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ROMEO ROAD,
SANITARY AND SHIP CANAL BRIDGE
I&M Canal National Heritage Corridor
Crossing the Sanitary and Ship Canal
Romeoville
Will County
Illinois

HAER No. IL-41

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
P.O. Box 37127
Washington, D.C. 20013-7127

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HISTORIC AMERICAN ENGINEERING RECORD

ROMEO ROAD, SANITARY AND SHIP CANAL BRIDGE
I&M Canal National Heritage Corridor

HAER No. IL-41

Location:	I & M Canal National Heritage Corridor Romeo Road crossing the Sanitary and Ship Canal Romeoville, Will County, Illinois UTM: 16 E.411720 N.4610200 Quad: Romeoville
Date of Construction:	1899
Builder:	Substructure: Elgin Iron Works Superstructure: C. L. Strobel Company
Present Owner:	State of Illinois
Present Use:	Vehicular Bridge
Significance:	Of the original fifteen bridges built across the Sanitary and Ship Canal, only seven survive; the Romeo Road Bridge is the oldest of the highway swing spans constructed by the Sanitary District of Chicago.
Project Information:	The Illinois and Michigan Canal was designated a National Heritage Corridor in 1984. The following year HABS/HAER embarked on an extensive inventory and documentation project of the 100 mile-long corridor. Field work for this project was concluded in 1988. Final editing of the documentation was completed in 1992.
Historians:	Frances Alexander, John Nicolay, and Charles Scott, 1986; Carolyn Brucken, 1992.

In 1892 the Chicago Sanitary District began construction of the Sanitary and Ship Canal, also called the Chicago Drainage Canal. Extending twenty-eight miles from the South Branch of the Chicago River at Damen Avenue to the DesPlaines River at Lockport, this canal reversed the flow of the Chicago River and discharged water drawn from Lake Michigan into the DesPlaines River at Lockport. Work on the Sanitary and Ship Canal was completed on January 2, 1900. As part of this extraordinary civil engineering project, fifteen bridges were initially constructed across the canal. The Sanitary District of Chicago supervised the design and construction of these bridges. Completed in August 1899, the Romeo Road Bridge was fabricated by the Elgin Iron Works of Chicago and erected by the Strobel Steel Construction Company, also of Chicago. By 1906, one fixed truss bridge and fourteen swing bridges crossed the Sanitary and Ship Canal. This included both rail and vehicular bridges.

The Romeo Road Bridge is the oldest of the highway swing spans built across the Sanitary and Ship Canal. This "bob-tailed" swing span contains a 306'-2" long Warren through truss and shorter approach spans. The swing span extends 205'-9" from the pivot pier across the canal and its counterweight span measures 100'-5" in length. The bridge tender's house rests on a steel-frame platform, which in turn is attached to the through truss. The off-center pivot pier and the abutments are constructed of ashlar limestone. The bridge is 20' wide and carries two lanes of traffic with one sidewalk.

SOURCES:

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"Railway Drawbridges Over the Chicago Drainage Canal,"Engineering News, v. 38 (December 2, 1897): 363-366.

Isham Randolph, "The Salient Features of the Chief Engineer's Annual Report of the Drainage Canal of the Sanitary District of Chicago for 1898," Journal of the Western Society of Engineers, v. 4 (August 1899): 317-334.

"Swing Bridges on the Chicago Drainage Canal," Engineering Record, v. 36 (October 2, 1897): 378; v. 36 (October 30, 1897), 469; v. 37 (December 25, 1897): 71-73; v. 37 (March 19, 1898): 338-339.

C. Arch Williams, The Sanitary District of Chicago: History of its Growth and Development (Chicago: The Sanitary District of Chicago, 1919).

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ADDENDUM TO
ROMEO ROAD,
SANITARY AND SHIP CANAL BRIDGE
I&M Canal National Heritage Corridor
Crossing the Sanitary and Ship Canal
Romeoville
Will County
Illinois

HAER No. IL-41

COPIES OF MEASURED DRAWINGS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
Rocky Mountain Regional Office
National Park Service
P.O. Box 25287
Denver, Colorado 80225-0287

HISTORIC AMERICAN ENGINEERING RECORD

ROMEO ROAD, SANITARY AND SHIP CANAL BRIDGE

This report is an addendum to a two page report previously transmitted to the Library of Congress.

I. INTRODUCTION

Present Location: 135th Street, (Romeo Road)
Spanning Chicago Sanitary and Ship Canal
Romeoville, Illinois

USGS Quadrangle: Romeoville, 7.5.
Latitude 41°-38.1'; Longitude 88°-03.6'
UTM: 16.411715.4610210

Inventory Data: Federal-Aid Urban Route
135th Street in Romeoville
0.8 miles east of Illinois Route 53
Structure No. 099-9902
NW-SW Quarter of Sections 2-35, T36-37N, R10E.
Will County

Date of Construction: 1899

Owner, Custodian: Will County

Present Use: Vehicular swing bridge, the sole remaining structure of three similiar bridges formerly spanning the Sanitary and Ship Canal.
Closed to traffic.
Projected date of removal is FY 1995.

