

THIRTY-FIRST STREET VIADUCT
East Thirty-First Street
Chicago
Cook County
Illinois

HAER IL-158
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WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240-0001

HISTORIC AMERICAN ENGINEERING RECORD

THIRTY-FIRST STREET VIADUCT

HAER No. IL-158

Location: Spanning right-of-way and trackage of Canadian National Railroad and Northeast Illinois Railroad Corporation at East Thirty-First Street, Chicago, Cook County, Illinois

Chicago Loop USGS Quadrangle, UTM Coordinates:
16.4499280.4613790

Date of Construction: 1927

Designer: Linn White, Chief Engineer, South Park Commission, Chicago, Illinois

Builders: Substructure: Sumner Sollitt Company (Chicago)
Superstructure (steelwork): Ketler-Elliott Company (Chicago)
Superstructure concrete and east approach: Kelly-Atkinson Construction Company (Chicago)
West approach: States Contracting Company (Chicago)
Paving: R.F. Conway Company (Chicago)

Present Owner: Chicago Department of Transportation, Chicago, Illinois

Present Use: Highway bridge

Significance: Spanning a depressed rail corridor near Lake Michigan in southeast Chicago, the four-span Thirty-First Street Viaduct is a skewed, continuous, concrete-encased, steel-stringer structure on a reinforced-concrete substructure. Completed in 1927, the viaduct was designed to serve as a highway and pedestrian approach to a new lakefront park, as conceived by Chicago architect Daniel H. Burnham in his 1909 master plan for Chicago.

Historian: Jeffrey A. Hess, August 1999

Project Description: The Chicago Bridges Recording Project was sponsored during the summer of 1999 by HABS/HAER under the general direction of E. Blaine Cliver, Chief; the City of Chicago, Richard M. Daley, Mayor; the Chicago Department of Transportation, Thomas R. Walker, Commissioner; and S.L. Kaderbek, Chief Engineer, Bureau of Bridges and Transit. The field

work, measured drawings, historical reports, and large-format photographs produced as part of the recording project were prepared under the direction of Eric N. DeLony, Chief of HAER.

DESCRIPTION

Located ½ mile west of Lake Michigan in southeastern Chicago, the Thirty-First Street Viaduct carries East Thirty-First Street across a depressed north-south rail corridor shared by the Canadian National Railway and the Northeast Illinois Railroad Corporation, a public agency known as “Metra” that is responsible for operating commuter rail service in the Chicago metropolitan area. The original owner of the rail right-of-way was the Illinois Central Railroad, which first laid tracks throughout the area in the 1850s. In 1987, the Illinois Central sold the western portion of its right-of-way in south Chicago to Metra. This agency uses the corridor for electrified passenger service on four tracks, its trains drawing power from overhead wires suspended from steel utility bridges in the right-of-way. The eastern portion of the corridor came under the control of the Canadian National Railway in the late 1990s as part of a general buy-out of the Illinois Central. The Canadian National maintains two unelectrified tracks, primarily for freight service.¹

To the west of the Thirty-First Street Viaduct is a residential and commercial neighborhood. To the east is Lake Shore Drive, a main north-south thoroughfare. Thirty-First Street crosses Lake Shore Drive by means of another grade-separation viaduct. One-quarter mile further east, the road terminates at the Thirty-First Street Beach on Lake Michigan. The beach is part of Burnham Park, a narrow swath of green space that borders the lake for about 6 miles, extending from the downtown area on the north to Fifty-Fifth Street on the south. Since the Thirty-First Street Viaduct is the only crossing of the rail corridor for about 1 mile north and south, it is an important gateway to the recreational facilities of Burnham Park.²

The Thirty-First Street Viaduct is a skewed, four-span, continuous, steel-stringer structure on reinforced-concrete abutments and trestle-type, built-up steel piers encased in concrete. The west abutment adjoins a reinforced-concrete retaining wall, which defines the west side of the rail corridor. The wall was in place by 1926, before the viaduct itself was completed.³

¹ *The Formation and Historical Development of Metra* (Chicago: Office of the Executive Director, 1987); “Suburban Service for 70 Years,” *Illinois Central Magazine* 45 (August 1956): 8-11.

