United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.

1. Name of Property

Historic name: Minnesota Bridge 2440

Other names/site number: Third Ave. Bridge; Central Ave. Bridge; St. Anthony Falls Bridge

Name of related multiple property listing**:** Reinforced-Concrete Highway Bridges in Minnesota, 1900-1945

(Enter "N/A" if property is not part of a multiple property listing

2. Location

Street & number: Trunk Highway 65 / Third Avenue South / Central Avenue Southeast over the Mississippi River

City or town: Minneapolis State: Minnesota County: Hennepin

Not For Publication: N/A Vicinity: N/A

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this ___ nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property ___ meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

___national ___statewide ___local

Applicable National Register Criteria:

___A ___B ___C ___D

Signature of certifying official/Title: **Date**

State or Federal agency/bureau or Tribal Government

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

Signature of commenting official: **Date**

Title : **State or Federal agency/bureau or Tribal Government**

4. National Park Service Certification

I hereby certify that this property is:

___ entered in the National Register

___ determined eligible for the National Register

___ determined not eligible for the National Register

___ removed from the National Register

___ other (explain:) _____

_____

Signature of the Keeper Date of Action

5. Classification

Ownership of Property

(Check as many boxes as apply.)

Private:	☐
Public – Local	☐
Public – State	X
Public – Federal	☐

Category of Property

(Check only **one** box.)

Building(s)	☐
District	☐
Site	☐
Structure	X
Object	☐

Bridge 2440 (Third Avenue Bridge) Hennepin, Minnesota
Name of Property County and State

Number of Resources within Property
(Do not include previously listed resources in the count)

Contributing	Noncontributing	
		buildings
		sites
1		structures
		objects
1		Total

Number of contributing resources previously listed in the National Register 1

---

6. Function or Use
Historic Functions
(Enter categories from instructions.)
TRANSPORTATION/rail-related
TRANSPORTATION/road-related (vehicular)

Current Functions
(Enter categories from instructions.)
TRANSPORTATION/road-related (vehicular)

7. Description

Architectural Classification
(Enter categories from instructions.)
OTHER: Open-Spandrel Arch

Materials: (enter categories from instructions.)
Principal exterior materials of the property: Concrete, Aluminum

Narrative Description
(Describe the historic and current physical appearance and condition of the property. Describe contributing and noncontributing resources if applicable. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, type, style, method of construction, setting, size, and significant features. Indicate whether the property has historic integrity.)

Summary Paragraph[1]

Bridge 2440 (Third Avenue Bridge) carries State Trunk Highway 65 over the Mississippi River just upriver from the Falls of Saint Anthony in downtown Minneapolis, connecting Third Avenue South on the west bank and Central Avenue Southeast on the east bank.[2] Constructed between 1914 and 1918, the bridge's overall length is approximately 1,888′. Unstable conditions in much of the riverbed precluded a straight alignment, resulting in the inverted S-curve that distinguishes the structure. The bridge has seven main, open-spandrel, Melan concrete-arch spans: five 211′ rib-arch spans (Arch Spans 1 through 5, numbered from west to east) and two 134′-long barrel arches (Arch Spans 6 and 7) to the east.[3] Two approach spans at each end—steel

[1] Sources for the description include field inspections by the authors in 2018-2019; Minnesota Department of Transportation, Minnesota Structure Inventory Report for Bridge 2440, accessed September 2019; A. M. Richter, "A 2,223-Ft. Concrete-Arch Bridge Built on Reverse Curve," *Engineering News* 74 (December 30, 1915): 1268-1273; and Wiss, Janney, Elstner Associates, "3rd Avenue Bridge: Bridge Inspection and Condition Evaluation Report," October 25, 2017, prepared for HNTB Corporation and the Minnesota Department of Transportation.
[2] The Mississippi River generally runs north to south, but it angles northwest-southeast in the vicinity of the Falls of Saint Anthony. Although the two sides of the river are sometimes labeled north and south in this section, they continue to be commonly known as the East Bank and West Bank. This standard nomenclature is adopted for the following description.
[3] Arch dimensions are longitudinal from pier face to pier face.

girders on the west and prestressed concrete girders on the east—replaced earlier steel-girder approach spans in 1978-1980. Despite this change, the bridge retains integrity of location, design, setting, materials, workmanship, feeling, and association.

Narrative Description

The Third Avenue Bridge carries Trunk Highway 65 over the Mississippi River in an area once dominated by railroad tracks and industry. Just downstream from the bridge, the Falls of Saint Anthony provide waterpower for Xcel Energy's Hennepin Island hydroelectric plant. A horseshoe dam and related roll dam that pass beneath Arch Spans 2 and 4 raise the head of the falls to increase power generation at the plant. A high-voltage line runs over the bridge from a major Xcel switchyard nearby. A guide wall in the channel below Arch Span 1 directed river traffic entering and leaving the Upper Lock at Saint Anthony Falls, which the U.S. Corps of Engineers opened in 1963 and closed in 2015. Directly southwest of the bridge is the city's Streamline Moderne main post office, erected in 1934 and still a busy mail processing facility. In recognition of the riverfront's importance to the establishment and growth of Minneapolis and the region, the Saint Anthony Falls Historic District was listed in the National Register of Historic Places in 1971. The Third Avenue Bridge is a contributing feature in the district, which has a period of significance extending from 1848 to 1941.

When the bridge was first built in 1914-1918, railroad tracks ran along both riverbanks under the approach spans. While vestiges of the industrial past remain, the character of the area was transformed in the last decades of the twentieth century for residential and commercial use as historic buildings were rehabilitated and new buildings were developed. West River Parkway, a two-lane road paralleled by pedestrian and bicycle trails, now runs beneath the western approach spans, and more trails and historic Main Street are below the eastern approach spans. A condominium tower was recently constructed at the intersection of Third Avenue South and North First Street near the bridge's west end, and the east approach is flanked by modern multifamily residences and commercial development.

The Third Avenue Bridge remains an important connection between the two sides of the river and a landmark in the area. All of the arch spans feature original Melan reinforcing—curved, parallel-chord trusses built up from steel angles and bar cross-bracing. Each of the original five rib-arch spans has three ribs that rise 36′ from the spring line. The outer ribs are 12′ wide in Spans 1 and 5 and 10′ wide in Spans 2, 3, and 4. The center ribs are 16' wide in all five spans. A 1915 publication explained that each arch rib contained multiple Melan reinforcing ribs "consisting of . . . 4×4×1/2-in. angles laced with 3×3×5/16-in. angles (at haunches) and 2-1/2×3/8-in. bars." The 16′-wide arch ribs have six Melan reinforcing ribs, the 12′ arch ribs have five, and the 10′ arch ribs have four. The reinforcing ribs "are braced every 30 ft. with 3×3×5/16-in. angles." The two original barrel-arch spans, which rise 38′ from the spring line, are reinforced with somewhat smaller Melan ribs comprising 3×3×5/16″ angles with 2-1/2×1/4″ bar lacing. These ribs are placed 34″ center-to-center and braced with 3×3×3/8″ angles at 30' intervals.[4]

[4] Richter, "A 2,223-Ft. Concrete-Arch Bridge Built on Reverse Curve," 1270.

All of the bridge piers are original, although rehabilitations in 1978-1980 and 2020-2023 repaired the concrete pier walls. Piers 1 and 8, between the arches and the approach spans, and Pier 6, between the rib and barrel-arch spans, are 30′ wide at the spring line and are hollow, with a reinforced-concrete wall around the perimeter. Each pier has two original arch-topped openings in the walls that reveal interior support walls, which have matching openings. The rounded ends of these piers project beyond the outside arches, creating viewing overlooks on the deck. The ends of the other piers are protected by reinforced-concrete breakwaters that taper to the waterline and have low, semi-conical tops. Piers 2 through 5, between the rib-arch spans, measure about 20′ in width above the spring line. Pier 7 between the barrel arches is about 14′ wide. These piers were historically also hollow, although concrete was poured into the downstream chambers of Piers 2 through 5 to support tower cranes during the 2020-2023 rehabilitation. All pier ends are ornamented with panels outlined by incised lines, and this original ornamentation was repaired during the 2020-2023 rehabilitation. A molded stringcourse delineates the top of the solid, reinforced-concrete bases of the gravity piers, which are supported by concrete spread footings on bedrock. The underwater bases of Piers 1 and 2 were repaired with new concrete in 2014 to address scour.

When the bridge opened in 1918, the east and west approach spans each consisted of four steel-girder spans. Railroad tracks ran beneath both approaches and Main Street was below the east approach. The rail lines are no longer in place. In 1978-1980, the east and west approach spans were removed and each was replaced by two spans. This included replacement of the bents and the columns that supported the approach spans. The west abutment was completely reconstructed and part of the east abutment was rebuilt. The west approach spans are welded, weathering-steel girders 36″ to 56″ deep with steel diaphragms. Between these spans, Bent 1 has a pier cap supported by four cylindrical concrete columns on a single concrete pedestal. The west abutment, a cast-in-place, reinforced-concrete stem wall, has integral wingwalls. The south wingwall is visible but the north wingwall is concealed by a perpendicular concrete retaining wall associated with the adjacent U.S. Post Office. The east approach spans are replacement 54″-deep precast, prestressed concrete girders with concrete diaphragms.[5] They are supported by Bent 2, a concrete wall with four arched openings echoing the two arched openings in Pier 8. Concrete retaining walls, including portions from 1914-1918, extend back from the integral wingwalls of the east abutment, also a reinforced-concrete stem-wall design. By the northwest abutment, a reinforced-concrete stair descends from the bridge deck to grade. This stair, installed during the rehabilitation project in 1978-1980, replaced an original spiral concrete stair in the same location. Vertical board forms are pronounced on the solid concrete rail, which follows a semicircular curve at the landings. Painted steel handrails are mounted to the concrete rails.

