



**Projector Test  
Screen**

**Slides  
Ready**

# Railroad Bridges at Zug Island

HistoricBridges.org



Presented By: Nathan Holth  
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# Introduction: About Me



- Website created and maintained by me.
  - Photos, Advocacy, & Documentation
  - 35 States
  - 4 Canadian Provinces
  - Some Overseas Countries
  - 4883 Bridges Listed
  - Currently
  - 15 Years
- I work in the office and also handle historic bridge matters.
  - Steel Fabricator
  - Restoration/Relocation of Historic Bridges &
  - Hot Rivets

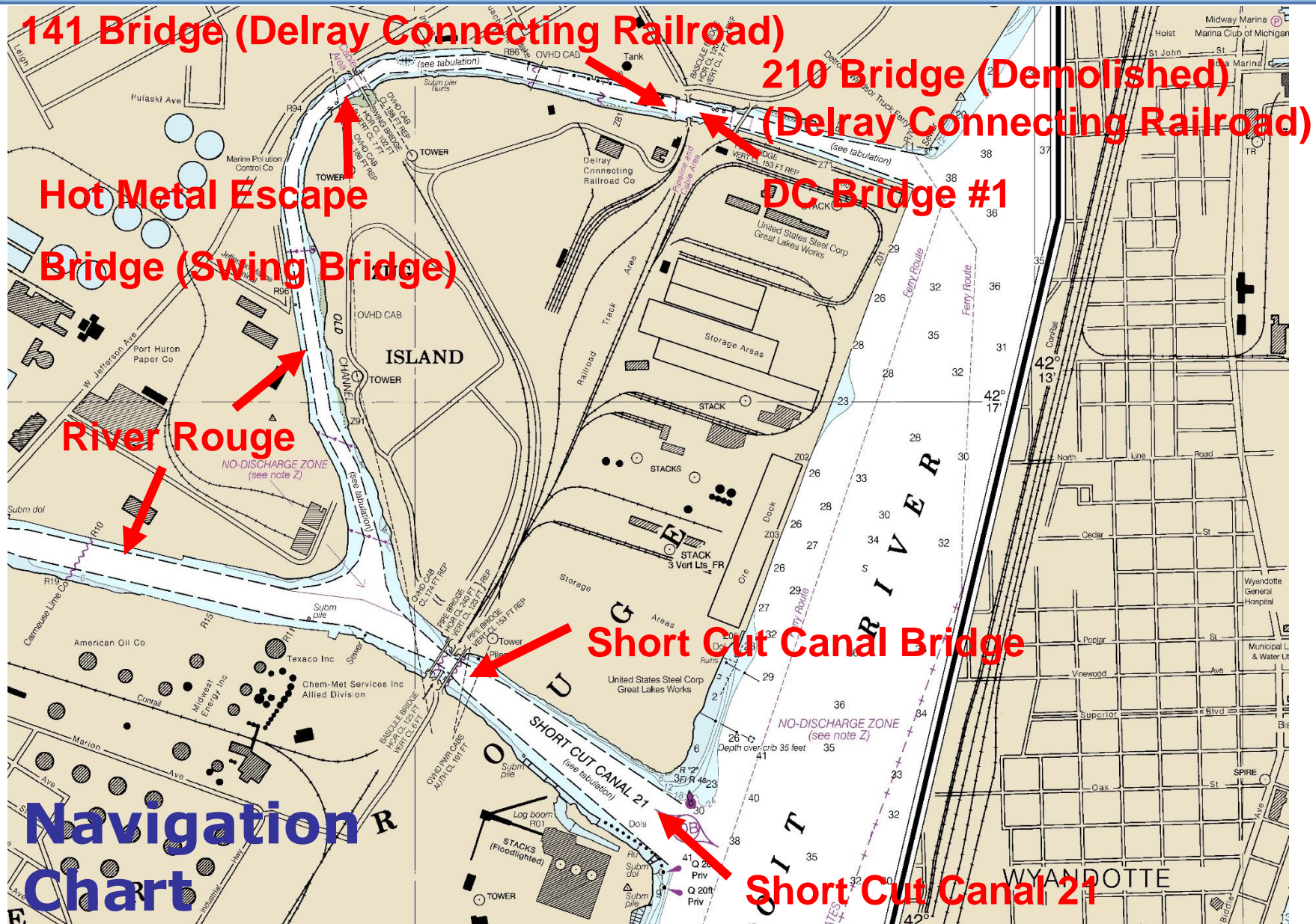


# Zug Island



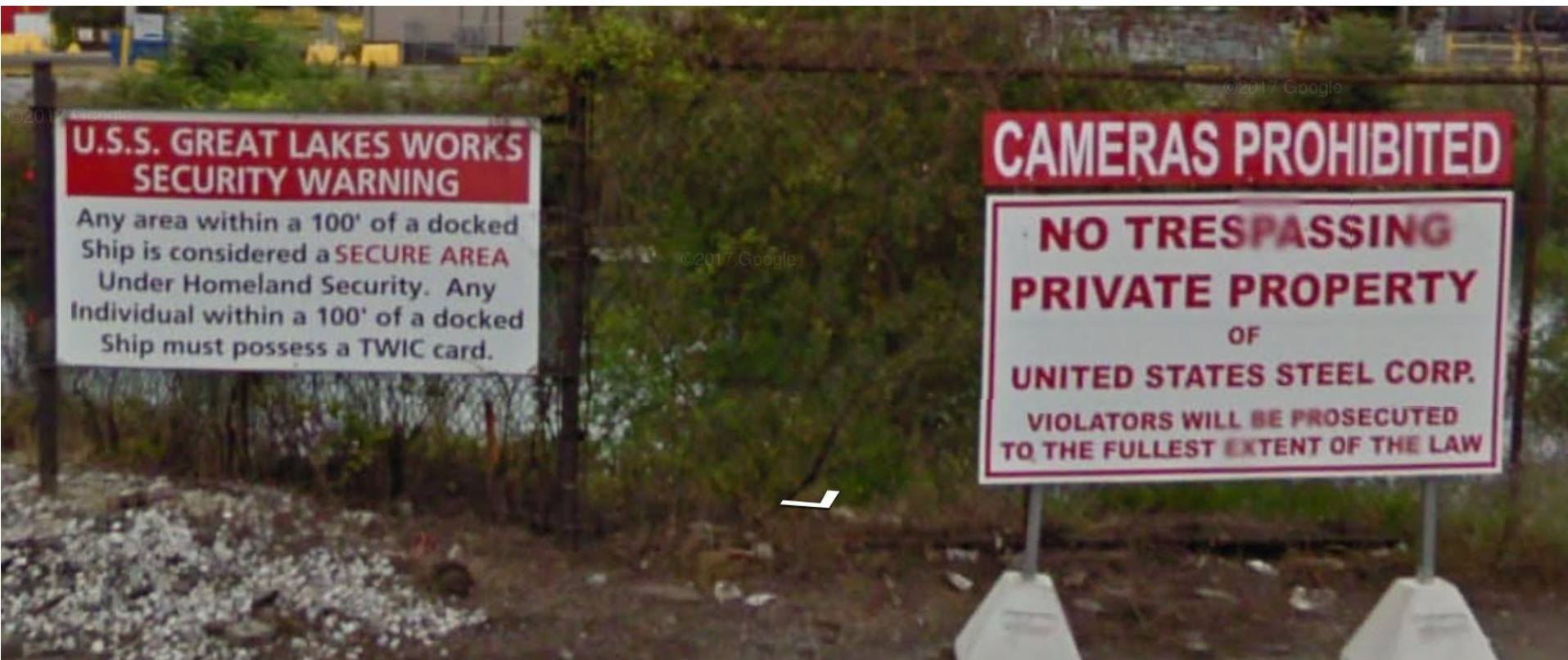


# Zug Island





## A Leading Tourist Attraction?



# Photo Credits

Due to inaccessibility of bridges, photos by others are used extensively. Thank you to the following photographers/sources:

- [michiganrailroads.com](http://michiganrailroads.com)
- Chosen Won (YouTube)
- Richard H. Scheel
- Nathan Nietering
- Ernest B. Novak
- Detroit Public Library
- Detroit Historical Society
- Wayne State University Digital Collections
- Google StreetView



# Hot Metal Escape Bridge



“Modern” bridge, built in 1976. (And sadly the only bridge I have photographed at Zug Island)

# Hot Metal Escape Bridge



Warren through truss swing bridge. Bolted connections and rolled steel beams.



# Hot Metal Escape Bridge



Approx. 260 foot swing span. Approx 315 feet total length.

