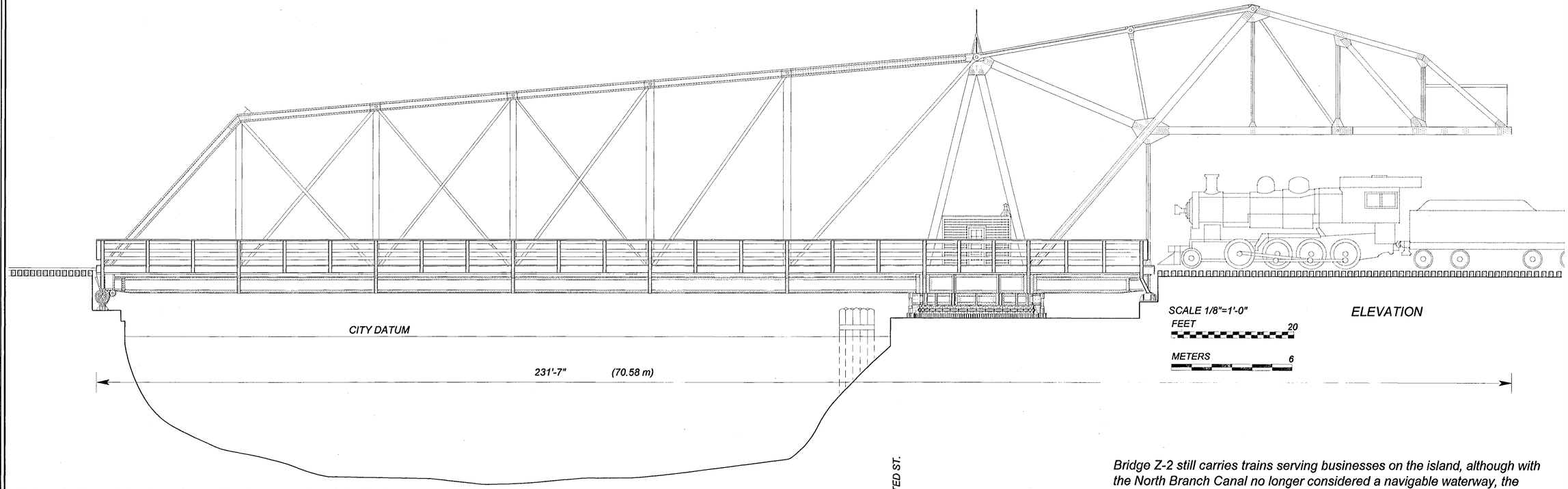
CHICAGO, MILWAUKEE & ST. PAUL RY.

BRIDGE Z-2 SPANNING NORTH BRANCH CANAL

1902, CHICAGO, ILLINOIS



SCALE 1/8"=1'-0"