The reinforced-concrete deck rests directly on the approach-span girders. On the arch spans, it is supported by reinforced-concrete spandrel columns (on the rib-arch spans) and walls (on the barrel arches) that rise from the extrados of the arches and terminate in transverse spandrel cap beams running the width of the deck. Cantilevered ends of the cap beams support the deck beneath the sidewalks. The deck was replaced and narrowed by approximately 1′, and most of

[5] The east approach span was replaced in a historic rehabilitation in 1978-1980.

the spandrels and all pier caps were reconstructed in 1980. The roadway elevation was raised 2′ at that time. The deck was replaced and raised again between Spans 5 and 7 in the 2020-2023 rehabilitation to accommodate a city watermain that is suspended under deck.[6] As part of that project, the spandrel caps and all spandrel columns/walls were again rebuilt. The ends of the reconstructed spandrel caps received a pyramidal faceting that was inspired by the original spandrel cap design. All of the concrete was recoated to protect historic and replacement material from the mist of the waterfall.

The configuration of the bridge deck has changed multiple times. In 1938-1939, the bridge underwent significant repairs using federal funding through the Public Works Administration (PWA). The railings, sidewalk, and curbs were replaced and a new traffic barrier was installed between the sidewalk and the roadway. The original concrete light poles were repaired and rewired for new light fixtures. Approximately 50 percent of the cantilevered portions of the spandrel columns supporting the bridge deck were repaired.[7] As noted above, the deck was replaced in 1978-1980 with the same general configuration of a roadway flanked by traffic barriers, sidewalks, and 1938-1939 ornamental railings. New metal lights with "shoebox" light fixtures were installed, and the concrete pilasters on the ornamental railings were simpler in style.

As part of the 2020-2023 rehabilitation project, sidewalks and bicycle lanes edging the 81′-8″-wide deck are at the same elevation as the roadway and separated from traffic by modern concrete traffic barriers. The roadway is about 48′-4″ wide with four vehicular lanes, two in each direction. Modern metal lights are mounted on the barriers, their alignment along both sides of the roadway following the historic pattern for the lights. Each light is a metal pole with a metal cross arm near the top with pendant luminaire fixtures hanging from the ends of the cross arm. The shape of the light follows the original cruciform lights, which also supported wiring for streetcars. The bicycle lanes are 6′ wide and are separated from the pedestrian sidewalk by raised markers in the deck. The outer railings along the 7′-6″-wide pedestrian sidewalks have the ornamental aluminum panels dating from 1938–1939 between new concrete pilasters. The design for the pilasters is based on the 1930s design and includes inset vertical decoration on the wider pilasters with blank inset panels on the smaller pilasters.

Integrity

The Third Avenue Bridge remains in its historic location over the Mississippi River just upstream from the Falls of Saint Anthony. While activity in the area has transitioned from industrial to residential and commercial, resulting in changes to buildings, structures, transportation systems, and landscape, the Mississippi River, Nicollet Island, and the Falls of Saint Anthony remain and the general urban character of the setting remains. The workmanship of the early twentieth-century laborers is still visible in the historic concrete on the piers and

[6] The 2020-2023 rehabilitation was reviewed and approved by the Minnesota State Historic Preservation Office through a Section 106 environmental review process.
[7] F. T. Paul and E. G. L. Gorgenson, *Specifications for Third Avenue Bridge Repairs*, Minneapolis, Minnesota #1633-F, November 1938, S7-S8, S16, available from the Public Works Department, City of Minneapolis; Howard, Needles, Tammen and Bergendoff (HNTB), *Minnesota Department of Highways*: *Bridge Inspection Engineering Report Third Avenue Bridge*, November 1968, 3.

arches, which are character-defining features of the bridge. The bridge was extensively rehabilitated in 1979-1980 and in 2020-2023. The bridge deck, spandrel caps, and spandrel columns/walls were replaced with new concrete, and historic concrete on the piers and arches was patched with new concrete. However, a large percentage of historic concrete in arches and piers was retained. The historic aluminum railing panels were also preserved. Concrete elements that had to be replaced were constructed of reinforced concrete the *Secretary of the Interior's Standards for Rehabilitation*. The integrity of materials is fair. Replacement concrete features, like the spandrel caps and pier walls, have followed the historic design as closely as possible and ornamental detailing was brought back to the bridge to match as closely to the original 1918 design as possible. The bridge continues to have its original inverted S-curve alignment, open-spandrel arches, pier detailing, and Melan reinforcing system, giving the structure a high degree of design integrity. The bridge represents an early phase of reinforced-concrete bridge construction in Minnesota and is still a major transportation artery in Minneapolis. The Third Avenue Bridge retains overall integrity of location, design, setting, materials, workmanship, feeling, and association.

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- [X] A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] B. Property is associated with the lives of persons significant in our past.
- [X] C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [ ] D. Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

- [ ] A. Owned by a religious institution or used for religious purposes
- [ ] B. Removed from its original location
- [ ] C. A birthplace or grave
- [ ] D. A cemetery
- [ ] E. A reconstructed building, object, or structure
- [ ] F. A commemorative property
- [ ] G. Less than 50 years old or achieving significance within the past 50 years

Areas of Significance
(Enter categories from instructions.)
Engineering
Transportation

Period of Significance
1918-1969

Significant Dates
1918
1939
1969

Significant Person
(Complete only if Criterion B is marked above.)

Cultural Affiliation

Architect/Builder
Frederick W. Cappelen
Concrete-Steel Engineering Company

Statement of Significance Summary Paragraph (Provide a summary paragraph that includes level of significance, applicable criteria, justification for the period of significance, and any applicable criteria considerations.)

The Third Avenue Bridge (Bridge 2440) is eligible for individual designation under Criterion A in the area of Transportation and is also eligible under Criterion C in the area of Engineering. The bridge meets several registration requirements under Criteria A and C under the Multi-Property Documentation Form "Reinforced-Concrete Highway Bridges in Minnesota, 1900-1945." Under Criteria A, it also relates to the historic context "Downtown Minneapolis." The bridge served a key role in the development of Minneapolis's downtown transportation system. The bridge is also important as an example of Melan-arch construction and as the first of the open-spandrel, reinforced-concrete arch bridges over the Mississippi River in the Twin Cities

region of Minnesota. The period of significance begins in 1918 when bridge construction was completed. It ends in 1969 when completion of the I-35W Mississippi River Bridge diverted traffic from the Third Avenue Bridge and ended its role as the most traveled river bridge in Minneapolis. The Third Avenue Bridge is a contributing property to the Saint Anthony Falls Historic District, which is listed in the National Register of Historic Places.[8]

Narrative Statement of Significance (Provide at least **one** paragraph for each area of significance.)

Uniting a City

The City of Minneapolis is on land that is the ancestral and current home of the Daḳota. The Mississippi River / Ḣaḣa Wakpa flows through the city and the Falls of Saint Anthony / Owamniyomni is an important spiritual and ceremonial place for some Daḳota. In the mid-nineteenth century, Euro-Americans established the village of Saint Anthony on the East Bank of the Mississippi River. The community grew, catalyzed by commerce and by sawmills on the river, but it was soon overshadowed by Minneapolis, which developed on the West Bank in 1856. A suspension bridge with wood towers was built in 1855 and connected Hennepin Avenue on the west bank to Nicollet Island. A wood trestle bridge over the east channel of the river carried the road into Saint Anthony, and connected the two communities. In 1872, Saint Anthony merged with its younger rival.[9]

As the city grew and traffic on both sides of the river increased, a deck truss bridge was constructed in 1874 to connect Tenth Avenue South on the west bank to Sixth Avenue Southeast on the east bank. The next year, the first suspension bridge at Hennepin Avenue was replaced with a new suspension bridge that had stone towers. Unfortunately, this bridge could not handle the continuously increasing traffic loads and was replaced by a new steel arch bridge constructed between 1888-1891. Additional bridges were constructed upriver and downriver in the 1880s, but the Hennepin Avenue and Tenth Avenue bridges provided the most direct access between the business districts on the east and west banks.[10]

The East Bank retained a commercial core and sense of community, and its vitality was bolstered in the early twentieth century as the city's population boomed and the streetcar system encouraged real estate development to spread out from the river. Saint Anthony was connected in 1875 to Minneapolis's downtown core by the first streetcar line, which ran along Washington

[8] "St. Anthony Falls Historic District," National Register of Historic Places documentation, 1971-1991, available from the State Historic Preservation Office, Saint Paul; Minneapolis Heritage Preservation Commission, "St. Anthony Falls Historic District Design Guidelines," 2012, 19-27, available from the Minneapolis Heritage Preservation Commission, Minneapolis.
[9] Nicholas Westbrook, Minnesota Historical Society, "Bridges," in *A Guide to Industrial Archeology of the Twin Cities*, ed. Nicholas Westbrook, (Saint Paul and Minneapolis: Society for Industrial Archeology, May 1983), 14-15.
[10] Denis Gardner, *Wood, Concrete, Stone and Steel: Minnesota's Historic Bridges* (Minneapolis: University of Minnesota Press, 2008), 25, 28, 44-46, 71, 73; Westbrook, "Bridges," 16-17.