Significance: The Romeo Road Bridge is a three span bridge consisting of an approach span of 31'-11" and a bob-tailed swing span having a total deck length of about 305'-9" and a clear roadway width of 18'-0". Situated in the I&M Canal National Heritage Corridor, this bridge is a representative example of canal swing bridges supported on a canal bank. This is the sole remaining structure of this type once spanning the Chicago Sanitary and Ship Canal and one of only four known swing bridges in Illinois.

II. HISTORY

The earliest Euro-Americans moved into the Romeoville area in the summer before the great snow of 1830-1831, but no settlement existed in the region when the United States Government bought land before 1833 from the Potawatomi Indians for a projected canal. Romeo was planned by the Commissioners of the Illinois and Michigan Canal on canal grant land with the intention of it becoming a romantic twin city to Juliet, eight miles to the south. The idyllic romance was short-lived for Romeo acquired an unsavory reputation due to combinations of Irish laborers, an abundance of cheap whisky from many saloons, and uncontrolled street brawls. When Juliet's name was changed to Joliet, in honor of Louis Jolliet, Romeo responded by becoming Romeoville.[1]

Through much of this area the I&M and later canals were dug through solid limestone, and from Romeoville's bustling quarries train loads were shipped daily. The present Capitol Building in Springfield was constructed of Romeo limestone. With the perfection of concrete as a building material, stone output declined, and Romeoville today is principally a bedroom community a mile west of the canal. Romeo is preserved as railroad switches near the bridge site.

A mile above the Romeo Road crossing, the canals, flowing from the north-east, enter the Des Plaines River basin and turn southerly. Maps from the earliest issues show a township line road, known variously as Romeo Road, Romeoville Road or currently 135th Street, providing convenient east-west access across the Des Plaines River and canals.[2]

The Chicago Sanitary and Ship Canal, its predecessors the Illinois and Michigan Canal and Drainage Canal, and successor the Illinois Waterway, have had a profound effect on the development and the central United States. While transversing the seven-mile Indian portage in 1673, Louis Jolliet was the first European explorer to envision the need for a canal, but it was not until 1830-1833 that route options were surveyed. Although the estimated railway cost was less than a canal with stepped locks over the twelve foot summit, the latter option, politically expedient for the times and 96 miles long, was eventually completed and opened in 1848.[3]

Booming canal trade led to rapid growth of Chicago as a grain and meat packing center. Although railroads soon replaced the canal as major carriers, a more urgent need for a canal soon became evident. Chicago's prosperity brought death as well, and five percent of the population died from drinking sewage contaminated water drawn from Lake Michigan.

In 1860 Chicago petitioned the state for permission to deepen the canal to provide gravity flow from Lake Michigan to purge the Chicago River of stagnant sewage. The $3,000,000 Drainage Canal was completed in 1871. The city of Chicago paid the bill, but due to tremendous losses incurred from the Chicago fire that same year, the state refunded the cost.

Although drainage was improved, a great rainstorm in 1885 again flushed pollution into Lake Michigan, bringing death by cholera and typhoid to 12 percent of the population. To further improve the flow from Lake Michigan through the Illinois River, the wider Chicago Sanitary and Ship Canal was built between 1892 and 1901, generally near and parallel to the earlier canals. During this phase the Romeo Road swing bridge and identical bridges upstream at Lemont and Willow Springs were erected.

Four ordinances regarding construction of the Romeoville Bridge appear in the 1899 proceedings of Sanitary District Board Meetings.[4]

1. May 3, 1899. The Board of Trustees of the village of Romeoville grants the District the right to construct a bridge over the main channel and to reconstruct the approach roads.
2. August 16, 1899. Daniel Sullivan, having completed road grading and culvert building, is released from his bond.
3. September 11, 1899. C. L. Strobel, having completed erection of the superstructure, is paid $649.27, the final amount of his contract dated August 24, 1898. The final contract price for superstructure and extras is $15,611.17.
4. October 30, 1899. Messrs. Heldmaier and Neu are paid in full for the substructure. Total cost of the contract, $13,407.28.

A summary, published in 1919, of new or replaced bridges built for the Sanitary and Ship Canal project lists 32 within the City, of which 22 are movable, including 6 swing type, and 75 outside the city of which 10 are movable, all swing bridges. The list includes the Romeo Bridge, opened to traffic in August 1899, at a total cost of $33,621.45.[5]

With construction of the Sanitary and Ship Canal the old I&M Canal above Joilet was abandoned as a traffic artery. Building the new canal, the largest earth moving project of the last century, proved to be the training ground for engineers, contractors and techniques used in building the Panama Canal, 1904-1914.

Shipping continued to decline in the polluted Sanitary and Ship Canal until 1953, when the flow of the Calumet River was reversed and the Illinois Waterway opened through the Calumet Sag Channel in 1953, a project aided with federal funding.

