United States Department of the Interior  
National Park Service  

National Register of Historic Places  
Inventory—Nomination Form  

See instructions in How to Complete National Register Forms  
Type all entries—complete applicable sections  

1. Name  

historical Houston Street Viaduct  
and or common Dallas-Oak Cliff Viaduct  

2. Location  

Houston St. roughly from Union Terminal to intersection of Lancaster Avenue  

3. Classification  

<table>
<thead>
<tr>
<th>Category</th>
<th>Ownership</th>
<th>Status</th>
<th>Present Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>district</td>
<td>X public</td>
<td>agriculture</td>
</tr>
<tr>
<td>building(s)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X structure</td>
<td>private</td>
<td>unoccupied</td>
<td>commercial</td>
</tr>
<tr>
<td>site</td>
<td>both</td>
<td>work in progress</td>
<td>educational</td>
</tr>
<tr>
<td>object</td>
<td>Public Acquisition</td>
<td>N/A in process</td>
<td>entertainment</td>
</tr>
</tbody>
</table>

Accessible:  
X yes: restricted  
X yes: unrestricted  
X no  

Present Use:  
X occupied  

Present Use:  
museum  

Present Use:  
park  

Present Use:  
private residence  

Present Use:  
religious  

Present Use:  
scientific  

Present Use:  
transportation  

Current Use:  
other:  

4. Owner of Property  

name City of Dallas  
street & number City Hall, 1500 Marsilla Street  

5. Location of Legal Description  
courthouse, registry of deeds, etc. Dallas County Courthouse  

6. Representation in Existing Surveys  

<table>
<thead>
<tr>
<th>Title</th>
<th>has this property been determined eligible?</th>
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<tbody>
<tr>
<td>(1) Texas Historic Engineering Site Inventory</td>
<td>X yes</td>
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<tr>
<td>(2) Historic Sites Inventory</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Federal</th>
<th>State</th>
<th>County</th>
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</thead>
<tbody>
<tr>
<td>(1) 1975</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>(2) 1984</td>
<td></td>
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<table>
<thead>
<tr>
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<th>state</th>
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<tr>
<td>(1) History of Engineering Program, C.E. Dept., Texas Tech Univ.</td>
<td>Texas</td>
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<tr>
<td>(2) Texas Historical Commission</td>
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<table>
<thead>
<tr>
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<th>state</th>
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<tbody>
<tr>
<td>(1) Lubbock</td>
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<tr>
<td>(2) Austin</td>
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7. Description

<table>
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<tr>
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<tr>
<td>fair</td>
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<td>date</td>
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<tr>
<td>unexposed</td>
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</table>

Describe the present and original (if known) physical appearance

Extending across the Trinity River and connecting the Dallas Central Business District with the early suburb of Oak Cliff, the Houston Street Viaduct is one of the longest viaducts with reinforced-concrete arches ever built. The viaduct has had few alterations, and is noteworthy for the special "shoes" to accommodate ocean-going vessels which, almost 75 years after the bridge was built, have yet to materialize.

The reinforced concrete viaduct between Dallas and Oak Cliff is 6,562 feet long, 56 feet wide overall, and has a roadway of 44 feet with two 4.5-foot sidewalks. It is made of fifty-one, 79'6" arches, a steel girder 100 feet in length spanning the Trinity River, and 16 panels of concrete bents and girders next to the approaches. The crossing of Lancaster Avenue in Oak Cliff from the last pier to the abutments consists of six panels of girder design. Beyond this is an earthen approach 787 feet in length.

Laying of concrete was facilitated by a rigid tower and chute moving on a track next to the viaduct. Bents and girders were poured continuously using two shifts when necessary. Slabs and floor members were also continuously poured. Because of a drought during the construction of the viaduct, raw sewage was used in the concrete mixture.

All arch piers rest upon timber piles except for the easternmost abutment arch, which rests upon bedrock a few feet below the ground surface. Piles were driven into the ground and concrete was poured around them for a firm foundation.

Arches rest upon cross walls which are supported by three columns. Vertical supports rest upon cross walls and reinforced concrete arches. These vertical members support longitudinal girders which in turn support the floor slab.

One of the extraordinary features of the Houston Street Viaduct is the use of rocker bearings for girders. On one end, the longitudinal girders are rigidly attached to the reinforced corner brackets. On the other end, the girders rest in a socket formed by two bent copper plates extending the full width of the girders. The lower plate rests on the cross girder and the upper plate is fastened to the longitudinal girder. Both plates are connected by reinforcing bars just above each socket, but a cleavage plane is left between them to permit rotation. All girders are, therefore, discontinuous and designed as simple beams.