² This description of site and structure is based on field inspections conducted by the author in July 1999. Aspects of the viaduct’s original construction are documented by the following two drawings: South Park Commissioners, “Lake Front Improvements, 31st Street Viaduct, Plan & Elevation,” 12 February 1924 (in “1995 Biennial and Fracture Critical Bridge Inspection Project, Bridge No. 016-6173, 31st Street over the Metra Electric and I.C.R.R.,” Bridge Inspection Files, Chicago Department of Transportation), and Bureau of Engineering, Chicago Department of Public Works, “Thirty-First Street Viaduct, Reconstructed Deck” (attached to “Estimate...31st St. Viaduct over I.C.R.R. Tracks, Redecking and Repairs,” Specification No. 80.77-67-4, 1967, Box 2206791, Chicago Department of Transportation Storage Archives). Although a full set of original drawings were once on file with the Chicago Department of Transportation, these plans could not be located during the summer of 1999. Nor were any plans in possession of the Chicago Park Department, which inherited the archives of the South Park Commission, the agency responsible for designing and building the viaduct. The author also contacted Metra and the Illinois Central Railroad, but the plans were not found.

³ On the construction of the retaining wall, see Illinois Central Railroad Company, *Progress of Reconstruction and Electrification of the Chicago Terminal* (Chicago, 1926), 6-7. For an early view of the wall, see photograph captioned, “West Approach to 31st Viaduct, Looking North, South Park Commissioners, Dec. 18, 1926,” in loose-leaf binder labeled “Photos Viaducts Book 1” in Chicago Park Department Archives.

The viaduct's span profile (east-to-west) is 70-72-72-62', giving an overall length of 275'. The superstructure's stringers form seven lines of built-up I-beams, approximately 3.5' in depth, transversely stabilized by shallower, rolled I-beam bridging. The top flanges of the stringers and bridging are on the same level and encased in the concrete-slab deck. Originally, gunite covered the other exterior surfaces of the stringers and bridging, but sections of the steelwork are now visible as the result of spalling. The deck slab, completely rebuilt in 1969, measures 80' in width.⁴ It carries a 50'-wide, four-lane bituminous-covered roadway and two 15'-wide sidewalks. The viaduct's original railings still border the sidewalks. Since they were supported by the superstructure's outside stringers, rather than the deck, it was not necessary for structural reasons to replace them during the 1969 reconstruction. The railings are of the open balustrade type, detailed in a Classical Revival Style manner. They are constructed of granitoid exposed-aggregate concrete, which has deteriorated in several areas and reveals rebar reinforcing. Several railing panels on both sides of the viaduct have been replaced by plain concrete, cast in the original architectural style. In addition, the center of the north railing has been reinforced, on the sidewalk side, by vertical angle-iron bracing. The south railing, near the west end, displays a section of solid concrete infill, which marks the location of a stairway that originally connected the viaduct to a passenger platform alongside the tracks. A photograph in the Archives of the Chicago Department of Transportation reveals the stairway (and presumably the platform) was in place in 1959. A 1968 photograph shows the stairway missing and the access opening barred by a steel barrier. A year later, as part of the deck reconstruction project, the viaduct's original light standards—fluted cylindrical structures finished in the same granitoid concrete as the railings—were replaced by the present utilitarian steel fixtures.⁵

HISTORY

The Thirty-First Street Viaduct, straddling a rail corridor next to an urban residential neighborhood, may not appear to be a park bridge, yet it was built by a public park authority, and its history is closely allied with the park development of the south Chicago lakefront. In 1869, the Illinois Legislature chartered an anonymous body known as the South Park Commission (SPC) to create and maintain public park land in Hyde Park, Lake, and South Chicago—three townships that lay just south of Chicago city limits. At the time, it was understood that the new park lands would primarily benefit Chicago residents. (Twenty years later, Chicago annexed the three townships, and the entire South Park District officially became part of the city.)

