970s
Survey and Report—“Archeological Survey-Contract 1A-Red Hook Water Pollution Control Project”: ca. 1970s
Report and Correspondence—“Red Hook Water Pollution Control Project-Contract 1A-Sewer Crossing of Subway Tracks, Joralemon Street to Clark Street”: 1978
Report—“WP 152: Red Hook Water Pollution Control Project-Finite Element Studies”: 1979
Report Draft—“Red Hook Interceptor Tunnel-NYCTA-Tunnel Crossings at Joralemon Street to Clark Street” By: Mason & Hanger-Silas Mason Co., Inc.: 1979
Report—“Red Hook Interceptor Tunnel-Progress Report-Joralemon Street-Finite Element Studies” By: Parsons, Brickerhoff, Quade, and Douglas: 1979

Box 18

Tunneling Projects-WP 152-Red Hook Interceptor Tunnel
Report and Correspondence—“Geologic References Used in Assessment with Questions Related to Contract 1A-Red Hook Intercepting Sewer”: 1970s
Correspondence-“Questions Concerning Proposed Dewatering Near Construction Shaft-Contract 1A” By: Woodward-Clyde Consultants: 1978
Report and Correspondence-“Evaluation of Pumping Test on Site” by:
Ground/Water Technologies, Inc. 1978
Report and Correspondence-“Proposed Recharge System at Brooklyn Bridge Anchorage” by: Ground/Water Technologies, Inc. 1978
Correspondence-“Study of Anticipated Effects of Dewatering on Existing Structures along Portions of Furman and Fulton Street” By: Woodward-Clyde Consultants: 1978
Correspondence-“Study of Anticipated Groundwater Drawdown and Effects on Existing Structures” By: Woodward-Clyde Consultants: 1978
Report-“Study Requested by City of New York Department of Buildings-Study of Anticipated Groundwater Drawdown and Effects on Existing Structures, Contract 1A” By: Woodward-Clyde Consultants: 1978
Correspondence-“Dewatering for Manhole 5 and Its Possible Effects on Interior Column Supports” By: Woodward-Clyde Consultants: 1978
Correspondence-“Study of Anticipated Groundwater Drawdown and Effects on Existing Structures” By: Woodward-Clyde Consultants: 1979
Correspondence and Operation Manual-“Observation Wells and Piezometer Installation” By: Woodward-Clyde Consultants: 1979
Correspondence-“Study of Anticipated Groundwater Drawdown and Effects on Existing Structures Adjacent to the Shield Removal Pit and Manhole MH-1” By: Woodward-Clyde Consultants: 1979
Correspondence-Addendum-“Addendum 1: Study of Anticipated Groundwater Drawdown and Effects on Existing Structures Adjacent to the Shield Removal Pit and Manhole MH-1” By: Woodward-Clyde Consultants: 1979
Correspondence-“Study of Anticipated Groundwater Drawdown and Effects on Existing Structures Adjacent to the Shield Removal Pit and Manhole MH-2” By: Woodward-Clyde Consultants: 1980
Correspondence and Report-“Preliminary Dewatering Study-Contract 3F-3G” By: Woodward-Clyde Consultants: 1978
Correspondence and Report-“Final Dewatering Study-Contract 3F-3G” By: Woodward-Clyde Consultants: 1978
Correspondence-“Contract 3-F-Study of Anticipated and Groundwater Drawdown Using Well points” By: Woodward-Clyde Consultants: 1979
Correspondence-“Addendum 1: Contract 3-F-Study of Anticipated and Groundwater Drawdown Using Well points” By: Woodward-Clyde Consultants: 1979
Correspondence and Operation Manual-“Contract 3F: Installation of Observation Wells and Piezometers” By: Woodward-Clyde Consultants: 1979
Correspondence-“Addendum 2: Contract 3-F-Study of Anticipated and Groundwater Drawdown Using Well points” By: Woodward-Clyde Consultants: 1979
Report and Correspondence-“Report on Radius of Influence of Vibration Effects Emanating From Construction Activities”: 1980
Correspondence-“Pre-Construction Report: Combined Relief Sewer and Appurtenances”: 1980
Correspondence-“Summary of Fees and Charges” By: Woodward-Clyde Consultants: 1978

