

Third Avenue Bridge  
Spanning the Olentangy River  
City of Columbus  
Franklin County  
Ohio

HAER No. OH-111

HAER  
OHIO  
25-COLB,  
50-

PHOTOGRAPHS  
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record  
National Park Service  
Great Lakes System Office  
Department of the Interior  
1709 Jackson St.  
Omaha, NE 68102

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**Historic American Engineering Record  
The Third Avenue Bridge**

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**I. INTRODUCTION**

**Location:** Spanning the Olentangy River on West Third Avenue, also known as the West Third Avenue Bridge, in the City of Columbus, Franklin County, Ohio.

**Latitude:** 39 degrees - 59' - 03" North  
**Longitude:** 83 degrees - 01' - 28" West  
**UTM:** easting 327420  
northing 4427730

Zone 17, Southwest Columbus Quadrangle

**Construction:** Design Date: 1917  
Constructed: 1918  
Opened to traffic: 1919

**Owners:** Franklin County Commissioners  
(Original & Present)

**Present Use:** Vehicular and pedestrian bridge to be replaced by a new vehicular and pedestrian bridge. Project date of removal is Spring of 1997.

**Significance:** The 1913 flood destroyed or damaged many bridges and buildings along the riverfront in Columbus. While the West Third Avenue Bridge was not among those that were, it was replaced as a result of this flood and contributed to the partial realization of the 1908 City Plan and City Beautiful Movement. This would also be the first time that the riverfront was the main focus of civic improvements. The bridge is also an example of designer Wilbur Watson's work.

Project  
Information:

This document was undertaken in 1996 as part of the Memorandum of Agreement between the State Historic Preservation Office and the Huntington District Army Corp of Engineers as a mitigative measure prior to the replacement of the bridge. This report was prepared by Jones-Stuckey, Ltd., Inc. in conjunction with the Franklin County Engineer's Office.

## II. HISTORY OF BRIDGE

### A) History of the Site

With the establishment of The Ohio State University in 1870, development of the land north of Columbus downtown began to intensify. The immediate neighborhood surrounding the West Third Avenue Bridge was developed between 1881 and 1920. In 1881, a 227.46 acre tract of land owned by Mr. William Neil was partitioned in to 11 lots of varying sizes.<sup>1</sup> At that time West Third Avenue stopped at the present Olentangy Street to the east. The extension of West Third Avenue from Olentangy Street across the Olentangy River was constructed between 1885 & 1890. Both original bridge fabricator and builder are unknown. From County records, it is known that this bridge was a single span (189.15 ft.) through Pratt Truss.<sup>2</sup> To make way for the present bridge, this original bridge was later moved to London-Lancaster Road over Little Walnut Creek on the Franklin - Pickaway County line in 1916. The County Commissioners contracted with Capital Construction Company to disassemble, remove and re-erect the truss bridge. The contract amount was for \$8339.99.<sup>3</sup> The bridge remained at the London - Lancaster site until taken out of service in 1982.

In 1891, Lot No. 5 and 6 of the original eleven lots were subdivided. These subdivisions were known as the Markland Addition and Wyoming Place Addition, respectively.<sup>4</sup> At the same time, the trolley communities of Grandview and Arlington, west of the Olentangy River were being developed. The existing steel trusses could not carry the 50 ton street car loading needed to support an expanding community.<sup>5</sup> This helps explain why the truss, in relatively good condition and only 25 years old, was replaced with the present earth-filled arch bridge.

Several other external factors influenced the design of the present West Third Avenue Bridge. The World's Columbian Exposition held in Chicago in 1893 is often viewed as the beginning of the City Beautiful Movement in the United States.<sup>6</sup> From this exposition, cities across the country attempted to uplift their community from the depths of the Industrial Revolution. The City of Columbus commissioned a study often referred to as the "1908 Master Plan" but submitted as the "Report of the Columbus Plan Commission". Those on the commission were Austin W. Lord (Chairman), Albert Kelsey, Charles N. Lowerie, H.A. MacNeil and Charles Mulford Robinson (Secretary).<sup>7</sup>

*"In scope, the present Report includes the whole city of Columbus, the contiguous territory over which the growing city is to spread, and all that adjacent area which in coming years is directly to contribute to the pleasure and welfare of the citizens."*<sup>7</sup> The study's intent was to give a general direction for the city to control its growth and provide a better environment for its citizens. It was divided into three discussion groups: (1) the General Survey; (2) the Park System and (3) the State or Civic Center.

