Landmarks Preservation Commission
October 7, 1986; Designation List 186
LP-1295

STARRETT-LEHIGH BUILDING, 601-625 West 26th Street, Borough of Manhattan. Built 1930-31; Russell G. and Walter M. Cory, architects; Yasuo Matsui, associate architect; Purdy & Henderson, consulting engineers.

Landmark Site: Borough of Manhattan Tax Map Block 672, Lot 1.

On April 13, 1982, the Landmarks Preservation Commission held a public hearing on the proposed designation as a Landmark of the Starrett-Lehigh Building, and the proposed designation of the related Landmark Site (Item No. 20). The hearing was continued to June 8, 1982 (Item No. 3). Both hearings had been duly advertised in accordance with the provisions of law. Four witnesses spoke in favor of designation, and a letter supporting designation was read into the record. Two representatives of the owner spoke at the hearings and took no position regarding the proposed designation.

DESCRIPTION AND ANALYSIS

The Starrett-Lehigh Building, constructed in 1930-31 by architects Russell G. and Walter M. Cory with Yasuo Matsui as associate architect and Purdy & Henderson as consulting engineers, is an enormous warehouse building that occupies the entire block bounded by West 26th and 27th Streets and 11th and 12th Avenues. A cooperative venture of the Starrett Investing Corporation and the Lehigh Valley Railroad, and built by Starrett Brothers & Eken, the structure served originally as a freight terminal for the railroad with rental manufacturing and warehouse space above. A structurally complex feat of engineering with an innovative interior arrangement, the Starrett-Lehigh Building is also notable for its exterior design of horizontal ribbon windows alternating with brick and concrete spandrels. Considered in the forefront of "modern" architecture in New York City at the beginning of the 1930s, the building combined the practical functionalism of American industrial architecture with the influence of the horizontal aesthetic of European modernism of the 1920s. Today it continues to provide rental office, manufacturing, and warehouse space.

Lehigh Valley Railroad and Railroad Freight Terminal Development in New York[1]

The Lehigh Valley Railroad was one of a number of Northeastern railroads founded in the nineteenth century to haul coal directly from the mines to urban areas. Incorporated in 1846 as the Delaware, Lehigh, Schuylkill & Susquehanna Railroad, it was planned as a link between the coal region of Pennsylvania and the Delaware River at Easton. Asa Packer, a mine owner, entrepreneur, and founder of Lehigh University, began construction of the line in 1852 and reorganized the company as the Lehigh Valley Railroad in 1853. After the Civil War, the system was expanded, westward to the "Niagara Frontier" of western New York State, and eastward to Perth Amboy, New Jersey. Construction of several branch lines, freight yards, and a large carfloat-lighterage terminal provided improved access to the New York Harbor at the turn of the century.

New York City, as the leading port in the United States, profited greatly from the expansion of manufacturing and shipping at the beginning of the twentieth century. The port, however, by nature of its widely scattered facilities and multiple jurisdictions, was laced with obstacles to the smooth and timely transfer of goods. Nearly all of the freight rail systems, which carried around two-thirds of the port's total freight tonnage, terminated at the Hudson River in New Jersey, whereas marine shipping terminals were spread throughout the metropolitan area. This geographical fact, as well as the lack of unified metropolitan organization, necessitated the transfer of goods between railroad and ship via carfloat or lighter type barges, often operated by the railroads. A crisis occurred in shipping in New York in 1915-19 due to rapid expansion and the exigencies of World War I. In several attempts to plan for the orderly development of the harbor, successive organizations were formed to address the problems: the New York City Improvement Commission (1903-05); an aldermanic committee to investigate the need for a union freight terminal in Manhattan (1910); the New York-New Jersey Harbor Development Commission (1917-20); and the Port of New York Authority (established 1921). Comprehensive regional improvement of railroad freight facilities was ultimately abandoned altogether for the construction of tunnels and bridges, as trucks emerged as a major force in the handling of freight.

In the meantime, the railroad companies themselves embarked upon a series of improvements in freight terminals and spur lines. The success of the operation of two freight companies in Brooklyn served, no doubt, as a spur to the larger railroads. The Bush Terminal Company was the first to operate a complex of coordinated facilities, beginning in 1902, which involved a railroad transfer line running along a series of piers, warehouses, and factories on the waterfront from 39th to 57th Streets in Sunset Park.[2] The New York Dock Company developed a similar system along three miles of waterfront from Fulton Ferry to Red Hook starting in 1903.[3] In Manhattan, the B.& O. Railroad completed a freight terminal in 1915 at the west end of 25th-26th Streets, two blocks south of the Central Stores/Terminal Warehouse Company Building (1891). The Erie Railroad in 1921 was the first to employ trucks for the pickup and delivery of goods from and to railroad cars;[4] three terminals were built in lower Manhattan near the Holland Tunnel (planned and constructed 1919-27). The long-delayed improvement of the New York Central Railroad's west side line occurred in 1929-41; on-grade tracks between St. John's Park and the 30th Street freight yard were moved and elevated, passing through warehouse buildings in several instances. At this same time, the elevated West Side Highway was constructed.

The Lehigh Valley Railroad also made improvements in its Manhattan freight facilities. The second railroad to employ trucks, it built two warehouses in 1925 on Beach and Washington Streets.[5] Ferries transported the trucks between the Lehigh Valley's yards in Jersey City and its pier at

West 27th Street in Manhattan. The Starrett-Lehigh Building [Fig. 1] was the last of the Lehigh Valley's major terminal projects. The site, created by landfill, had first been plotted in 1858.[6] The Lehigh Valley Railroad Company leased the entire block in 1900[7] and maintained its Manhattan carloading freight operation here. A subsidiary of the railroad, the Pioneer Real Estate Company, purchased the land in March 1930 for the construction of a large freight terminal and warehouse building over the railroad's spur line.[8] This location was particularly convenient, located as it was adjacent to several other railroad terminals, the New York Central freight yard, piers and ferries, and the West Side Highway.

In June 1930, the Starrett Investing Corporation signed a 99-year lease agreement with the Pioneer Real Estate Company in which Starrett Brothers & Eken, an associated company, was to construct the proposed fifteen-story building; the railroad leased back the ground floor for its freight terminal.[9] Col. William A. Starrett, president of the Starrett Corporation, was an advocate of large new warehouse terminals:

> When water and rail and automotive transportation can be joined up in a great terminal where, under the same roof, executives, sales and clerical forces, display rooms, manufacturing, storage, assembly and distribution all can be carried on in a single terminal unit, we will have obtained a measure of relief from unnecessary transportation and, to a certain extent, will have defeated the major affliction of modern metropolitan life -- traffic congestion.[10]

The grouping of industries and services within one building would have other advantages as well: the elimination of sidewalk truck delivery, thus reducing costs and waste, and the convenience and affordability to small manufacturers of renting major Manhattan plant facilities.

<u>Starrett Brothers & Eken</u>[11]

Starrett Brothers, one of the major construction companies in New York City that was responsible for numerous large-scale projects, including some of the world's tallest skyscrapers, was formed in 1922 by Paul and William Starrett with Andrew J. Eken. The Starretts were two of five brothers, all of whom were associated with a number of leading construction and architectural firms based in New York and Chicago. Originally from Kansas, the Starrett family moved to the Chicago area; eldest brothers Theodore and Paul began their careers in 1887 in the office of architect Daniel H. Burnham. Theodore (1865-1917) became a structural engineer and a prominent designer of Chicago hotels and apartment buildings, and formed the Whitney-Starrett Company, which built Union Station, Columbus, Ohio (1897, Burnham). The subsequent Thompson-Starrett Construction Company, founded in 1901 by Theodore with brothers Ralph and William (and later Goldwin), specialized in large-scale industrial, commercial, hotel, and skyscraper construction. The firm's many projects included Union Station, Washington (1903-08, Burnham) and the Woolworth Building (1911-13, Cass Gilbert, 233 Broadway).[12]

Paul Starrett (1866-1957), while working for Burnham, supervised construction of the Ellicott Square Building, Buffalo (1895-96). He then joined the George A. Fuller Company in 1897, working in Baltimore and Washington, and moved to the New York office in 1898. The Fuller Company, one of the largest building concerns in the United States and a rival of Thompson-Starrett, built many of New York's most prominent turn-of-the-century structures, including Pennsylvania Station (1902-11, McKim, Mead & White, demolished), the Metropolitan Life Insurance Company Tower (1909, Napoleon LeBrun & Sons, 1 Madison Avenue), the Flatiron Building (1902, D.H. Burnham & Co., 173-185 Fifth Avenue), the Plaza Hotel (1905-07, Henry Hardenbergh, 2 Central Park South), and the U.S. General Post Office (1909-18, McKim, Mead & White, 8th Avenue and 31st Street).[13] Paul Starrett became a chief of construction for the Fuller Company and eventually served as president, from 1905 until he left the company in 1922.

William Aiken Starrett (1877-1932) received a degree in civil engineering from the University of Michigan and was also hired by the George A. Fuller Company, in 1898. He left the company in 1901 to join his brothers in Thompson-Starrett, serving as vice president until 1913. He was next a partner (1913-18) of brother Goldwin in the architectural firm of Starrett & Van Vleck (formed in 1907) and during World War I he served as chairman of the construction committee of the War Industries Board. Returning to the Fuller Company in 1919 as a vice president, he directed the construction of several steel-framed earthquake-resistant structures in Japan. In 1922 William and Paul left the Fuller Company to found their own construction firm, Starrett Brothers, and were joined by Fuller Company colleague Andrew J. Eken. The name of the firm was changed to Starrett Brothers & Eken in 1930.

Eken (1882-1965), born in New Jersey and raised in Virginia, began his career in 1899 as a draftsman; he later worked as an engineer on both coasts and overseas. He became a vice president of the George A. Fuller Company in New York and served as president of the George A. Fuller Company, Ltd. in Canada.

Starrett Brothers became known for undertaking large-scale construction projects which were executed with efficiency and speed. The firm built a number of skyscrapers in New York in the 1920-30s which were particularly notable in terms of height and architectural design: the New York Life Insurance Company Building (1925, Cass Gilbert, 51 Madison Avenue), the Bank of Manhattan Building (1929-30, Craig Severance and Yasuo Matsui, 40 Wall Street), the McGraw-Hill Building (1930-31, Raymond Hood, Godley & Fouilhoux, 330 West 42nd Street), and the Empire State Building (1930-31, Shreve, Lamb & Harmon, 350 Fifth Avenue).[14]

In 1929 the Starrett Corporation was founded, consisting of several subsidiary divisions, including realty and investment, as well as the construction firm of Starrett Brothers. William Starrett, vice president of Starrett Brothers, acted as president of the corporation. Another subsidiary, the Starrett Ohio Corporation, built and owned Carew Tower, Cincinnati (1930, Walter W. Ahlschlager), an innovative office, hotel, and commercial complex. In 1930-31 Starrett Brothers & Eken constructed the Starrett-Lehigh Building as a cooperative venture of the Starrett Investing Corporation and the Lehigh Valley Railroad.

During the Depression, as a means of keeping the company active, Andrew J. Eken proposed that it enter into the construction of residential housing; Starrett Brothers & Eken were in the forefront of building concerns involved in large-scale housing projects during this period. Hillside Houses, the Bronx (1933-35, Clarence Stein) was built with a $5 million loan from the Public Works Administration. This success led to the firm's involvement in an early and innovative public housing project, Williamsburg Houses, Brooklyn (1935-37, William Lescaze and Richmond H. Shreve, lead architects). Starrett Brothers & Eken then entered into a profitable collaboration with the Metropolitan Life Insurance Company in the construction of two entire communities, Parkchester, the Bronx (1938-42), and Stuyvesant Town-Peter Cooper Village, Manhattan (1945 on). Eken served as president of Starrett Brothers & Eken from 1938 to 1955 while Paul Starrett was chairman of the board; Eken then became chairman, until his retirement in 1961.

Architects and Engineers of the Starrett-Lehigh Building

The Starrett-Lehigh Building was designed through the collaborative efforts of a group of architects and engineers: Russell G. and Walter M. Cory, architects, Yasuo Matsui, associate architect, and the firm of Purdy & Henderson, consulting engineers.

Russell Gherdes Cory [Fig. 2][15] was born in Jersey City and attended the night school of the Cooper Union, receiving an electrical engineering degree (1910). While attending school, Cory was employed by Cyrien O. Mailloux, a consulting engineer. Cory established an independent architectural and engineering practice in 1908; in 1920 he was joined as an associate by his brother Walter, who became a partner in 1924 in the firm known as R.G. & W.M. Cory. Russell Cory served as president of the firm throughout its existence. Specializing in industrial buildings, Russell Cory's first known major commission in New York City was the American News Company Building (1923-24, 131 Varick Street), a loft structure with vertical articulation and colorful tiles (now painted). The New York Dock Trade Facilities Building (1928-29, East River at Joralemon Street, Brooklyn; Russell Cory, architect and engineer, Walter Cory, associate, and N.E. Driver, chief engineer) is credited by noted American engineering historian Carl Condit as the first "vertical street" type industrial structure, having a central utilities core with elevators that carried trucks to each floor.[16] Russell Cory received patents for several aspects of this concept in 1929 and 1933. While a functional precursor to the Starrett-Lehigh Building, with railroad tracks and freight terminal serving the building and undivided floor space above, the New York Dock Trade Facilities Building was architecturally typical of industrial buildings in the 1920s, with its cellular grid of fenestration and vertical piers. The Starrett-Lehigh Building marked a distinctly new and "modern" direction for Cory & Cory. After Starrett-Lehigh, the Corys designed the Cashman Laundry Corporation Building (1932, Gerard Avenue and East 140th Street, the Bronx) employing a variation on the exterior architectural treatment and cantilever construction of Starrett-Lehigh for a small three-story building. Russell Cory was architect of a notable complex of one-story Moderne style buildings for the Johnson & Johnson Company (1940-41) at its plant near New Brunswick, New Jersey. Built of light-colored brick, tile, and marble with horizontal strip windows, these included the Personal Products Corporation and Industrial Tape Corporation Buildings and Ligature Laboratories. Designed according to Cory's belief that "factories can be beautiful... discarding all preconceived ideas of a factory, a building has been produced which is far removed from the most advanced conception of what constitutes even an ultra modern factory."[17] Russell Cory retired from architectural and engineering practice in 1942 and dissolved the firm.