Box 19

**Tunneling Projects-WP 152-Red Hook Interceptor Tunnel**
Report and Survey-“Archaeological Survey-Stage 2: The Archaeology and History of the Empire Stores, 2-14 Main Street, Brooklyn-Contract 1A-Red Hook Water Pollution Control Project” By: Ralph S. Solecki, Phd.: 1980
Report-“WP152: Summary Report-Field Measurements for Crossing of Subways at Clark Street” By: Parsons Brinckerhoff Quade and Douglas, Inc.: 1980
Report and Correspondence-“WP 152: Summary Report-Field Measurements for Crossing of Subways at Clark Street” By: Parsons Brinckerhoff Quade and Douglas, Inc.: 1980
Report-Underpinning-“WP 152: Red Hook Water Pollution Control Project-Cost Analysis of Underpinning”: 1980

Box 20

**Tunneling Projects-WP 152-Red Hook Interceptor Tunnel**
Report-“Instrumentation Procedures and Results, Contract 1A” By: Woodward-Clyde Consultants: 1980
Correspondence and Report-“WP 152: Supplemental Instrumentation Monitoring Following Completion of Tunneling and Termination of Compressed Air Procedures” By: Woodward-Clyde Consultants: 1980
### Box 21

**Tunneling Projects-WP 152-Red Hook Interceptor Tunnel**
- Report—“Report on the Effects of the Red Hook Intercepting Sewer Crossing Over the NYCTA Tunnels at Joralemon and Clark Streets in Furman Street”
  - Prepared By: New York City Department of Environmental Protection: 1980
- Report—“Final Report-Capital Project WP 152-Red Hook Water Pollution Control Project-Contract 1A-Interceptor Sewer-From the Red Hook Water Pollution Control Plant to Manhole 1 at Atlantic Avenue and Furman Street, vol.1”: 1986
- Report—“Final Report-Capital Project WP 152-Red Hook Water Pollution Control Project-Contract 1A-Interceptor Sewer-From the Red Hook Water Pollution Control Plant to Manhole 1 at Atlantic Avenue and Furman Street, vol.2”: 1986

### Box 22

**Tunneling Projects-Hudson River Vehicular Tunnel (Holland Tunnel)**
- Photographs—“Holland Tunnel”: 1920s
- Report—“Hudson River Vehicular Tunnel” (photocopy): 1919
- Report—“Miscellaneous Reports on Concrete Block Tunnel”: 1919-1920
- Report—“Report on Goethal’s Design for a Hudson River Vehicular Tunnel-42’ Concrete Block Tunnel”: ca. 1920
- Reports and Blueprints—“Progress Reports and Records of Construction and Estimates”-1920s-1930s
- Report and Presentation—“Holland Tunnel: Presentation to the Hoboken Chamber of Commerce”: 1920
- Memorandum—“For Mr. Holland-Report on the Boring Contract” By: Mr. Freeman: 1920
- Blueprints—“Hudson River Boring Contract” By: New York State Bridge and Tunnel Commission and New Jersey Interstate Bridge and Tunnel Commission ca. 1920s
- Drawings—“Hudson River Vehicular Tunnel”: ca. 1920s
- Records—“Hudson River Vehicular Tunnel”: By: New York State Bridge and Tunnel Commission and New Jersey Interstate Bridge and Tunnel Commission: 1919-1920
- Ledger Records—“Holland River Vehicular Tunnel: Estimates from October 1, 1920 to June 2, 1920”: 1920
- Report and Correspondence—“Holland Tunnel Vehicular Tunnel-Materials”: 1920-1921
- Report—“Holland River Vehicular Tunnel: Costs-Cast Iron no. 4”: 1921
Report—“Holland River Vehicular Tunnel: Pavements-Cast Iron No. 5”: 1919-1920
Report—“Holland River Vehicular Tunnel: Design Specifications”: 1920
Correspondence—“Chief Engineer’s Outline Analysis of Vehicular Tunnel Project-Cast Iron No. 9”: 1919
Appendices—“Holland River Vehicular Tunnel: Location-Surveys-Borings-Traffic-Capacity”: 1919-1920
Appendices—“Holland River Vehicular Tunnel: Ventilation-Type and Method-Misc.-Estimates”: 1920-1921

Box 23

**Tunneling Projects-Hudson River Vehicular Tunnel (Holland Tunnel)**
Correspondence and Reports—“New York State Bridge and Tunnel Commission”: 1919-1920
Blueprints—“Hudson River Vehicular Tunnel- New York State Bridge and Tunnel Commission”: 1919
Correspondence—“Hudson River Vehicular Tunnel- New York State Bridge and Tunnel Commission-Miscellaneous Memoranda”: 1921
Correspondence—“Hudson River Vehicular Tunnel- New York State Bridge and Tunnel Commission-Estimates, Blueprints, Memoranda”: 1919

