Pearl Street Bridge
Spanning Grand River at Pearl Street,
between Front and Campau Streets
Grand Rapids
Kent County
Michigan

HAER NO. MI-8

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
MID-ATLANTIC REGION NATIONAL PARK SERVICE
DEPARTMENT OF THE INTERIOR
PHILADELPHIA, PENNSYLVANIA 19106

HISTORIC AMERIGAN ENGINEERING RECORD

Pearl Street Bridge

HAER No. MI-8

Location:	The bridge is located on Pearl Street, between Front Street and Campau Street Grand Rapids, Kent County, Michigan UTM: 16.608050.4757740 Quad: Grand Rapids West
Date of Construction:	1858; replaced in 1922
Builder:	Pearl Street Bridge Company
Present Owner:	City of Grand Rapids 300 Monroe Avenue,, N.W. Grand Rapids, Michigan 49503 Mr. John L. Hornbach, P.E. City Enginmeer
Present Use:	The bridge cross the Grand River to provide major access to the Central Business District. Reconstruction/Restoration is proposed for 1983 to provide four unrestricted traffic lanes and two sidewalks.
Significance:	The bridge is a good example of open spandrel type arch construction, as described in engineering textbooks published during the first quarter of the twentieth century. This type of bridge construction is labor-intensive, and this design would not be considered cost effective or competitive in today's market place. The bridge setting is prominent and highly visible from adjacent commercial, public and park areas.
Edited & Transmitted by:	Jean P. Yearby, HAER, 1985

Project Information

The Pearl Street Bridge Reconstruction/Restoration is a "concept" to preserve the external arch ribs facades to support the reconstructed sidewalks while removing the inner two arches and constructing a modern superstructure in the roadway zone of the bridge that would be capable of supporting maximum legal loads, 77 ton gross vehicle weight. The proposed project would result in minor alterations to the external appearance of the structure and would retain the historical and architectural features of the existing bridge.

The proposed project results in a "concept" to preserve the external arch ribs facade resulting in a composite bridge "divided" into two outer pedestrian bridges and one central vehicular bridge.

This project is to be funded by the Federal Highway Administration. Under Section 106 of the National Historic Preservation Act of 1966, mitigative documentation was undertaken by Gary Tressel of Hubbell, Roth and Clark, Inc., Consulting Engineers, for the city of Grand Rapids in 1983.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of erection: The first bridge at Pearl Street was completed about a month after the first one at Leonard, November 25, 1858. It was erected by the Pearl Street Bridge Company. It was of the double truss Burr type, 620 feet long, resting upon five piers and massive stone abutments. The eastern portion of the bridge, from the island across the steam channel to the foot of Pearl Street, was a separate structure, connected with the main bridge by a high embankment across the island. Tolls were charged for crossing until the city purchased the bridge in June 1873.

   The first Pearl Street bridge was used until 1886, when an iron structure replaced it. The island and east channel were meanwhile converted into building lots by filling in with earth. The iron bridge was torn down and the present structure, completed November 7, 1922, took its place. The plans for the existing bridge are dated September 1921.

2. Engineer: Westcott Engineering Company, Chicago, Illinois, as shown on name plate and on plans.

3. Original and subsequent owner: City of Grand Rapids

4. Contractor: Koss Construction Company, Des Moines, Iowa, as shown on name plate.

5. Original plans and construction: Original plans dated September 1921, and revised drawings dated September 1922, are available and are on file at the Office of the City Engineer, City of Crand Rapids.

6. Alterations and additions:

   a. Bridge railings and lights were reconstructed in 1970.

   b. Bituminous surfacing was applied over brick paver road surface in 1970.

   c. Circular stairways from the bridge sidewalk down to the former entrances to the abandoned Comfort Station, located under the east abutment, were removed in 1965, approximately.

   d. Entrances and windows at the abandoned Comfort Station have been bricked-in in approximately 1965.

B. Historical Context:

The bridge has been continuously in service since opening to traffic in 1922, serving as an essential link in the Grand Rapids community.