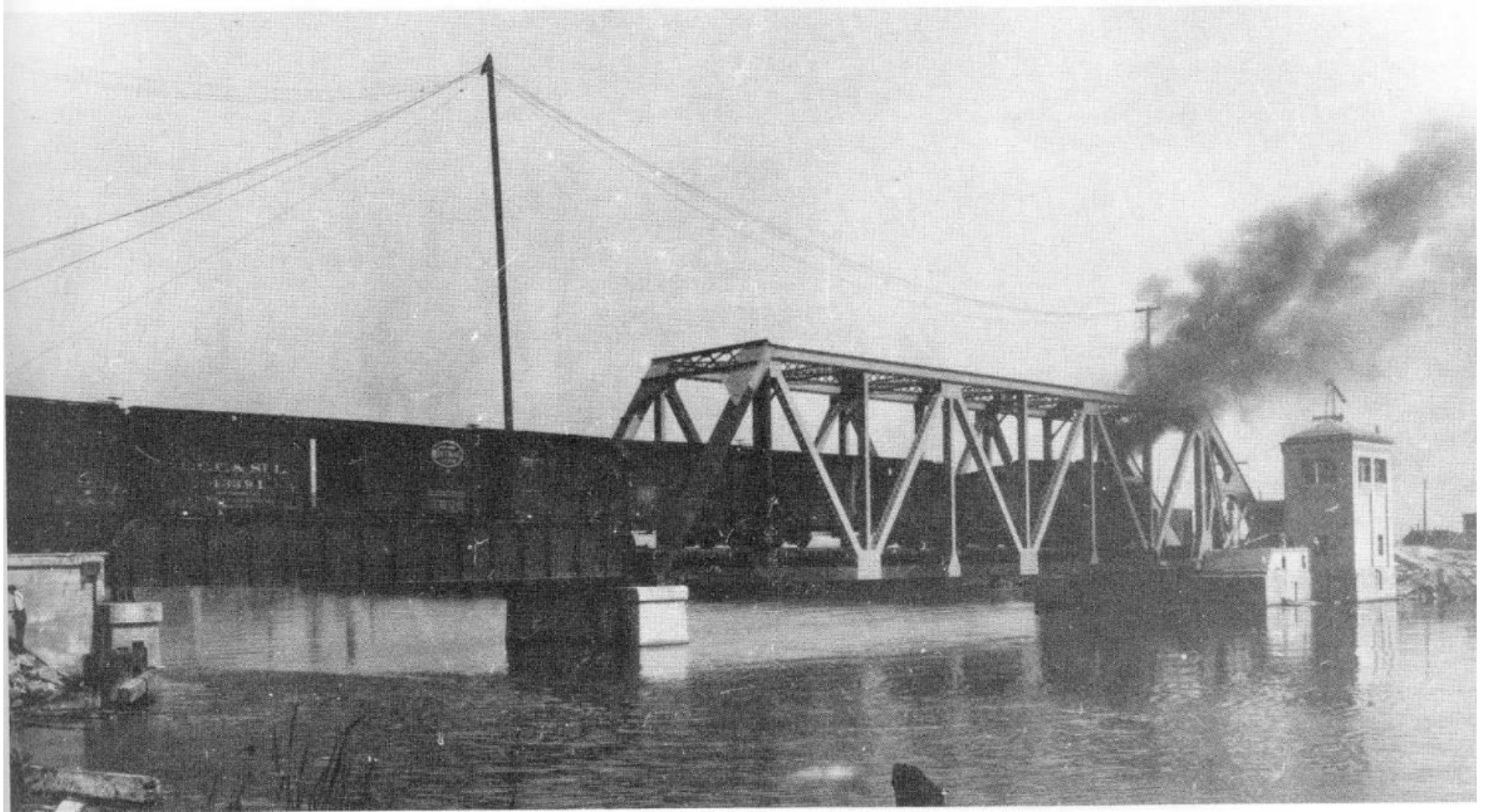


# Hot Metal Escape Bridge



Deck is capable of both railroad and highway traffic.

# Short Cut Canal Bridge



Strauss trunnion bascule bridge built in 1922.



# Short Cut Canal Bridge



Bascule leaf completely removed and replaced in 1957.



# Short Cut Canal Bridge



The new 1957 leaf is surprisingly similar in appearance to the 1922 leaf.

Note plate girder approach span to right, also replaced today.

# Short Cut Canal Bridge



An extremely rare example of a below-ground counterweight on a railroad bascule bridge.



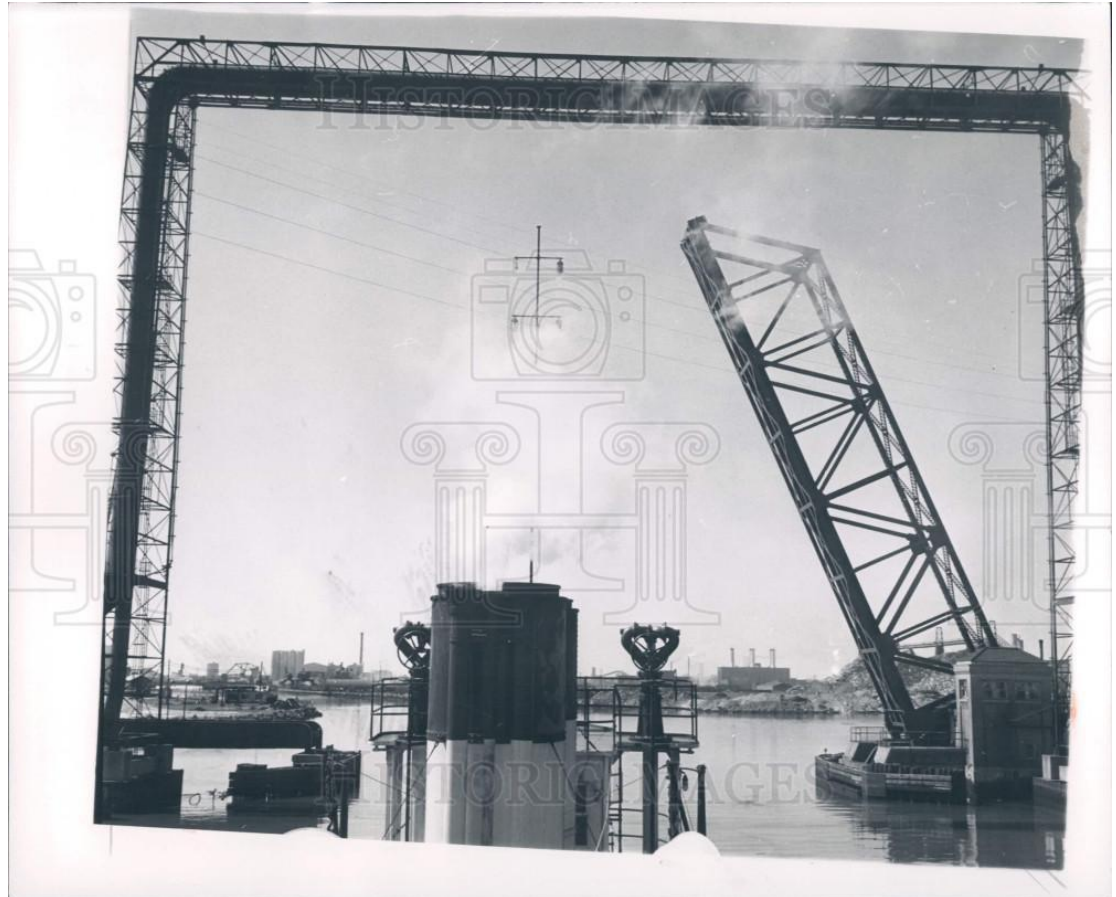
# Short Cut Canal Bridge



The bridge tender house is relatively attractive for a railroad bridge in an industrial setting.