Box 24

**Tunneling Projects-NYCTA Project No. TSC-622**
Report Binder—“Final Report-Inspection and Analysis of Rapid Transit River Tunnels-Phase I”: 1982
Report Binder—“Summary Report-Inspection and Analysis of Rapid Transit River Tunnels-Phase I”: 1982

Box 25

**Subway Routes-Articles, Reports, Documents Misc.**
Paper—“Route 5: Tunnel Work on Sections 8, 9, 10, and 11-Broadway-Lexington Avenue Subway” BY: Isreal V. Werbin, ASCE Journal: 1916 (photocopy)
Notebook—“Route 5: Lexington Avenue Subway”: 1910-1920s
Report—“Route 5: Harlem River Tunnel of the Lexington Avenue Line” BY: R.S. Bennett: no date (photocopy)
Article-Route 11—“The Fourth Avenue Subway in Brooklyn” BY: James Blaine Walker, Public Service Record: 1915
Article-Route 11—“Heavy Earth Pressures and How They Act” BY: Max Miller, Public Service Record: 1916
Article-Route 11—“Soil Values on Flatbush Avenue, Brooklyn” BY: Harry R. Wickham, Public Service Record: 1917
Article-Route 11—“The Fourth Avenue Subway, Brooklyn” BY: Paul Entenman: no date (photocopy)
Article-Route 11-“Tunnel of Fourth Avenue Subway Beneath Flatbush Avenue Subway, Brooklyn” By: Frederick H. Mellert: no date
Article-Route 11-“The Fourth Avenue Subway, Brooklyn” By: Henry L. Oestreicher: no date
Table-Route 11-“Table-Subway Construction Costs”: no date
Article-Route 12, Sec. 2A-“Tunneling Methods, Flatbush Avenue, Brooklyn” By: Waldo C. Briggs: no date
Article-Route 12, Sec. 2A-“Giant Tunneling Shield” By: Charles M. Torpey, Public Service Record: 1917
Report-Route 48, Sec. 3-“Weekly Reports #13 to 21”: 1914
Drawings-Route 101, Sec. 6-“Contract Drawings”: 1930s (copies)
Correspondence-Route 109-“Memoranda and Estimates”: 1926-1927
Report and Photographs-Route 119G-“Construction of High Trestle and Swing Bridges across Jamaica Bay”: 1950s (3 folders)

**Box 26**

**Subway Routes-6th Avenue Line, Route 101, Section 12**
Reports-Route 101, Sec. 12-“Estimates”: 1961-1963
Article-Route 101, Sec. 12-“Special and Trial Term Part XII” By: Justice Jacob Markowitz, NY Law Journal: 1962 (photocopy)
Sketches-Route 101, Sec. 12-“Sketches”: 1962
Procedures-Route 101, Sec. 12-“Inspection and Warning Procedures” By: PATH Corporation: 1963
Legal Booklet-Route 101, Sec. 12-“Supplemental Agreement to Contract for Construction of a Part of a Rapid Transit Railroad…”: 1963
Report-Route 101, Sec. 12-“Confidential Report on Soil and Water Conditions at the North Heading of Route 101, Section 12, Sixth Avenue Subway” By: King & Gavarris Consulting Engineers: 1963
Chart-Route 101, Sec. 12-“Chart of Accounts” By: Maclean, Grove, & Shepherd: 1963
Sketches-Route 101, Sec. 12-“Contractor’s Method of Excavation, South Heading” By: J. Tremko: 1963, 1965
Sketches-Route 101, Sec. 12-“Contractor’s Method of Excavation, North Heading” By: J. Tremko: 1963, 1965
Diazotypes and Copy Sketches-Route 101, Sec. 12-“Contractor’s Method of Excavation, North Heading” By: J. Tremko: 1963, 1965
Correspondence-Route 101, Sec. 12-“Statements of Costs and Schedules” By: Maclean, Grove, & Shepherd: 1964
Correspondence-Route 101, Sec. 12-“Correspondence Regarding Non-reimbursable Costs”: 1964
Report-Route 12, Sec. 12-“Estimates”: 1964
Paper-Route 101, Section 12-“Construction of Sixth Avenue Subway” By: Norman Nadal, Municipal Engineer’s Journal, Vol. 51: 1965 (copy)
Report-Route 101, Sec. 12-“Appraisals and Inventory-On Job Site Values”: 1966
Report-Route 101, Sec. 12-“Appraisals and Inventory-Liquidation Values”: 1966
Report-Route 101, Sec. 12-“Subdivision No. 2 Sample Final Estimate Sheets”: 1967