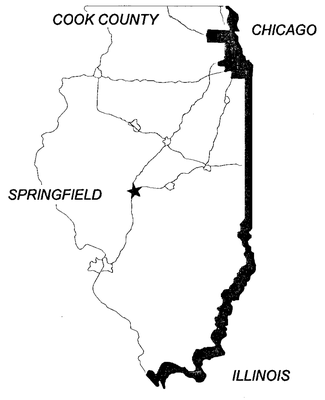
FEET 20

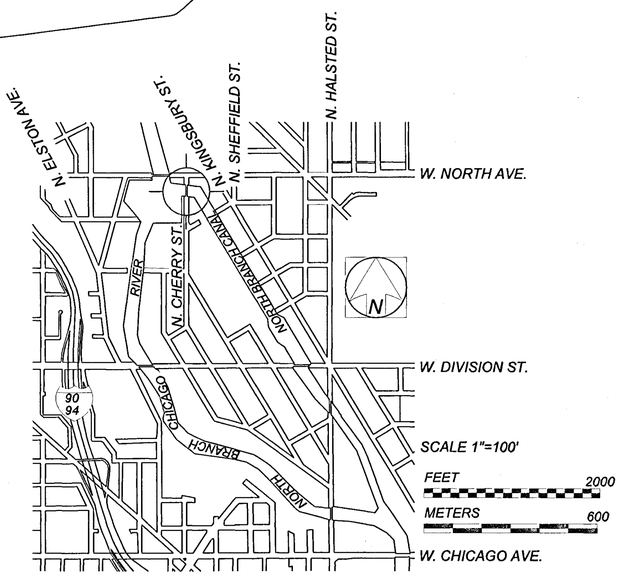
METERS 6

ELEVATION

Chicago's Goose Island was formed by the excavation of the North Branch Canal before the Civil War, cutting off a bend in the North Branch of the Chicago River. Waterfront property attracted grain elevators and industries such as metals, tanning, and paper; the Chicago, Milwaukee & St. Paul Railway (Milwaukee Road) constructed a yard in the middle of the island. A single track passed over the island's only railroad bridge to connect with the Milwaukee Road's main line. Like most movable spans constructed in Chicago during the nineteenth century, this was a swing bridge with a mid-channel pier. The U.S. War Department, authorized by the River & Harbor Act of 1892 to maintain the North Branch Canal as a navigable waterway, declared the bridge an obstruction to navigation in 1899 and ordered its removal.

While other railroads were paying for patented movable bridge designs to replace their obstructive crossings, the Milwaukee Road, known to design and erect many of its own spans, continued to build swing bridges. To provide a single wide channel, however, the replacement bridge's pivot was located on shore, with a counterweight on the shorter land arm balancing the longer river arm. The Milwaukee Road built several of these asymmetrical designs, known as "bobtails," in Chicago. Bridge Z-2, at the northern tip of Goose Island, was completed in 1902 and features an early example of a concrete counterweight. The steel truss, fabricated by the Wisconsin Bridge Company, swings on a hybrid bearing consisting of a circular roller nest around a center pivot.





Bridge Z-2 still carries trains serving businesses on the island, although with the North Branch Canal no longer considered a navigable waterway, the span has been rendered inoperable.

The Chicago Bridges Recording Project is part of the Historic American Engineering Record (HAER), a long-range program to document historically significant engineering and industrial works in the United States. The HAER program is administered by the Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) Division of the National Park Service, U.S. Department of the Interior, E. Blaine Cliver, Chief. The project was sponsored during the summer of 1999 by the City of Chicago, Richard M. Daley, Mayor; and the Chicago Department of Transportation, Thomas R. Walker, Commissioner, and S. L. Kaderbek, Chief Engineer, Bureau of Bridges and Transit.

The field work, measured drawings, historical reports, and photographs were prepared under the direction of Eric N. DeLony, Chief of HAER. The recording team consisted of Architectural Field Supervisor James P. Hanley (Peoria, IL); Engineering Field Supervisor Justin M. Spivey (HAER); Architects Susan H. Gordon (University of Virginia), Karen L. Hassey (University of Virginia), Julia M. Koslow (University of Notre Dame), and Domagoj Kranjcevic (ICOMOS, University of Zagreb, Croatia); and Historians Jeffrey A. Hess (Minneapolis, MN) and Matthew T. Sneddon (University of Washington). Large-format photographs were taken by Jet Lowe (HAER). Bureau of Bridges and Transit Assistant Chief Engineer Christopher Holt served as department liaison.

DRAWN BY: Domagoj Kranjcevic, 1999 Thomas M. Behrens, 2000

CHICAGO BRIDGES RECORDING PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

CHICAGO, MILWAUKEE & ST. PAUL RAILWAY BRIDGE Z-2
COOK COUNTY ILLINOIS
CHICAGO

SURVEY NO. IL-143

HISTORIC AMERICAN ENGINEERING RECORD
SHEET 1 OF 03 SHEETS

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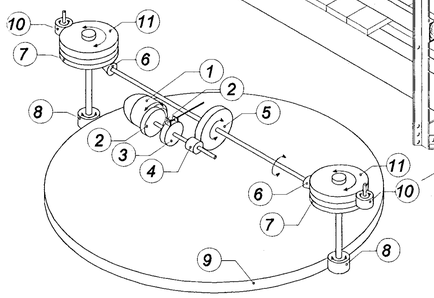
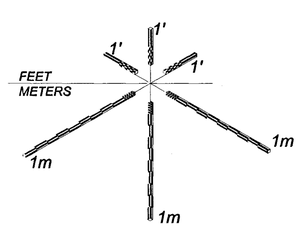


DRIVE TRAIN SCHEMATIC

The electric motor (1) turns a first reduction gear (2); rotation of this shaft is stopped by a brake (3) operated via a cable from the control house. A second reduction (4,5) turns a transverse shaft; rotation is transmitted to two vertical shafts by pairs of bevel gears (6,7). Pinions (8) turning in the same direction, rotate the bridge about a fixed circular rack (9). Alternately, the bridge can be operated by hand-cranked gears (10) with their own reductions (11).