Innovative engineering and effluent treatment system by the Metropolitan Water Reclamation District of Greater Chicago have significantly reduced pollution in the city and Illinois River basin.[6]

The Romeo Road Bridge, now closed after nearly a century of service due to major structural and alignment deficiencies, is a rare surviving example of turn-of-century American engineering. Plans for additional development of the Centennial Trail along the canal corridor provide for future relocation and preservation of this "bob-tailed" swing bridge.[7]

III. THE BRIDGE

A. The Bridge Type

The Romeo Road bridge spanning the Chicago Sanitary and Ship Canal is a "bob-tailed" swing bridge, having two arms of unequal length extending from the pivot pier. The pivot pier is located on the west bank of the canal, the long arm truss spanning the canal is 204'-2 7/8" from the pivot center, the short arm truss is 98'-7 3/8"; total truss length is 302'-10 1/4"; deck length along radii is approximately 305'-9". The L0-L1 panel of the short arm has storage racks beneath the deck to hold pig-iron billets or concrete blocks for balancing the arms. Configurations of trusses extending from the pivot tower are Through Warren with verticals. The operator's house is mounted above the roadway at the pier. The roadway width is 20' 0"; a cantilevered sidewalk was added in 1962.

The earliest metal bridges mass developed in the mid-nineteenth century were frequently Pratt trusses with pinned connections, a design patented in 1844 by Caleb Pratt. Pratts were ideal bridges for the American frontier. Pinned connections required only a basic linear design, members were easily fabricated in the shop, simple to disassemble for shipment to the site and capable of being erected by an unskilled crew. Turnbuckles snugged the system after assembly.[8]

Warren trusses, introduced from Europe in the last decade of the nineteenth century, are continuous assemblies of isosceles triangles, with vertical floor hangers from upper chord joints frequently added. Warrens generally have rigid joints and after perfection of field riveting techniques in the last decade of the nineteenth century, generally became the preferred truss type.[9]

Swing bridges turn horizontally around a vertical axis on the pivot pier, usually in the center of the stream. Because of the waterway clearance hazards, the need for operators and powerful operating machinery, this type has largely disappeared. The longest swing span on record, 525', is the A.T.& S.F. railroad bridge over the Mississippi at Fort Madison, Iowa.[10]

No mention of "bob-tailed" swing spans is found in standard bridge reference books, classic texts or design manuals. To meet the innovative challenge of designing these structures, the designers selected a Warren configuration with top chords sloping from the central tower to the portals. Pin connections, unusual for a Warren, were used for upper chord connections. At the lower chord, which acts in compression and is continuous and riveted, pin connections are through the chord channel webs. The use of pins simplified the determination of stress magnitudes and reversals developed within the bridge frame when under traffic loading or open.[11]

Predominate stresses in the Romeo Bridge truss members are determined by cantilever forces in the arms when the bridge is open, resulting in truss member stresses unlike those found in conventional Warrens: the lower chords are in compression; four top chords on each side of the pivot tower are eye-bar tension members; sloping end posts are in compression as are the outer six panels of the top chord on the long arm. Height of the upper chord pin at U1 is 25'-0" on the short arm and 20'-0" at U16 on the long arm.

The bridge, mounted on a 29'-0" diameter drum, pivots on a coursed limestone octagonal pier. Abutments and the east pier are also built of coursed limestone. Plans for the east pier, a 31'-11" approach span, and revised configuration of the east abutment were added to the original plans in March 1898.

An operator's house is located on the pivot tower above the roadway. Originally reached by open rungs from the roadway, current access is from the sidewalk added to the north side and a ladder encircled by a safety cage.

In this location the canal is cut through solid rock. Abutments and pier foundations are supported on solid limestone, apparently only a footing depth below the ground surface.

File copies of the bridge plans include several major rehabilitations; doubtlessly many smaller repairs have been made without benefit of formal plans.

1920. Addition of supplemental rods to strengthen existing vertical hangers. Installation of vertical posts in long arm for intermediate support of upper compression chord. Original timber stringers and decking replaced, asphalt surfacing added. Plans by the Sanitary District of Chicago.

1935. Drive train strengthening, motors replaced, upgrading of safety gates etc., operator's house replaced. Plans by the Department of Public Works and Buildings, Division of Highways.

1942. Machinery and support rehabilitation. Plans by the Department of Public Works, Division of Highways.

1962. Steel grate floor installed. Grate sidewalk added to upstream side. Plans by the Metropolitan Sanitary District of Chicago.

1977. Drive train rehabilitated. Machinery replaced with motors from Lemont swing bridge. Steel grate floor rehabilitated. Plans by the Department of Transportation, Division of Highways.

B. The Designer

Design drawings for the identical swing bridge superstructures at Romeo Road, Lemont and Willow Springs do not include names or initials of individual designers. All sheets are signed as correct by Edward Wilmann, Assistant Bridge Engineer and approved by Isham Randolph, Chief Engineer.[11]