Walter Monroe Cory (1888- ?) [Fig. 3],[18] born in Watsessing, New Jersey, also attended the Cooper Union night school and received an electrical engineering degree (1920). Beginning in 1909 he worked in his brother's firm as a draftsman, designer, and project manager. Serving in the U.S. Army in 1917-19, he worked for a time in construction and maintenance for the Ordnance Department. Returning to practice, he became an associate of his brother in 1920 and was project manager for the American News Company Building and a building for E.R. Squibb & Sons. From 1924 until 1934 Walter Cory was a partner in the architectural and engineering firm of R.G. & W. M. Cory. Moving to Florida, where he was also active as a consultant, he participated in the development of the Apshawa Groves, Inc. citrus company in Minneola (of which Russell was president). Walter resumed practice as an industrial architect-engineer in 1936 and returned to New York City in 1942. Specializing in the design and modernization of industrial plants, particularly for the beverage industry, he produced designs for Canada Dry Ginger Ale, Inc. and the Coca-Cola Bottling Company throughout the United States, Canada, and Cuba, as well as for the F.L. Smithe Machine and Underwriters Salvage Companies in New York.

Yasuo Matsui (1883-1962)[19] was born and educated in Japan and later attended M.I.T. and the University of California, Berkeley. He worked as a draftsman in the offices of several prominent New York architectural firms, including those of George B. Post, Ernest Flagg, Palmer & Hornbostel, Warren & Wetmore, and Starrett & Van Vleck. Though little is known about the specifics of Matsui's career as a registered architect in New York and New Jersey, he did act as an associate or consulting architect on a number of buildings in New York City: 10 East 40th Street (1928-29, Ludlow & Peabody); the Bank of Manhattan skyscraper (1929-30, Craig Severance, 40 Wall Street), constructed by Starrett Brothers & Eken; and the Japanese Pavilion, New York World's Fair (1939). Matsui was associated with the firm of Wengenroch & Matsui, served as president of F.H. Dewey & Company, and designed both the General Hospital and Free Academy in Corning, New York.

The engineering firm of Purdy & Henderson[20] was founded by two of America's leading engineers, both of whom were prominent in the construction circles of Chicago and New York. Corydon Tyler Purdy (1859-1944), born in Grand Rapids (now Wisconsin Rapids), Wisconsin, began his career as a draftsman for the Chicago, Milwaukee & St. Paul Railroad and eventually became an assistant engineer for the Chicago & Evanston Railway. Purdy received a civil engineering degree from the University of Wisconsin (1886), spent two years as city engineer of Eau Claire, Wisconsin, and a year with the Keystone Bridge Company, and opened an office in Chicago in 1889 as a consulting structural engineer. Realizing the potential for the use of steel in tall buildings, Purdy became one of the early innovative specialists of the steel-framed skyscraper. He was structural engineer for many of Chicago's important early skyscrapers, working with architects

Holabird & Roche on the Tacoma Building (1887-89), the Monadnock Building Addition (1893), the Marquette Building (1893-94), and the Old Colony Building (1893-94); and with Burnham & Root on the Woman's Temple (1891-92). As part of the firm of Wade & Purdy, he joined Theodore Starrett as one of the designing engineers of the Rand McNally Building, Chicago (1889-90, Burnham & Root), which was credited by Condit as a "structural masterpiece" and the first building supported on an entirely steel frame.[21]

Purdy formed the firm of Purdy & Henderson, engineers and contractors, in 1893 and moved the principal office to New York in 1894. Lightner Henderson (1866-1916), a draftsman and structural steel designer then in Purdy's employ, served as president and chief engineer of the firm for fifteen years. Purdy & Henderson, with branch offices in Chicago, Boston, and Havana, designed bridges as well as the structures for a number of turn-of-the-century buildings, including: the Capital and Hotel Nacional, Havana; the Willard Hotel, Washington (1901, Henry Hardenbergh); Wabash Station, Pittsburgh (1902-04); additions to the Congress Hotel, Chicago (1902, 1907, Holabird & Roche); and the Hotel Lasalle, Chicago (1908-09, Holabird & Roche). In New York City, important structural commissions by Purdy & Henderson included the original Waldorf-Astoria Hotel (1893-97, Henry Hardenbergh, demolished); the Whitehall Building (1900, Hardenbergh, 17 Battery Place); the Flatiron Building (1902, D.H. Burnham & Co.); Pennsylvania Station (1902-11, McKim, Mead & White), for which Henderson designed one of the most notable features, the exposed concourse steelwork; the New York Times Building (1904, Eidlitz & Mackenzie, Broadway and 42nd Street, altered); the Metropolitan Life Insurance Company Tower (1909, Napoleon LeBrun & Sons); and the Municipal Building (1909-13, McKim, Mead & White, Centre and Chambers Streets).[22] Throughout his career, Corydon Purdy was a leader in the effort to further the professional relationship between engineers and architects.

<u>Construction</u> <u>of</u> <u>the</u> <u>Starrett-Lehigh</u> <u>Building</u>

The <u>New</u> <u>York</u> <u>Times</u> on June 26, 1930, announced the projected Starrett-Lehigh Building, "said to be the largest of its kind ever erected," which "will have no exterior columns."[23] Construction began immediately; under the terms of the lease the building was to be completed within a year at a cost of between six and nine million dollars. The Lehigh Valley Railroad also insisted on maintaining a spur track arrangement similar to that existing on the site.[24]

Unforeseen problems developed during work on the foundations, due to the geology of the landfill site. Bedrock was located forty-five feet below street level on the east side of the block, but was not reached until over 145 feet at the west end. These conditions necessitated changes in the proposed design of the building, resulting in the present configuration [Fig. 4]: instead of being uniformly fifteen stories tall, with a central penthouse, the building would have a nineteen-story midsection with nine-story western and eighteen-story eastern wings.[25]

An innovative method employed in laying the foundations proved to be a successful, economical solution to the problems. Clusters of eighteen- and twenty-four-inch open-ended steel tubes were driven to rock, blown out, filled with concrete, capped, and attached to steel billets onto which were transferred column loads.[26] Thirteen hundred men worked on the construction of the building, which was completed in October and officially opened at the end of November 1931.[27] At the time of its completion, the Starrett-Lehigh Building was the largest multi-story structure in the United States having a flat-slab reinforced concrete frame [Fig. 5].[28]

Reinforced concrete, because of its economic and functional benefits, became the dominant building material of the twentieth century in the United States, and technical innovations continually expanded its structural possibilities. Ernest Ransome (1844-1917), an English-American structural engineer, became a leader in the promotion of reinforced concrete; he received his first patent in 1882 for a concrete floor slab system and another in 1902 for the cantilevering of the floor slabs beyond the outer line of columns[29] (thus forming continuous exterior spandrels and allowing windows to be independent of the framing). Reyner Banham calls Ransome the "apparent inventor of the concrete frame in its American version and thus of the true Daylight factory," characterized as "multi-story American industrial buildings with exposed concrete frames, filled in only by transparent glazing" and developed c. 1898-1917.[30] The combination of cantilevered floors and "continuous" or "ribbon" windows was patented by Paul Gerhardt, a Chicago architect, "and used by him, apparently for the first time," according to Condit, in the Winston Building, Chicago (1916-17).[31] Willis Polk, in his pioneering Hallidie Building, San Francisco (1917-18), furthered explored the possibilities by suppressing the spandrels behind a glass curtain wall. Condit credits "the unified window of the single-story factory" as "undoubtedly form[ing] the precedent for" the ribbon window and glass curtain wall.[32] Claude A.P. Turner (1869-1955), a Minneapolis engineer, advanced the system of flat slab framing into a "mushroom slab" system in which reinforced concrete floor slabs were carried directly, without beams, by "mushroom columns" with large flared capitals. Developed as early as 1898, first used fully in the Johnson-Bovey Building, Minneapolis (1905-06), and patented in 1908,[33] the system immediately proved successful for large industrial buildings, both because of its economic use of materials and the increased amount of overhead space it made available. The earliest known example in New York City of cantilever flat slab construction is a loft building at 645-651 Eleventh Avenue designed in 1911 by Ernest Flagg and built in 1913-14.[34]

The reinforced concrete mushroom slab system is the basic framing system of the Starrett-Lehigh Building, but there are additional complexities [Fig. 6]. Because of the ground floor (curving) railroad spur lines and freight station platforms, an irregular open framing system of steel columns and girders was developed [Fig. 7]. This steel framing system was continued up to the second floor, which had a garage (entered by a ramp); the irregular spacing of columns allowed for increased manueverability of the trucks. Out of structural necessity, a mezzanine was created above the second floor; this was an area of transition between the irregular steel framing of the bottom two floors and the regular concrete framing system above. The framing transition is made by way of two concrete Warren trusses. So that the mezzanine would be usable for storage space, its height was extended. Above the mezzanine, the framing consists of a regular system of concrete mushroom columns carrying concrete floor slabs which are cantilevered beyond the outer columns, creating largely unobstructed floor spaces and continuous windows which provided the maximum possible amount of natural lighting [Fig. 8].[35] The windows, which constitute a large portion of the facades, were of particular concern in this building and multi-pane steel sash were specially designed:

> The cantilever construction introduced several questions as to sash design due to the fact that there is a probability of slight movement of the slab under load, with resultant breakage of glass, unless proper provision is made to control the movement set up in the sash. In addition, continuous windows and walls without intervening columns introduced the question of making adequate provision for expansion and contraction of these wall and glass surfaces.[36]

The building's utilities (including elevators, electrical conduits, and water, gas, steam, and waste pipes) were all grouped into a central core [Fig. 9]. Trucks entered the building on West 27th Street, crossed under the railroad tracks, and proceeded directly into an elevator, where they could be carried to any floor; they emerged from the building on West 26th Street. Electric inter-terminal transfer trucks carried freight directly between the ground floor railroad terminal and the floors. This "vertical street" type structure, with its operating principle of "every floor a first floor,"[37] was a continuation of the innovative features of Russell Cory's New York Dock Trade Facilities Building (1928-29). Since a "vertical street" type building is dependent on its core,

> it was decided to construct the central service area of structural steel throughout, independent of and in advance of the balance of the building. The result was the completion of this section of the building in time to place the elevators and services in operation before the balance of the structure of concrete was completed. [Fig. 10][38]

The Starrett-Lehigh Building contains over 26 million cubic feet of space, with over 1.8 million square feet of rentable space.[39] The building originally contained such amenities as executive offices, cafeterias, a hospital, a barber shop, a newstand, and a gas station-auto repair shop. William Starrett thought it to be

> the forerunner of what we confidently believe will be the metropolitan solution, not only in New York, but in other large cities. It seems to us there is no other solution.[40]

Modernism and the Exterior of the Starrett-Lehigh Building

While the architectural expression of the exterior of the Starrett-Lehigh Building was determined, in large part, by the methods of construction and the functions of the interior, it also displays the stylistic influences of modernist trends of the architecture of Europe of the 1920s.

The design of American industrial architecture in the late nineteenth and early twentieth centuries had been dominated, in general, by pragmatic considerations-- economics, function, planning, and efficiency-- and structural innovations played a strong role. The skeletal nature of steel-framed buildings, for instance, allowed an increased amount of space to be devoted to windows, which provided additional natural lighting to the interior. Condit, in pointing out the "structural-utilitarian-aesthetic unity" of the best of the Chicago School commercial work, states that "the adaptation of the Chicago office building to industrial purposes was a logical consequence of opening the wall to the maximum extent allowable with wide-bayed steel framing."[41] Structures such as the Sears, Roebuck & Co. administration and warehouse complex, Chicago (1904-06, Nimmons & Fellows); the Montgomery Ward warehouse, Chicago (1906-08, Schmidt, Garden & Martin), with continuous horizontal spandrels; and the Pacific Coast Borax Plant, Bayonne, New Jersey (1903, Ernest L. Ransome), constructed of reinforced concrete; all exemplify the development at the turn of the century of an American industrial architecture employing a utilitarian grid which had large areas of glass, in Banham's term the "Daylight factory," which "represent[s] one of the earliest and most powerful influences of American building on the rest of the world."[42] Industrial buildings, usually low in height, were horizontal in organization and became increasingly so with reinforced concrete slab construction. In New York City in the 1920s, industrial or often taller loft structures frequently had piers which emphasized verticality (reflecting a similar usage in Art Deco style commercial buildings).