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character: Well proportioned, open spandrel, low rise, multiple span, multi-ribbed arch bridge with structural east approach.

2. Condition of fabric: Roadway and sidewalks are in poor condition; arches and spandrel walls are in fair to good condition.

B. Description of Exterior:

1. Overall dimensions: Curb to curb - 46 feet; sidewalks 10 feet wide either side; overall width = 69'-8" +/-; length - 470 feet, excluding structural east approach.

2. Foundations: Substructure units are pile supported abutments and piers.

3. Walls: Exposed end walls of abutments and piers are faced with cut stone.

4. Structural system, framing: The superstructure consists of four reinforced concrete arch ribs springing from the abutments and piers. Reinforced concrete transverse spandrel walls rise from the top of the arch ribs to support a beam and a slab type roadway and sidewalk framing system.

5. Circular stairway: The former circular stairways leading to the entrances of the abandoned Comfort Station have been removed.

6. Openings:

   a. Doorways and doors: Bricked in

   b. Windows: Bricked in

C. Description of Interior:

1. Floor plans: Abandoned Comfort Station is located under the east abutment - the area is subdivided by concrete partition walls. However, the area is common without any isolating partitions and doors.

2. Stairways: None

3. Flooring: Exposed concrete

4. Wall and ceiling finish: Exposed concrete

5. Openings:

   a. Doorways and doors: Bricked in

   b. Windows: Bricked in

6. Decorative features and trim: None

7. Hardware: None

8. Mechanical Equipment:

   a. Heating, air conditioning, ventilation: None

   b. Lighting: None

   c. Plumbing: None

D. Site:

1. General setting and orientation: The setting is urban. The bridge crossing is normal to the river.

2. Historic landscape design: The east dock line is a vertical wall. The west bank is natural. The 470-foot river width is the primary landscape feature.

3. Outbuildings: None

PART III. SOURCES OF INFORMATION

A. Original architectural drawings:

1. Westcott Engineering Company:

a. Drawings 1 through 5, dated September 1921

b. Drawings C1 and C2, dated September 1922

c. City of Grand Rapids: Drawing 1 dated June 8, 1970

B. Early views: A construction photograph is on file with the City of Grand Rapids.

C. Interviews on this project consisted of solicitation of comments and additional information in writing from the local, regional and state historical organizations, Grand Rapids Public Library and providing the public an opportunity to review and comment through public notices placed in the local paper to the Environmental Assessment and Section 4(f) Evaluation. The results of these requests have been consistently in support of the efforts being implemented to preserve the historical characteristics of this bridge.

D. Bibliography:

1. Primary and unpublished sources:

The original plans dated September 1921 and revised drawings dated September 1922 are available and are on file in the Office of the City Engineer, City of Grand Rapids.

An Engineering Analysis, dated March 1981, is on file in the Office of the City Engineer, City of Grand Rapids.

2. Secondary and published sources:

The Lower Peninsula of Michigan, an Inventory of Historic Engineering and Industrial Sites, 1976, published by the Historic American Engineering Record, National Park Service, U. S. Department of the Interior.

Grand Rapids, Renaissance on the Grand, 1982, published by Continental Heritage Press, Inc.

Old Grand Rapids, Pen Pictured by Arthur Scott White, 1925, published by White Printing Company, Grand Rapids, Michigan.

A Citizen's History of Grand Rapids, Michigan, with Program of the Campau Centennial, September 23-26, 1926, compiled and edited by William J. Etten; published by A. P. Johnson Company for the Campau Centennial Committee.