> Edward Wilmann is listed in Chicago City Directories of the period as a Civil Engineer. In 1898 his office was at 188 Madison and his home at 859 West North Avenue. In 1901 his office was room 327 in the city hall, home address unchanged.[12]
>
> Isham Randolph was born on a farm near, New Market, Clark County, Virginia, March 25, 1848, and educated chiefly by his mother and 21 months in private day schools in Virginia. His engineering training was acquired by studying and actual work, beginning as an axman for the B&O R.R. He received a doctorate in Engineering at the University of Illinois in 1910. His positions included: Chief Engineer of the C&WI R.R. and Belt Railroad, 1880; Chief Engineer Chicago, Madison and Northern Railway, 1886; Chief Engineer Sanitary District of Chicago, June 7, 1893 - July 21 1907; later a consulting engineer of same; Member International Board of Consulting Engineers for the Panama Canal, 1905-6; Chairman Internal Improvement Commission of Illinois; member Advisory Board of Engineers, Panama Canal, 1909; Engineer Milwaukee Outer Harbor, 1909. Member and past president Western Society of Civil Engineers; member American Society of Civil Engineers; and Engineers Club. Contributor to engineering journals.[13]

C. The Builder

On August 24, 1898 the superstructure contract for the Romeo Road bridge was awarded to C. L. Strobel. On September 1, 1899 the superstructure erection by Mr. Strobel was certified complete.[14]

C. L. Strobel is listed with American Bridge Building Companies, Chicago area, 1896-1901; however no bridge company by that name is recorded in manufacturing directories. No record has been found of the fabricator of record, The Elgin Iron Works. In 1898 and 1901 city directories Mr. Strobel's business address is given as 1744 Monadnock and his residence at 570 Division.[15]

> Charles Louis Strobel was born in Cincinnati, Ohio, October 6, 1852. He was educated in public schools in Cincinnati and from his seventeenth to twenty-first year attended the Royal Technical High School at Stuttgart, Germany, graduating as a Civil Engineer.

Returning to America in the fall of 1873 he became a draftsman and the following spring was appointed assistant engineer and later Engineer of Bridges for the Cincinnati Southern Railway. Among the structures he built were major bridges over the Ohio at Cincinnati and over the Kentucky River. The former containing the longest span of the truss or girder type which up to that time had been attempted; and the latter as the first cantilever bridge built in this country.

In 1878 he became chief engineer and vice-president of the Keystone Bridge Company, with residence in Pittsburgh. He edited and published the well known Carnegie handbook and designed new steel beam sections. Moving to Chicago in 1885 as a Carnegie representative he designed steel skeletons for the first Chicago skyscrapers. As a consultant for the Chicago, Milwaukee & St. Paul Railroad he designed the superstructure of that company's bridge over the Missouri River at Kansas City. In 1893 he opened his own practice in Chicago as a consulting and contracting engineer. He was a member and past director of the American Society of Engineers, and of other national, international and local organizations. He travelled extensively abroad studying steel and iron manufacture and bridge construction.[16]

D. Structure Description, including later modifications

Superstructure: Drawings showing truss member identification and a schematic swing span elevation are included in the Appendix, pages 18 and 19.

Continuous span bobtail swing bridge; Deck length, 305'-9" along radii; 22' 0" c to c trusses; current roadway width 18'-0" between curbs, roadway clearance, 14'-0"; 17 panels, three parts.

1. Short arm, bank span, west end, swings south; 5 panels L0-UL5 at 17'-10" = 89'-2"; height varies from 25' 0" at the portal, U1, to 40'-0" at the pivot tower, UL5.

2. Pivot Tower, UL5-UL6; height 40'-0"; panel length 18'-10 3/4". Operator's house is on a platform at mid-level.

3. Long arm, canal span, east end, swings north; 11 panels, UL6-U17 at 17'-8 1/2" = 194'-9 1/2"; height varies from 40'-0" at pivot tower, UL6, to 20'-0" at portal, U16.

4. East Approach Span; length 31'-11"; no details, currently may be a concrete slab with three imbedded girders.

Major truss members:

Lower chords; compression members, 2 channels, lacing T and B:
L0-L2, 12"x20.5 lbs.; L2-L4, 12"x25 lbs.
L4-L7, 12"x40 lbs.; continuous through pivot tower.
L7-L9, 12"x30 lbs.; L9-L17, 12"x20.5 lbs.
Lower chord is spliced and continuous, pin at interior panel connections are through reinforced LC channel webs.

Inclined end posts and upper chords:
L0-U1, 2 channels 12"x20.5 lbs., end post, lacing T and B.
U1-U3, 2 eye bars 5"x7/8"; U3-U5, 2 eye bars 5"x1-9/16"
U5-U6, 4 eye bars 3"x1-9/16", pivot tower
U6-U8, 2 eye bars 5"x1-9/16"; U8-U10, 2 eye bars 5"x1-9/16"
U10-U12, 2 channels 12"x20.5 lbs., lacing T and B.
U12-U14-U16, 2 channels 12"x30 lbs. lacing T and B.
U16-L17, 2 channels 12"x25 lbs., end post, lacing T and B.

Compression diagonals; 2 channels, lacing T and B:
U1-L2, 12"x30 lbs.; U3-L4, 12"x30 lbs.
L7-U8, 12"x35 lbs.; L9-U10, 12"x25 lbs.
L11-U12, 12"x25 lbs.; L13-U14, 9"x15 lbs.
U14-L15, L15-U16, 8"x13.75 lbs.