The Starrett-Lehigh Building displays, to some degree, traits of a number of contemporary modes of modernist architecture. In the 1920-30s, as David Gebhard has theorized, there was little agreement in the United States as to what constituted "modern" architecture:

> Architecture which was labelled modern in these two decades encompassed points of view far more diverse than just that of the International Style. In addition to the International Style, there were those few buildings (and, in most cases, projects) which sought out a direct correlation between constructive machine technology and its symbolic expression; then there were those buildings that could loosely be labelled Expressionistic-- those that attempted to assert the emotive quality of the machine aesthetic. Finally there was that style variously labelled as Moderne; Modernistic; Art Moderne (and now recently labelled 'Art Deco'). All four of these modern modes... drew upon and expressed the world of science, technology, and the machine for their visual forms... The battle to establish modern architecture in the United States was not then primarily a conflict between the proponents of historic period architecture and the Moderne, but rather it was a knock-down and drag-out affair between two modern styles-- the International Style and the Moderne. The American affaire Moderne readily divides itself into two phases-- the Zigzag Moderne [Art Deco] of the '20s and the Streamlined Moderne of the '30s...[43]

The seminal "Modern Architecture:International Exhibition" by the Museum of Modern Art (1932), in an attempt to explain the "International

Style" (as it was then dubbed), categorized it as displaying emphasis on volume rather than mass, regularity, and lack of applied ornament.[44] The progressive and experimental architects who developed this architecture in the early twentieth century, particularly in Germany, attempted to address various social and aesthetic issues, including the creation of a new architectural expression appropriate to the modern industrial age. The European modernism which emerged was philosophically based on the concept of a functional and utilitarian architecture of pure geometry, construction, and efficiency, which was free of historical references, and related directly to technology and engineering (and thus to industrial construction). The industrial buildings that these architects designed were influential in the development of this modern architecture.[45] William Jordy, in a discussion of the International Style, stated that

> whatever the technological and functional commitment of the International Style in fact, the 'look' of it surpassed the actuality. For those architects whose design especially depended on the technological and functional bias of the International Style the 'look' was that of the factory.[46]

The Starrett-Lehigh Building falls generally within the tenets of the Museum of Modern Art's definition of the International Style, except for the use of ornament on the vertical utilities core. A warehouse-industrial building in actuality, Starrett-Lehigh's "look" was directly related to its interior structure.

In the midst of these International Style architectural currents were a number of Expressionist architects, including the German Erich Mendelsohn (1887-1953) who, as Nikolaus Pevsner notes,

> took up the motif of curved facade and the bands of windows sweeping round corners and made them into an effective tool of Expressionism... It became one of the most popular motifs of the years between the First and Second World Wars...[47]

Several of Mendelsohn's sketches of the 1920s, including a design for a building on the Kemperplatz, Berlin (1920)[Fig. 11], are related in concept to the later Starrett-Lehigh Building.[48] During this period numerous architects here and abroad produced designs for projects which were to be built of reinforced concrete with cantilevered floors and continuous horizontal windows [Fig. 12]. According to Jordy, "Long horizontal bands of windows... were among the hallmarks of modern architecture during the twenties."[49]

> The cantilevered floor slab with the ribbon window had become protocol in modern architecture because... the window bands celebrated the ultimate reality of skeletal framing... Ribbon windows suggested factories or warehouses... indeed, the American factory building, with its reinforced concrete skeleton filled in with glass areas even more markedly horizontal than the Chicago window, was a primary source of inspiration to the modern architect.[50]

The Starrett-Lehigh Building exhibits tendencies towards Expressionism (spectacular or dramatic effects)[51] in its sheer size, energetic design, use of continuous horizontal windows and curved (actually polygonal) corners, and its "modernity" in the midst of the older buildings of the industrial West Side.

The Exposition Internationale des Arts Decoratifs et Industriels Moderne, Paris (1925), an exhibition celebrating "modern" design, had great influence on decorative arts and interior design. In New York City, Art Deco style ornament influenced by the exposition became popular in the 1920s and was readily applied to skyscrapers, apartment buildings, and commercial and industrial structures, often relying on vertical emphasis, multi-colored materials, patterned brick, and terra-cotta ornament based on abstract forms. The style is seen in Starrett-Lehigh in the ornament and verticality of the piers of the utilities core. At the same time, the building anticipates the later 1930s Moderne, characterized by horizontal lines, continuous windows, curves, flat surfaces, and less ornament.

Around 1929 the influence of the horizontal aesthetic of 1920s European modernism began to be felt in New York City; the Starrett-Lehigh Building was one of the first buildings in New York to reflect this aesthetic. In 1922, in the widely-noted competition for the Chicago Tribune Building, a non-winning entry by Knut Lonberg-Holm had had horizontally-expressed floors. The Philadelphia Savings Fund Society Building, Philadelphia (1929-32, George Howe and William Lescaze), considered one of the first American buildings of the International Style, also featured the use of horizontals on the office slab (and more so in the earlier design proposals). Starrett-Lehigh was preceded in New York City by the Beaux-Arts Apartments (1928-30, Kenneth Murchison and Raymond Hood, Godley & Fouilhoux, 307 and 310 East 44th Street), with its ornamental horizontal emphasis created through the use of continuous spandrels and contrasting brick panels, and the New School for Social Research (1929-30, Joseph Urban, 66 West 12th Street),[52] with its ribbon windows [Fig. 13]. Contemporary with Starrett-Lehigh (and constructed by the Starretts) was the McGraw-Hill Building (1930-31, Raymond Hood, Godley & Fouilhoux), called by Henry-Russell Hitchcock, Jr., "the first tall commercial structure consciously horizontal in design executed by an architect since Sullivan's Schlesinger-Mayer Building in Chicago in 1903."[53] An intriguing project (which was never realized) was a garment center in the Bronx (announced in the Real Estate Record and Guide in February 1930, prior to Starrett-Lehigh); the design by architect Harvey W. Corbett featured a "new departure in architectural treatment," including a marked horizontal emphasis [Fig. 14].[54]

The Starrett-Lehigh Building represented a new expression in industrial architecture in New York City. For this relatively low and massive warehouse-industrial building, built of concrete cantilever construction, the horizontal architectural solution was tied logically and intimately to the functional and structural requirements. The Starrett Investing Corporation and Lehigh Valley Railroad as clients received a building as modern-looking, and as functional, as possible in return for their major investment.

Critical Assessment of the Starrett-Lehigh Building

Since its completion the Starrett-Lehigh Building has received favorable critical notice for its architectural design, engineering, and functional aspects. The New York Times in 1931 described it as

> in modern style, with an unusual amount of the usual wall space taken up by windows... An innovation in construction of the exterior walls of the building features setback supporting columns that permit running bands of glass instead of conventional windows, giving increased light and an unconventional exterior appearance.[55]

The Real Estate Record and Guide in 1931 considered it "a structure which, from an engineering and architectural point of view, is as unusual as it is striking."[56] The building was featured in articles in Architectural Forum (1931) and Architectural Record (1932). Lewis Mumford offered his critical assessment in the New Yorker in 1931:

> The Starrett Lehigh Building is another victory for engineering... Here a cantilevered front has been used, not as a cliche of modernism, but as a means of achieving a maximum amount of daylight and unbroken floor space for work requiring direct lighting. The aesthetic result is very happy indeed. The contrast between the long, continuous red-brick bands and the green-framed windows, with sapphire reflections or depths, is as sound a use of color as one can see about the city. The north side of the structure is genuinely exciting: here the requirements of the building code have created a setback of the otherwise unbroken upper windows, and the curved passage has been very ably handled. Across the way from the Starrett Lehigh Building is an admirable old warehouse of the eighties, with solid brick walls, grudgingly punctuated with windows: the contrast between the two structures points not merely to different functions, but to an essential difference between the old architecture, with its emphasis on the wall, and the new architecture, with its interest in the opening. There is one weak point in the newer building: in what is apparently a section for administrative offices on the south side, the rhythm of the building is broken: the windows are narrow and high, and the vertical effect is heightened by feeble tabs of ornament on the uppermost walls. Even granting the difference in purpose between the factory section and the offices, there was no reason for breaking the horizontal accent-- still less for spoiling the noble severity of the facade.[57]

A promotional brochure for the building even boasted that

> the unusually dominating appearance of the building itself... has not been superimposed but has grown out of the rigid necessities of construction.[58]

The "Modern Architecture:International Exhibition" by the Museum of

Modern Art in 1932 included a photograph of Starrett-Lehigh, one of only six American buildings included other than those by major architects; it was one of only ten buildings in New York City included in the exhibition or its catalogue. The catalogue, by Philip Johnson and Henry-Russell Hitchcock, Jr., mentioned Starrett-Lehigh in the context of contemporary American architecture:

> Except for Raymond Hood and George Howe, few established architects have attempted modern design with any real understanding and sympathy. The magnificent factories of Albert Kahn in Detroit, like the Starrett-Lehigh Building in New York, are an exception.[59]

Hitchcock also compared Starrett-Lehigh's horizontal design to that of the McGraw-Hill Building:

> ... the Starrett-Lehigh Building... with its cantilevered concrete construction, was a more radical example of the same tendency but it was less conscious aesthetically. Indeed, the architects, Cory & Cory , regretting the economic demand for a horizontal design, decorated the central feature of the south side with vertical buttresses.[60]

The Federal Writers' Project in the New York City Guide (1939) thought "the building has unusual power and constitutes an important step in the development of contemporary architecture."[61] Carl Condit considered Starrett-Lehigh "a highly innovative work that advanced the structural arts as much as it did the techniques of urban circulation,"[62] and also "the major American work of column-and-slab framing" due to its "size and variety of its structural elements."[63] "The presence of ribbon windows in a multi-story building was enough of a novelty at the time Starrett-Lehigh was completed for this sober mammoth of pure utility to be regarded as avant garde."[64]

In a fine overall summation of Starrett-Lehigh, Carol H. Krinsky recently pointed out that for the design of a utilitarian structure it was

> possible for the architects to use a style that revealed function and structure... For manufacturing and storage, it needed wide floors interrupted by as few vertical supports as possible. All but the lowest three stories, which are steel-framed, are cantilevered concrete slabs with some verticals thereby eliminated from the interior. The vast floors stretch out and sweep around corners. Only the taller, steel-framed service core near the center emphasizes verticality; this is structurally expressive because only there and on the bottom three floors do verticals appear on the building's exterior. The succession of huge floors can be seen outside as light-colored horizontal bands of concrete; brick parapets under ribbon windows add other horizontal lines. The varied colors and textures and the polygonal corners that look curved add graceful elements, making the building handsome as well as functional.[65]

Thus, although Mumford and Hitchcock had criticized the lack of universal horizontality in the exterior design of Starrett-Lehigh, the handling of the exterior can be seen as logical and consistent in functionalist terms, the design emanating from and expressing the various functions and different structural methods employed within. The base, used originally as a railroad freight terminal, and central service-elevator core received a vertically-expressed exterior treatment reflecting the interior steel framing, which contrasted to the rest of the building with its horizontal emphasis reflecting the separate floors and concrete cantilever construction. In this regard, Starrett-Lehigh was also in the forefront of modernist architecture in New York City.[66]

Conclusion

Several major factors jeopardized the financial success of the Starrett-Lehigh Building immediately upon its completion. The unanticipated foundation problems added a substantial extra cost to the construction of the building.[67] The Depression ended the heady building boom of the 1920s and brought the real estate industry in New York to a near standstill from 1931 to 1938, so that Starrett-Lehigh's opening was hardly opportune. According to Paul Starrett, there was also direct competition:

> Our real estate department had reported that the space engaged provided a substantial income over all possible carrying charges. But when this building was about half erected, the Port Authority in New York launched a scheme for a huge counterpart [The Port of New York Authority/Union Terminal No. 1, 1931-32, Abbott, Merkt & Co., with Aymar Embury II, 111 Eighth Avenue] and established rates which completely ruined our schedules. Here the government entered into competition with us and underbid us.[68]

The Starrett Investing Corporation, which had announced in November 1930 its intention to build another similar facility on the Passaic River in Newark, New Jersey (to be constructed by Starrett Brothers & Eken, and one section of which would feature a horizontally-expressed exterior), abandoned this new project.[69] After the death of William Starrett in 1932, the Starrett-Lehigh Building was purchased by the Lehigh Valley Railroad Company "to insure its permanence as a freight terminal."[70]

The Lehigh Valley Railroad, like other freight railroads in the northeastern United States, experienced a decline in the years after World War II, and was eventually merged into the ConRail system in 1976.[71] The railroad ended its association with the Starrett-Lehigh Building in 1944,[72] and the spur line tracks were removed from the ground floor.

The Starrett-Lehigh Building has continued in its original function of supplying rental warehouse, manufacturing, and office space. The result of the collaboration of the Lehigh Valley Railroad, one of New York's leading construction firms, and a group of architects and engineers, Starrett-Lehigh stands as a monument of early 1930s industrial and modernist architecture in New York City, and a reminder of the importance of railroads and freight handling to New York's economy in the first half of the twentieth century.