# Short Cut Canal Bridge



125 feet of navigation clearance. Approx. 170 foot bascule span. Approx. 260 feet total length.

# 210 and 141 Bridges



Two bascule bridges built in 1914 by Scherzer Rolling Lift Bridge Company. Rolling lift bascules.

Due to proximity of these bridges, a single bridgetender house controlled both bridges.



# 210 and 141 Bridges



The two bridges replaced a single existing swing bridge.

# 210 and 141 Bridges



Steel fabrication/erection: Pennsylvania Steel Co.  
of Steelton, PA



# 141 Bridge



Substructure contractor: Ginzel and Towler of Detroit.

Substructure design by the Engineering Dept. of Solvay Process Company.

# 141 Bridge



Originally operated with a 37 HP AC motor, with means provided for hand operation.





# 141 Bridge



Originally built to carry a combination of highway and railroad traffic, plus 4 foot cantilevered sidewalks.

# 141 Bridge



Historical photo of bridge.



# 141 Bridge



Bridge being raised.



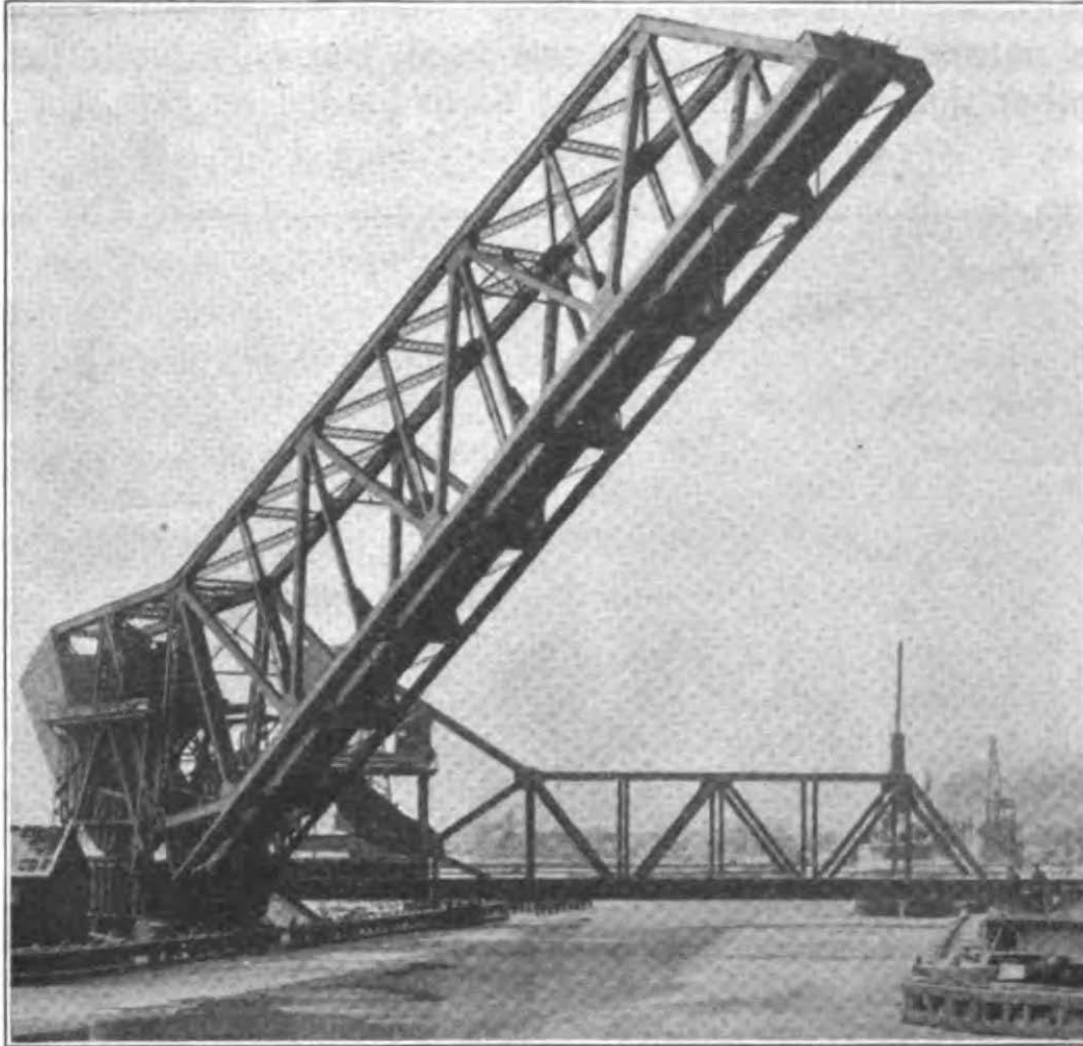
# 210 Bridge



The 210 Bridge was designed for railroad traffic only.



# 210 Bridge



The bridge was operated with two 30 HP AC motors, with means for hand operation available.

# 210 Bridge



Remains of the bridge approach are still present next to the bridgetender house.



# Bascule Bridge Engineers



Thomas Pihlfeldt



John Ericson

In the early 1900s, Chicago city engineers including city engineer John Ericson and city engineer of bridges Thomas Pihlfeldt, developed a very reliable and cost-effect design of bascule bridge.

# Bascule Bridge Engineers



Hugh E. Young

Later, another city engineer of bridges, Hugh E. Young decided that Chicago's bridges were so efficient that he opened a business on the side called the Chicago Bascule Bridge Company to design these bridges for other customers.



# Bascule Bridge Engineers



Hugh E. Young

The Wayne County Road Commission was one of those customers, and they hired Hugh. E. Young to design three bascule bridges.