Immediately after its establishment, the SPC called on New York landscape architects Frederick Law Olmsted and Calvert Vaux, who had garnered national recognition for their design of New York's Central Park. The two men were working in the Chicago area on a master plan for the suburban community of Riverside. In 1869, Olmsted and Vaux signed a contract with the SPC to prepare a park plan for a large tract of land, including a parcel in Hyde Park that fronted Lake Michigan between East Fifty-Sixth and East Sixty-Seventh streets. Although the architects

⁴ On the redecking, see Chicago Department of Public Works, *Annual Report, 1969*, 17.

⁵ Photograph captioned "31st Street Viaduct over I.C.R.R., Lkg. N.E. 8-26-59, Box 223775, Chicago Department of Transportation Storage Archives; photograph captioned "E. 31st Via. @ I.C.R.R., S. Balustrade Lkg. S. 3-5-68," in Chicago Department of Transportation, Bridge Inspection Report for Thirty-First Street Viaduct, 1968, Bridge Inspection Files. The 1959 photo shows the original light standards.

delivered their plan for “South Park” in 1871, the SPC did not have the resources to implement the entire program, and the lakeside parcel, soon renamed Jackson Park, remained largely undeveloped for the next two decades.⁶

In 1890, Chicago was selected to host the 1893 World’s Fair, and the SPC agreed to allow Jackson Park to be the site of the extravaganza. The previous world’s fair had been held in Paris, often regarded as the center of Old World culture. Chicago fully intended that its handling the 1893 World’s Fair would establish its claim to the same role in the New World, especially since the event was officially dedicated to commemorating the 500th anniversary of Columbus’ landing in the Americas. For a landscape plan, the fair’s organizers turned to Olmsted, and to coordinate construction of the temporary lathe-and-plaster exhibition halls, they selected Daniel H. Burnham, a principal in the Chicago firm of Burnham and Root, which was known for pioneering a new utilitarian aesthetic for commercial buildings. Burnham, however, did not view the World’s Fair as an opportunity to break new aesthetic ground. Instead, he focused on cloaking the fairgrounds’ impermanence with the seemingly eternal verities of Renaissance design. Working with Olmsted, he sought to achieve a full integration of architecture and site. When the World’s Fair opened in 1893, Jackson Park stood forth as a dazzling “White City” of stately Classical Revival edifices efficiently linked by thoroughfares in a tranquil setting of artificial lagoons. In addition to giving Chicago the cultural recognition it craved, the World’s Fair had an enormous influence on American architecture, helping to inaugurate the Classical Revival vogue that would last for decades. The fair also prompted many Americans to reconsider how they went about building their cities. Starkly contrasting with the customary chaos of most American urban places, the almost utopian order of the fairgrounds became a powerful argument for city planning, especially in Chicago.⁷

The SPC was one of the first groups to acknowledge the fair’s influence, and the following year decided to improve the lakefront from Jackson Park to Grant Park.⁸ Burnham himself took up the lakefront improvement proposal, and in 1896 prepared a plan for a 6-mile-long park to be built on infill along the Lake Michigan shoreline between Jackson Park and Grant Park, a long neglected public space just east of the downtown area. The new park’s spine would be a line of artificial lagoons, bordered by greenways and spanned by a series of bridges connecting the old city street grid on the west with the new scenic lakefront drives and beaches on the east.⁹ Although the proposal produced no concrete results at the time, Burnham’s advocacy of the

⁶ On the establishment of the SPC, see Daniel F. Breen, *Historical Register of the Twenty-Two Superseded Park Districts* (Works Progress Administration, 1941), 281-282. A detailed chronology of Jackson Park’s development is in “Timeline, Jackson Park (1869-1995),” Jackson Park Files, Chicago Park Department. For biographical sketches of Vaux and Olmsted, see *American Landscape Architecture*, ed. William H. Tishler (Washington, D.C.: The Preservation Press, National Trust for Historic Preservation, 1990), 34-43. For Vaux’s and Olmsted’s work on Riverside and South Park, see Victoria Post Ranney, *Olmsted in Chicago* (Chicago: The Open Lands Project, 1972).

⁷ For an excellent discussion of Burnham’s career, including his role in planning the 1893 World’s Fair, see Thomas S. Hines, *Burnham of Chicago: Architect and Planner* (Chicago and London: The University of Chicago Press, 1974). A succinct assessment of the fair’s influence is in Leland M. Roth, *A Concise History of American Architecture* (New York: Harper and Row, 1979), 213-218.