Avenue North to Hennepin Avenue, then across the river to East Hennepin Avenue and down Fourth Street Southeast. The bridge at Tenth Avenue was not able to carry streetcar loads.[11]

Connecting the east and west sides of the river were critical to the city's growth; yet all streetcar lines ran over the Hennepin Avenue Bridge, creating congestion at the bridgeheads. Boosters on both sides of the river began a publicity campaign for the erection of another bridge over the Mississippi at Third Avenue South around 1905. The campaign was not popular with business owners along Hennepin, Nicollet, and East Hennepin Avenues, who feared losing customers. They questioned whether traffic volumes required a new bridge, advocating instead for widening the Hennepin Avenue Bridge or rebuilding the Tenth Avenue Bridge (1872), which connected Tenth Avenue South to Sixth Avenue SE downstream from the Great Northern Railway's Stone Arch Bridge. The city considered upgrading the aging Tenth Avenue crossing, but it was not an easy fix. According to city engineer at the time Andrew Rinker: "If that bridge were to be replaced by a modern structure, all of the steep grades to its approach should be eliminated, and the entire structure made to span the railroad bridges on this side of the river and the tracks on the other side at a high elevation. This would cost as much, if not more, than a new bridge at Third avenue south [*sic*]."[12]

In August 1910, the city conducted a traffic count on the Hennepin Avenue Bridge, the Plymouth Avenue Bridge, and the old Tenth Avenue Bridge over a twelve-hour period. According to an article in the *Minneapolis Journal*, the Hennepin Avenue Bridge had 6,574 pedestrians, 3,120 wagons, 950 autos, 640 carriages, 1,574 streetcars, and 1,268 bicycles/motorcycles. The Plymouth Bridge had 1,116 pedestrians, 670 wagons, 115 autos, 95 carriages, and 177 bicycles/motorcycles. The Tenth Avenue Bridge had 1,394 pedestrians, 569 wagons, 97 autos, 100 carriages, and 249 bicycles/motorcycles. The study made a strong case for a new bridge to relieve traffic on the Hennepin Avenue Bridge.[13]

Despite opposition from some members of the community, the idea of a new bridge took hold. Supporters argued that the new bridge would help expand the downtown core to include the new Municipal Building (courthouse and city hall) and a new federal post office under construction at the southwest corner of the intersection of South Second Street and Third Avenue South. William Henry Eustis, a former mayor, stated, "The people of the East Side are also entitled to a direct approach to such important centers as the Chamber of Commerce, the new union station, our great milling district, and the courthouse and city hall building." He continued, "the people of the East Side have the right to demand that they shall be given the most immediate access possible to the federal building instead of reaching it by the present roundabout medium of the steel arch bridge and Hennepin avenue [*sic*]."[14] Pressure for the bridge continued to grow over

[11] John W. Diers and Aaron Isaacs, *Twin Cities by Trolley: The Streetcar Era in Minneapolis and St. Paul* (Minneapolis: University of Minnesota Press, 2007), 25, 35.
[12] Rinker quote from "Petition: Paper Presented to City Council Friday Opposing Third Avenue Bridge," *Minneapolis Tribune*, February 10, 1906. See also Calvin F. Schmid, *Social Saga of Two Cities: An Ecological and Statistical Study of Social Trends in Minneapolis and St. Paul* (Minneapolis: Minneapolis Council of Social Agencies, 1937), 5-6.
[13] "Bridge Traffic Heavy," *Minneapolis Journal*, August 17, 1910.
[14] "Third Avenue Bridge Said to Be Necessity," *Minneapolis Tribune*, March 3, 1907.

the next few years as the city's population also expanded. The Civic Commission shared its preliminary City Beautiful plan for Minneapolis with the public in December 1910. Comprised of businessmen interested in city planning, the group hired Chicago architect Edward H. Bennett to develop a City Beautiful scheme. Many of the recommendations focused on widening existing streets and creating new diagonal roadways to connect sections of the city. The proposed bridge was mentioned as an important connector for an "inner circuit artery" around the commercial districts on both sides of the river.[15]

Inspired by Bennett's City Beautiful plan, the Minneapolis Civic and Commerce Association, a commercial organization, called for the bridge to be the "first monumental structure of the Minneapolis civic plan."[16] They advocated for a consulting architect to design the bridge and referenced the seven stone bridges of Paris as inspiration. A challenge was also put to the city council regarding the design: "It is pointed out that the new bridge should be something more than a utilitarian thing, a mere necessity erected staunchly and carefully."[17]

By the end of 1912, commercial organizations, including the Minneapolis Civic and Commerce Association and the Saint Anthony Commercial Club, passed resolutions and lobbied the council to build the bridge. The Minneapolis City Council heeded the call for a consultant and commissioned a design for a reinforced-concrete bridge from the Concrete-Steel Engineering Company (Concrete-Steel) in New York. It was a challenging site, just above the Falls of Saint Anthony. The falls, which had originally been located near what is now downtown Saint Paul roughly 12,000 years ago, had worked its way northwest due to the geology beneath the Mississippi River. The top layer of limestone rested on fragile shale and limestone beds. Backwash from the falls had eroded the lower layers, creating limestone ledges that collapsed from the force of the pounding water and caused the falls to move upstream. The limestone ledge ended near where the new bridge was proposed. If the ledge was lost, the falls would also be lost, leaving rocky rapids. A complete loss of the falls had almost happened in the 1860s when a tunnel being built under the river had collapsed, leading to years of failed remedies to stabilize the falls. They were finally saved by construction of a subterranean dike, which controlled water seepage beneath the falls, and a series of wood and concrete aprons protecting the fragile limestone precipice.[18]

The engineers at Concrete-Steel were not aware of the delicacy of the limestone riverbed when considering the design for the new bridge, particularly the locations for the piers. The first bridge design that Concrete-Steel's engineer produced had a gentle horizontal curve and arch spans of 195′. The design required a pier be placed on a limestone break at the tip of Nicollet Island. Frederick W. Cappelen, Minneapolis's city engineer, raised concerns about the proposed bridge pier locations as he understood the geological conditions of the riverbed after working on six

[15] "World's Center Here Civic Planners' Aim," *Minneapolis Morning Tribune*, December 21, 1910.
[16] "Competition of Experts or Employment of Consulting Engineer Held Advisable in Constructing the Third Avenue South Bridge," *Minneapolis Sunday Tribune*, July 21, 1912.
[17] "Competition of Experts."
[18] "Business Men Want Third Avenue Bridge," *Minneapolis Tribune*, December 13, 1912; "Resolution Demands Bridge," *Minneapolis Tribune*, December 20, 1912; Richter, "A 2,223-Ft. Concrete-Arch Bridge Built on Reverse Curve," 1268-1270.

previous bridges over the Mississippi River. Based on Cappelen's recommendation, the city council rejected the plans by Concrete-Steel and instructed Cappelen to design a steel truss bridge. Cappelen's truss design used a parabolic through truss, single span of 435′ to cross the areas of the limestone breaks. Although the bridge had less impact on the riverbed and was approved by the council, its aesthetics were unpopular with the public, which hoped for the Concrete-Steel's Classical Revival concrete design.[19]

Cappelen worked with Concrete-Steel to modify their original design with a reverse "S" curve and arch spans of 134′ and 211′ to avoid the limestone breaks in the river. Construction on the bridge, "the first of the graceful reinforced-concrete arch bridges in the Twin Cities," began in 1914.[20]

For his efforts modifying the design, his original designs for the approach spans, and his role overseeing construction, Cappelen is cited as the chief designer of the Third Avenue Bridge. Frederick Cappelen was a Norwegian engineer educated in Sweden and Germany. He immigrated to the United States in 1880 and initially worked for the Northern Pacific Railway. He designed a double-track, steel railroad bridge downriver from the Falls of Saint Anthony in 1884-1885, and its replacement, Northern Pacific Bridge Number 9, in 1924. In 1886, the City of Minneapolis hired him as a bridge engineer and he designed the steel-arch Hennepin Avenue Bridge, which was completed between 1888 and 1891. In 1893, Cappelen was elected as the city engineer and held the position until 1898. He was reelected as city engineer in 1913, continuing in that role until his death in 1921. In 1914, Cappelen became the first president of the Minnesota Section of the American Society of Civil Engineers. He also made important contributions to the city and state as a sanitary engineer. In addition to the bridges listed above, Cappelen is credited with the design for the F. W. Cappelen Memorial Bridge, which carries Franklin Avenue over the Mississippi River. Cappelen's assistant, Kristoffer Oustad, completed the bridge after Cappelen's death.[21]

Oustad was another Norwegian engineer who immigrated to Minnesota and joined the city's engineering office in 1883. He would become the city's bridge engineer in 1893, and retired from the department in 1929. Oustad assisted in overseeing construction of the Third Avenue Bridge, and designed or assisted in the design of additional Melan-reinforced-concrete, open-spandrel arch bridges in Minneapolis.[22]

Melan Arches

The design for the Third Avenue Bridge utilized the Melan system of reinforcing in the concrete arches of the seven main spans. For smaller Melan structures, steel I-beams or railroad rails were curved to form the arch and then covered with concrete. In larger structures, such as the Third Avenue Bridge, the reinforcing was built-up from steel angles, creating a structure of curved,

[19] Richter, "A 2,223-Ft. Concrete-Arch Bridge Built on Reverse Curve," 1268-1270; "Competition of Experts."
[20] Richter, "A 2,223-Ft. Concrete-Arch Bridge Built on Reverse Curve," 1268-1270. Quote from Kenneth Bjork, *Saga in Steel and Concrete: Norwegian Engineers in America* (Northfield, Minn.: Norwegian-American Historical Association, 1947), 148.
[21] Bjork, *Saga in Steel and Concrete*, 145-147, 150-151.
[22] Bjork, *Saga in Steel and Concrete*, 140-142.

parallel-chord trusses. The size, number, and spacing of the beams or trusses depended on the size and structural requirements of the bridge spans.

The Melan concrete-arch system was introduced to the United States in 1894 when Austrian engineer Frederick von Emperger presented a paper at the annual meeting of the American Society of Civil Engineers (ASCE). His presentation focused on the concrete reinforcing tests being conducted in Austria by professor Josef Melan. Many engineers scoffed at the claim that "iron and stone, in spite of their different strength, elasticity and thermic expansion, if properly proportioned, act together like one material." Emperger knew this to be true and set out to prove the skeptics wrong. As the holder of the U.S. patents for the Melan system of reinforcing, Emperger designed the first Melan concrete-arch bridge in the United States in 1894. The 36′ bridge was built in Rock Rapids, Iowa. In 1895, he designed a 70′ bridge for Eden Park in Cincinnati, Ohio, to prove the system could work in arches longer than 50′. To push the limits of the system, Emperger also designed a 100′ arched pedestrian bridge in Stockbridge, Massachusetts, that year. To make the bridge as flat and thin as possible, he designed the arch to rise only 10′ (1/10 its span), and the concrete at the arch's crown was only 9″ thick. This helped prove that reinforced concrete could be adapted to a variety of shapes and sizes. By the 1898 meeting of ASCE, skeptics were turning into believers.[23]

During the construction of the Stockbridge pedestrian bridge, William (Wilhelm) Mueser joined Emperger's firm. Mueser was born in Germany in 1872, and emigrated to the United States in 1893. Mueser met Edwin Thatcher, a Rennsselaer Polytechnic Institute graduate, while in Emperger's firm. Thatcher spent more than thirty years working as an engineer for the railroads and for bridge companies before joining Emperger. In 1901, Mueser and Thatcher left Emperger's firm and established the Concrete-Steel Engineering Company, which would become the leading designer of Melan-arch bridges in the United States.[24]