# River Rouge Bascule Bridges



Jefferson Avenue



Dix Avenue



Photo Courtesy Nathan Nietering

Fort Street

Up until 2013, all three remained. However, the Fort Street Bridge was demolished and replaced.



# River Rouge Bascule Bridges

**Engineering World**  
A Journal of Engineering and Construction  
Published by the International Trade Press, Inc., Chicago

Vol. 20.—No. 2. CHICAGO, FEBRUARY, 1922. Two Dollars a Year.



Fort Street Bridge, Wayne Co. (Detroit), Mich.  
Chicago Bascule Bridge Co., "Engineers"

**C**HICAGO, the home of more modern bascule bridges than any other city in the world, desiring movable bridges which would be **first in beauty, economy of cost, operation and maintenance**, adopted the patented "internal rack" and fixed "underneath counterweight" as necessary basic elements of their design, and has **contracted for no other type since 1912.**

The great "Boulevard Link" Bridge is a monument to the efforts of engineers who spent ten years in the concentrated study and development of Chicago's bascule bridges.

Such experience and knowledge, insuring a bascule bridge that will embody the most modern features of design, has been available to you since 1920 through the organization by these engineers, of the Chicago Bascule Bridge Company.

***Our Engineering Service Means Real Service***

Although we use the "internal rack," it is not an exploitation of this or any other patent which we may use.

It will be to your advantage, whether you are considering a railroad or highway bascule bridge, to consult with us before adopting any other design.

**CHICAGO BASCULE BRIDGE COMPANY**  
*Engineers*  
118 North La Salle Street - Chicago, Illinois



BELMONT AVE. BRIDGE



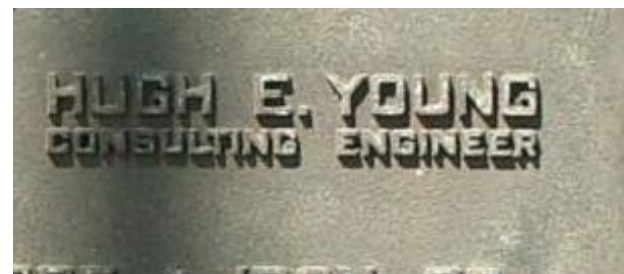
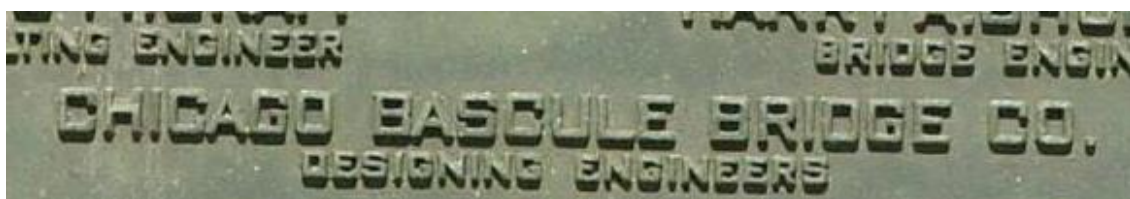
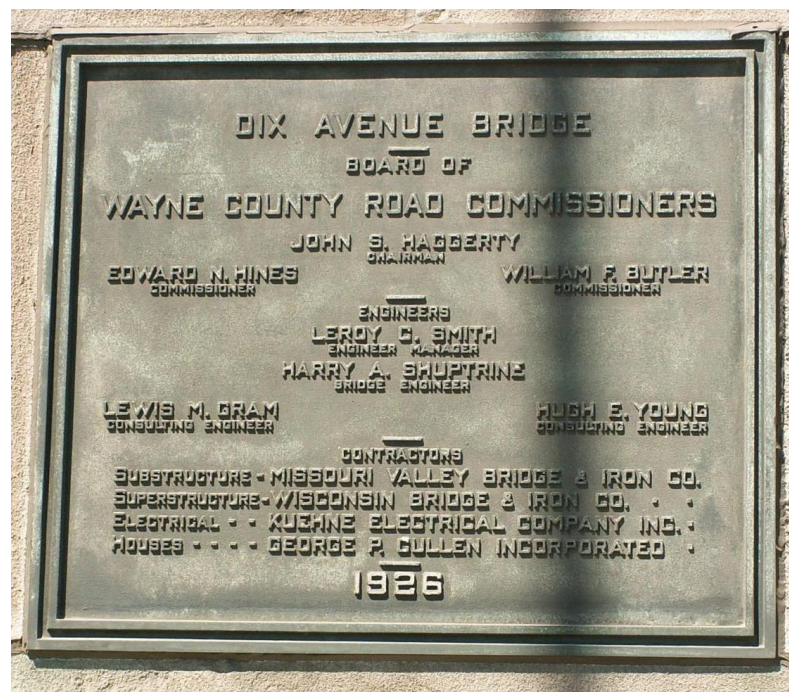
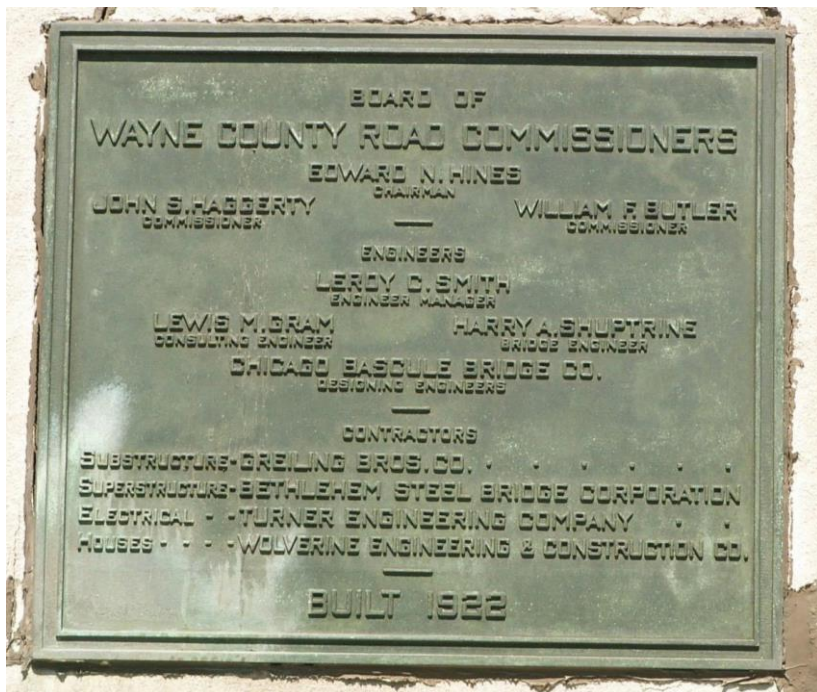
FRANKLIN-ORLEANS BRIDGE, CHICAGO