In the General Survey section, the report discussed the vision for the bridges to be built in Columbus. While careful to separate those bridges like Broad and Main which are within the Civic Mall area from the ordinary river crossing such as West Third Avenue, the commission still gave some general instructions. *" But, speaking generally, the conspicuousness of a bridge, seen as it is for a long distance on either shore, justifies great carefulness of design. Permanence is the first practical requirement, and nothing better gives the effect of strength than a broad masonry construction. Concrete is a close second in appearance, and it is so inexpensive and requires little attention, as compared with steel, that the Commission earnestly recommends that the further bridges of Columbus be either of concrete or masonry."*<sup>7</sup>

In 1913 the state of Ohio was ravaged by one of the worst floods in history. As many as one thousand bridges were destroyed across the state.<sup>8</sup> While it is known that the 1913 flood did not destroy the West Third Avenue bridge, many of the bridges that were destroyed were steel trusses. Public sentiment was to "flood proof" the bridges. Filled reinforced concrete arch bridges met this criteria. In fact, the King Avenue bridge was under construction at the time of the flood. The partially completed structure withstood the ravages of the flooding. However there was concern about adequate waterway opening, A forth span was added to the bridge as a result. By 1913, the Closed Spandral Filled Arch bridge was well established in Central Ohio.

#### B) The Bridge

West Third Avenue Bridge designed by consulting engineers, The Watson Engineering Company, is a four span, closed spandral earth-filled arch. Its total length is 388 ft., with each of the four spans measuring 90 feet (face/face) or 97 feet (c/c of substructure). A total waterway opening

of 6,900 square feet was 500 square feet greater than King Avenue. The bridge has a roadway width of 30 ft. with a six foot sidewalk on each side. A street car loading of 50 tons with an impact loading of 25 % was used in the design.<sup>9</sup>

Plans for the bridge design and its estimate were submitted and approved by the Franklin County Commissioners on July 2, 1917.<sup>10</sup> The bridge, constructed by the firm of Robert H. Evans & Company was completed in 1919.<sup>11</sup> Commemorative plaques at each end of the bridge are still on the structure. Those plaques will be incorporated onto the replacement bridge.

Its ornamentation, while fairly plain, reflected many of the City Beautiful Movement characteristics. Items such as exposed aggregate on the balustrade railing, concrete light poles and the use of curved wingwalls added to the design. In addition, Mr. Wilbur Watson advanced his theory of the use of defined structural members as ornamentation. The piers, arch element and spandrel wall were extended to call attention to their designs.<sup>12</sup>