⁸ Daniel H. Burnham and Edward H. Bennett, *Plan of Chicago* (Commercial Club of Chicago, 1909, repr. NY: Princeton Architectural Press, 1993), 6.

⁹ Burnham and Bennett, 5-7, 51-53.

lakefront project, combined with his previous work on the world's fair, earned him a growing reputation as a city planner. National recognition came in 1901, when the U.S. Senate appointed Burnham chairman of the Park Commission of the District of Columbia, which was in charge of modernizing the layout of the Capitol. Despite these responsibilities, as well as subsequent planning projects in Cleveland and San Francisco, Burnham remained committed to his vision of the Chicago lakefront.¹⁰ In 1906, the Commercial Club of Chicago, representing the area's major business interests, commissioned Burnham to prepare a master plan for his own city. Burnham's plan incorporated the lakefront park and was published in 1909. In Burnham's mind, the new park would help Chicago become the scenic rival of any European city.

The waterway should be lined with restaurants and pleasure pavilions and with public bath houses; swimming beaches should be constructed on their shores, which by careful designing can be made as picturesque as any inland river... Imagine this supremely beautiful parkway, with its frequent stretches of fields, playgrounds, avenues, and groves extending along the shore in closest touch with the life of the city throughout the whole water front... When this parkway will be created, our people will stay here, and others will come to dwell among us—the people who now spend time and large amounts of money in Paris, in Vienna, and on the Riviera.¹¹

Although Burnham's master plan was enthusiastically received by the Chicago business community and the local press, the lakefront component faced a number of obstacles. For one thing, the Illinois Central Railroad, whose tracks directly bordered Lake Michigan between Twelfth and Forty-Eighth streets, laid claim to the submerged shore lands upon which the new park would be built. For another, the federal government, in the guise of the U.S. Army Corps of Engineers, was uneasy about any offshore park development that might interfere with the use of the lakefront as a harbor. Further complicating the matter was the Illinois Central's desire for still more space by the lake to build a new downtown terminal, and the city council's determination to block the project unless the railroad agreed to depress much of its trackage below street level and to electrify its trains to eliminate smoke pollution. After a decade of negotiations, the various parties finally reached an agreement, codified in the Lake Front Improvement Ordinance of 21 July 1919. The Illinois Central received permission for a new downtown terminal; the city council obtained a depressed and electrified rail corridor; the Army Corps, a harbor line it could tolerate; and the SPC, a new lakefront park connecting Grant Park with Jackson Park. Shortly after the passage of the ordinance, the voters of the South Park District approved an \$8 million bond issue so that the SPC could begin work. In 1920, the SPC reported that its Chief Engineer Linn White was supervising a force of about twenty men on the lakefront improvement and that an initial 12 acres of submerged land south of Grant Park had been reclaimed. Although Burnham had died in 1912, his plan continued to guide construction throughout the 1920s. The lakefront improvement would fittingly be called Burnham Park.¹²

¹⁰ Hines, 139-196.

¹¹ Burnham and Bennett, 51.

¹² For a discussion of the conflicting interests on the lakefront, see Lois Wille, *Forever Open and Free: The Struggle for Chicago's Lakefront* (Chicago and London: The University of Chicago Press, 1991), 85-91. For a chronology of the negotiations leading up to the Lake Front Ordinance, see Chicago Plan Commission, *Ten Years Work of the Chicago Plan Commission, 1909-1910* (Chicago: Chicago Plan Commission, 1920), 47-49. For the commencement

The Lake Front Improvement Ordinance of 1919 gave the SPC the right to build “park approach” viaducts across the Illinois Central rail corridor at six locations south of downtown. These crossings were to be located at East Twenty-Third Street, East Thirty-First Street, East Thirty-Fifth Street, East Oakwood Boulevard (Thirty-Ninth Street), East Forty-Third Street, and East Forty-Seventh Street. Only three viaducts were actually built south of downtown, at Twenty-Third Street, Thirty-First Street, and Oakwood Boulevard.¹³ The SPC constructed these structures in north-south sequence, as dictated by the progress of the Illinois Central’s track depression program.