A 1922 advertisement for the Chicago Bascule Bridge Company included a drawing of the Fort Street Bridge

Essentially, an employee of the City of Chicago designed a bridge for Wayne County, Michigan!



# River Rouge Bascule Bridges



Hugh E. Young or the Chicago Bascule Bridge Company can be found on the River Rouge bridge plaques.



# Fort Street Bridge

11 lap 3'-6" where splices are  
1' be wired together with #14 wire.  
e plain square bars.  
e placed not closer than 3" from  
1 face of concrete, unless other-

1 to be 8'-6" thick unless otherwise  
e Engineer.  
of concrete see Specifications.  
f subpiers see General Plan of

(Substructure Contract 7 or 14)

## WAYNE COUNTY ROAD COMMISSION DETROIT, MICHIGAN

EDWARD N. HINES,  
CHIEF ENGINEER

JOHN S. HAGGERTY,  
COMMISSIONER

WILLIAM F. BUTLER  
COMMISSIONER

### DOUBLE LEAF TRUNNION BASCULE BRIDGE

AT

### FORT STREET

OVER

### THE RIVER ROUGE

### SUBSTRUCTURE

Subpiers

SCALE 1/4" = 1'-0" DATE Dec. 16, 1920 DRAW. No. 7

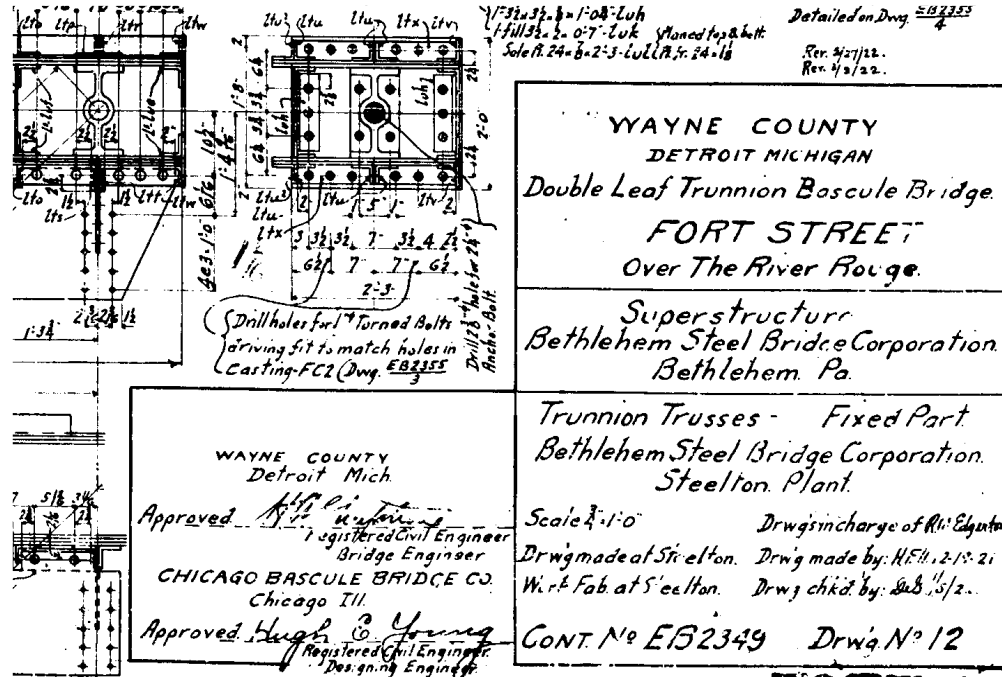
APPROVED

CHIEF ENGINEER

APPROVED

DESIGNING ENGINEER

Submitted By *Hugh E. Young*  
Designing Engineer

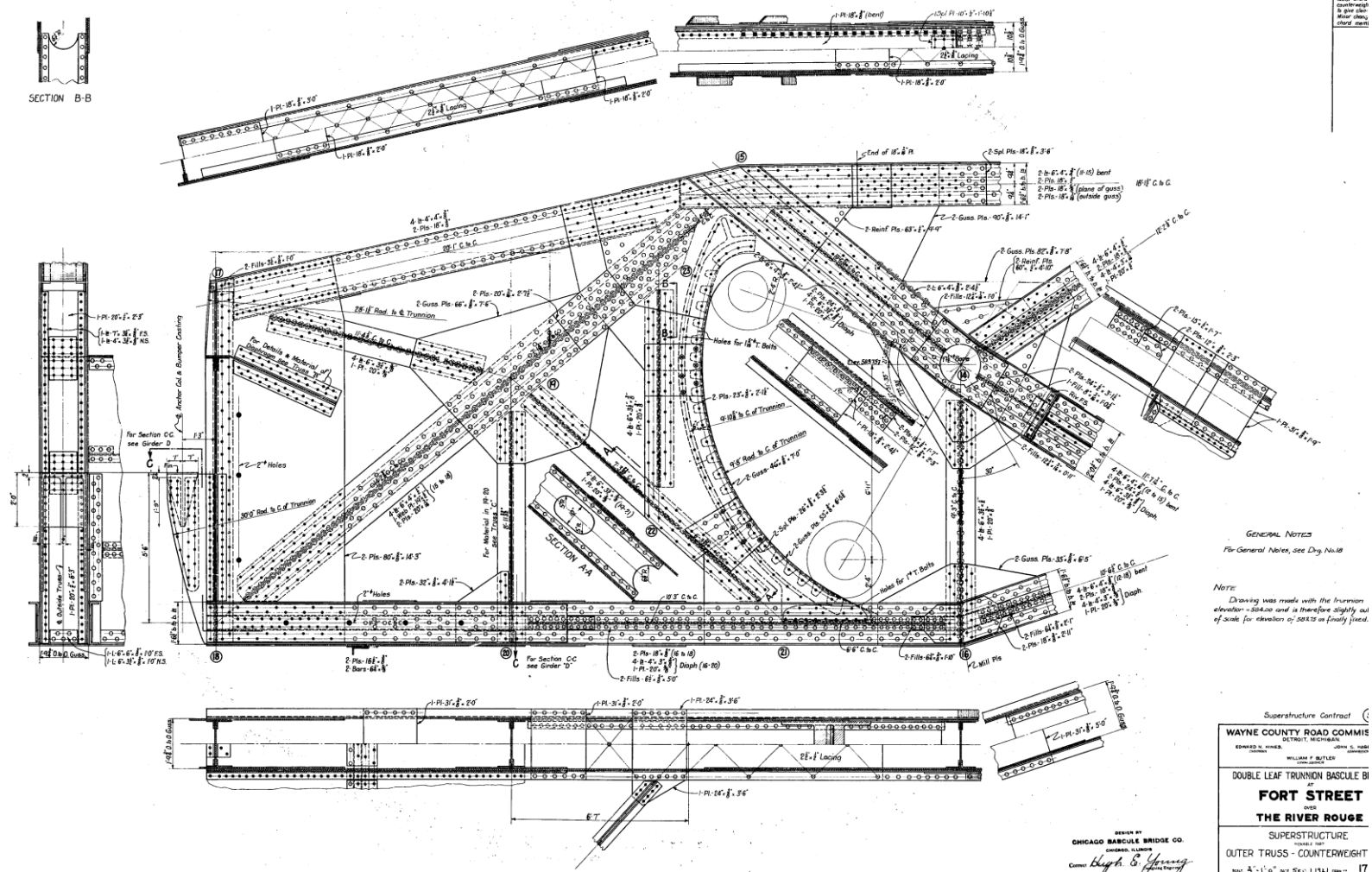


Submitted By *Hugh E. Young*  
Designing Engineer

CHIEF ENGINEER  
CHICAGO BASCULE BRIDGE CO.  
Chicago Ill.  
Approved *Hugh E. Young*  
Registered Civil Engineer  
Designing Engineer

Hugh E. Young's name appears on the Fort Street Bridge plans and shop drawings.

# Fort Street Bridge



Hugh E. Young's name appears on the Fort Street Bridge plans and shop drawings.



# Fort Street Bridge



Interior view of tail pit and machinery room taken during prep for demolition.

# Fort Street Bridge



Interior view of tail pit and machinery room taken during prep for demolition.



# Fort Street Bridge



Interior view of tail pit and machinery room taken during prep for demolition. Rack and pinion system.