In an article he wrote in 1925 for the *Cornell Civil Engineer*, Mueser stated that the Third Avenue Bridge in Minneapolis demonstrated "the applicability of reinforced concrete as a monolithic building material." Regarding the reverse S-curve plan, Mueser said "stone arch construction would have been impossible or exceedingly expensive; steel bridge construction would have been awkward, kinky, and crude, but with reinforced concrete no trouble was encountered in making the gentle curves and in creating a pleasing appearance."[25]

Building the Bridge

With a design finally secured, construction of the bridge began in August 1914. The topography of the bridge site complicated the construction of the Third Avenue Bridge. Once Cappelen had

[23] William Mueser, "The Development of Reinforced Concrete Bridge Construction," *The Cornell Civil Engineer* (May 1925): 161-165.
[24] National Archives and Records Administration (NARA), Washington D.C., Roll #: 2079; Volume #: Roll 2079 - Certificates: 210976-211349, 08 Aug 1922-10 Aug 1922; "Edwin Thatcher," *Engineering News* Record 85, no. 14 (September 30, 1920): 675; Letter to F. W. Thorstenson, Assistant Road Design Engineer for Minnesota Department of Highways, from William H. Mueser of Mueser, Rutledge, Wentworth, and Johnston Consulting Engineers, New York, dated March 1, 1965.
[25] Mueser, "The Development of Reinforced Concrete Bridge Construction," 180.

determined where and how the bridge would cross the river, he had to decide how to construct it. Temporary timber towers measuring 165′ in height were built on the east and west sides of the river to clear the falls, the river current and steep banks, and railway operations on the west bank. Steel cables running between the towers carried concrete and other materials from storage bins near the east abutment to the piers and the west abutment. Smaller wood towers were built adjacent to the work area at each pier and contained a hopper and chute to receive the concrete and direct the pour.[26]

Construction began with the footings for the piers in the river. Steel-sheet cofferdams were constructed around the site of each pier. The sheet-piling at Piers 2 and 3 was reinforced at the bases to compensate for the strong current west of the falls. After the sheeting was watertight and sandbags were placed at the bottom, workers began pumping out the water. A few of the pier locations had water seep in through fissures in the rock. This required placing 5′ to 6′ of the footing concrete underwater. Once the fissures were capped, the water was pumped out and the remainder of the footing and pier were placed dry.[27]

Falsework for the arches started on April 19, 1915. Wood cribs were constructed and anchored to the riverbed with sandbags. These cribs were spaced about 29′ on center and supported steel I-beams above the normal water level. On top of the beams, timber falsework was constructed in seven sections per span. Crews then assembled the steel arches, constructed the forms, and poured the concrete for the arch ribs. The first upstream rib was poured on July 8, 1915, and the last upstream rib was poured on August 5. The falsework for the first rib was then struck and moved section by section into place under the center rib. Initially, it took the crews one day to move the falsework but by the last downstream rib on the project, it took only two hours and forty minutes to move.[28]

Over the next three years, the concrete for the arches, spandrel columns and cap beams, and the deck was poured. The work was continued over the winter, and the engineers took precautions to keep the concrete from freezing. This included not pouring concrete when the air temperature was below zero, covering the forms with tarps, and heating them with coke stoves. The sand and rock bins for the concrete were also heated and the large buckets carrying concrete were dipped in hot water. Classical Revival detailing was featured on the bridge piers and the edge of the bridge deck. Concrete balustrades formed the railings on the deck and concrete cruciform-shaped light fixtures could also carry the wiring for streetcars. The bridge opened on Flag Day, June 14, 1918, with a simple ceremony. The city council requested that every citizen cross the bridge during Flag Day as a way of observing the holiday and the opening of the bridge.[29] With the success of the Third Avenue Bridge, a new era of concrete arch highway bridges in Minneapolis and Saint Paul was initiated. Within the next decade, the Nicollet Avenue Bridge over

[26] Richter, “A 2,223-Ft. Concrete-Arch Bridge Built on Reverse Curve,” 1272.
[27] Richter, “A 2,223-Ft. Concrete-Arch Bridge Built on Reverse Curve,” 1270.
[28] Richter, “A 2,223-Ft. Concrete-Arch Bridge Built on Reverse Curve,” 1271.
[29] Richter, “A 2,223-Ft. Concrete-Arch Bridge Built on Reverse Curve,” 1271; “Preliminary Work Completed on New Third Avenue $650,000 Bridge,” *Minneapolis Morning Tribune*, June 18, 1915; “Simple Ceremonies to Mark Completion of Third Ave. Structure,” *Minneapolis Tribune*, June 14, 1918; “Third Av [*sic*] Bridge Is Mecca of Crowds Bent on Inspection,” *Minneapolis Journal*, June 16, 1918.

Minnehaha Creek (1923), the Franklin Avenue/Cappelen Memorial Bridge (1923), the Fort Snelling-Mendota Bridge (1926), the Intercity/Ford Parkway Bridge (1927), the Anoka-Champlin Mississippi River Bridge (1929), and the Tenth Avenue SE/Cedar Avenue Bridge (1929) were all completed. The Third Avenue Bridge held the distinction of being the first open-spandrel reinforced-concrete arch bridge over the Mississippi River in Minnesota.[30]

Moving People

The Third Avenue Bridge heralded in a new era of bridge design in the city, and also played a significant role in the growth of Minneapolis's transportation network. Before the bridge was completed, it was seen as a sign of Minneapolis's growth. An advertisement in the *Minneapolis Sunday Tribune* claimed that "this bridge will answer the ever-recurring demand for more convenient communication between the two banks of the river. It was the lack of such communication that so long kept St. Anthony the town, and Minneapolis but a field of undeveloped opportunities." The bridge succeeded in connecting the city on both sides of the river.[31]

The bridge became integral in the streetcar system, which was the primary form of public transit in the early twentieth century. Ridership expanded rapidly, jumping from 31.2 million in 1900 to 87.4 million in 1910 to nearly 120 million by 1917. In 1920, with ridership at 138.6 million, the city council directed the Minneapolis Street Railway to route streetcars over the Third Avenue Bridge. The bridge soon carried the Bloomington-Columbia Heights line, the Grand and Monroe lines, and the Bryan and Johnson lines, and was "the keynote to the plan of rerouting and construction of new lines" to serve the city. The bridge, together with an expansion of the streetcar network through downtown Minneapolis, provided better service and relieved congestion.[32]

As the number of automobiles increased in the 1920s, the state and federal highway systems were developed. The bridge became part of U.S. Highway 8 in 1933 and Trunk Highway 65 in 1934. The inclusion of the bridge in the federal highway system appears to have brought it under the control of the Minnesota Department of Highways, which maintained the federal highway routes throughout the state. The bridge was showing early signs of aging, and by the 1930s the sidewalks and concrete railings were deteriorating. The *Minneapolis Star* claimed that original railings were "built at the workhouse" and "merely set on the sidewalk."[33] Using funds from the state highway department and the Public Works Administration (PWA), the city rehabilitated the bridge in 1938-1939. The concrete railings were removed and new Art Deco aluminum panels and concrete posts were installed. The posts were tied into the deck structure with reinforcing

[30] Minnesota Department of Transportation, Historic Bridges Website, accessed September 9, 2019, https://www.dot.state.mn.us/historicbridges/.
[31] "The Third Avenue Bridge," *Minneapolis Sunday Tribune*, July 18, 1915; Sanborn Map Publishing Company, *Minneapolis, Minnesota,* vol. 2 (New York: Sanborn Map Publishing Company, 1885, update 1889), Sheets 59, 64, 69, 70; Sanborn Map Company, *Insurance Maps of Minneapolis, Minnesota*, vol. 8 (New York: Sanborn Map Company, 1912, update 1951), Sheets 935, 954, 955.
[32] Quote from "New Bridge Keynote of Trolley Line Plan," *Minneapolis Sunday Tribune*, February 15, 1920. See also "First Car over Third Avenue Bridge," *Minneapolis Tribune*, October 17, 1920; Schmid, *Social Saga of Two Cities*, 62.
[33] "Third Avenue Bridge to Get a New Railing," *Minneapolis Tribune*, December 7, 1938.

rods. The *Minneapolis Tribune* reported that the new railings allowed the "opportunity for motorists and pedestrians alike to view the waters of the Mississippi far below." New sidewalks and curbs were poured. Space was reserved under the sidewalks to run conduit. Raised curbs with a steel pipe traffic barrier—to prevent "curb-vaulting motor vehicles"—were placed between the sidewalks and the roadway. The original concrete light/streetcar poles were repaired and rewired for new luminaires. Approximately 50 percent of the cantilevered portions of the spandrels were repaired and coated with Driwal, a "damp-proof" and "stain-proof" treatment for stone and concrete.[34]

The Third Avenue Bridge was part of the most traveled road into the downtown loop by 1946, when a traffic study revealed that it carried an average of 20,122 vehicles daily, which was "more traffic to and from the loop than any other artery."[35] While the streetcar system remained in operation through the first half of the twentieth century, its primacy was eclipsed by the rise of the automobile. Buses, now the primary public transportation method, replaced streetcars on the bridge by 1954 and the streetcar tracks were eventually removed. Vehicular traffic on the bridge continued to increase with daily counts between 27,000 and 31,500 vehicles in 1955. A *Minneapolis Star* article observed that the city had several nineteenth-century bridges, that could not keep up with the increase in automobiles. The Third Avenue Bridge was one of the more recent bridges, and the city engineer described the bridge as "'saturated' with cars, particularly at rush hours." The traffic counts for the bridge made it the most traveled in the city.[36]

As maintenance of the bridge structure continued in this period, the city and the state highway department continued to coordinate projects. In 1953, the city and the highway department executed an agreement for the city to repair a failed concrete pier cap on the west end of the bridge. Additional agreements for repairs and maintenance were executed in the 1960s. Between 1958 and 1965, the original concrete light poles were replaced with metal poles and mercury vapor lights. The approach spans to the bridge were reinforced in the 1960s with additional steel beams. A memo, dated August 4, 1967, from G. H. Kolstad at the Department of Highways discussed the severity of structural deterioration. He noted the difficulties the City of Minneapolis was having with repairs on the bridge because "the deterioration appears to be more extensive than was first anticipated." The memo stated: "It now develops that there is a possibility of deterioration of the deck slab and the tops of the spandrel columns on the arches. It has also been found in sandblasting and cleaning the steel girders in preparation for repairs and painting that they are in a more critical condition." The result of the memo was a comprehensive bridge inspection. In 1968, Howard, Needles, Tammen and Bergendoff (HNTB) completed the

[34] *1934 Supplement to Mason's Minnesota Statutes 1927*, sec. 2554, 2557, and 2662-2½ (Citer-Digest Co. 1934); "Highways Will Get New Markers Friday," *Minneapolis Tribune*, May 3, 1934; Schmid, *Social Saga of Two Cities*, 65; Paul and Gorgenson, "Specifications for Third Avenue Bridge Repairs, Minneapolis, Minnesota #1633-F," S7-S8, S16; The Billings-Chapin Company, "Driwal" brochure, accessed December 18, 2019, https://babel.hathitrust.org/cgi/pt?id=nnc2.ark:/13960/t0gv1sv77&view=1up&seq=1; HNTB, *Minnesota Department of Highways*: *Bridge Inspection Engineering Report Third Avenue Bridge*, 1, 3.