First on the project list was the Twenty-Third Street Viaduct, which entered the planning stage in April 1921, when the SPC awarded a design contract for the structure to the Condron Company, a Chicago structural engineering firm.¹⁴ According to the Lake Front Improvement Ordinance, all viaducts in the corridor were to be “of deck type, that is, no part of the construction shall project above the top of the roadway or the top of the sidewalk, except that portion which is used for protection railing purposes, and the viaducts shall be of steel construction, concrete covered, or reinforced concrete.” The ordinance also specified that “provision shall be made on each of the Park Approach Viaducts for adequate sidewalks and for two street car tracks.”¹⁵ It further stipulated that all viaduct designs for the Illinois Central corridor were subject to the approval of both the railroad and the Chicago Department of Public Works. Guided by these considerations, the Condron Company drew up plans for a continuous multiple-span crossing with a built-up, steel-string superstructure resting on reinforced-concrete abutments and piers. The top flanges of the superstructure’s stringers were to be encased in a reinforced-concrete deck slab, while the rest of the steelwork was to be covered by gunite (a pneumatically applied concrete). The viaduct’s architectural detailing focused on the sidewalk railings bordering the deck. These were Classical Revival Style open-balustrade structures constructed of a granitoid, exposed-aggregate concrete known as “Benedict Stone.”¹⁶ The SPC had been using stone-finish concrete in its park projects for almost two decades, and it had recently specified Benedict Stone for the Soldier Field Stadium, then under construction in the northern part of Burnham Park. As the SPC noted in its official board minutes, “Before selecting this material for the Stadium Mr. [Linn] White[, SPC chief engineer,] made an inspection of various installations...in the eastern states. This stone is of uniform composition throughout, and is not veneered. It is...by far the best stone

of the work, see SPC, *Annual Report, 1919-1920*, 2, 1920-1921, 62-65. A brief description of the total project is in “Chicago’s \$140,000,000 Lake-Front Improvement Plans,” *Engineering News-Record* 83 (31 July 1919): 216. For a more detailed discussion, see Edward J. Kelly, “Reclamation and Improvements by the Guniteers,” *World Ports* 19 (February 1931): 497-505.

¹³ “Lake Front Improvement Ordinance,” *Journal of the Proceedings of the City Council of Chicago*, 21 July 1919, 990-991. There were also to be a series of viaducts in Grant Park, between Randolph Street and Twelfth Street (Roosevelt Road). The proposed Forty-Seven Street Viaduct became an underpass.

¹⁴ SPC, *Modern and Most Valuable Park Development in the South Park District of the City of Chicago* (Chicago, 1923).

¹⁵ “Lake Front Improvement Ordinance,” 992.

¹⁶ The original railings are no longer in place, but their detailing and finish is documented by a completion photograph captioned, “23rd St. Viaduct Looking North Dec. 15, 1925,” Chicago Park Department Archives.

available for this work.”¹⁷ The Condron Company prepared the specifications (and presumably the plans) for the viaduct’s railings, as well as for the larger engineering work. These basic architectural and engineering designs also governed the construction of the three subsequent viaducts in the corridor, although the actual plans for these crossings appear to have been prepared by White and his staff engineers.¹⁸