Tension diagonals; 2 eye bars unless noted:
L2-U3, 4"x1-1/8"; L4-U5, 5"x1-1/16"
L5-U6, U5-L6, pivot tower frame, 3"x0-3/4"
U6-L7, 5"x1-1/8"; U8-L9, 4"x1-1/8"
U10-L11, 4"x0-7/8"; U12-L13, 3"x0-3/4"

Verticals: (hangers unless noted; 3" rd. pins in lower chords).
U1-L1, 2 eye bars 3"x1" (required to support counterweights)
U3-L3, U8-L8 through U16-L16; 2 eye bars 2-1/2"x0-5/8"
U5-L5, U6-Lg, tower frame; 2 channels 12"x40 lbs., lacing

Main truss member connections: 4" or 4-1/2" rd. pins.

Additional vertical members added in 1920:
Hangers: UL3, UL8, UL10, UL12, UL14, UL16: 2 supplemental rods, 1-1/4" rd. with upset threads
Posts: UL11, UL13, UL15; columns, 2 angles 4"x4"x5/16" with stay plates (To reduce L/r in upper compression chords).

Floorbeams:
20 I 85, short arm; 20 I 65, long arm
Interior FB end plates hang from lower chord pins.
14 I 42, end FBs, curved to radius of respective span arms; lower flanges extended and upswept to lift beams up on four cast steel lift and bearing rollers spaced on each abutment seat.

Sway Bracing:

Single cross-frames with center verticals, all light angles, are attached to compression diagonals at U3,8,10,12,14; depth varies to provide 14'-0" roadway clearance.

Drum and Power Assembly:

The bridge pivot drum, supported on 36 cast steel wheels, rotates 90° on a circular track 29'-0" in diameter. The circular plate girder drum has a 60"x5/16" web with two flange angles 5"x5"x5/8", T and B, stiffeners and bracing. Gear teeth on the outer circumference of the track castings are engaged by two pinions on vertical shafts. Original plans show two vertical speed reducers mounted on the outside of the drum. In 1977, machinery removed from the Lemont bridge was installed at this bridge. These motor assemblies are mounted horizontally on top of the drum on each side of the bridge deck. Assemblies include a gear motor, induction motor, thruster brake, bevel gears and pinions, and bearings.

Deck and Railing:

Deck, original: width 17'-8", timber stringers 6"x16" at 1'-10". Floor: Timber, 10"x12" YP (Yellow Pine) creosoted.

Deck, current, 1963; width 18'-0", five stringers 16 W 40 with edge channels; 5" open grate steel flooring, end 20'-4" of short arm is concrete filled.

Railing, original, double element pipe, 3" and 2", timber curb.

Railing, current, 1963; triple element steel angle, steel curb.

East Span:

Length 31'-11"; roadway width flares from 22'-0" to 28'6" at abutment to provide for 90° turn; formerly timber stringers and deck, currently may be a concrete slab with imbedded beams.

Substructure:

Gravity masonry construction. Portland cement footings 2'-0"; dimensioned stone for walls was taken from stone excavated from the canal; coping under bearings 1'-6" Bedford Stone, cramps at joints. Heights are from top of footing to bearing seats.

West Abutment (L0): height 18'-0", length 47', wing lengths 29' parallel to approach, back wall height 5'-8 3/4"; masonry totals 230 cu. yds., concrete 27 cu. yds.

Pivot Pier (L5L6): octagonal, height 10'-11", diameter (flats) 32'-4"; surface stone lengths alternate 6' and 7'; Bedford coping, center filled with Natural Cement; masonry totals 313 cu. yds., concrete 226, cu. yds.

East Pier (L17): rectangular; height 11'-11", coping 28'-0"x 4'-8"; 1'-4" slab block, no quantities given.

East Abutment and Ramp: U-shaped, at right angles to bridge, height 11'-11", back wall 2'-9", width 28'-30', length 200'; bridge access on side, roadway turns southerly 90° on ramp, ramp slopes to ground level where roadway turns 90° to cross adjacent AT&SF RR tracks at grade, thence, with 90° turns, returns to former East-West alignment. Masonry parapets, no quantities given.

E. Present Condition

The bridge, painted in 1984, has been well maintained, is well preserved and clean. Some vandalism is noted about the operator's house. Machinery appears operable, but end bearing roller seat on the west abutment covered with stone debris and vegetation. When closed in 1992, officials of Will County and the Illinois Department of Transportation concurred that controlling elements were in a failed condition and beyond correction.[17]

F. Ownership and Future

The Romeo Road Bridge is owned and maintained by Will County. Due to the tortuous east approach and low load carrying capacity, The Village of Romeoville is currently planning to replace this structure with a high level bridge spanning tracks of the Santa Fe and Southern Pacific (formerly Chicago and Alton) railroads, the abandoned I&M and current Illinois Waterway canals. Because of age and configuration, the swing span is of significant structural interest.

The Centennial Trail, opened in 1989, is a project of the Metropolitan Water Reclamation District of Greater Chicago celebrating 100 years of service. The 26-mile route connecting the Chicago Portage site on Harlem Avenue with Lockport, former headquarters of the Illinois and Michigan Canal Commission, is a major portion of the 120 mile Illinois and Michigan Canal National Heritage Corridor between Chicago and Peru. In addition to recreational uses the Centenial Trail features varied landscapes with significant natural, industrial and cultural histories.