Description of the Starrett-Lehigh Building*

The Starrett-Lehigh Building occupies the entire trapezoidal-shaped block bounded by Eleventh and Twelfth Avenues and West 26th and 27th Streets. The lower portion of the building, consisting of seven stories, fills the configuration of the block. The next two stories are "double H" shaped in plan, with projecting central and end pavilions on the north and south facades; there is no western pavilion above the ninth floor. The heights of the five divisions of the long north and south facades are, respectively in stories (from west to east): nine--eighteen--nineteen (plus two mechanical)--eighteen--eighteen. In addition, there is a mezzanine level, which is located between the second and third floors (and is not included in the numbering of the floors). All sections of the building except the western one have a series of setbacks. All outer corners, and most of the corners of the building formed by the meeting of sections, are polygonal (except for the Central Utilities Section, on the south facade and upper three stories of the north facade); many of the corners formed by the meeting of sections on the upper stories are "S-curves."

The base of the building, consisting of the first and second floors and mezzanine, is organized by a grid pattern of fenestration, piers, floor slabs, and spandrels. [The ground floor interior, partially open from the west, south, and north facades, is not subject to this designation.] The Central Utilities Section is articulated vertically on the south facade and upper three floors of the north facade. All remaining facades of the building, from the third through the eighteenth floors, are articulated horizontally with continuous concrete floor slabs, continuous red brick spandrels (which become parapets on the setbacks), and horizontal ribbon windows.

Horizontal Ribbon Windows
Multi-pane steel sash [See pages 8-9 for reference to design].
Originally 110,000 panes of glass+
Mullions frame sections containing 4x5 panes on all continuous floors, except for most polygonal curves where the sections are reduced to 3x5 and 2x5 panes
Sash originally painted green
Operable ventilating sash, central horizontal-pivot, of 2x2 panes; alternating rhythm from section to section: A) second and third row of panes B) third and fourth row of panes. Few operable sash on polygonal curves.

Coping of parapets: terra-cotta tile

Alterations
signage placed on building
window panes (particularly operable sash) replaced by air conditioning units, louvers, and vents in numerous instances
ground floor: original conditions not known for all bays (many may have been open); alterations on all bays of east facade and many bays of south and north facades

* Window section configuration: number of panes, horizontal x vertical
\+ Skyscraper Management, p. 5.

SOUTH FACADE

Arrangement of Setbacks (Sections from West to East)

1. nine stories with monitor
2. setback atop seventh floor; above ninth floor width of section narrows with building rising on eastern side; slight setback atop thirteenth floor; setback atop fourteenth floor; eighteen stories total
3. Central Utilities Section: setback atop tenth floor; setback atop thirteenth floor; slight setback in U-shape atop sixteenth and seventeenth floors; two mechanical floors atop nineteenth floor
4. setback atop seventh floor; slight setback atop thirteenth floor; setback atop fourteenth floor; monitor atop eighteenth floor
5. slight setback atop thirteenth floor; setback atop fourteenth floor; width of pavilion narrows above fourteenth floor; eighteen stories total

Base of South Facade

12 bays west of and 11 bays east of Central Utilities Section: grid pattern formed by concrete floor slabs and brick piers and spandrels. Piers have stone caps, which rise slightly above the mezzanine level floor slab, and concrete bases; piers project slightly and interrupt the floor slabs

Ground floor subdivided into two levels: 12 bays west of and 3 bays east of Central Utilities Section.

Ground floor upper portion: Windows and brick spandrels (except bays 4 and 5 which are all brick). Windows: 3 continuous sections of 4x3/5x3/4x3 panes, with alternating rhythm operable ventilating sash

Ground floor lower portion (bays from west to east):

- Bays 1-4: brick wall with concrete base. Bay 2 has brick niche.
- Bays 5-7: open truck loading docks with concrete base.
- Bays 8-11: painted cinderblock with concrete base. Bay 8 has opening sealed with wood, bay 9 has metal grille.
- Bay 12: brick wall (partly more recent brick) with concrete base and small window
- Bays 13-18: [See description of Central Utilities Section below].
- Bays 19-21: storefront: plate glass with concrete base. Bay 21 has metal rolldown door over double metal and glass doors.
- Bays 22-29: ground floor is not subdivided into 2 levels, second floor has wider brick spandrels
  - Bay 22: brick wall with metal frame window at west side
  - Bays 23-24: metal rolldown doors. Bay 24 has louver above.
  - Bay 25: dark grey brick and painted cinderblock wall with metal louver above
  - Bays 25-29: brick piers painted at ground floor level
  - Bay 26: metal louver with concrete base and dark grey brick above
  - Bays 27-28: dark grey brick wall with concrete base
  - Bay 29: storefront: triple metal-frame window with concrete base and dark grey brick above

Windows of second floor: 3 sections of 4x5/5x5/4x5 panes, with alternating rhythm operable ventilating sash, except bay 29 with 5x5/4x5/5x5 panes.

Windows of mezzanine: 3 sections of 4x4/5x4/4x4 panes, with central (non-alternating rhythm) operable ventilating sash, except bay 29 with 5x4/4x4/5x4 panes.

Central Utilities Section

Base: enframed by paired patterned-brick piers (with stone caps) which interrupt the line of the floor slabs; piers pierced by windows: west (bay 13): ground floor, 1 section in each pier of 3x3 panes, and second floor, 1 section in each pier of 3x4 panes; east (bay 18): 3-over-3 central horizontal-pivot sash, 1 section on ground floor, and 2 sections in each pier on second floor.

Windows located in the center of each pair of piers: bay 13: ground floor, 6x3 panes, second floor, 6x5 panes, and mezzanine, 6x4 panes; bay 18: ground floor, 6x2 panes, second floor, 2 sections 6x2 panes, and mezzanine, 6x4 panes.

Bay 13 ground floor: recessed entrance between piers with large flat arch lintel with voussoirs, flanked by openings recently bricked-in.

Bay 18 ground floor: c. 1950s alteration: blue-grey marble veneer forming 4 piers with "entablature," recessed entrances with 2 metal doors and triple metal and glass doors, and aluminum letters "Starrett Lehigh Building"

Central section between pairs of piers (Bays 14-17):

Ground floor: bay 14 brick spandrel with concrete base and windows with 4 continuous sections of 3x3 and 4x3 panes; bays 15-17 vehicle exits. Continuous windows: ground floor, sections of 4x3 panes with alternating rhythm operable ventilating sash, second floor, sections of 4x5 panes with alternating rhythm operable ventilating sash, and mezzanine, sections of 4x4 panes with central (non-alternating rhythm) operable ventilating sash.

Third floor: bandcourses; long terra-cotta panel with inscription "Starrett Lehigh Building" flanked by small plain panels; 7 plain terra-cotta roundels alternating with windows (outer with 6x4 panes and 4 pairs with 3x4 panes), all with central operable ventilating sash.

Floors 4-10: enframed by 3 slightly projecting brick piers which interrupt line of floor slabs; topped by stone caps and continuous coping; outer pairs of windows with 2 sections of 4x5 panes, central window bands with 5 sections of 4x5 panes, all with alternating rhythm operable ventilating sash; floor 10 outer windows slightly recessed; stylized terra-cotta "keystone" panels above each bay on floor 10; row of windows each side of projecting section floors 8-10

Floors 11-13: same as floors 4-10, except: recessed windows are center bay of floor 13; no side windows

Floors 14-17: enframed by 3 slightly projecting brick piers with smaller intermediate piers; center section rises to floor 16, with 4 smaller piers; topped by stone caps and continuous coping; line of floor slabs reduced to lintels; outer windows with 3x5 panes, center windows with 4x5 and 3x5 panes, except outer windows floor 17 with 3x2 panes; floors 15-17, row of windows each side of projecting section

Floors 18-19: same as floors 14-17, except major piers are angled, with angled caps; terra-cotta panel above each window, central one abstract ornament

Mechanical Floors: 5 pairs of vertical terra-cotta panels alternating with small central horizontal-pivot windows (paired outer, single central); terra-cotta spandrel panels; "castellated" parapet with coping; eastern side windows; Alteration: easternmost section parged

Smokestack: brick; rises on west from floor 19; adjacent brick "buttress" from floor 15 to the lower mechanical floor

NORTH FACADE

Arrangement of Setbacks and Floors 3-19 (Sections from West to East)

1. nine stories
2. setback atop seventh floor; section narrows above ninth floor with building rising on eastern side; slight setback atop thirteenth floor; setback atop fourteenth floor; eighteen floors total
3. setback atop tenth floor; floors 3-16 are horizontal; floors 17-19 have 6 projecting brick piers and 5 smaller intermediate piers which interrupt the line of the floor slabs, stone caps and coping, and windows in double sections of 3x5 panes; row of windows each side of projecting section floors 17-19; large ducts floor 17 to roof; 5 water tanks on roof
4. setback atop seventh floor; slight setback atop thirteenth floor; setback atop fourteenth floor; eighteen floors total
5. slight setback atop thirteenth floor; setback atop fourteenth floor; width of pavilion narrows above fourteenth floor; eighteen stories total

Base of North Facade

15 western bays: concrete piers rising to the top of the mezzanine level, forming a grid with the concrete floor slabs; brick spandrels on second floor and mezzanine (very wide on second floor);

Ground Floor (Bays from West to East):

- Bays 1-9: open to interior of ground floor; no piers between bays 4-5 and 8-9
- Bays 10-13: concrete block wall with concrete base, bay 10 open above, other bays have metal panels above
- Bay 14: vehicle entrance with metal rolldown door
- Bay 15: concrete base; vertical iron bars over painted masonry piers, windows, metal panels, and louvers

Second Floor and Mezzanine Windows: 3 continuous sections of 4x4/5x4/4x4 panes each bay, each floor (except westernmost bay [bay 1] with 5x4/6x4/5x4 panes) ; alternating rhythm operable ventilating sash on second floor, central operable ventilating sash on mezzanine

15 eastern bays: irregular spacing of ground floor piers; second floor and mezzanine grid pattern formed by continuous concrete floor slabs and brick spandrels (wide on second floor) and piers;

Ground Floor (Bays from West to East):

- Bays 16-25: Concrete base; vertical iron bars over painted masonry piers, windows, metal panels, and louvers
  - Bay 17: metal rolldown door
  - Bay 20: vehicle entrance with metal rolldown door and metal panel/louver and adjacent metal door
- Bay 26: vehicle entrance with metal rolldown door and metal panel/louver
- Bays 27-28: flanked by wide painted concrete block piers; vertical iron bars over windows and metal panels
- Bays 29-30: concrete base; anodized aluminum and glass storefront (continuation of that of eastern facade)

Second Floor Windows: 3 continuous sections each bay of 4x4/5x4/4x4 panes(except easternmost bay [bay 30] with 5x4/4x4/5x4 panes) with alternating rhythm operable ventilating sash

Mezzanine Windows: 3 continuous sections each bay of 4x5/5x5/4x5 panes (except bay 30 with 5x5/4x5/5x5 panes) with central operable ventilating sash

Alteration: second floor spandrel partially painted horizontally bays 14-30

WEST FACADE(S)

portion of building along Twelfth Avenue rises 9 stories; long setback to adjacent section of building (which is 18 stories); slight setback atop thirteenth floor; setback atop fourteenth floor

Base of West Facade

Angled corners; slight projection from upper floors; second floor and mezzanine grid of continuous concrete floor slabs and brick spandrels (wide on the second floor) and pilasters;

Ground Floor: irregular spacing of concrete piers framing 7 bays; all bays open to the ground floor interior except for the third bay from the north which is a brick wall with concrete base, double metal doors, and opening sealed with wood; second and third bays from the south have concrete base; southernmost bay is entrance to a vehicle ramp

Windows of second floor and mezzanine: 9 bays of 3 sections each with 4x5 panes on the second floor (except northernmost bay with 4x4 panes) and 4x4 panes on the mezzanine; alternating rhythm operable ventilating sash on the second floor and central operable ventilating sash on the mezzanine; corner windows are single section with the same pattern (except second floor northwest corner, which has 4x4 panes

EAST FACADE

slight setback atop thirteenth floor; setback atop fourteenth floor; eighteen stories total

Ground Floor (bays from south to north):

Southeast Corner: storefront: double metal and glass doors, with transom, on angle

Bay 1: brick piers framing triple metal-frame window with dark grey brick above and concrete base

Bay 2: dark grey brick wall with metal door with transom and concrete pier on north; concrete base

Bay 3: vehicle entrance with metal rolldown door with metal louver above

Bays 4-9: anodized aluminum and glass storefront with intermediate floor spandrel panels; Bay 5 has metal door and louver

Northeast Corner: double anodized aluminum and glass doors, with transom, on angle; sidelights; anodized aluminum floor spandrel panel and windows above

Second Floor and Mezzanine: corners and grid and window pattern are the same as that of the West Facade, except for piers which frame the southernmost bay (similar to those on the South Facade)

Alteration: second floor spandrel partially painted horizontally (except southernmost 3 bays)

GROUND FLOOR INTERIOR*

Open interior corresponds approximately in dimensions to the 13 western bays of the North Facade and the entire West Facade; dirt and concrete floor; concrete piers, some with steel bracing; east wall is concrete block; ramp leading down in northeast corner; intermediate brick and tile wall; interior loading docks; brick wall adjacent to southwest ramp

Report prepared by
Jay Shockley
Research Department

* Not subject to this designation.

NOTES

1. Carl W. Condit, The Port of New York: A History of the Rail and Terminal System from the Beginnings to Pennsylvania Station (Chicago: University of Chicago Press, 1980), pp. 70-71, and "The Freight Terminal System" (Chapter 4), The Port of New York: A History of the Rail and Terminal System from the Grand Central Electrification to the Present (Chicago: University of Chicago Press, 1981), pp. 101-151.