# Fort Street Bridge



Demolition



# Fort Street Bridge



Demolition





# Fort Street Bridge



New Bridge

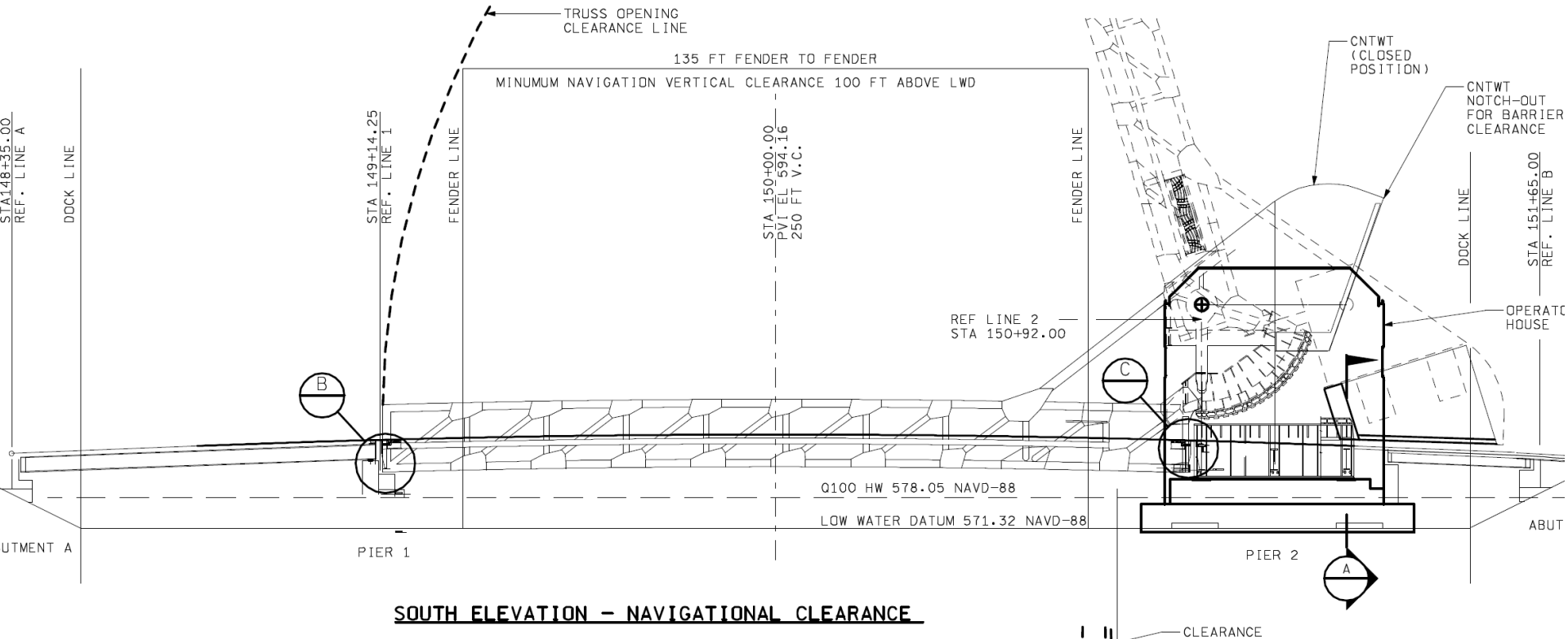


# Fort Street Bridge



New Bridge

# Fort Street Bridge



New Bridge



# Dix Avenue Bridge



Built 1927. Similar to Fort Street Bridge

# Dix Avenue Bridge



Historical photo showing bridge deck.



# Dix Avenue Bridge



Historical photo showing bridge open.

# Jefferson Avenue Bridge



A pony truss design, similar to that found on many Chicago bridges.

Built 1922 by the Strobel Steel Construction Company of Chicago



# Jefferson Avenue Bridge



A pony truss design, similar to that found on many Chicago bridges. Above is the 100<sup>th</sup> Street Bridge over Calumet River in Chicago

# Jefferson Avenue Bridge



Bridge in raised position.



# Jefferson Avenue Bridge



The original Jefferson Avenue Bridge from 1882, shown above, was a primitive European style bascule/drawbridge, replaced in the 1890s by a swing bridge.

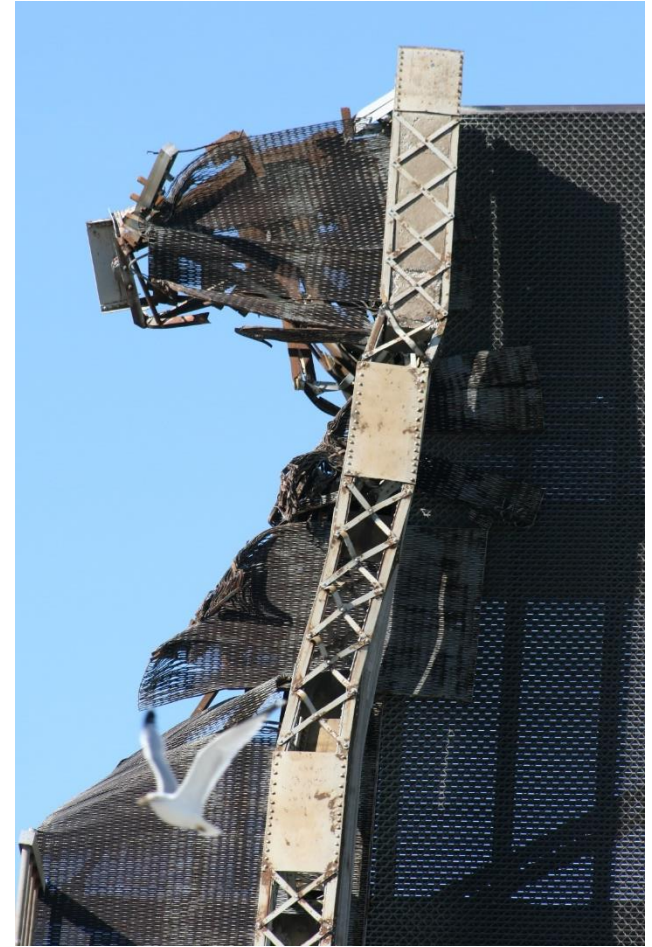
# Hold My Beer & Watch This!



In May 2013, a legally intoxicated bridgetender lowered the Jefferson Avenue Bridge BEFORE a freighter had passed under the bridge!



# Jefferson Avenue Bridge



The bridge was placed in the raised position and left there until a repair contract was let.

# Jefferson Avenue Bridge



Original section to left, new (bolted) section to right.



# Jefferson Avenue Bridge



Completed repairs.

# Conclusion/Questions



## Photo Credits/Sources:

- HistoricBridges.org
- Historic American Engineering Record
- Randy Mulder
- Upper Peninsula Regional Digitization Center
- Toronto Public Library

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