In 1925, while the Twenty-Third Street Viaduct was still under construction, the SPC completed its drawings for a four-span viaduct at Thirty-First Street.¹⁹ Two additional provisions in the Lake Front Improvement Ordinance directly affected this viaduct’s design. First, the ordinance specified that the Thirty-First Street crossing “shall be constructed to the width of eighty (80) feet.” Second, the ordinance stipulated that the piers of all viaducts in the rail corridor “shall be set parallel with the [Illinois] Central Company’s tracks.”²⁰ Since the rail corridor intersected Thirty-First Street at an oblique angle, this provision required the Thirty-First Street Viaduct to be built as a skewed structure, which called for a slightly different pier arrangement than that employed on the Twenty-Third Street Viaduct. Otherwise, the Thirty-First Street Viaduct displayed similar architecture and engineering. It, too, was a continuous, concrete-encased, steel-stringer structure with a reinforced-concrete substructure and a reinforced-concrete deck bordered by Benedict Stone railings detailed in an open-balustrade Classical Revival Style. Since the park improvement to the east of the viaduct would not be completed for several years, the SPC could afford to adopt a leisurely construction schedule, which it implemented during the period 1925-1927, through a series of phased low-bid contracts, beginning with substructure work and ending with roadway blacktopping. Although this procedure undoubtedly increased the SPC’s administrative costs, it probably had the political benefit of dividing the work among Sumner Sollitt Company (substructure), Ketler-Elliott Company (superstructure steelwork); Kelly-Atkinson Construction Company (superstructure concrete and east approach), States Contracting Company (west approach), and R.F. Conway Company (paving).²¹ The Thirty-First Street Viaduct was completed without incident in late 1927 although Kelly-Atkinson was required to re-waterproof the concrete work (and subsidize one-third the expense) “on account of the damage to the thin coating already applied.”²²

¹⁷ SPC, Proceedings, 8 August 1924, Chicago Park Department Archives. On the SPC’s use of stone-finish concrete, see Julia Sniderman, “The Historic Resources of the Chicago Park District,” National Register of Historic Places Multiple Property Documentation Form, 15 December 1989, Section F-II, 9, Chicago Park Department Archives.

¹⁸ During the mid-1920s, the SPC also used Benedict Stone railings of the same Classical Revival design on Grant Park viaducts and in the landscaping of the park itself.

¹⁹ Neither the Chicago Park Department nor the Chicago Department of Transportation could locate the original plans for the viaduct when this study was prepared in the summer of 1999. Only a much-reduced photocopy of one sheet survives. It bears the following title block: SPC, “Lake Front Improvements, 31st Street Viaduct, Plan & Elevation,” 12 February 1924. (See footnote 2 above.) The signatures on the drawing, which might identify the viaduct’s designer, are not legible.

²⁰ “Lake Front Improvement Ordinance,” 993.

²¹ SPC, Proceedings, 18 November 1925; 21 April, 16 June 1926; 23 May, 20 June 1927. It is not possible to calculate the total cost of the Thirty-First Street Viaduct, partly because some of the contracts included work for other SPC structures and partly because the board minutes awarding the substructure contract could not be located.

²² SPC, Proceedings, 19 October 1927.

The Thirty-First Street Viaduct was the easternmost stop on the Chicago Consolidated Traction Company's Archer Avenue Streetcar Line, which remained in service until 1948.²³ At the viaduct, streetcar passengers could catch the Illinois Central's commuter line to either downtown or South Chicago. The viaduct's original construction incorporated a passenger stairway, in the west end of the south railing that connected the crossing's south sidewalk to a platform alongside the tracks. This stairway was removed between 1959 and 1968, when the Illinois Central eliminated its Thirty-First Street service as the result of a drastic decline in fares.²⁴ Apart from this alteration and the reconstruction of the crossing's deck in 1969, the Thirty-First Street Viaduct remains very much as originally designed. Burnham Park, however, experienced a somewhat different fate. Although the SPC completed most of its infilling work for the new lakefront park by 1930, the economic realities of the Great Depression severely curtailed the implementation of Daniel Burnham's grand design. The reclaimed area did become an extended lakeshore green space between Grant Park and Jackson Park, and it did include a number of recreational facilities, including a bathing beach at Thirty-First Street. Except for one small pond at the park's north end, Burnham's "inland waterway" never materialized. True to its original conception, the Thirty-First Street crossing still functions as a park approach viaduct, although it conducts the visitor to a very modest rendition of the Burnham plan.

²³ James D. Johnson, *A Century of Chicago Streetcars, 1858-1958* (Wheaton, IL: The Traction Orange Company, 1964), 29, 31.

²⁴ Thaddeus P. Brzyski, "A Study of the Chicago South Suburban Mass Transit District," M.A. diss., Roosevelt University, 1969, 8; see also note 5 above. An insert map in Brzyski's study, entitled "Urban Transportation Routes in the Area Served by the Illinois Central Suburban System," indicates that the Thirty-First Street Station was closed by 1968.

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Archival

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