2. David Ment, The Shaping of a City: A Brief History of Brooklyn (New York: Brooklyn Educational and Cultural Alliance, 1979), p. 78.

3. ibid., p. 79.

4. Condit, The Port of New York... Present, p. 138.

5. ibid.

6. New York County, Office of the Register, Block Index of Reindexed Conveyances, Liber 77.

7. New York County, Office of the Register, Liber Deeds and Conveyances.

8. ibid.

9. ibid.; "Starretts Lease West Side Block," New York Times, June 26, 1930, p. 42.

10. "Starrett, Showing High Traffic Costs, Recommends Huge Terminals for Relief," Real Estate Record and Guide, 127 (June 6, 1931), 9.

11. This information was compiled from the following sources: "Colonel W.A. Starrett Taken by Death at 55," Real Estate Record and Guide, 129 (April 2, 1932), 34; Carl W. Condit, The Chicago School of Architecture: A History of Commercial and Public Building in the Chicago Area, 1875-1925 (Chicago: University of Chicago Press, 1964); Lee E. Cooper, "Silhouette," Housing Progress, 1 (Fall 1945), 15-16; Andrew J. Eken Obituary, New York Times, June 12, 1965, p. 31; Louis J. Horowitz and Boyden Sparkes, The Towers of New York: The Memoirs of a Master Builder (New York: Simon & Schuster, 1937); "Paul Starrett, Builder, 90, Dies," New York Times, July 6, 1957; Paul Starrett, Changing the Skyline: An Autobiography (New York: Whittlesey House, 1938); "Colonel William A. Starrett," American Architect, 141 (May 1932), 94; "William Aiken Starrett," Architectural Record, 71 (April 1932), 275; "William Aiken Starrett," Dictionary of American Biography, Dumas Malone, edit. (New York: Charles Scribner's Sons, 1964), pp. 536-537.

12. The Woolworth Building is a designated New York City Landmark.

13. The Flatiron Building, Plaza Hotel, and U.S. General Post Office are

designated New York City Landmarks.

14. The McGraw-Hill and Empire State Buildings are designated New York City Landmarks.

15. This information was compiled from the following sources: "Building for Defense... An Industrial Community," Architectural Forum, 75 (November 1941), 330-334, supplement p. 46; "Russell Gherdes Cory," National Cyclopaedia of American Biography, 34 (New York: James T. White & Co., 1948), 71; Russell G. Cory Obituary, National Architect, 2 (July and August 1946), 15 and 7; Russell G. Cory Obituary, New York Times, May 28, 1946, p. 21; "New York Dock Trade Facilities Building," American Architect, 135 (March 5, 1929), 329-331; "Planning for Laundry Efficiency," Architectural Record, 72 (October 1932), 252-256.

16. Carl W. Condit, American Building Art: The Twentieth Century (New York: Oxford University Press, 1961), p. 354, n. 7.

17. "Building for Defense...," supplement p. 46.

18. "Walter Monroe Cory," National Cyclopaedia of American Biography, H (New York: James T. White & Co., 1952), 82. Walter Cory's Canada Dry Ginger Ale Co. building, Portland, Oregon (1946) is cited by Gideon Bosker and Len Lencek, Frozen Music: A History of Portland Architecture (Portland: Western Imprints, 1985).

19. "Yasuo Matsui," American Architects Directory, George S. Koyl, edit. (New York: R.R. Bowler Co., 1962); Yasuo Matsui Obituary, New York Times, August 12, 1962, p. 81. A collection of drawings by Matsui is held by the Avery Architectural and Fine Arts Library, Columbia University. Mostly skyscraper and apartment building projects, little is known about them as to location, execution, or Matsui's involvement.

20. This information was compiled from the following sources: Condit, Chicago School; "Lightner Henderson," National Cyclopaedia of American Biography, 17 (New York: James T. White & Co., 1920), 172; "Corydon Tyler Purdy," National Cyclopaedia of American Biography, 12 (New York: James T. White & Co., 1904), 96-97; "Corydon Tyler Purdy," Who's Who in America, 11 (Chicago: A.N. Marquis Co., 1920), 2315; Corydon Tyler Purdy Obituary, New York Times, December 28, 1944, p. 19.

21. Condit, Chicago School, pp. 99-100.

22. The Municipal Building is a designated New York City Landmark.

23. "Starretts Lease West Side Block."

24. ibid.; "The Starrett-Lehigh Building," Architectural Forum, 55 (October 1931), 485.

25. ibid., pp. 485-486.

26. *ibid.*, p. 486.

27. Reports on the total cost differ, from $6.37 to 10 million: Freeman Crowell, "The Dramatic Relief of Vehicular Traffic Congestion in Manhattan: No. 2, The Lehigh Starrett Terminal," *Real Estate Record and Guide*, 128 (August 29, 1931), 8; Carlisle Davidson, "What to See in New York," *Skyscraper Management* (March 1940), p. 4.

28. Condit, *Port of New York... Present*, p. 139.

29. Carl W. Condit, *American Building Art: The Nineteenth Century* (New York: Oxford University Press, 1960), pp. 235, 239.

30. Reyner Banham, *A Concrete Atlantis: U.S. Industrial Building and European Modern Architecture 1900-1925* (Cambridge, Mass.: MIT Press, 1986), p. 32.

31. Condit, *American Building Art: 20 C*, p. 159.

32. *ibid.*, pp. 349-350, n. 7.

33. *ibid.*, pp. 167-168.

34. Mardges Bacon, *Ernest Flagg: Beaux-Arts Architect and Reformer* (Cambridge, Mass.: MIT Press, 1986), pp. 207-208.

35. "The Starrett-Lehigh Building," pp. 486-487.

36. *ibid.*, p. 489.

37. *ibid.*, p. 484.

38. *ibid.*, p. 488.

39. *ibid.*, p. 489.

40. William A. Starrett, "The Toll of Traffic Congestion Presents a Problem for Solution," *Real Estate Record and Guide*, 128 (August 29, 1931), 33.

41. Condit, *Chicago School*, pp. 12, 178.

42. Banham, p. 20.

43. David Gebhard, "The Moderne in the U.S. 1920-1941," *AAQ: Architectural Association Quarterly*, 2 (July 1970), 5, 7.

44. Henry-Russell Hitchcock and Philip Johnson, *The International Style* (New York: Norton Library, 1966).

45. Major examples include the AEG Turbine Factory, Berlin (1909-10, Peter Behrens), Fagus Factory, Alfeld (1910-14, Walter Gropius and Adolf Meyer), Model Factory, Werkbund Exhibition, Cologne (1924, Gropius and Meyer), and Van Nelle Tobacco Factory, Rotterdam (1927-

30, Brinkman, van der Vlugt, and Stam).

46. William H. Jordy, American Buildings and Their Architects: The Impact of European Modernism in the Mid-Twentieth Century (Garden City, New York: Anchor Books, 1970), p. 131.

47. Nikolaus Pevsner, Pioneers of Modern Design: From William Morris to Walter Gropius (Baltimore: Penguin Books, 1974), p. 210.

48. Mendelsohn's completed commissions in the 1920s included the Schocken Department Stores in Stuttgart (1926-28) and Chemnitz (1928-29).

49. Jordy, p. 68.

50. ibid., p. 106.

51. ibid., p. 138.

52. The New York School for Social Research is located within the Greenwich Village Historic District.

53. Museum of Modern Art, Modern Architecture: International Exhibition (New York: Arno Press, 1969), p. 131.

54. "Fox Plans Great Garment Center for West Bronx," Real Estate Record and Guide, 125 (February 22, 1930), 9-10.

55. "New West Side Industrial Buiding," New York Times, December 6, 1931, section 11-12, p. 2.

56. Crowell, p. 7.

57. Lewis Mumford, "The Sky Line: Bridges and Buildings," New Yorker, November 21, 1931, p. 48.

58. Starrett-Lehigh Building, Inc., "Starrett-Lehigh Building" (New York: c. 1931-32), p. 6.

59. Museum of Modern Art, p. 22.

60. ibid., p. 131.

61. Federal Writers' Project, New York City Guide (New York: Octagon Books, 1970), p. 73.

62. Condit, Port of New York... Present, p. 139.

63. Condit, American Building Art: 20 C, p. 170.

64. ibid., p. 172.

65. Carol H. Krinsky, "Sister Cities: Architecture and Planning in the Twentieth Century," Chicago and New York: Architectural Interactions (Chicago: Art Institute of Chicago, 1984), p. 56.

66. Vincent Scully observed the expression of functions in the Lonberg-Holm Tribune design (cited by Jordy, p. 435, n. 52), and Jordy pointed out that "the discrete revelation of different functions radically distinguishes [Philadelphia Savings Fund Society] from other skyscrapers. Moreover, if we search the European International Style for buildings approximating PSFS in this respect, we find them to be in a definite minority" (Jordy, p. 157).

67. Davidson, p. 4.

68. Paul Starrett, pp. 314-315.

69. "New Type of Industrial Buiding," Newark Evening News, November 8, 1930, magazine section, p. 8.

70. Liber Deeds and Conveyances; "Lehigh Valley Buys Big Freight Terminal," New York Times, June 23, 1932, p. 38.

71. Condit, Port of New York... Present, p. 236.

72. Liber Deeds and Conveyances.

FINDINGS AND DESIGNATIONS

On the basis of a careful consideration of the history, the architecture and other features of this building, the Landmarks Preservation Commission finds that the Starrett-Lehigh Building has a special character, special historical and aesthetic interest and value as part of the development, heritage and cultural characteristics of New York City.

The Commission further finds that, among its important qualities, the Starrett-Lehigh Building is one of the finest examples of twentieth-century industrial-warehouse architecture in New York City; that it represents the creative collaboration between the Starrett Investing Corporation, Starrett Brothers & Eken, and the Lehigh Valley Railroad which resulted in the combination railroad freight terminal-warehouse building; that its construction was a complex feat of engineering and was the result of the collaboration of a distinguished group of architects and engineers; that it is a significant example of reinforced concrete mushroom slab and cantilever construction systems; that its exterior design, with its horizontal ribbon windows alternating with brick and concrete spandrels, places it in the forefront of "modern" architecture in New York City at the beginning of the 1930s; that it is an early example of a building in New York City showing the influence of the horizontal aesthetic of 1920s European modernism; and that that aesthetic is here applied to an American functionalist industrial structure, its design based on and reflecting its various interior structural systems and functions.

Accordingly, pursuant to the provisions of Chapter 21, Section 534, of the Charter of the City of New York and Chapter 8-A of the Administrative Code of the City of New York, the Landmarks Preservation Commission designates as a Landmark the Starrett-Lehigh Building, 601-625 West 26th Street, Borough of Manhattan and designates Tax Map Block 672, Lot 1, Borough of Manhattan, as its Landmark Site.

BIBLIOGRAPHY

Banham, Reyner. A Concrete Atlantis: U.S. Industrial Building and European Modern Architecture 1900-1925. Cambridge, Mass.: MIT Press, 1986.

"Building for Defense... An Industrial Community." Architectural Forum, 75 (November 1941), 330-334, supplement p. 46 [Johnson & Johnson Co.].

"Colonel W.A. Starrett Taken By Death at 55." Real Estate Record and Guide. 129 (April 2, 1932), 134.

Condit, Carl W. American Building Art: The Nineteenth Century. New York: Oxford University Press, 1960.

________________. American Building Art: The Twentieth Century. New York: Oxford University Press, 1961.

________________. The Chicago School of Architecture: A History of Commercial and Public Building in the Chicago Area, 1875-1925. Chicago: University of Chicago Press, 1964.

________________. The Port of New York: A History of the Rail and Terminal System from the Beginnings to Pennsylvania Station. Chicago: University of Chicago Press, 1980.

________________. The Port of New York: A History of the Rail and Terminal System from the Grand Central Electrification to the Present. Chicago: University of Chicago Press, 1981.

Cooper, Lee E. "Silhouette." Housing Progress, 1 (Fall 1945), 15-16 [Andrew J. Eken].

Cory, Russell G. Obituary. National Architect, 2 (July and August 1946), 15 and 7.

Crowell, Freeman. "The Dramatic Relief of Vehicular Traffic Congestion in Manhattan: No. 2, The Lehigh Starrett Terminal," Real Estate Record and Guide, 128 (August 29, 1931), 7-8.

Davidson, Carlisle. "What to See in New York," Skyscraper Management, (March 1940), 3-5, 28-30.

Federal Writers' Project. New York City Guide. New York: Octagon Books, 1970. Reprint of 1939 edition.

"Fox Plans Great Garment Center for West Bronx." Real Estate Record and Guide, 125 (February 22, 1930), 9-10.

Gebhard, David. "The Moderne in the U.S. 1920-1941." AAQ: Architectural Association Quarterly, 2 (July 1970), 4-20.

Hitchcock, Henry-Russell, and Johnson, Philip. The International Style. New York: Norton Library, 1966. Reprint of 1932 edition.

Horowitz, Louis J., and Sparkes, Boyden. The Towers of New York: Memoirs of a Master Builder. New York: Simon & Schuster, 1937

Jordy, William H. American Buildings and their Architects: The Impact of European Modernism in the Mid-Twentieth Century. Garden City, N.Y.: Anchor Books, 1976.

Krinsky, Carol H. "Sister Cities: Architecture and Planning in the Twentieth Century," Chicago and New York: Architectural Interactions. Chicago: Art Institute of Chicago, 1984.