Article-Route 101, Sec. 12-“Lampach v. City of NY” NY Law Journal: 1968 (copy)

Correspondence-Rout 101, Sec. 12-“Correspondence and Memoranda between NYCTA and Maclean, Grove, & Shepherd Inc.: 1968-1969

Report and Blueprints-Route 101, Sec. 12 (Legal)-“Subdivision No. 3-Division of Designs, Engineering Bureau-Board of Transportation-Review of Office Work 1925-1942” By: Alfred Brahdy: 1942

Unidentified Drawing-Route 101, Sec. 12: no date

Report-Route 101, Sec. 12-“Unidentified Draft Report”: no date

Correspondence and Notes-Route 101, Sec. 12-“Misc.-Job History and Notes”: 1960s

Box 27

Subway Routes-East 63rd Street Tunnel-Route 131-A, Section 1

Binder-Report-“East 63rd Street Tunnel between the Boroughs of Queens and Manhattan-Monthly Progress Report from January to June” By: NYCTA: 1970

Report- E. 63rd Street Tunnel-“Design Calculations for 40’-0” O.D. Tunnel”: 1966

Report-“Sub Aqueous Tunnel Construction” By: NYCTA: 1970


Paper No. 377-“East 63rd Street Tunnel” By: Eugene F. Casey: 1972


Article-“The Threshold of the Seventies: The East 63rd Street Tunnel” By: Eugene F. Casey: no date

Box 28

Subway Routes-East 63rd Street Tunnel-Route 131-A, All Sections

Correspondence and Blueprints-“Re: Study of Trench Tunnel for East River Tunnel Crossing at E. 64th Street”: 1964

Correspondence and Drawings-“Estimates and Construction Times-Route 131-A”: 1969

Photographs-“Route 131-A, Section 1-Substation”: 1970

Photographs-“Route 131-A, Section 1-Queens Shaft”: 1970-1971

Photographs-“Route 131-A, Section 1-Welfare Island Shaft”: 1970-1972

Photographs-“Route 131-A, Section 1-Queens Tunnel”: 1970-1971

Photographs-“Route 131-A, Section 1-Welfare Island Tunnel”: 1970-1972

Photographs-“Route 131-A, Section 1-Dredging”: 1970

Photographs-“Route 131-A, Section 1-Fabrication”: 1970-1971

Photographs-“Route 131-A, Section 1-Outfitting”: 1970-1971
Photographs-“Route 131-A, Section 1-Placing Barge in West Channel”: 1971
Photographs-“Route 131-A, Section 1-Landfill”: 1970
Photographs-“Route 131-A, Section 1-General”: 1969-1970
Report-Route 131-A, Sections 2 & 3-“The Subway Under Central Park” By: Peter B. Fisher: no date (copy)
Diazotype Drawings-Route 131-A, Section 4-“Associated Drawings”: 1975
Diazotype Drawing- Route 131-A, Section 5A-“Project Plan and Elevation”: 1976
Drawings-Route 131-A, Section 5B-“Plans”: 1970s

Box 29

Miscellaneous Documents and Reference Materials

Journal-‘Municipal Engineer’s Journal Index”: various dates
Book (photocopy)-“Modern Tunnel Practice” By: David McNeely Stauffer: 1906
Paper No. 1212 (photocopy)-“The Detroit River Tunnel” By: W.S. Kinnear, ASCE: 1911
Book (photocopy)-“Shield and Compressed Air Tunneling” By: B.H.M. Hewett and S. Johannesson: 1922
Article (photocopy)-“Engineer Describes under Water Tunnel Construction” By: L.S. Stiles, General Contractor’s Association: 1936
Paper No. 191-“Ancient Engineering” By: Walter D. Binger, Municipal Engineers Journal: 1939
Articles-Clippings-“Construction Methods”: 1940, 1952
Journal (photocopy)-“Boston Society of Civil Engineers, vol. xxix no. 3”: 1942
Paper-“Application of Geology to Tunneling Problems” By: Ernest E. Wahlstrom, ASCE Journal: 1947-1948
Article-“Unidentified Article from the Explosive Engineer”: 1949
Journal-“Civil Engineering: 100 Years of Engineered Progress”: 1952
Article (copy)-“Opening Dates” By: Electric Railroads, no.23: 1954
Book (photocopy)-“Tunnel Engineering” By: Rolt Hammond: 1959
Book (photocopy)-“The World Beneath the City” By: Robert Daly: 1959
Article- Special and Trial Term Part XII” By: Justice Jacob Markowitz, NY Law Journal: 1962 (photocopy)
Circular-“Tunneling Technology: It’s Past and Present” By: US Department of the Interior: 1968
Article-“Designing Trench Type Sub Aqueous Tunnels” By: J.O.Bickel, Consulting Engineer Magazine: 1969
Article (photocopy)-“Three Steps to CS Tenure” By: Frank J. Priall II, The Chief Newspaper: 1969
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**Miscellaneous Documents and Reference Materials**