The trail is located largely on land owned by the District. It is proposed that the bridge be moved from its present site and preserved in a suitable location along the Centennial Trail.[18]

IV. ENDNOTES

[1]James Sczepaniak, Our Neighbor to the South, A brief history of Romeoville, typescript, unpublished, (Springfield: State Historical Library vertical files).

[2]Combination Atlas Map of Will County, Illinois, (Thompson Bros. and Burr, 1873); Standard Atlas of Will County, (Chicago: Geo. A. Ogle and Co., 1909-1910).

[3]C.H. Chorpening, Waterway Growth in the United States; American Society of Civil Engineers, Transactions, Paper No. 2643 (New York, published by the Society, 1953), 976ff; William H. Shank, P.E., Illinois and Michigan Canal; Towpaths to Tugboats, A History of American Canal Engineering, (American Canal and Transportation Center, 1982), 44ff.

[4]Proceedings, Board of Trustees of the Sanitary District of Chicago, 1899, (Chicago: published by the Board, 1890), 5836,7; 5987,8; 6027-9.; Conversations with Mary C. West, Director of Finance/Clerk and John C. Farnan, MWRD, Chicago.

[5]C.Arch Williams, The Sanitary District of Chicago, History of its Growth and Development, (Chicago: published by the District, 1919), 70-9; 190-3.

[6]______, Chicago's Waterfalls, 1994 Outstanding Achievement Award for effulent treatment; Civil Engineering. (New York: American Society of Civil Engineers, July 1994), 36.

[7]______, The Importance of Centennial Trail, unidentified newspaper clipping furnished by David Bielenberg, Supv. Architect-Planner, MWRD.

[8]David H. Miars, A Century of Bridges (Clinton Co. [Ohio] Historical Society, 1972), 3; David Plowden, Bridges: The Spans of North America. (New York: Viking Press, 1974), 62, 67.

[9]James L. Cooper, Iron Monuments to Distant Posterity, Indiana's Metal Bridges, 1870-1930. (DePauw University, Federal Highway Authority, FHWA, Indiana Department of Highways and others, 1987), 70, 76; Plowden, op. cit., 185.

[10]David B. Steinman and Sara Ruth Watson, Bridges and their Builders. (New York: Dover Publications, 1957), 375; Martin Hayden, The Book of Bridges. (New York: Galahad Books, 1976).

[11]Illinois Department of Transportation, Bridge Plans, Willow Springs, Lemont and Romeo Road Bridges, 1898, including subsequent repairs. (Springfield: Bureau of Design and Environment).

[12]"Lakeside" City Directory of Chicago, (Chicago: Lakeside Press, 1898, 1901).

[13]Albert Nelson Marquis, The Book of Chicagoans II, A Biographical Directory of leading living men of the City of Chicago. (Chicago: A. N. Marquis and Co., 1911), 556.

[14]Proceedings. op. cit.,6108,9.

[15]Victor C. Darnell, Directory of American Bridge Building Companies, 1840-1900. (Washington, D.C.: Society for Industrial Arcaeology, 1984), Introduction, 12; "Lakeside" Directory, op. cit.

[16]E. R. Prichard, Ed., Illinois of Today and its Progressive Cities. (Chicago: _____, 1897).

[17]Illinois Department of Transportation, Historical Bridge Data Sheet. (Springfield: Bureau of Design and Enviroment, 1994).

[18]Metropolitan Water Reclamation District of Greater Chicago, The Centennial Trail; Illinois and Michigan Canal, National Heritage Corridor. (Chicago: 1989); Conversation with David Bielenberg, Supv. Architect-Planner, MWRD, Chicago.

[19]Milo S. Ketchum, C.E., Structural Engineer's Handbook, (New York: McGraw-Hill, 1924), 139.

[20]Schematic Elevation drawing prepared for the author.

V. SOURCES CONSULTED

A. Books

Cooper, James L. Iron Monuments to Distant Posterity. DePauw University, Federal Highway Authority (FHWA), Indiana Department of Highways and others, 1987. (Indiana's metal bridges, 1870-1930).

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G. <u>Conversations</u>

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Mary C. West
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(Archivist, provided <u>Proceedings</u>).

VI. PROJECT STATEMENT

This Historic American Engineering Record (HAER) report for the Romeo Road Bridge is part of a long term program to document historically significant structures scheduled for replacement. Older moveable bridges are representative of state-of-the-art construction of earlier periods and provide a record of area needs and technology development at a point in time.

Preparation of this report was directed by the Bureau of Design and Enviroment of the Illinois Department of Transportation. Member descriptions, technical and historical research, field observations and writing were by John B. Nolan, Licensed Structural Engineer in Illinois. Archival photography was by Roger McCredie, Staff Photographer, I.D.O.T. Office of Public Affairs. Jerome Jacobson, Historic Resourses Coordinator, Bureau of Design and Enviroment, was Project Supervisor.