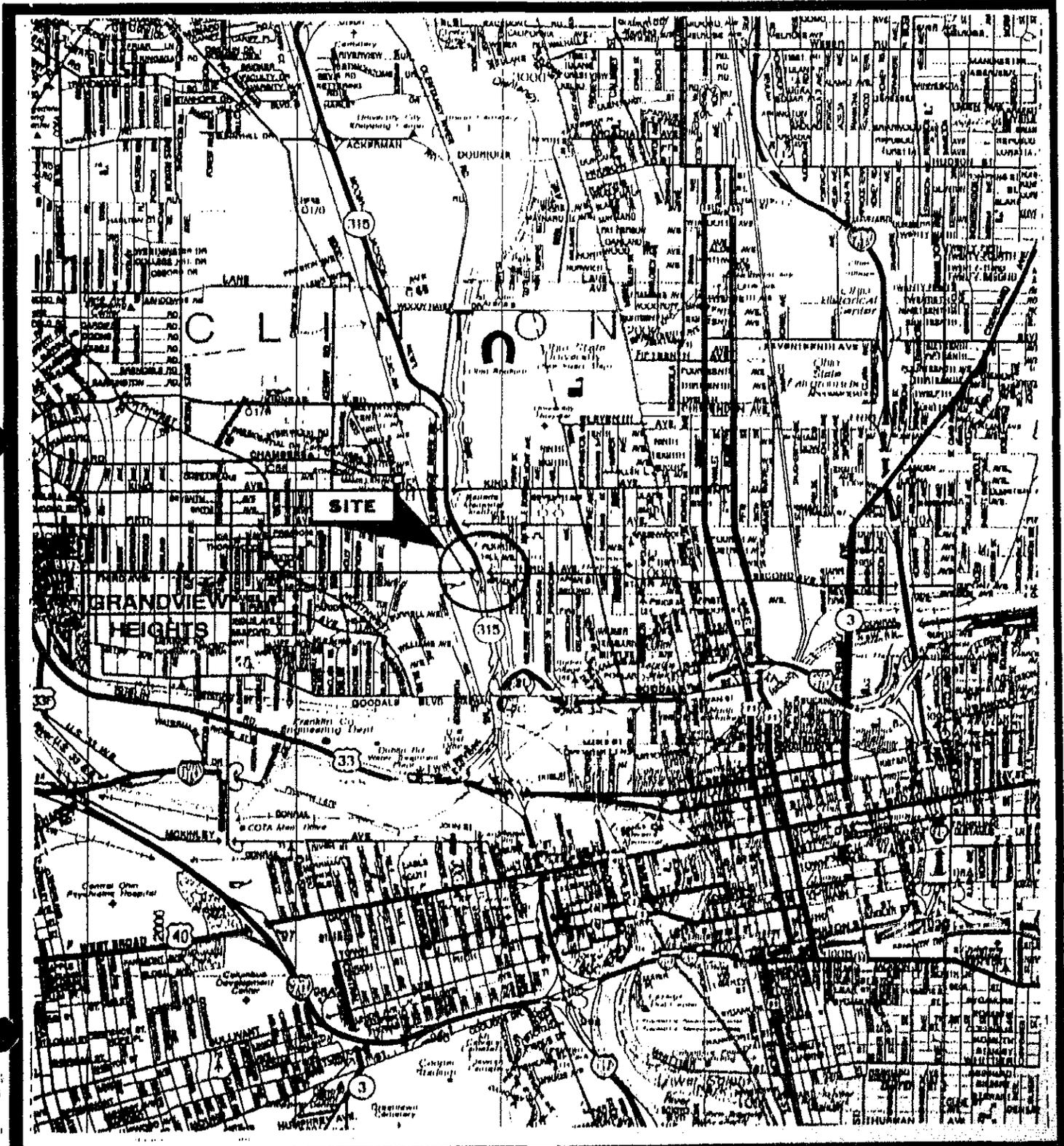
In 1951, the Olentangy River became regulated with the building of the Delaware Dam. The Dam was built to control flooding on the Olentangy. In 1967-69, Olentangy Freeway (SR 315) was constructed over the west end of bridge. Approach roadway fill of the overpass bridge fills in the western two spans.<sup>13</sup>

C) The Designer : Wilbur J. Watson

Mr. Watson founded the consulting engineering firm of "The Watson Engineering Company" in 1907. The private practice lasted until his death in 1937. In addition to designing West Third Avenue Bridge, Mr. Watson was a co-designer of the King Avenue Bridge in 1914 with Walter Braun. Mr. Braun at that time was the Franklin County Bridge Engineer.<sup>14</sup>

As a well known designer around the state of Ohio, Mr. Watson advanced his company as an author of journal articles and four books. Those books were *Specifications for Concrete Arch Bridges*, published 1905; *Bridge Architecture*, published in 1927; *Decades of Bridges, 1926-36*, published in 1937; and *Bridges in History and Legend*, published in 1937. His special interest was in bridge aesthetics. From his book, *Bridge Architecture*, Mr. Watson described the design of the King Avenue Bridge: "*This bridge may be considered as typical of its kind, although greater pains have been taken to obtain pleasing lines than usual in this class of structure. The essential features may be described as the usual of perfect ellipses for the interdosal curves, curved cutwaters for the pier, curved retaining walls at the abutments and a carefully executed parapet. Another feature of the bridge is the light color, almost white, obtained by use of selected aggregates (white Limestone) for the concrete. No attempt to imitate cut stone masonry is made.*"<sup>15</sup> As stated previously, West Third Avenue was typical of its kind but attention to details enhanced it.