Matsui, Yasuo. Avery Architectural and Fine Arts Library, Columbia University. Drawings Collection.

"Matsui, Yasuo." American Architects Directory. George S. Koyl, edit. New York: R.R. Bowler Co., 1962.

Ment, David. The Shaping of a City: A Brief History of Brooklyn. New York: Brooklyn Educational and Cultural Alliance, 1979.

Mumford, Lewis. "The Sky Line: Bridges and Buildings." New Yorker, November 21, 1931, p. 48.

Museum of Modern Art. Modern Architecture: International Exhibition. New York: Arno Press, 1969. Reprint of 1932 edition.

National Cyclopaedia of American Biography. New York: James T. White & Co. 12, 1904 (Corydon T. Purdy), p. 96-97; 17, 1920 (Lightner Henderson), p. 172; 34, 1948 (Russell G. Cory), p. 71; H, 1952 (Walter M. Cory), p. 82.

"New Type of Industrial Building." Newark Evening News, November 8, 1930, magazine section, p.8 [proposed Starrett building in Newark].

New York City. Department of Buildings, Manhattan. Plans and Dockets. [Located in Municipal Archives].

New York County. Office of the Register. Liber Deeds and Conveyances.

"New York Dock Trade Facilities Building." American Architect, 135 (March 5, 1929), 329-331.

New York Times. June 26, 1930 ("Starretts Lease West Side Block"), p. 42; July 5, 1931 ("Terminal Work Pushed"), section 11-12, p. 1; December 6, 1931 ("New West Side Industrial Building"), section 11-12, p. 2; June 23, 1932 ("Lehigh Valley Buys Big Freight Terminal"), p. 38; December 28, 1944 (Corydon T. Purdy obituary), p. 19; May 28, 1946 (Russell G. Cory obituary), p. 21; July 6, 1957 (Paul Starrett obituary); August 12, 1962 (Yasuo Matsui obituary), p. 81; June 12, 1965 (Andrew J. Eken obituary), p. 31.

Pevsner, Nikolaus. Pioneers of Modern Design: From William Morris to Walter Gropius. Baltimore: Penguin Books, 1974. Reprint of 1936 edition.

Placzek, Adolf K., edit. Macmillan Encyclopedia of Architects. New York: The Free Press, 1982.

"Planning for Laundry Efficiency." Architectural Record, 72 (October 1932), 252-256 [Cashman Laundry Corp. Building].

"Purdy, Corydon T." Who's Who in America, Volume 11. Chicago: A.N. Marquis Co., 1920, p. 2315.

"Starrett-Lehigh Building." Architectural Record, 71 (January 1932), 30-35.

"The Starrett-Lehigh Building." Architectural Forum, 55 (October 1931), 483-492.

Starrett-Lehigh Building, Inc. "Starrett-Lehigh Building." New York, [c.1931-32].

Starrett, Paul. Changing the Skyline: An Autobiography. New York: Whittlesey House, 1938.

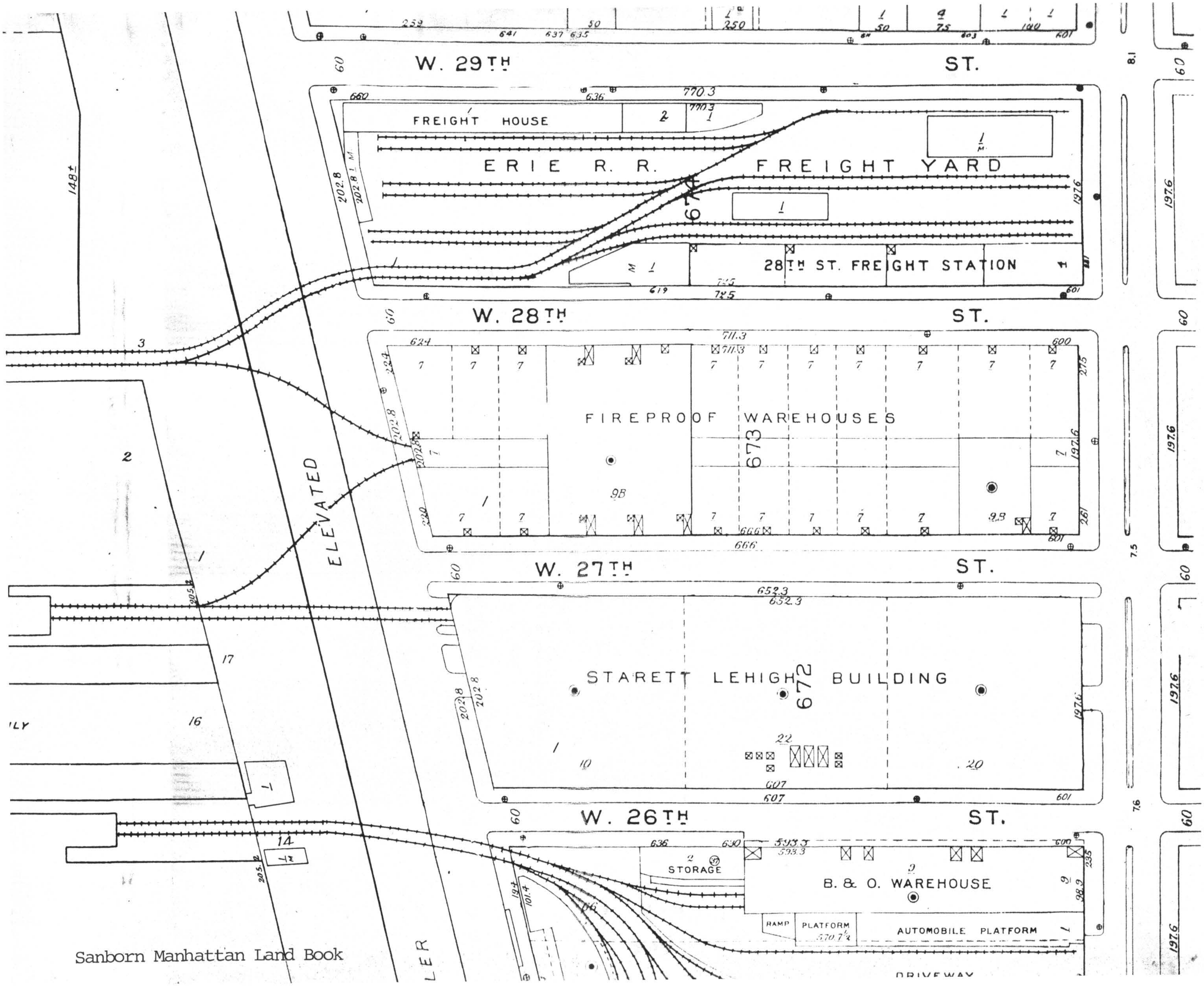
"Starrett, Showing High Traffic Costs, Recommends Huge Terminals for Relief." Real Estate Record and Guide, 127 (June 6, 1931), 9.

"Starrett, William A." Dictionary of American Biography, volume 9. Dumas Malone, edit. New York: Charles Scribner's Sons, 1964.

Starrett, William A. Obituary. American Architect, 141 (May 1932), 94.

Starrett, William A. Obituary. Architectural Record, 71 (April 1932), 275.

Starrett, William A. "The Toll of Traffic Congestion Presents a Problem for Solution," Real Estate Record and Guide, 128 (August 29, 1931), 5-6, 33.