[35] "Third Avenue Bridge Busiest," *Minneapolis Tribune*, July 4, 1946.

[36] Quote from Hal Seymour, "City Bridge Work Needs Repair—or Replacement," *Minneapolis Star*, November 22, 1955. See also Diers and Isaacs, *Twin Cities by Trolley*, 227, 230, 232.

bridge inspection, which provided a baseline of existing conditions to guide planning for an extensive repair program in the 1970s.[37]

Changing Times

At the end of the 1960s, the bridge's role as the main transportation artery across the river in Minneapolis changed. Construction on Interstate 35W had begun in south Minneapolis in the early 1960s. A bridge over the Mississippi River was planned and the Interstate 35W (I-35W) Mississippi River Bridge was completed in 1969. Once in use, the I-35W Bridge alleviated traffic on neighboring bridges, including the Third Avenue Bridge. In 1976, the I-35W Bridge carried an average of 86,600 vehicles daily while the Third Avenue Bridge carried an average of 16,625.[38]

With the traffic pressure lessened, the Minnesota Department of Transportation (MnDOT), successor to the Department of Highways, could plan the Third Avenue Bridge rehabilitation in earnest. In 1976, MnDOT removed the concrete spiral staircase at the northeast end of the bridge that led down to Main Street Southeast because of structural inadequacy. Two years later, a large-scale rehabilitation project began. When preparing for the project, MnDOT consulted with the State Historic Preservation Office (SHPO), the Minneapolis Heritage Preservation Commission (HPC), and other parties to ensure that repairs met the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. The deck was replaced and the new deck was approximately 12″ narrower; all of the spandrel caps and approximately 60 percent of the spandrel columns/walls were replaced; and the concrete on the piers and arches were patched. The east and west approaches, including the bents, abutments, and wing walls, were replaced with new approach spans. The existing retaining walls on the east side were repaired and extended upward. A new bridge deck, spandrel cap beams, sidewalks, traffic barriers, and new light standards were installed. The Art Deco railings from 1938-1939 were preserved and reinstalled with new, unadorned concrete pilasters. The center of the bridge deck was raised approximately 5′, and the spandrel columns and piers were extended in height to match the new

[37] HNTB, *Bridge Inspection Engineering Report Third Avenue Bridge*, 3-4; State of Minnesota Department of Transportation Location/Design Study Report for State Project 2701-Bridge 2440, August 1978, 10; G. H. Kolstad, Minnesota Department of Transportation Office Memorandum, August 4, 1967, available from MnDOT; "A Brief History of MnDOT," Minnesota Department of Transportation, accessed June 5, 2017, http://www.dot.state.mn.us/information/history.html.

[38] State of Minnesota, Department of Highways and U. S. Department of Commerce, Bureau of Public Roads, "Twin Cities Area Transportation Study," vol. 1, Survey Results, May 1962, 11-12, available at the Minnesota Historical Society, Saint Paul; Sam Newlund, "Marshall Hopes to Rush Local Plans," *Minneapolis Tribune*, August 18, 1962; Minnesota Department of Highways, "Highway Construction Programs for Fiscal Years 1963-1965, June 1962; Minnesota Department of Highways, "Highway Construction Programs, Fiscal Years 1964-1966, June 1963, 62; "A Sky High View," *Minneapolis Tribune*, July 30, 1967, Interstate 35W clippings file, 1967-1970, Special Collections, Hennepin County Library; American Association of State Highway and Transportation Officials (AASHTO), *The States and the Interstates: Research on the Planning, Design and Construction of the Interstate and Defense Highway System* (Washington DC: American Association of State Highway and Transportation Officials, 1991), 31; Major River Crossings Task Force, Transportation Advisory Board, Metropolitan Council, "Major River Crossings in the Twin Cities Metropolitan Area," 1978, 8-9, accessed September 10, 2019, https://www.leg.state.mn.us/docs/pre2003/other/790353.pdf; Minnesota Department of Transportation, Traffic Mapping Application, accessed September 10, 2019, https://mndot.maps.arcgis.com/apps/webappviewer/index.html?id=7b3be07daed84e7fa170a91059ce63bb.

profile. A new spiral staircase was constructed on the northeast end of the bridge close to the location of the original staircase. All of the concrete on the bridge was coated with a Thoroseal cementitious mix to give the bridge a uniform appearance and protect the concrete from moisture.[39]

The rehabilitation project was completed ahead of schedule in November 1980 with the final part of the Thoroseal coating work occurring into 1981. Local journalist Barbara Flanagan deemed the project a success, remarking that the "elegant" bridge had been "basically unchanged in design, but restored to contemporary safety standards."[40] Although no longer the most traveled bridge in the city, the Third Avenue Bridge continued to be a crucial connection between the east and west banks of the Mississippi River into the twenty-first century.

In the early 2000s, substantial damage on the piers and spandrels were noted in regular MnDOT inspections, and the agency determined that another major rehabilitation project was needed to extend the bridge's lifespan. The second rehabilitation project, completed in 2020 to 2023, replaced the bridge deck, spandrel caps, and spandrel columns/walls, and repaired deteriorated concrete on the piers and arches. The historic aluminum railings were preserved and new concrete pilasters that are closer in appearance to the historic design were constructed. New metal streetlights with a design inspired by the historic streetlights were installed on a new lower

traffic barrier. MnDOT consulted with the State Historic Preservation Office (SHPO), the Minneapolis Heritage Preservation Commission (HPC), and other parties to ensure that repairs met the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and the bridge's historic character and integrity were preserved.[41]

Conclusion

The Third Avenue Bridge was evaluated using the Multiple Property Documentation Form "Reinforced-Concrete Highway Bridges in Minnesota, 1900-1945." The bridge is individually eligible for the National Register under Criterion C at the state level of significance because it embodies "distinctive characteristics of bridge engineering and construction" and also represents a significant phase "in the evolution of bridge engineering and construction."[42] The MPDF identifies registration requirements under Criterion C, and the Third Avenue Bridge meets several of these registration requirements. The bridge meets Registration Requirement 2 because it was "designed or constructed with patented or otherwise specially designed elements."[43] The

[39] Minnesota Department of Transportation, "The Third Avenue Bridge: Its History and Renovation," available at the Minnesota Department of Transportation Office, Saint Paul; "A Brief History of MnDOT."
[40] Barbara Flanagan, "Don't Let City Budget-Cutters Drop CUE or HPC," *Minneapolis Star*, March 26, 1982.
[41] "Metro Gallery," *Minneapolis Star*, November 21, 1980; Jim Adams, "Painters Brush Up on Machine's Stroke of Genius," *Minneapolis Star*, August 19, 1981.
[42] Robert M. Frame III, "Reinforced-Concrete Highway Bridges in Minnesota," National Register of Historic Places Multiple Property Documentation Form, August 1988, F7.
[43] Frame, "Reinforced-Concrete Highway Bridges in Minnesota," F8.

Josef Melan reinforcing system was used in the arches of the main spans and the original reinforcing is still present in the arches.

The bridge also qualifies under Registration Requirement 3—it was "designed with a span length of monumental proportions."[44] The overall length of the bridge is 1,887′-6.5″. The five rib-arch spans are each 211′ in length from pier to pier, and the two barrel-arch spans are 134′ in length. All of the arch spans are also curved in their horizontal layout—the 211′ spans curve on a tangent of 4 degrees and the 134′ spans on a tangent of 10 degrees. The length and curve of the spans were specifically designed to avoid limestone breaks in the riverbed, and protect the Falls of Saint Anthony from collapse.

The bridge meets Registration Requirement 5 because it was "designed with outstanding architectural style or ornamentation."[45] The bridge has Classical Revival ornamentation on the piers, the spandrel caps, and the deck edge. The symmetrical plan of the light fixtures on the deck is also part of the Classical Revival style and emphasizes the unique reverse-S curve plan of the bridge. The bridge was the first bridge over the Mississippi River in Minneapolis to utilize a reinforced-concrete structure with Classical Revival details. The Cappelen Memorial Bridge, Tenth Avenue Bridge (Cedar Avenue Bridge), and the Intercity (Ford Parkway Bridge) would also have Classical Revival ornamentation but were built after the Third Avenue Bridge. The Third Avenue Bridge is also eligible for Criterion C under Registration Requirement 6 because it was designed by Frederick Cappelen and the Concrete-Steel Engineering Company, which have both been identified as important engineers, architects, or firms.[46]

The Third Avenue Bridge is eligible for listing under Criterion A in the area of Transportation for its important role in Minneapolis's transportation network. It relates to the statewide historic context "Urban Centers, 1870-1940" and more specifically to the "Downtown Minneapolis" historic context adopted by the Minneapolis Heritage Preservation Commission. The Third Avenue Bridge is specifically cited in the context as an important expansion of the transportation infrastructure in the period from 1910-1945. As the city grew and commercial districts on both sides of the river developed, the Hennepin Avenue Bridge and Tenth Avenue

Bridge (1874) could not handle the increase in vehicular traffic. The Third Avenue Bridge was a significant connection across the river and became the most traveled bridge in the downtown area until the Interstate 35W Mississippi River Bridge was completed in 1969.[47] The registration requirements in the "Reinforced-Concrete Highway Bridges in Minnesota, 1900-1945" state that "bridges eligible under Criterion A must have integrity of location" and that "the significant reinforced-concrete element in the superstructure span . . . must be in substantially original condition."[48] The Third Avenue Bridge has not been moved and retains integrity of location. The bridge's historic superstructure is also in a substantially original condition. Portions of the

[44] Frame, "Reinforced-Concrete Highway Bridges in Minnesota," F8.
[45] Frame, "Reinforced-Concrete Highway Bridges in Minnesota," F8.
[46] Frame, "Reinforced-Concrete Highway Bridges in Minnesota," F9.
[47] Marjorie Pearson and Charlene K. Roise, Hess, Roise and Company, "Downtown Minneapolis: An Historic Context," prepared for the Minneapolis Heritage Preservation Commission, August 2000, 25.
[48] Frame, "Reinforced-Concrete Highway Bridges in Minnesota," F7.

concrete on the arches have been patched and the arches are finished with a protective coating, but the original Melan steel reinforcing is intact inside the arches and the majority of the original concrete is also extant on all of the arches.