D. LOCATION MAP



### III. DECLINE AND RECENT HISTORY

#### A. ALTERATIONS AND REPAIRS

- 1946            New concrete curbs constructed.
- Sep. 1955       Patched curbs.
- Oct. 1955       Applied Silicone Masonry Water Repellant to sidewalk, curb face and deck facia.  
Gemaco on North side, loxseal on South side & both deck faces.
- Mar. 1957       South sidewalk replaced with 6" concrete Class C - 6 1/2 bag mix air entrained  
with 6 x 6 #10 gage mesh.
- Oct. 1957       Resurfaced deck with 2" thick t-35 hot mix
- Sep. 1961       Capped North walk by removing existing concrete except curb and replacing to  
grade (4" +/-).
- Oct. 1962       Applied linseed oil anti-spalling to face of curb and sidewalk, 2 coats, 35 gal  
total.
- Mar. 1966       Two utility 21" dia. manhole lids replaced.
- 1967            Columbus & Southern Electric (C&SOE) installed electrical conduits, replaced  
North sidewalk.<sup>16</sup>
- Late 1960's     Overpass bridges for the Olentangy Freeway constructed over the western portion of  
the West Third Avenue Bridge and approach roadway. A stepped west embankment  
results from the fill brought in for the more recently constructed overpass.<sup>17</sup>
- 1981            Resurface deck with 2" of ODOT item 404.

## B. RECENT INSPECTIONS AND TESTING

- Mar. 1968     Whole structure was reported as crumbling. Some of the underneath reinforcing steel was exposed.
- 1981           Bridge inspection report shows spalling concrete on the arch facia and the spandral walls, and on the superstructure. Heavy spalling was observed on the substructure.<sup>18</sup>
- Jul. 1982     Condition Survey: Jones-Stuckey, Ltd. Inc. completed a condition survey for the Third Avenue Bridge over the Olentangy River.<sup>19</sup>
- Condition: An on-site inspection was made on the bridge, from the riverbanks, and from a boat, viewing all exposed portions of the bridge and recording the apparent condition graphically. The bridge was rated in fair to good condition. However, there was extensive surface distress, especially on the arch edges which was 85% spalled. Walls, piers, abutments and arch underside were spalled to a lesser extent, 25% or less. A few rail post tops had spalled. Spans A & B have been largely filled in underneath by S.R. 315 embankment.
- Jun. 1991     Preliminary engineering report: "Parsons Brinckerhoff was retained by Franklin County to perform an in-depth inspection analysis, and evaluation of the Third Avenue Bridge over the Olentangy River, Bridge No. FRA-3855-212, with the purpose of investigating the condition of the structure and assessing its potential for rehabilitation and restoration or replacement."<sup>20</sup>

Inspection: An in-depth hands-on inspection of the bridge was performed by sounding and mapping the concrete surface. The concrete was found to be in poor condition exhibiting severe surface deterioration in localized areas and in distinct patterns throughout the bridge.

Analysis: Analysis indicated that the structural integrity of the bridge could be maintained and normal highway loading could be permitted without load posting. The inventory rating was set at 44 tons and the operating rating at 73 tons for the bridge. However, it was not economically feasible to repair and restore the structure. The concrete typically exhibited heavy localized surface deterioration and overall degradation to its strength and integrity.

Recommendations: The evaluation of the structure included a combined assessment of visual and tactile observations, lab results of samples taken from the site, and a structural analysis of the barrel arch. Based on this evaluation, it was recommended that the Third Avenue Bridge over the Olentangy River be replaced. Furthermore, it was suggested that replacement studies be initiated as soon as practical so that the bridge can be economically replaced before it becomes structurally unsafe.

Cost: The cost estimate for the bridge replacement was 2.5 million dollars and for bridge rehabilitation was 1.7 million dollars.