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APPENDIX

BRIDGE TRUSS DRAWINGS

Figure 1. Diagrammatic sketch of a Through Pratt Truss Highway Bridge. Nomenclature is generally similar to descriptions used in the Romeo Bridge report.[19]

STEEL HIGHWAY BRIDGES.

Definition.—A truss is a framework composed of individual members so fastened together that loads applied at the joints produce only direct tension or compression. The triangle is the only geometrical figure in which the form is changed only by changing the lengths of the sides. In its simplest form every truss is a triangle or a combination of triangles. The members of the truss are either fastened together with pins, pin-connected, or with plates and rivets, riveted.

Types of Truss Bridges.—The bridge in Fig. 1 consists of two vertical trusses which carry the floor and the load; of two horizontal trusses in the planes of the top and bottom chords, respectively, which carry the horizontal wind load along the bridge, and of cross-bracing in the planes of the end-posts, called portals, and in the planes of the intermediate posts, called sway bracing.

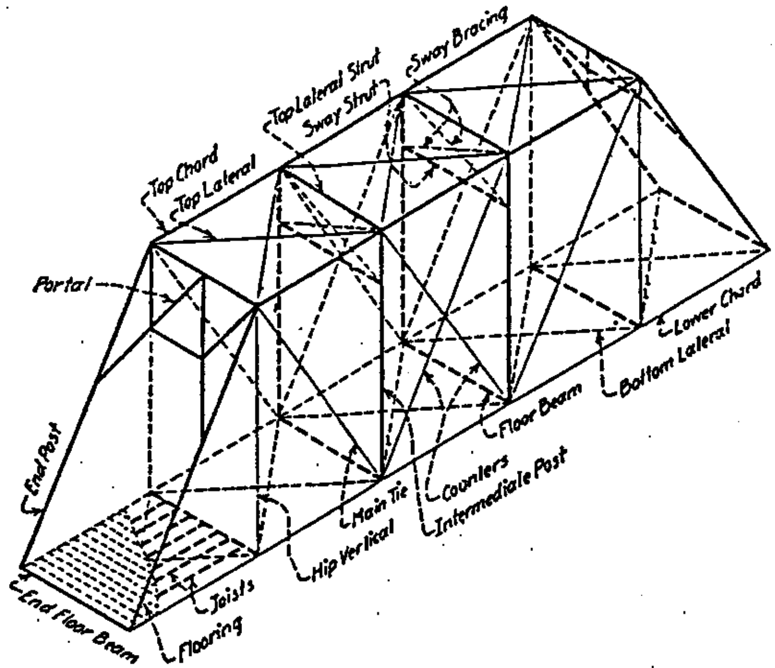
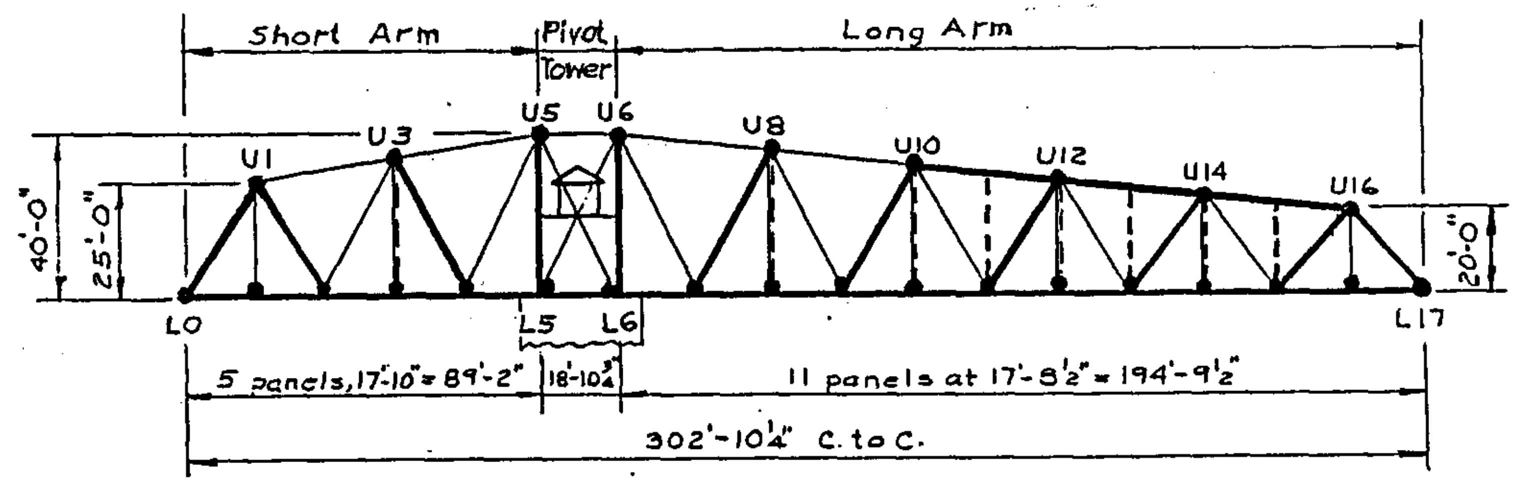


FIG. 1. DIAGRAMMATIC SKETCH OF A THROUGH PRATT TRUSS HIGHWAY BRIDGE.