- Index—“List of Articles in Engineering Journals”: 1970
- Paper—“Advances in Tunneling” By: Norman A. Nadal, Society of Mining Engineer’s if AIME: 1970
- Correspondence and Report—“Organisation for Economic Co-Operation and Development Inspection Trip to New York”: 1970-1971
- Newsletter—“Soils, vol. 1”: 1972
- Articles—“Brooklyn has the Oldest Subway in the World” Brooklyn Daily Eagle: Reprinted 1974
- Newsletter—“A Selected, Annotated List on Tunneling” Tunneling Technology Newsletter: 1974
- Article—“The Collision between India and Eurasia” By: Peter Molnar and Paul Tapponnier: 1975
- Seminar Paper—“Lateral Soil Pressures Generated by Pipes, Piles, Tunnels, and Caissons”: 1975
- Article—“The Oldest Rocks and the Growth of Continents” By: Stephen Moorbath, Scientific America: 1977
- Newsletter—“Tunneling Technology No. 35”: 1981
- Correspondence—“American Society of Civil Engineers”: 1985
- Article—Summary of Soft-Ground Tunneling Institute” By: Paul A. Seaburg: no date
- Index—“List of Articles from Engineering Magazines”: no date
- Notebook—“Historical Data Areas”: no date
- Reports—“Caisson Disease”: no date
- Papers—“The Bentonite Tunneling Machine” By: J.V. Bartlett et al.: no date (ca. 1970s?)
- Manual—“Program S113-Bar Schedule and Estimate of Bar Weights”: no date
**Box 31**

**Eugene F. Casey Personal Papers and Documents**
Photographs-Miscellaneous-Eugene Casey: ca. 1970
Correspondence -“Eugene Casey-Personal Correspondence and Awards”: 1970s-1980s
Greeting Cards-“Eugene Casey-Christmas Cards”: 1970s
Correspondence-“Re: Elgood Mayo Drawing”: 1974 (see Oversize Drawings)
Lecture-“Open Cut Construction Seminar” By’: Eugene F. Casey: 1975

*(On Row 4, Unit D, Shelf 5-No Box)*
Contract Book-“Alterations to 14th Street Union Square Station, C-30575”: ca. 1978
Manuals-American Society of Civil Engineers, MET Section Construction Group:
“Open Cut Seminars” (1975) and “Tunnel Seminar II” (1979)

**4: OVERSIZED MATERIALS – 2 BWAY, ROW 4, UNIT C, SHELVES 5 AND 6**

**Box 32**

**Roll Storage-Drawings (Row 4, Unit D, Shelf 1)**
Drawings-“Route 109, Section 5B: Express Tracks and Local Tracks
Drawings-“Tracing from a Drawing…Reinforced Concrete Blocks for Tunnel Construction, No. 5”

**Box 33**

**Drawings**
“Hospital Lock-East River Tunnels”: Drawing #18, 1916
Delaware Aqueduct: Contract 322-“Method of placing Tunnel Concrete”, City of New York Board of Water Supply: ca. 1941 (2 prints)
Delaware Aqueduct, Eastern Department: Contract 322-“Typical Tunnel Driving Method”, City of New York Board of Water Supply: ca. 1940 (2 prints)
“Method 1, sheet 1 &2; Method 2, sheet 1 & 2”-By: Stephen J. Pirelli: no date (4 Tunneling Diagrams)

**Box 34**

**Drawings**
40 Photostat Drawings-“Route 61-Record Drawings of Completed Tunnels” 60th Street-East River Tunnels: By: Transit Commission, Chief engineer: Robert Ridgway: 1923

**Box 35**

**Drawings**
1 Binder containing Photostats -“Record Drawings of Completed Tunnels: Route 48, Section 3-Clark Street Tunnel” By: Transit Commission: no date (ca. 1920s?)
1 Binder containing Photostats—“Record Drawings of Completed Tunnels: Route 33, Section 2-Montague Street Tunnel” By: Transit Commission: no date (ca. 1920s?)