## FOOTNOTES

1. Franklin County, Ohio, County Auditor Plat Book 3, 168.
2. Franklin County, Ohio, County Engineer Microfilm Plans of Existing Bridge, Plan and Elevation, 992-2; list stationing of the old face of abutments.
3. Franklin County, Ohio, Commissioners Journal Book 895, 102.
4. Franklin County, Ohio, County Auditors Plat Book 4, 363, 376.
5. Franklin County, Ohio, County Engineer Microfilm Plans of Existing Bridge, Plan and Elevation, 992-2; List 50-ton street car loading.
6. Ohio Department of Transportation, Federal Highway Administration, The Concrete Arch Supplement to the Ohio Historic Bridge Inventory, Evaluation and Preservation Plan, (Columbus, Ohio, 1994), Chapter 2.
7. Columbus Plan Commission, Report of the Plan Commission for Columbus, Ohio, (Columbus, Ohio, 1908).
8. Ohio Department of Transportation, Federal Highway Administration, The Concrete Arch Supplement to the Ohio Historic Bridge Inventory, Evaluation and Preservation Plan, (Columbus, Ohio 1994), Chapter 2.
9. Franklin County, Ohio, County Engineer Microfilm Plans of Existing Bridge, Plan and Elevation, 992-2
10. Franklin County, Ohio, Commissioner Journal Book 145, 205.
11. Franklin County, Ohio, County Engineer Microfilm Plans of Existing Bridge, Details of Railing, 992-5; showing planned location; Picture 8 showing commemorative plaque on west side of bridge; Picture 10 showing commemorative plaque.
12. Watson, Bridge Architecture, 223
13. Columbus Citizens Journal, 28 October 1968. Picture 11 showing SR 315 overpass construction.
14. Ohio Department of Transportation, Federal Highway Administration, The Concrete Arch Supplement to the Ohio Historic Bridge Inventory, Evaluation and Preservation Plan, (Columbus, Ohio 1994), Chapter 2.

15. Watson, Bridge Architecture, 225.
16. Franklin County, Ohio, County Engineer Microfilm, Columbus & Southern Ohio Electric Plans filed.
17. Columbus Citizens Journal, 28 October 1968. Picture 11 showing SR 315 overpass construction.
18. Jones, David W., Philips, David C., Franklin County 1981 Yearly Bridge Inspection Report, 9 January 1981.
19. Jones-Stuckey Ltd., Inc. Third Avenue Bridge over The Olentangy River - A Condition Study, Columbus, Ohio, July 1982.
20. Parsons Brinckerhoff Ohio, Inc., Preliminary Engineering Report, Third Avenue Bridge over The Olentangy River, Columbus, Ohio, June 1991.

## INFORMATION SOURCES PUBLISHED

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Kreppel, P.E., "Rehabbing Historic Stone and Concrete Bridges." Paper presented at the Third Historic Bridges Conference of the Department of Civil Engineering, The Ohio State University and the Historical Preservation Division, Ohio Historical Society, October 1990. Fair Lawn, NJ; A.G. Lichtenstein & Associates, 1990.

Columbus Plan Commission, Report of the Plan Commission for Columbus, Ohio, Columbus, Ohio 1908

The Ohio Department of Transportation, the Federal Highway Administration, The Concrete Arch Supplement To The Ohio Historic Bridge Inventory, Evaluation and Preservation Plan Columbus, Ohio, 1994.

The Ohio State Journal, 17 March 1916, 30 September 1919.

Watson, Wilbur J, Bridge Architecture, William Helburn Inc., New York, 1927)

## INFORMATION SOURCES UNPUBLISHED

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Jones-Stuckey, Ltd., Inc., Condition Survey, Third Avenue Bridge over the Olentangy River Columbus, Ohio, July 1982.

Parsons Brinckerhoff Ohio, Inc., Preliminary Engineering Report, Third Avenue Bridge over the Olentangy River, Columbus, Ohio, June 1991.

Sherman, Mark, Historic American Engineering Record, The Broad Street Bridge, Franklin County Engineer's Office, HAER No. OH-618, Columbus, Ohio, 1988.

ADDENDUM TO:  
THIRD AVENUE BRIDGE  
Spanning Olentangy River on West Third Avenue  
Columbus  
Franklin County  
Ohio

HAER OH-111  
*HAER OHIO,25-COLB,50-*

FIELD RECORDS

HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
U.S. Department of the Interior  
1849 C Street NW  
Washington, DC 20240-0001