The period of significance begins in 1918 when the original construction of the bridge was completed and it was put into use. The period of significance ends in 1969 when the Interstate 35W Mississippi River Bridge diverted traffic from the Third Avenue Bridge and ended its role as the most traveled river bridge in Minneapolis.

9. Major Bibliographical References

Bibliography (Cite the books, articles, and other sources used in preparing this form.)

Adams, Jim. "Painters Brush Up on Machine's Stroke of Genius." *Minneapolis Star*, August 19, 1981.

American Association of State Highway and Transportation Officials (AASHTO). *The States and the Interstates: Research on the Planning, Design and Construction of the Interstate and Defense Highway System*. Washington DC: American Association of State Highway and Transportation Officials, 1991.

Bjork, Kenneth. *Saga in Steel and Concrete: Norwegian Engineers in America*. Northfield, Minn.: Norwegian-American Historical Association, 1947.

"Bridge Traffic Heavy." *Minneapolis Journal*, August 17, 1910.

"Business Men Want Third Avenue Bridge." *Minneapolis Tribune*, December 13, 1912.

Clippings Files. Special Collections, Hennepin County Library.

"Competition of Experts or Employment of Consulting Engineer Held Advisable in Constructing the Third Avenue South Bridge." *Minneapolis Sunday Tribune*, July 21, 1912.

Diers, John W., and Aaron Isaacs. *Twin Cities by Trolley: The Streetcar Era in Minneapolis and Saint Paul*. Minneapolis: University of Minnesota Press, 2007.

"Edwin Thatcher." *Engineering News Record* 85, no. 14 (September 30, 1920): 675.

Emperger, Frederick von. "A Melan Concrete Arch in Eden Park, Cincinnati, O." *Engineering News* 34 (October 8, 1895): 214-215.

"First Car over Third Avenue Bridge." *Minneapolis Tribune*, October 17, 1920.

Frame, Robert M., III. "Reinforced-Concrete Highway Bridges in Minnesota." National Register of Historic Places, Multiple Property Documentation Form, August 1988.

Flanagan, Barbara. "Don't Let City Budget-Cutters Drop CUE or HPC." *Minneapolis Star*, March 26, 1982.

Gardner, Denis. *Wood, Concrete, Stone and Steel: Minnesota's Historic Bridges.* Minneapolis: University of Minnesota Press, 2008.

"Highways Will Get New Markers Friday." *Minneapolis Tribune,* May 3, 1934.

Howard, Needles, Tammen and Bergendoff (HNTB). *Minnesota Department of Highways*: *Bridge Inspection Engineering Report Third Avenue Bridge.* November 1968.

Landler, Juliet. "Melan Arch Bridge, Addendum to Reinforced Concrete Arch Bridge." Historic American Engineering Record No. IA-15.

Major River Crossings Task Force, Transportation Advisory Board, Metropolitan Council. "Major River Crossings in the Twin Cities Metropolitan Area." 1978.

"Metro Gallery." *Minneapolis Star*, November 21, 1980.

Minneapolis Heritage Preservation Commission. "St. Anthony Falls Historic District Design Guidelines," 2012. Available from the Minneapolis Heritage Preservation Commission, Minneapolis, Minnesota.

Minnesota Department of Highways. Highway Construction Files. Available at the Minnesota Department of Transportation Offices, Saint Paul, Minnesota.

Minnesota Department of Transportation. Files on the Bridge 2440 (Third Avenue Bridge). Available at the Minnesota Department of Transportation Offices, Oakdale, Minnesota.

Mueser, William. "The Development of Reinforced Concrete Bridge Construction." *The Cornell Civil Engineer* (May 1925): 161-183.

National Archives and Records Administration (NARA), Washington D.C.

"New Bridge Keynote of Trolley Line Plan." *Minneapolis Sunday Tribune*, February 15, 1920.

Newlund, Sam. "Marshall Hopes to Rush Local Plans." *Minneapolis Tribune*, August 18, 1962.

1934 Supplement to Mason's Minnesota Statutes 1927. Citer-Digest Co., 1934.

Paul, F. T., and E. G. L. Gorgenson. "Specifications for Third Avenue Bridge Repairs, Minneapolis, Minnesota #1633-F." November 1938. Available at the Public Works Department, City of Minneapolis.

Pearson, Marjorie, and Charlene K. Roise, Hess, Roise and Company. "Downtown Minneapolis: An Historic Context." Prepared for the Minneapolis Heritage Preservation Commission, August 2000.

"Petition: Paper Presented to City Council Friday Opposing Third Avenue Bridge." *Minneapolis Tribune*, February 10, 1906.

"Preliminary Work Completed on New Third Avenue $650,000 Bridge." *Minneapolis Morning Tribune,* June 18, 1915.

"Resolution Demands Bridge." *Minneapolis Tribune*, December 20, 1912.

Richter, A. M. "A 2,223-Ft. Concrete-Arch Bridge Built on Reverse Curve." *Engineering News* 74 (December 30, 1915): 1268-1273.

"St. Anthony Falls Historic District." National Register of Historic Places documentation, 1971-1991. Available from the State Historic Preservation Office, Saint Paul, Minnesota.

Sanborn Map Company. *Insurance Maps of Minneapolis, Minnesota*. Vol. 8. New York: Sanborn Map Company, 1912, update 1951.

Sanborn Map Publishing Company. *Minneapolis, Minnesota.* Vol. 2. New York: Sanborn Map Publishing Company, 1885, update 1889.

Schmid, Calvin F. *Social Saga of Two Cities: An Ecological and Statistical Study of Social Trends in Minneapolis and St. Paul.* Minneapolis: Minneapolis Council of Social Agencies, 1937.

Seymour, Hal. "City Bridge Work Needs Repair—or Replacement." *Minneapolis Star*, November 22, 1955.

"Simple Ceremonies to Mark Completion of Third Ave. Structure." *Minneapolis Tribune,* June 14, 1918.

"A Sky High View." *Minneapolis Tribune*, July 30, 1967.

State of Minnesota, Department of Highways and U. S. Department of Commerce, Bureau of Public Roads. "Twin Cities Area Transportation Study." Vol. 1, Survey Results. May 1962. Available at the Minnesota Historical Society, Saint Paul.

"The Third Avenue Bridge." *Minneapolis Sunday Tribune*, July 18, 1915.

"Third Avenue Bridge Busiest." *Minneapolis Tribune*, July 4, 1946.

"Third Av [*sic*] Bridge Is Mecca of Crowds Bent on Inspection." *Minneapolis Journal*, June 16, 1918.

"Third Avenue Bridge Said to Be Necessity." *Minneapolis Tribune,* March 3, 1907.

"Third Avenue Bridge to Get a New Railing." *Minneapolis Tribune*, December 7, 1938.

Westbrook, Nicholas, Minnesota Historical Society. "Bridges." In *A Guide to Industrial Archeology of the Twin Cities.* Ed. Nicholas Westbrook. Saint Paul and Minneapolis: Society for Industrial Archeology, May 1983.

"World's Center Here Civic Planners' Aim." *Minneapolis Morning Tribune*, December 21, 1910.

Previous documentation on file (NPS):

___ preliminary determination of individual listing (36 CFR 67) has been requested
_X_ previously listed in the National Register
____previously determined eligible by the National Register
____designated a National Historic Landmark
____ recorded by Historic American Buildings Survey #_____
____recorded by Historic American Engineering Record # _____
____ recorded by Historic American Landscape Survey # _____

Primary location of additional data:

____ State Historic Preservation Office
_X_ Other State agency
____ Federal agency
_X_ Local government
____ University
____ Other
Name of repository: _____

Historic Resources Survey Number (if assigned): _HE-MPC-00165__

---

10. Geographical Data

Acreage of Property _3.58_____

Use either the UTM system or latitude/longitude coordinates

Latitude/Longitude Coordinates
Datum if other than WGS84:_____
(enter coordinates to 6 decimal places)
1. Latitude: Longitude:

2. Latitude: Longitude:

3. Latitude: Longitude:

4. Latitude: Longitude:

Or
UTM References
Datum (indicated on USGS map):

[ ] NAD 1927 or [X] NAD 1983

1. Zone: 15	Easting: 479619	Northing: 4981144
2. Zone:	Easting:	Northing:
3. Zone:	Easting:	Northing:
4. Zone:	Easting :	Northing:

Verbal Boundary Description (Describe the boundaries of the property.)

The boundaries for the Third Avenue Bridge extend from the west end of the bridge deck across the full-length of the bridge to the east edge of the bridge deck. The boundaries include the superstructure under the deck and the substructure in the Mississippi River.

Boundary Justification (Explain why the boundaries were selected.)

The boundary includes the physical limits of the bridge from the east bank to the west bank of the Mississippi River, and includes the extended limits of the cap beams and entablature on the edge of the deck.

---

11. Form Prepared By

name/title: Elizabeth Gales, Kristen Koehlinger, and Charlene Roise
organization: Hess, Roise and Company
street & number: 100 North First Street
city or town: Minneapolis state: MN zip code: 55401
e-mail gales@hessroise.com
telephone: 612-338-1987
date: December 2023

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** or equivalent (7.5 or 15 minute series) indicating the property's location.