ROLLER NEST



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CHICAGO
COOK COUNTY
ILLINOIS

SURVEY NO.
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HISTORIC AMERICAN ENGINEERING RECORD
SHEET 2 OF 03 SHEET

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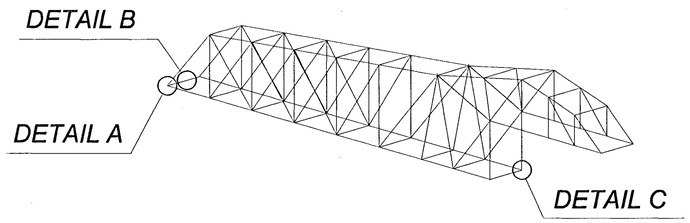
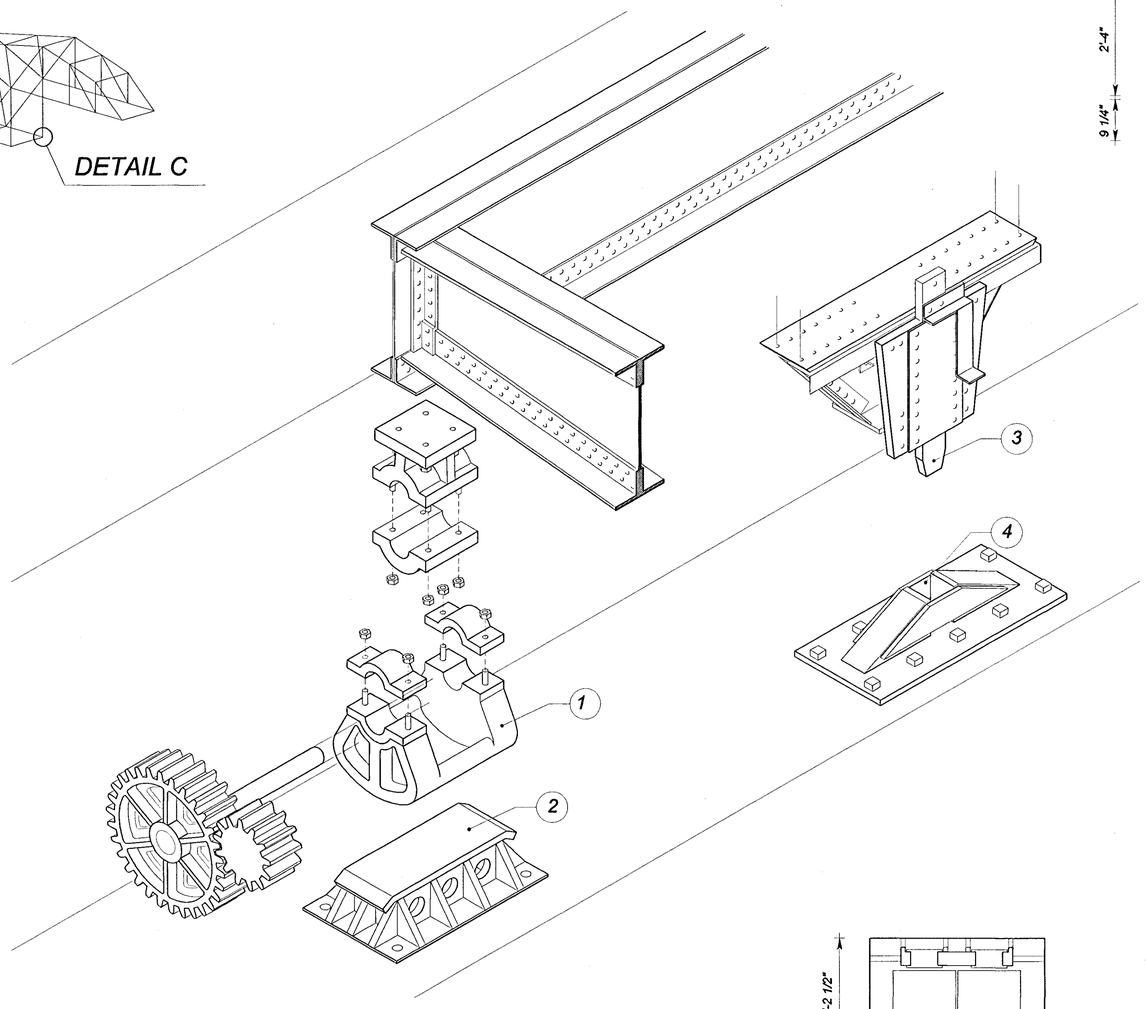
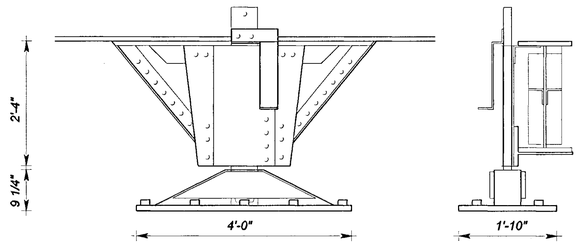
DETAILS