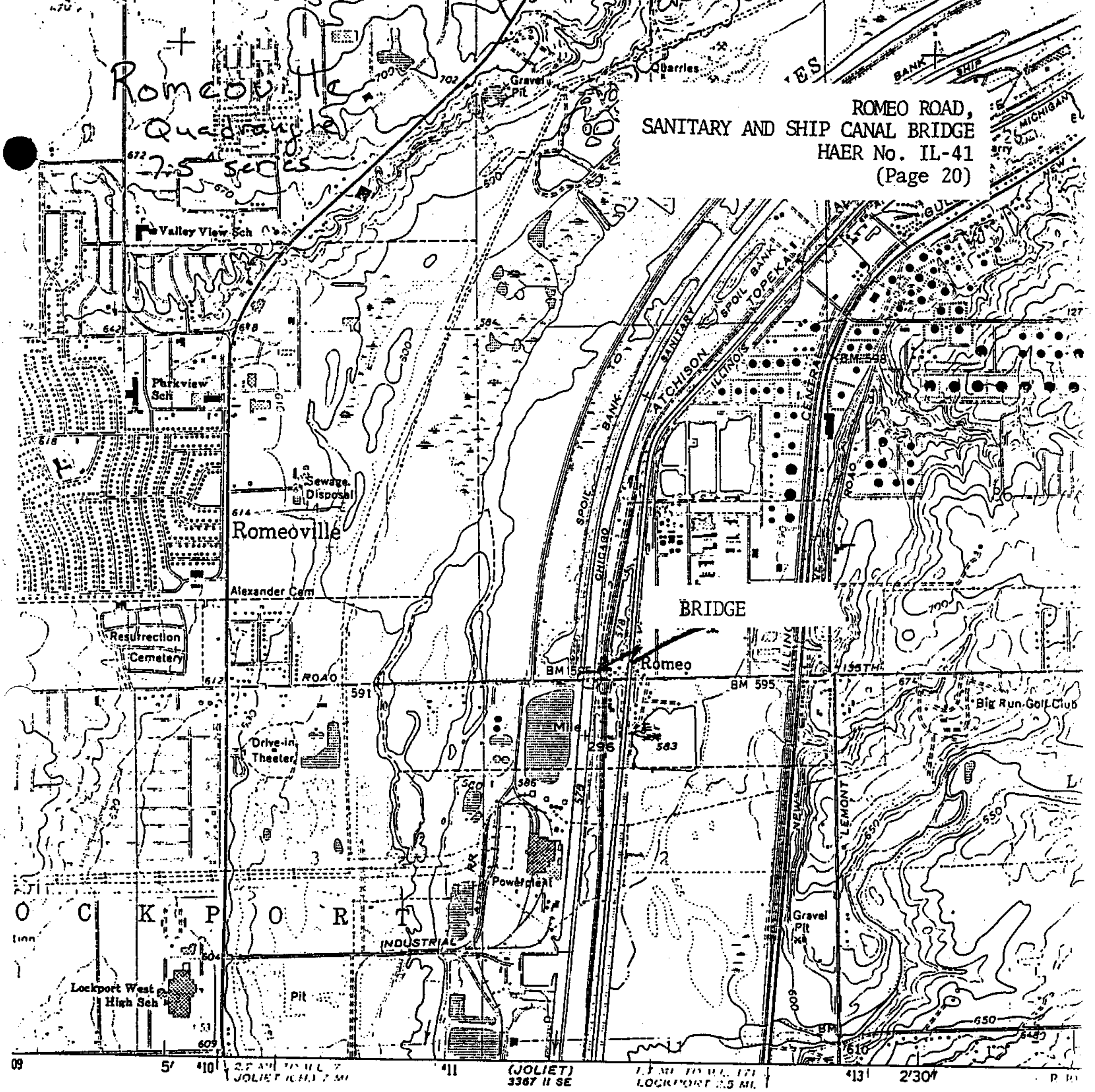
The floor is carried on joists or stringers placed parallel to the length of the bridge, and which are supported in turn by the floorbeams. The names of the different parts of the bridge are shown in Fig. 1. The main ties, hip verticals, counters and intermediate posts are together called "webs." The bridge shown in Fig. 1, is a through pin-connected highway bridge of the Pratt type, the traffic passing through the bridge. In a deck bridge the roadway floor is carried on top of the main trusses. The bridge shown has square abutments.



SCHEMATIC ELEVATION

Light lines indicate tension members
Heavy lines indicate compression members
Dashed lines indicate subsequent strengthening

SANITARY DISTRICT OF CHICAGO
SUPERSTRUCTURE
FOR
WILLOW SPRINGS, LEMONT and ROMEO ROADS
over MAIN CHANNEL
DESIGNED-1898 ERECTED-1899



SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

MN GN 18 MILS

MAGNETIC NORTH AT CENTER OF SHEET

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
AND BY THE STATE GEOLOGICAL SURVEY, URBANA, ILLINOIS 61801
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGL

Revisions shown in purple com
taken 1973 and 1978. Map c
This information not field chec

Purple tint indicates extension