E. Likely Sources not yet Investigated:

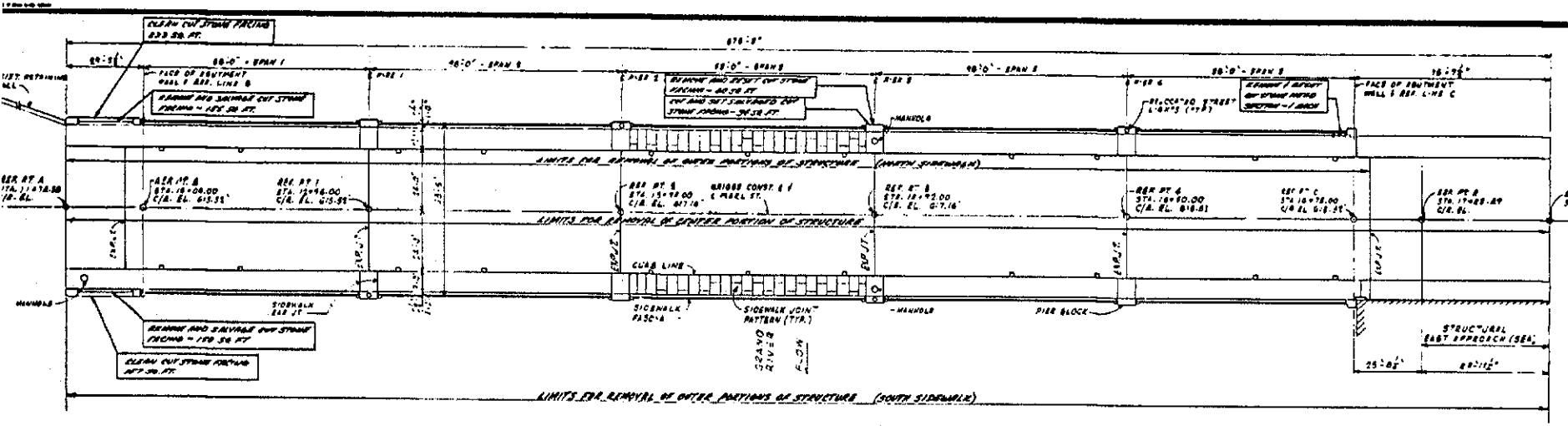
There are no known likely sources of information which remain to be investigated regarding the Pearl Street Bridge.

F. Supplemental Material:

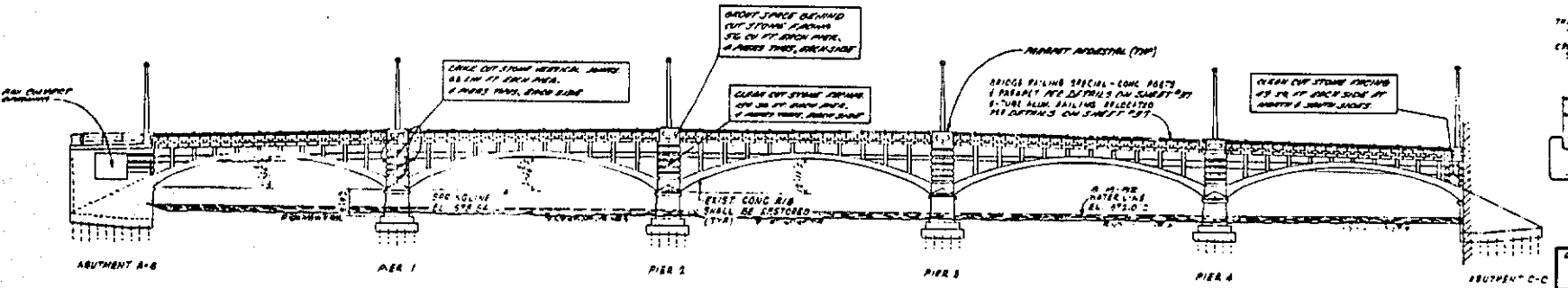
Environmental Assessment and Section 4(f) Evaluation prepared by the city of Grand Rapids and Hubbell, Roth & Clark, Inc., Consulting Engineers, 2323 Franklin Road, Bloomfield Hills, Michigan 48013.