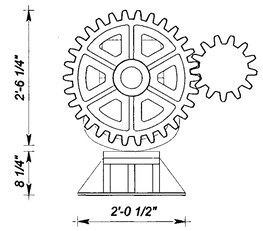




DETAIL B - SPAN LOCK

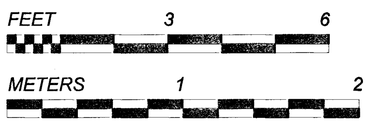
The end lift mechanism shown in Detail A provides a rocker-type bearing when the span is in the closed position. Like the rocker end of a fixed span, the bearing rotates slightly as temperature changes lengthen or shorten the truss. When the bridge is opened, a longitudinal drive shaft rotates the bearing shoe (1) clear of its seat (2). This allows the span to dip slightly toward its free end, lifting it off the back rollers (Detail C) at the opposite end. The procedure is reversed when the span is closed.

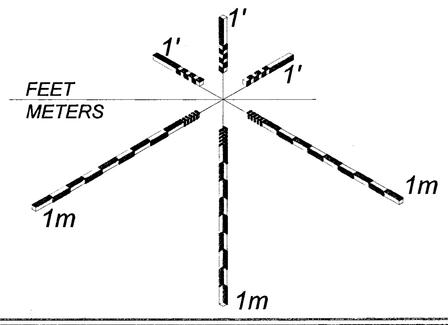
Although the span must open to allow free passage of river traffic, it must also provide a safe crossing for trains. To secure the bridge in its closed position, the span lock draw bar (3) is lowered into a slot (4) in the base. Evidence suggests that the longitudinal drive shaft turned a worm gear to actuate the draw bar and rail locks. This mechanism has since been removed, however, rendering the span inoperable.

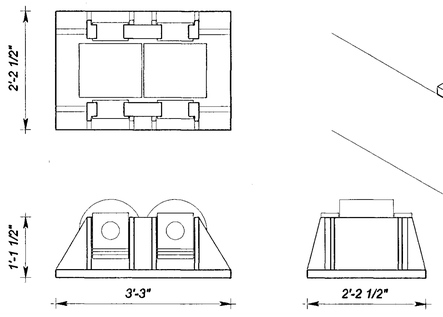


DETAIL A - END LIFT

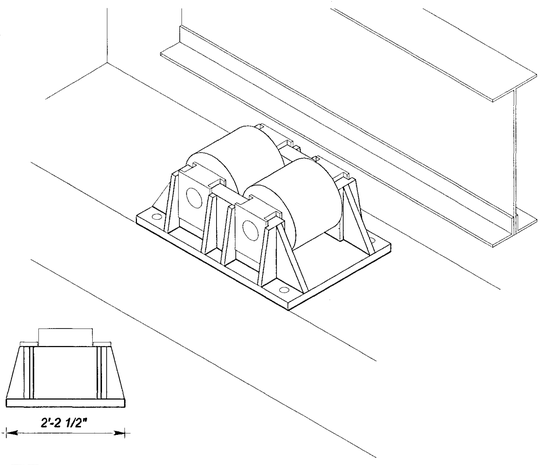
SCALE 3/4"=1'-0"







DETAIL C - BACK ROLLER



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SHEET 3 OF 03

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