Sanborn Manhattan Land Book

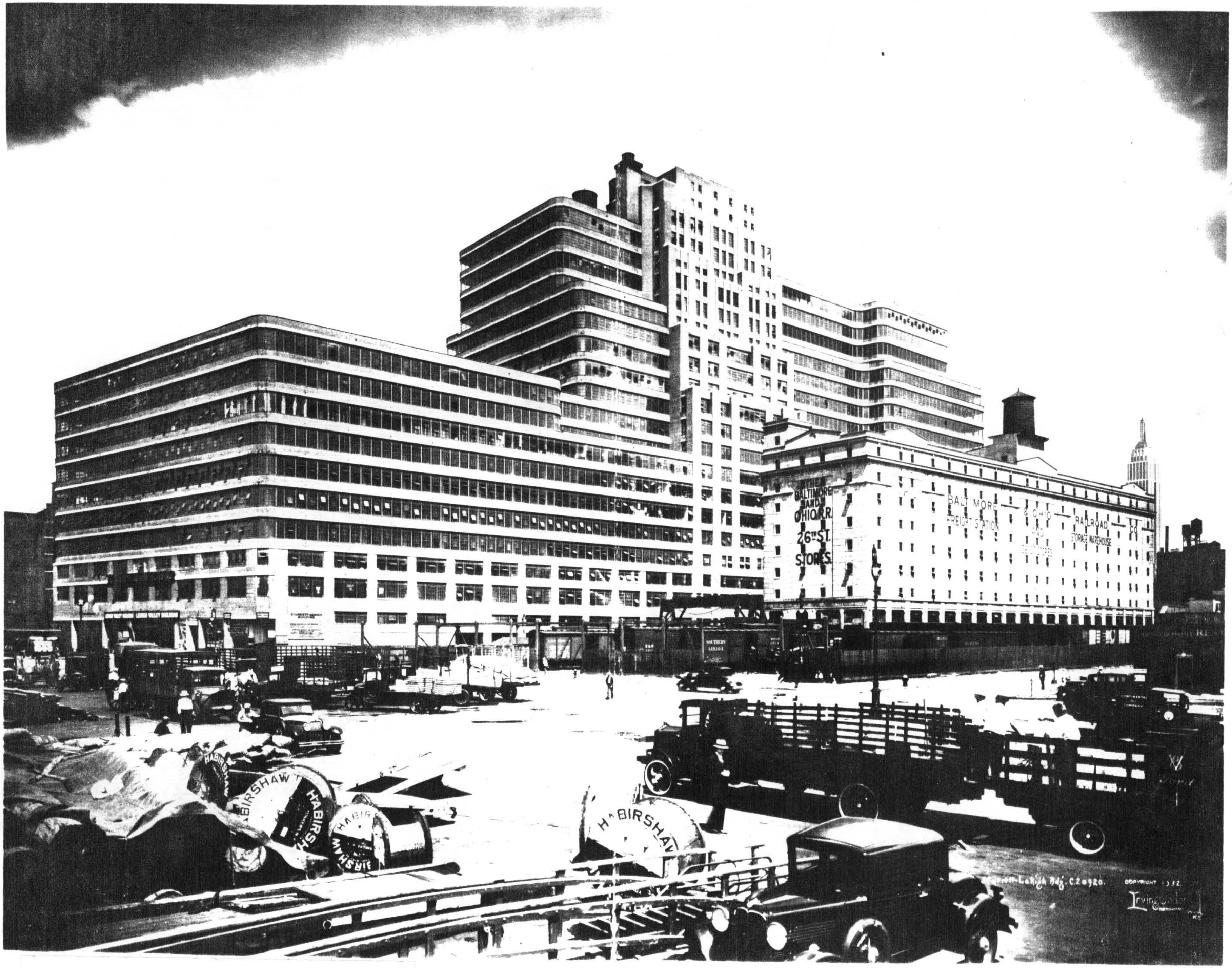


Fig. 1: Starrett-Lehigh Building
Photo: Irving Underhill, 1932

Fig. 2: Russell G. Cory

Fig. 3: Walter M. Cory

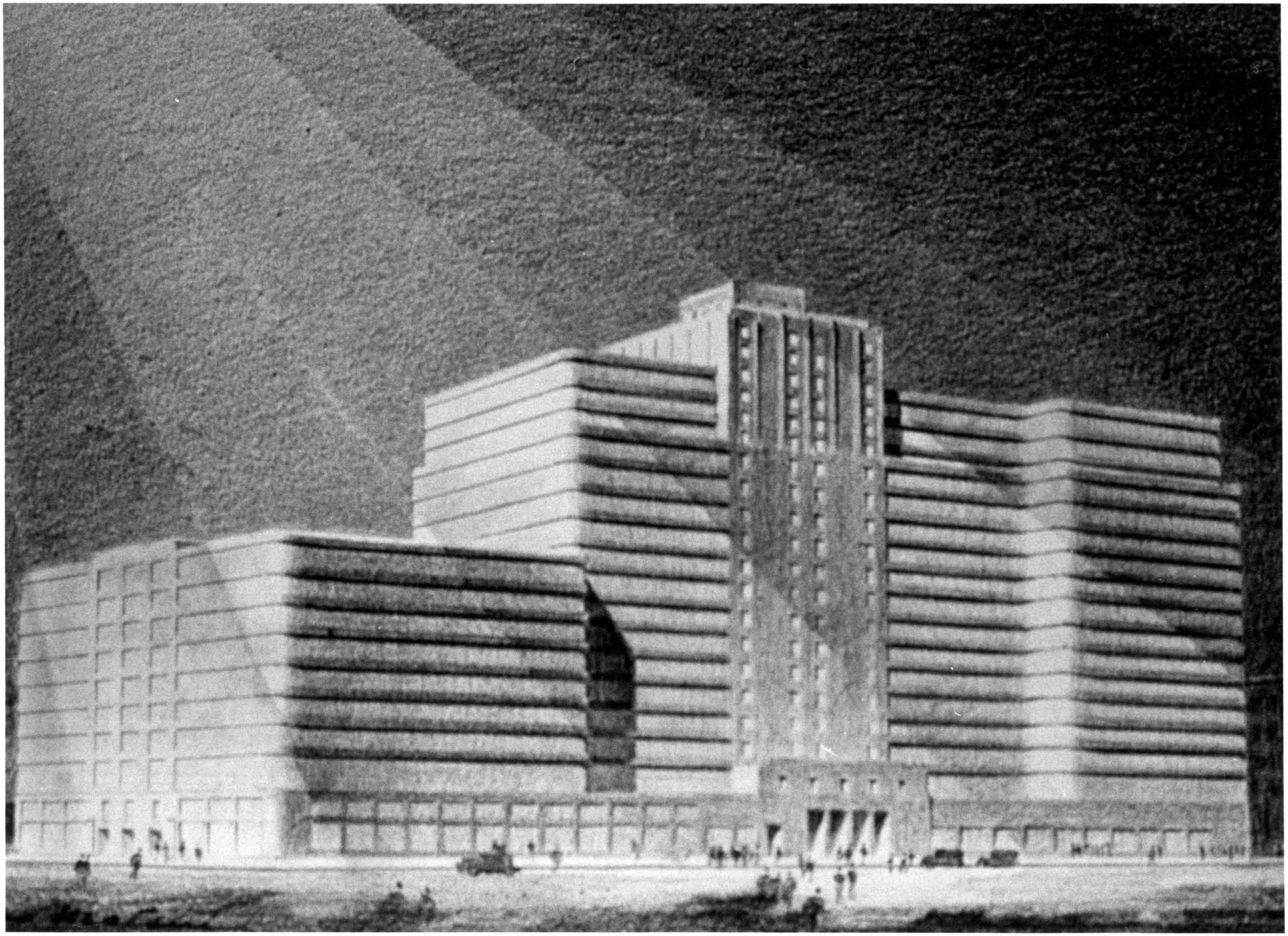


Fig. 4: Proposed Starrett-Lehigh Building
Drawing: Avery Library

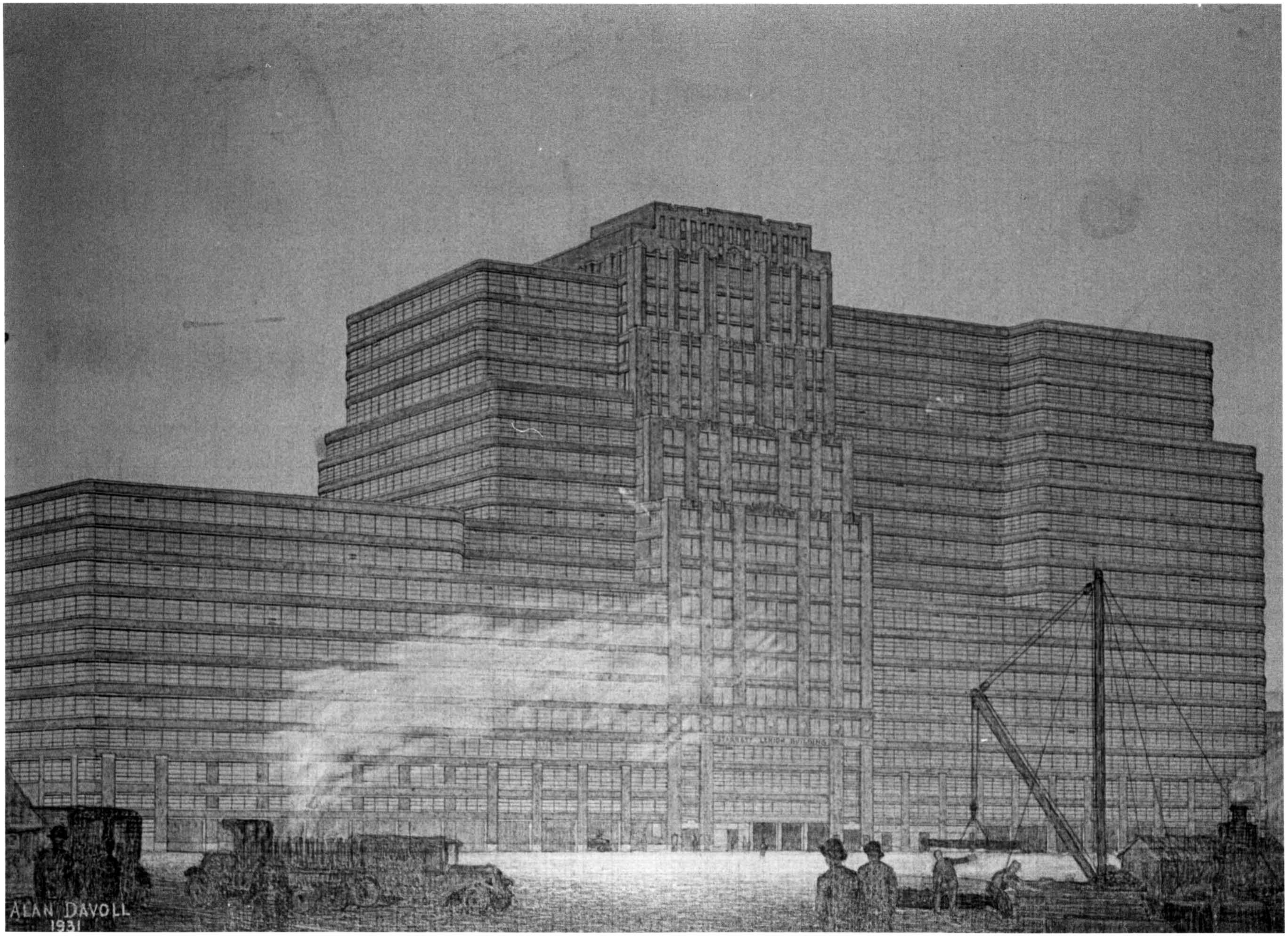


Fig. 5: Starrett-Lehigh Building
Drawing: Avery Library

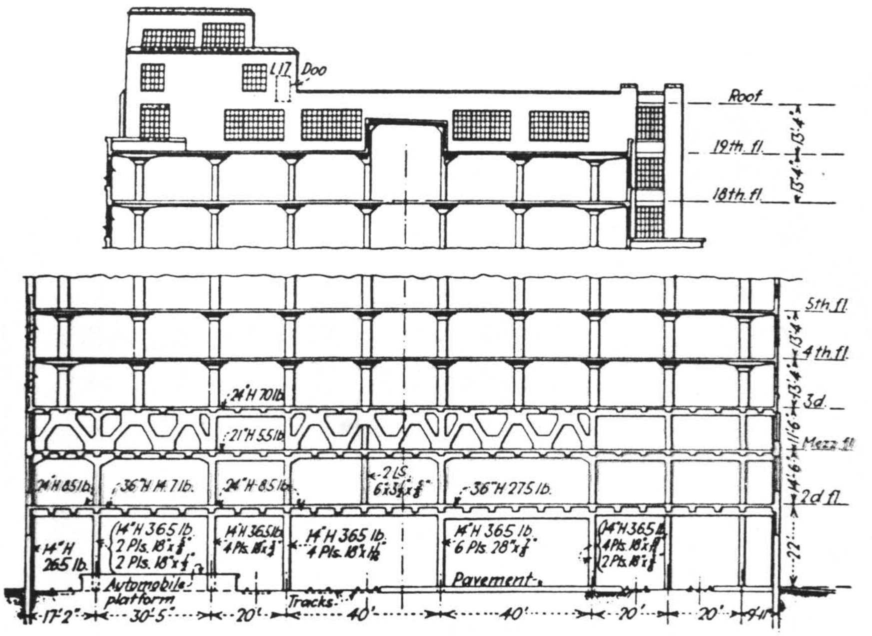


Fig. 6: Cross section, Starrett-Lehigh Building
Source: Condit, American Bdg. Art:20th C.

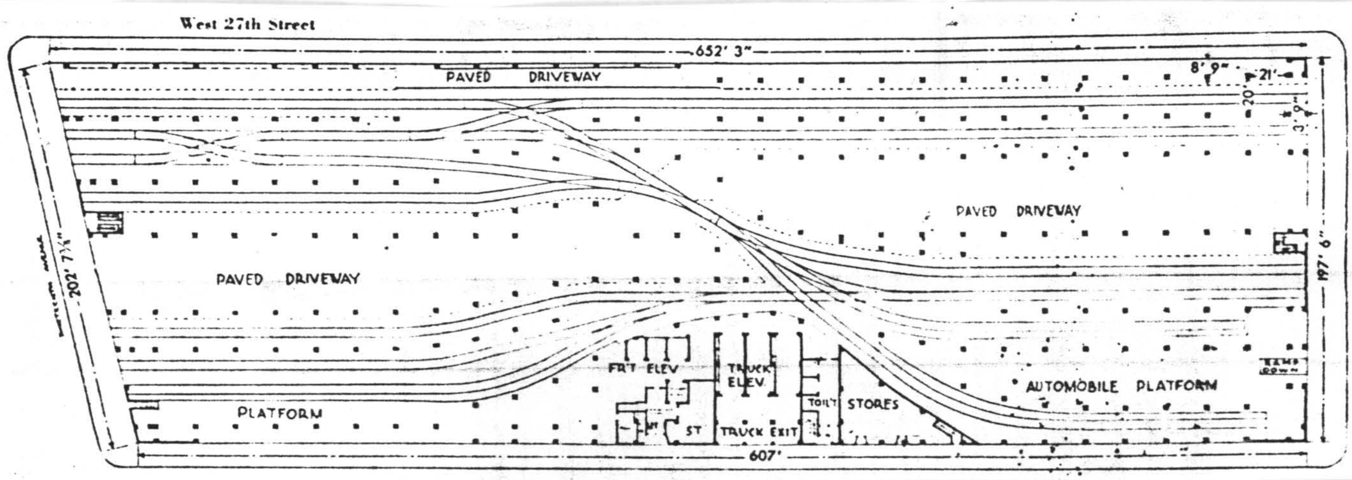


Fig. 7: Ground floor plan, Starrett-Lehigh Building
Source: Archl. Record, Jan., 1932

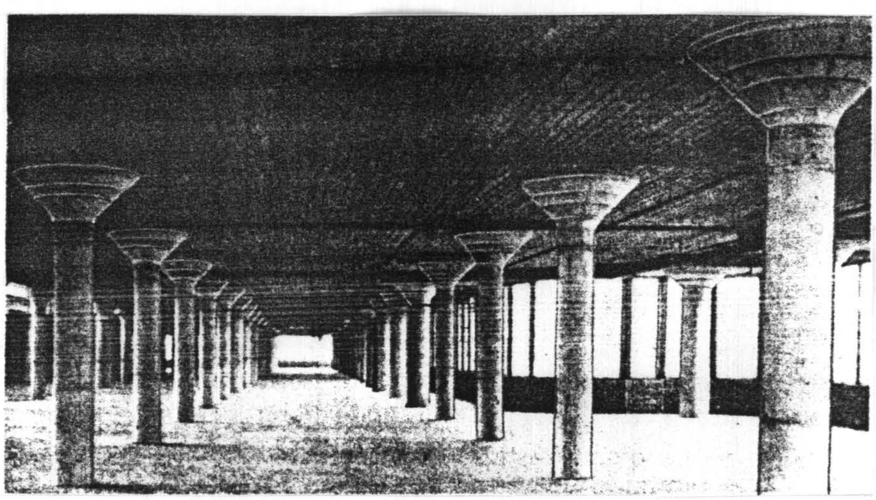
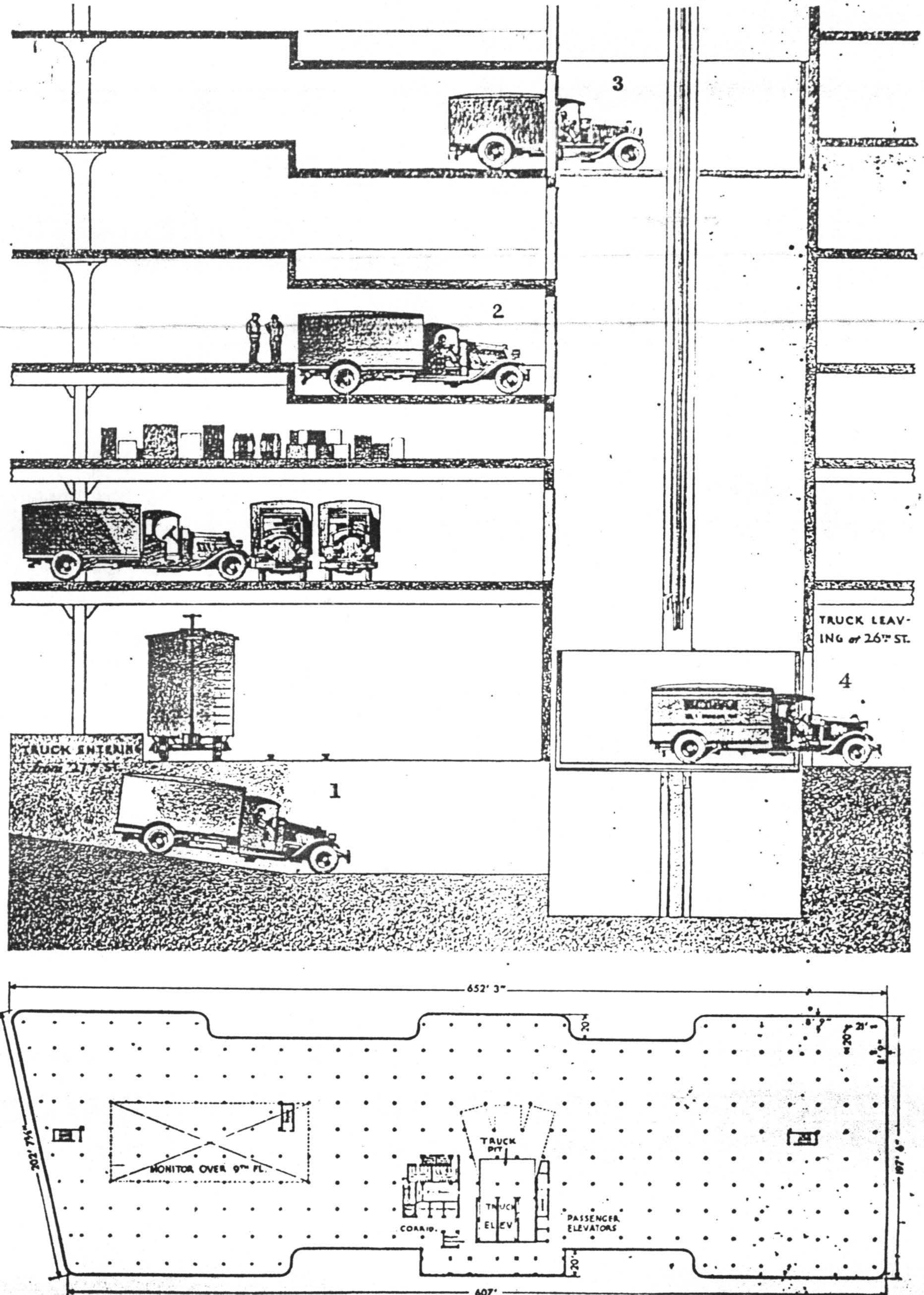