Contract Drawings and Specifications for the Proposed Reconstruction/ Restoration of Pearl Street Bridge prepared for the city of Grand Rapids by Hubbell, Roth & Clark, Inc., Consulting Engineers, 2323 Franklin Road, Bloomfield Hills, Michigan 48013. Plans and specifications were prepared by Mr. Frederick G. Oles, Chief Structural Engineer, and Mr. Gary J. Tressel, Project Manager, and issued for bids on January 18, 1983.

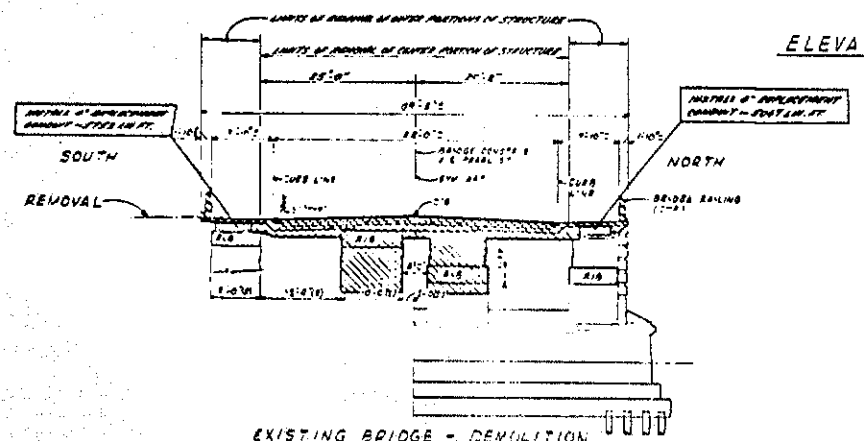
Exhibit No. 1 (attached) consists of eight 8 photographs prepared by the West Dempster Company, Suite 100C, Waters Building, Grand Rapids, Michigan 49502 on December 14, 1982, by Mr. Michael Forrest, photographer.



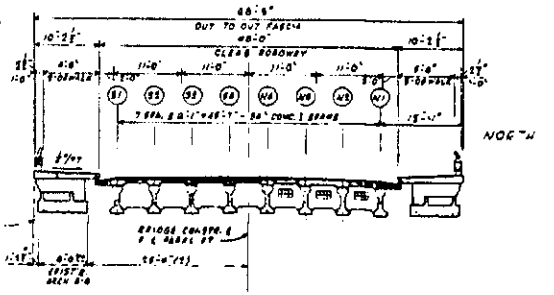
PLAN • ROADWAY



ELEVATION



EXISTING BRIDGE - DEMOLITION
TYPICAL HALF SECTION @ MIDSPAN
TYPICAL HALF SECTION @ QUARTER SPAN



NEW BRIDGE
SECTION @ MIDSPAN

NOTE:
ALPHABETICAL DESIGNATION OF PIERS IS NOT TO BE CONSTRUED AS A PIER SEQUENCE

NOTES

TOP OF FINISHED PAVEMENT MEASUREMENT FROM CURB GRADE

ROADWAY WIDTH (FT.)	PAVED WIDTH (FT.)	"A" DIM. CURB GRADE (FT.-IN.)	"B" DIM. PAVED (FT.-IN.)	"C" DIM. (FT.-IN.)
66	66	-0"	-0"	0"

MISCELLANEOUS QUANTITIES

ITEM
REMOVAL OF CENTER PORTION OF STRUCTURE
REMOVAL OF OUTER PORTIONS OF STRUCTURE
24" WALL 3' REINFORCED CONDUIT
REMOVE AND SALVAGE CUT STONE FACING
REMOVE AND RESET CUT STONE INTAKE SURROUND
REMOVE AND RESET CUT STONE PARAPET
CUT AND SET SALVAGED CUT STONE FACING
CHASE CUT STONE VERTICAL JOINTS
GROUT SPACE BEHIND CUT STONE FACING
CLEAN CUT STONE FACING

CITY OF GRAND RAPIDS, MICHIGAN
PEARL STREET BRIDGE OVER THE GRAND RIVER
GENERAL PLAN OF STRUCTURE

PEARL STREET BRIDGE
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