- **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.

- **Additional items:** (Check with the SHPO, TPO, or FPO for any additional items.)

Photographs

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels (minimum), 3000x2000 preferred, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered and that number must correspond to the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

Photo Log

Photo 1 of 12
Name of Property: Third Avenue Bridge
City or Vicinity: Minneapolis
County: Hennepin State: Minnesota
Photographer: Elizabeth Gales
Date Photographed: November 2, 2023
Elevated view of the bridge with downstream faces of arches, looking northeast.

Photo 2 of 12
Date Photographed: December 2, 2023
Upstream faces of arched spans, looking south.

Photo 3 of 12
Date Photographed: October 30, 2023
Downstream faces of arched spans, looking north.

Photo 4 of 12
Date Photographed: December 2, 2023
North approach span, looking southeast.

Photo 5 of 12
Date Photographed: December 2, 2023
Pier 8, looking southeast.

Photo 6 of 12
Date Photographed: December 2, 2023
Staircase on north approach, looking northwest.

Photo 7 of 12
Date Photographed: October 30, 2023
South approach span, looking northwest.

Photo 8 of 12
Date Photographed: October 27, 2023
Close view of deck and spandrel columns near Pier 6, looking northeast.

Photo 9 of 12
Date Photographed: October 27, 2023
Bridge deck at north approach near Central Avenue NE, looking southwest.

Photo 10 of 12
Date Photographed: October 27, 2023
Bridge deck showing the curve in the bridge alignment, looking southwest.

Photo 11 of 12
Date Photographed: December 2, 2023
Bridge deck and approach at South First Street, looking northeast.

Photo 12 of 12
Date Photographed: December 2, 2023
Bridge deck showing historic aluminum railing, sidewalk/bicycle lane, traffic barrier, and streetlights, looking northeast.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Bridge 2440 (Third Avenue Bridge)
Name of Property
Hennepin, Minnesota
County and State
Reinforced-Concrete Highway Bridges in Minnesota, 1900-1945
Name of multiple listing (if applicable)

Section number Additional Documentation Page 1

Bridge 2440 (Third Avenue Bridge)

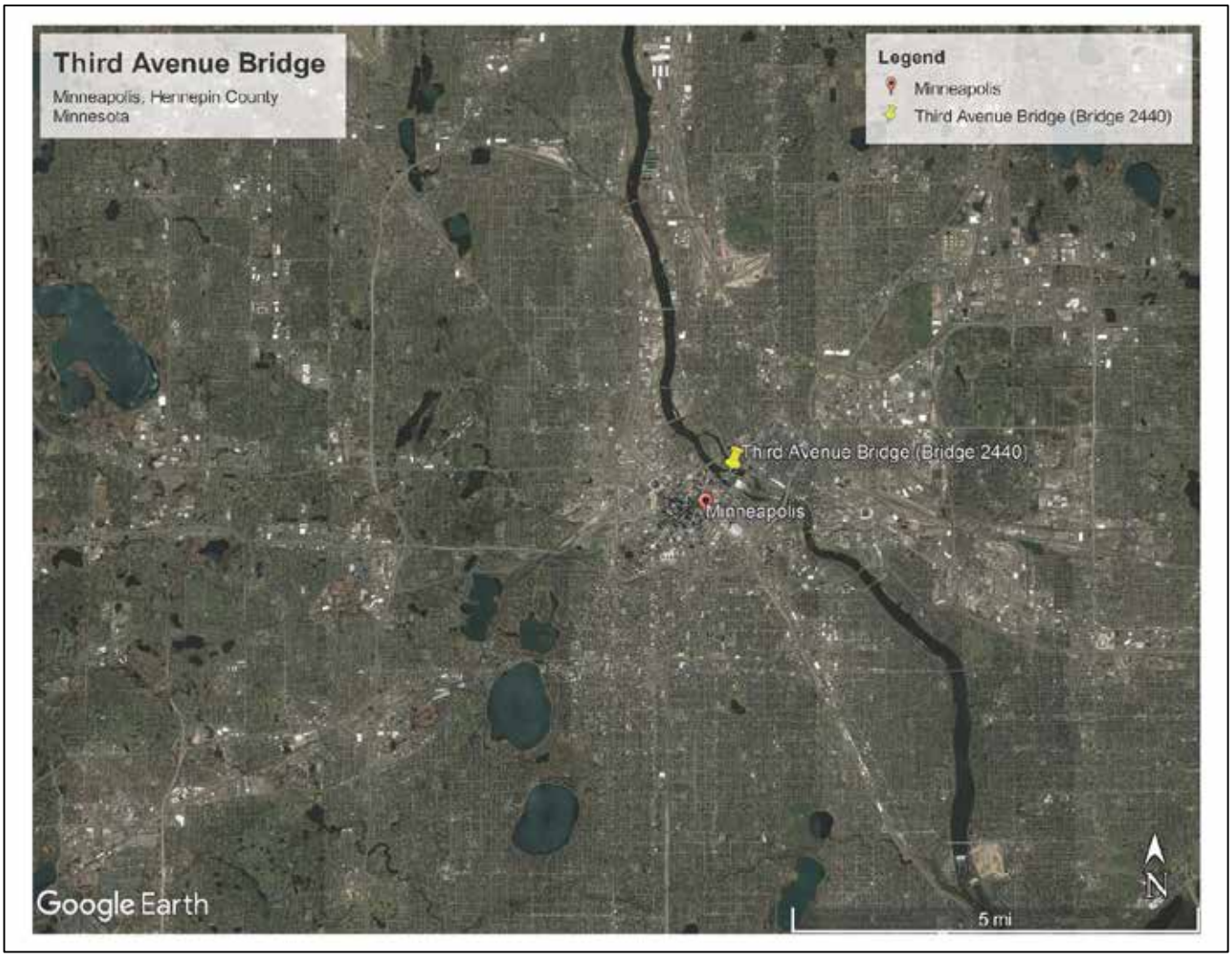
Trunk Highway 65 / Third Avenue South over the Mississippi River
Minneapolis, Hennepin County, Minnesota
UTM Coordinates: 15:479619:4981144

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Bridge 2440 (Third Avenue Bridge)
Name of Property
Hennepin, Minnesota
County and State
Reinforced-Concrete Highway Bridges in Minnesota, 1900-1945
Name of multiple listing (if applicable)

Section number Additional Documentation Page 2



United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Bridge 2440 (Third Avenue Bridge)
Name of Property
Hennepin, Minnesota
County and State
Reinforced-Concrete Highway Bridges in Minnesota, 1900-1945
Name of multiple listing (if applicable)

Third Avenue Bridge Boundary and Photo Key, 2024. The red boundary represents the nominated property. (Base map from Hennepin County property information website, accessed May 2018)

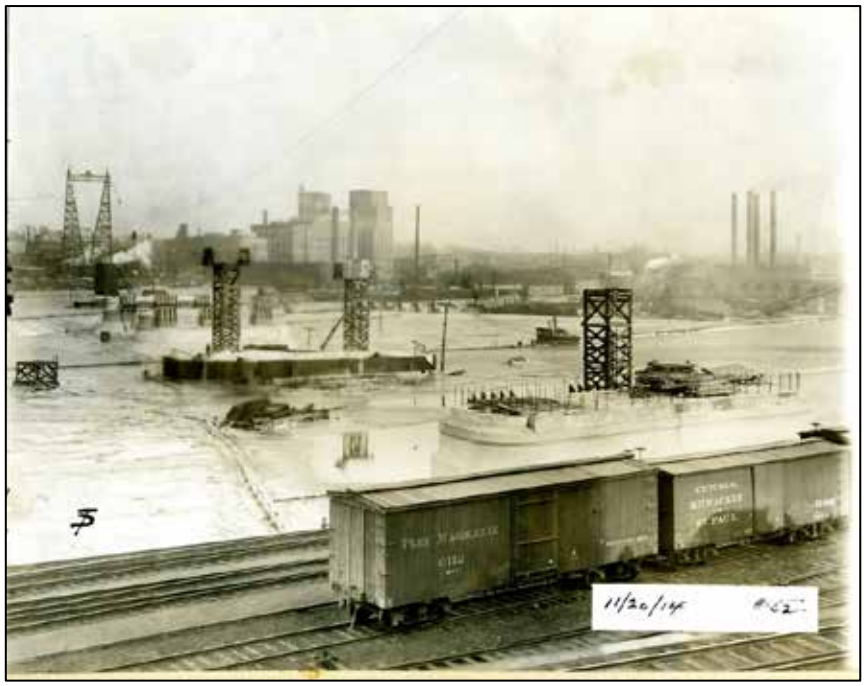


Figure 1. November 20, 1914 – Construction of piers, looking northeast (*City of Minneapolis*)

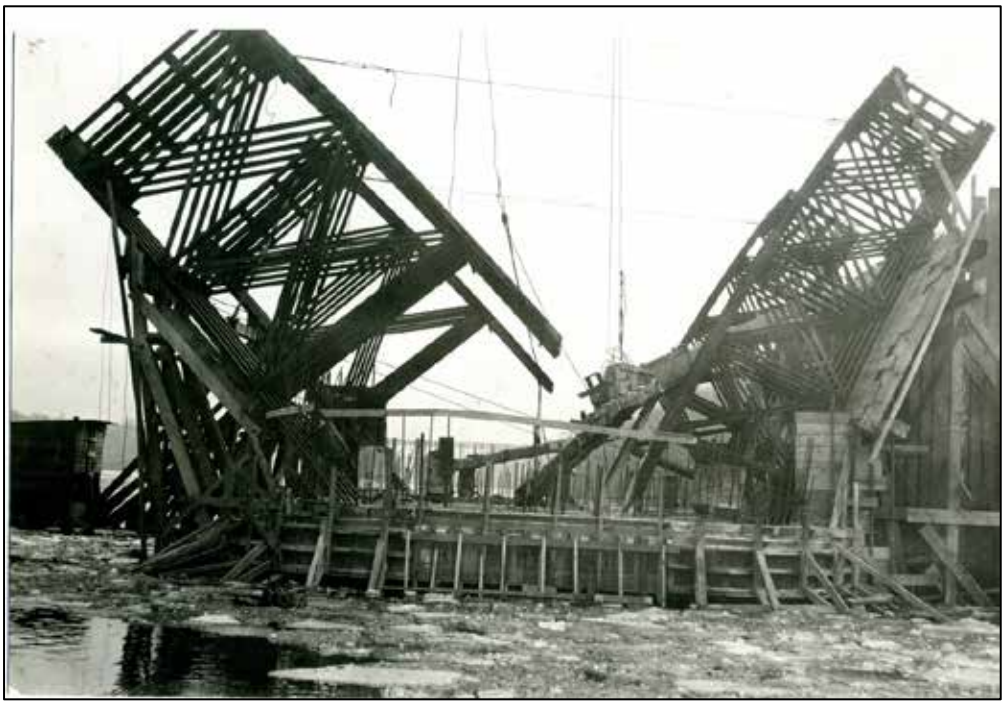


Figure 2. c 1915 – Melan reinforcing for arch ribs (*City of Minneapolis*)