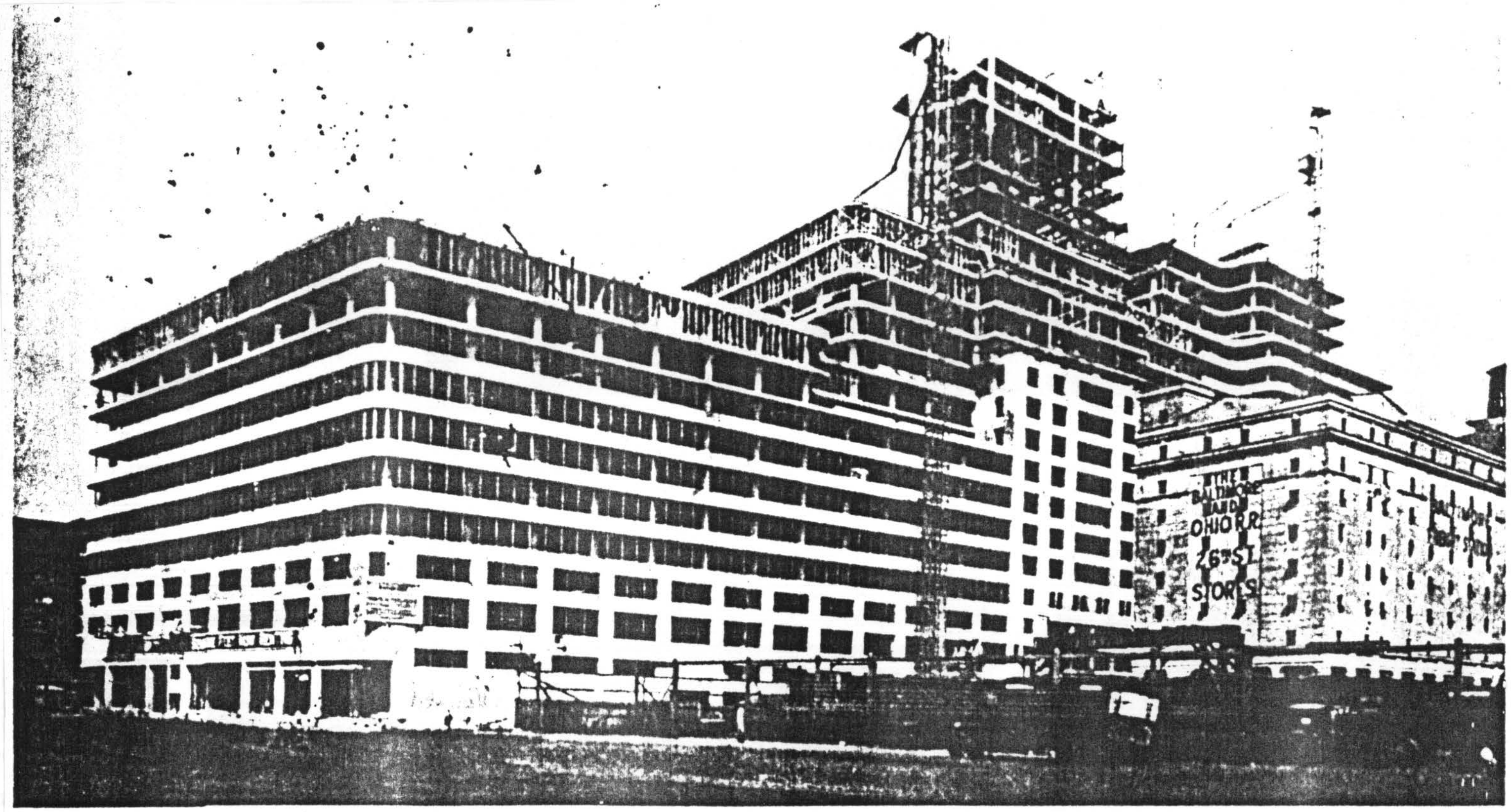
Fig. 8: Starrett-Lehigh Building Interior
Source: Condit, American Bdg. Art:20th C.



STARRETT-LEHIGH BUILDING, NEW YORK
RUSSELL G. AND WALTER M. CORY,
YASUO MATSUI, ASSOCIATE ARCHITECTS

All traffic is handled inside the building. Trucks enter from street, (1) underpass the railroad tracks and are taken to desired floors by elevators; (2) they back into pits of 9-truck capacity; (3) after loading or unloading, they descend, and (4) exit without having had to turn around.

Fig. 9: Starrett-Lehigh Building
Source: Archl. Record, Jan., 1932



Knickerbocker Photos

Fig. 10: Starrett-Lehigh Building under construction
Source: Archl. Forum, Oct., 1931

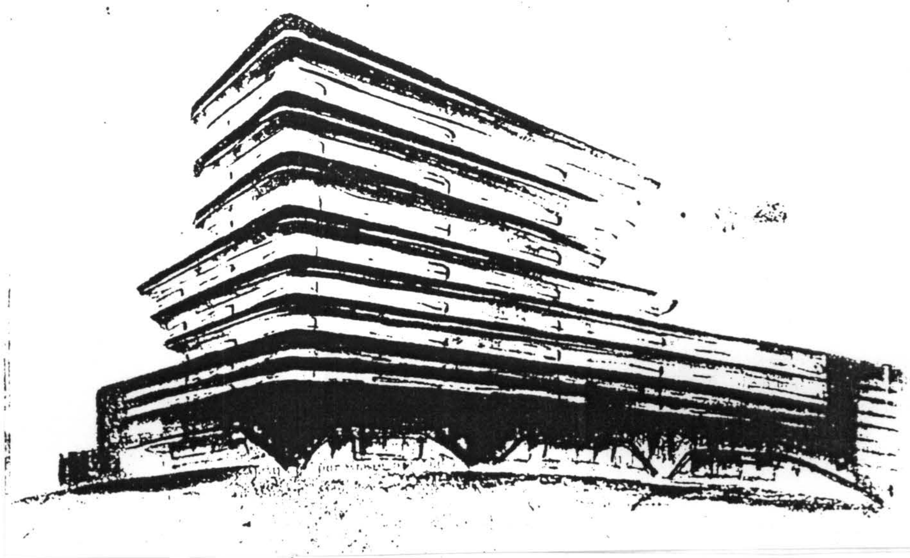
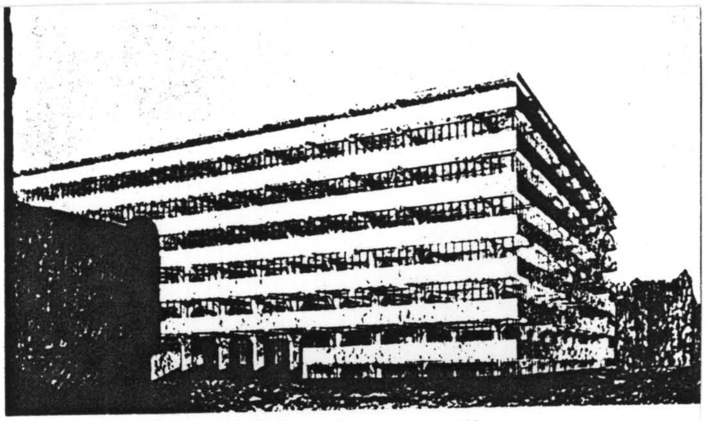


Fig. 11 Wettbewerbsentwurf Bürohaus, Berlin-Tiergarten, Kemperplatz 1921
Erich Mendelsohn



Mies van der Rohe. Reinforced concrete office building. 1922. Project

Fig. 12

Source: Encyclopedia of Modern Arch., Gerd Hatje, edit. (1964)

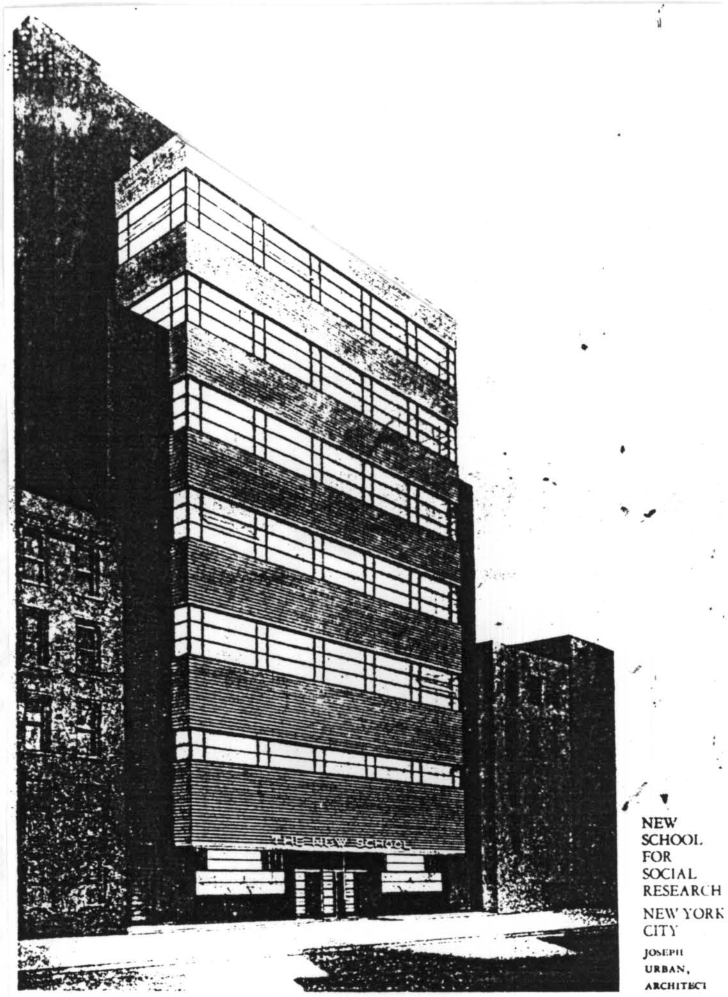


Fig. 13.
Source: Archl. Record, April, 1930

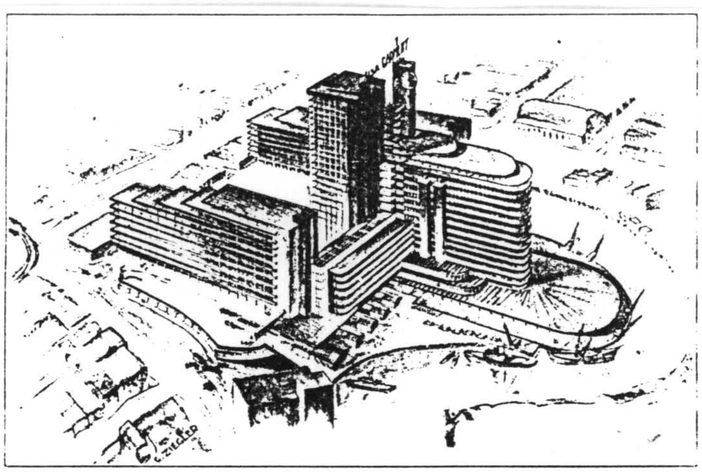


Fig. 14: Fox Garment center project, Bronx
Source: Record & Guide, Feb. 22, 1930

Starrett-Lehigh Building
West and South Facades

PHOTO: SHOCKLEY

Starrett-Lehigh Building
South Facade

PHOTO: SHOCKLEY

Starrett-Lehigh Building
North Facade

PHOTO: SHOCKLEY

Starrett-Lehigh Building
North Facade

PHOTO: SHOCKLEY