Box 36

Oversize Photographs and Prints
Illustration—“63rd Street Tunnel”, ca. 1970s (3 prints)
Drawing Mounted on Board—“Elgood Mayo Cartoon Drawing” By: Blashko, ca. 1974
Photograph Mounted on Board—“Tunnel Curve of 150ft. Radius, at Morton and Greenwich Streets in Sand and Gravel Formation: Sharpest Tunnel Curve Driven to Date by Hydraulic Shield under Compressed Air” By: New York and Jersey Railroad Company, signed by: Charles M. Jacobs, C.E.: 1904
Photograph Mounted on Board—“#104-Station 14+70-South Tunnel, Looking East towards Second Lock”: 1904
Photostat—“The Thames Tunnel: Open to the Public…”: no date
Print—“Isometric View of Underground Piping at the Intersection of Broadway and Fulton Street in 1890”: no date
Photograph Mounted on Board—“Unidentified-Tunnel Equipment/Part”: no date (ca. 1904)
Photograph—“24th Annual Dinner Sponsored By the Transportation Quarter Century Club, New York City Transit Authority, Grand Street Boys Club”: 1962
Photograph—“Route 101, Section 13”: NYCTA: 1962
Photograph—“Route 101, Section 13”: NYCTA: 1962
Photograph—“Route 101, Section 12”: NYCTA: 1964
Photograph—“Welfare Island-63rd Street Tunnel”: NYCTA: ca. 1970s
Photograph—“Excavation- 63rd Street Tunnel”: NYCTA, Steve DiSanto: 1970
Photograph—“Route 131A-63rd Street Tunnel”: NYCTA: ca. 1970s
Photograph—“Eugene Casey Overseeing Construction of 63rd Street Tunnel”: NYCTA: ca. 1970s
Photograph—“Overview of Construction for the 63rd Street Tunnel”: NYCTA: ca. 1970s
Photograph—“Overview of Construction for the 63rd Street Tunnel Showing Excavation Machinery”: NYCTA: ca. 1970s
Photograph—“Overview of 63rd Street Tunnel Section on Barge”: NYCTA: ca. 1970s
Photograph—“Overview of 63rd Street Tunnel Section on Barge”: NYCTA: ca. 1970s
Print on Board—“Overview of Construction for the 63rd Street Tunnel Showing Excavation Machinery and Construction of all 4 Tunnels”: NYCTA: ca. 1970s
Print on Board—“Overview of Barge in East River”: NYCTA: ca. 1970s
Print on Board—“Overview of 63rd Street Tunnel Walls and Lining”: NYCTA: ca. 1970s
Print on Board-“Overview of 63rd Street Tunnel Walls and Lining”: NYCTA: ca. 1970s
Print on Board-“Overview of 63rd Street Tunnel Section on Barge Being Unloaded into East River”: NYCTA: ca. 1970s
Photograph-“Mission Street-California”: no date
Photograph-“Mission Street-California”: no date

*unprocessed negatives-3 canisters of Double X Aerographic Film, 2405 Estar Base:”Yards-292 Photos”; “TSRPC-17 photos”; “TSC241-Elevated Lines Structural Survey”: 1974 (located on row 4, unit c, shelf 5)

List of Major Subway, Railroad, and Vehicular Tunnels in New York

Subway Tunnels

149th Street Tunnel: opened 1905
Joralemon Street Tunnel: opened 1908
Steinway Tunnel: opened 1915
Lexington Avenue Tunnel: opened 1918
Clark Street Tunnel: opened 1919
Montague Street Tunnel: opened 1920
60th Street Tunnel: opened 1920
14th Street Tunnel: opened 1924
Concourse Tunnel: opened 1933
Cranberry Street Tunnel: opened 1933
53rd Street Tunnel: opened 1933
Rutgers Street Tunnel: opened 1936
63rd Street Tunnel (Upper): opened 1989

Railroad Tunnels

Hudson Tubes: opened 1908 and 1909
East River Tunnels: opened 1910
North River Tunnels: opened 1910

Vehicular Tunnels in New York City

Holland Tunnel (I-78): opened 1927
Lincoln Tunnel (NJ): portions opened between 1930s-1950s
Queens Midtown Tunnel (I-495): opened 1940
Brooklyn-Battery Tunnel (I-478): opened 1950