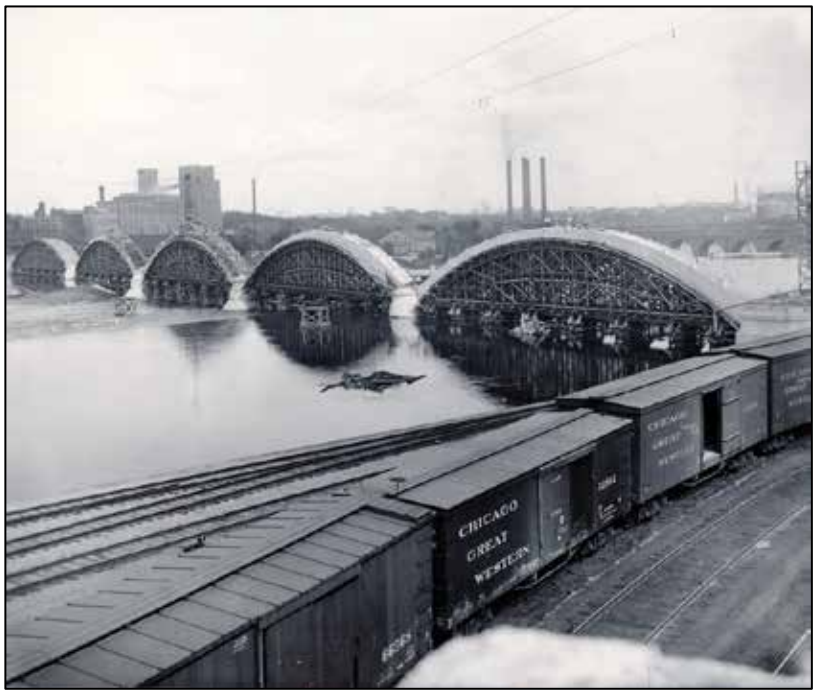


Figure 3. July 29, 1915 – Arch construction, looking northeast (*City of Minneapolis*)

Figure 4. c. 1916 – Arch construction, looking west (*City of Minneapolis*)

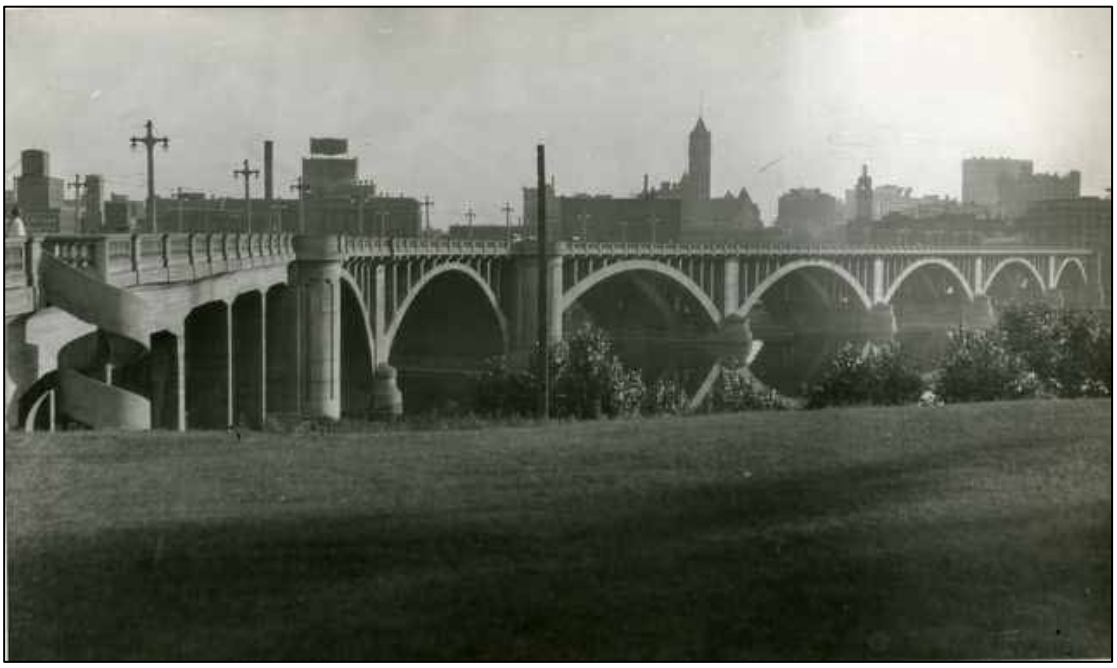


Figure 5. Third Avenue Bridge, ca.1918 (*Minnesota Historical Society*)

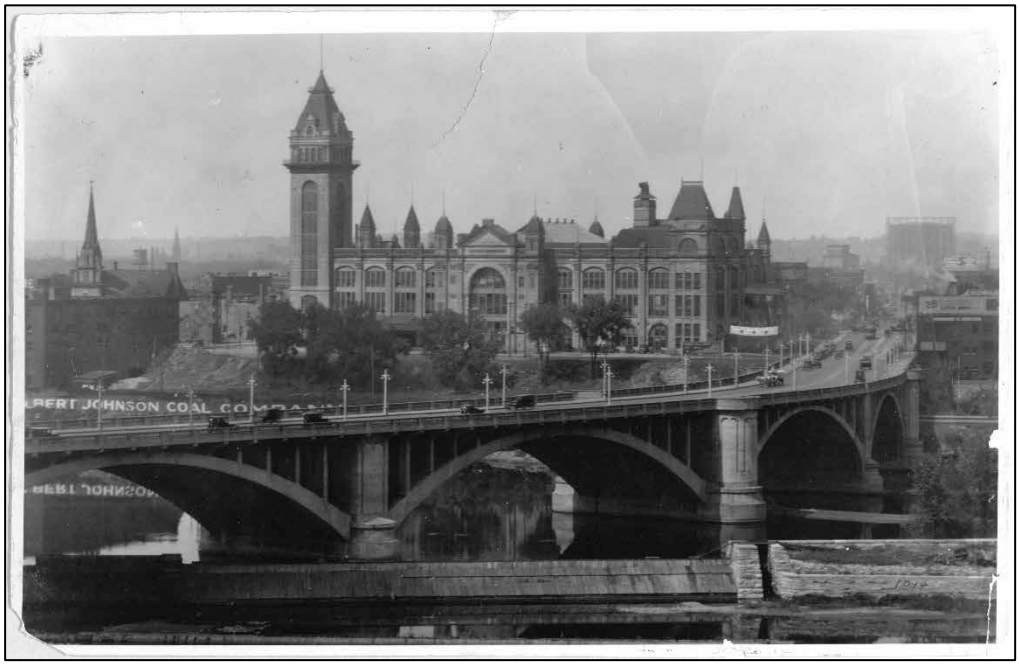


Figure 6. Third Avenue Bridge and Exposition Building, 1920s (*Special Collections, Minneapolis Central Library, Hennepin County Library System*)

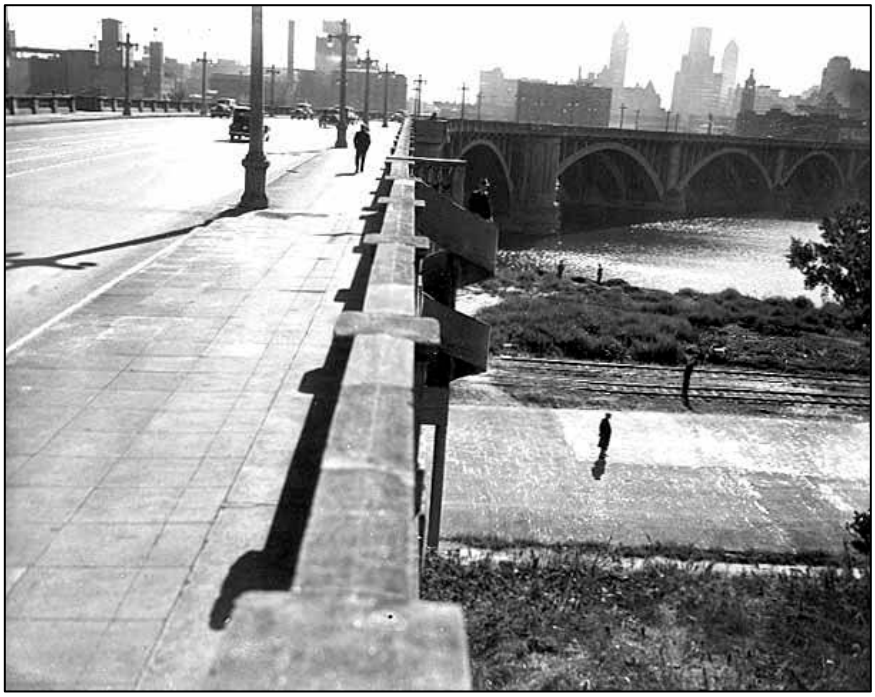


Figure 7. Third Avenue Bridge at north approach span, ca. 1935 (*Minnesota Historical Society*)

Figure 8. Third Avenue Bridge, 1948 (*Minneapolis Star Tribune collection, Minnesota Historical Society*)

Figure 9. Third Avenue Bridge at north approach span, 1952 (*Minnesota Historical Society*)

Figure 10. Third Avenue Bridge, ca. 1958 (*Minnesota Historical Society*)