The cost of the project was $570,000, or $2.10 per square foot of floor. Dallas County paid all construction costs. The contractors were Corrigan, Lee, and Halpin of Kansas City, Missouri. Construction of the viaduct began in October of 1910 and was completed in late 1911.
Despite major changes in the northern setting over the years, the viaduct remains substantially intact. A new concrete handrail was added in the early 1930s and, more recently, stairs were added to the Reunion Arena parking areas. Otherwise, the viaduct has not undergone visible modification.
8. Significance

<table>
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<tr>
<th>Period</th>
<th>Areas of Significance</th>
<th>Builder Architect</th>
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<tr>
<td></td>
<td>other (specify)</td>
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Specific dates Built 1910-1911

Statement of Significance (in one paragraph)

The Houston Street Viaduct was the first of five concrete and steel viaducts built to connect the north and south sections of Dallas. One of the longest viaducts with reinforced concrete arches ever built (6,562'), the bridge was constructed entirely with Dallas County funds at a surprisingly low cost of $2.10 per square foot of floor. The bridge includes an unusual feature designed to facilitate ocean-going vessels in this inland city; a steel plate girder span over the river channel with special "shoes" that feature vertical bearing surfaces for transmitting the arch thrust through the piers to the girder span.

On May 25, 1908, the worst flood in Dallas history swept down the Trinity River causing over a million dollars worth of damage to homes and businesses located near the banks of the river. This flood washed away most of the bridges, and left the remaining one under water. The Oak Cliff community and Dallas were thus effectively cut off from each other for a week. The Houston Street Viaduct was built as a direct result of this flood.

In 1909, the County of Dallas voted a bond issue of $600,000 to construct the viaduct. After acquisition of the right-of-way, the county had $563,000 remaining for construction. In November of 1909, County Engineer J.F. Witt advertised for competitive bids. All bids had to be in on January 1, 1910, with these general specifications:

1. Any structure between Dallas and Oak Cliff has to be of reinforced concrete of either arch or trestle construction.
2. The bridge must provide a roadway for vehicular traffic and shall include two sidewalks, with provisions for a double-track electric railway in the future.
3. It must be 50 feet from handrail to handrail, or any greater width so long as that width does not cause the construction of the viaduct to exceed money available.
4. Conduit spaces must be provided longitudinally throughout the viaduct of no less than 20 square feet.
5. All designs are to consider live loads of two 100,000-pound electric cars on each track plus 100 pounds per square foot, or a 15-ton roadroller having maximum axle concentration of 10 tons. Sidewalks should be designed to support 80 pounds per square foot.
6. Complete construction plans, specifications, and design analysis are to accompany bids.
9. Major Bibliographical References

Dallas Morning News, January 5, 1909.
Ralph Banks to Peter Flagg Maxson, interview, Austin, April 27, 1984
(see continuation sheet)

10. Geographical Data

Acreage of nominated property: Approx. 8 acres
Quadrangle name: Dallas, Tex
Quadrangle scale: 1:24000

UTM References

A 14 705 5,10 362 81,65
Zone Easting Northing
B 14 705 5,30 362 80,80
C 14 704 7,90 362 69,40
D 14 705 5,30
E 14 704 7,90
F 14 705 5,30
G
H

Verbal boundary description and justification

The structure begins near the south line of Arlington Street and proceeds along the east side of Houston Street on an ascending grade of 2.8% to a point near the tracks of several railroads, a distance of 567.7 feet. From this point, (see continuation sheet)

List all states and counties for properties overlapping state or county boundaries

<table>
<thead>
<tr>
<th>state</th>
<th>code</th>
<th>county</th>
<th>code</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Form Prepared By

name/title: Murray R. Arrowsmith, Research Associate (with Peter Flagg Maxson, Texas Historical Commission)
organization: History of Engineering Program
date: April 1976 (April 1984)
street & number: Civil Engineering Department, Texas Tech University
telephone: (806) 742-1231
city or town: Lubbock
state: Texas

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

___ national ___ state ___ local

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

State Historic Preservation Officer signature

state: Texas

date: 2 July 1984

For NPS use only

I hereby certify that this property is included in the National Register

Keeper of the National Register
date: 8/9/84

Chief of Registration
All bids were considered by a board of engineers consisting of T.U. Baylor, Otto H. Lang, and N. Werenskiold. Of the 15 bids submitted, an arch design of Ira G. Hedrick, C.E., of Kansas City, Missouri, with M.R. Ash as Associate Engineer, was accepted with only two modifications. Exceptions included the adoption of pile footings instead of spread reinforced concrete footings, and widening of the roadway from 40 to 44 feet with two 45-foot-wide sidewalks. Pile footings were utilized because of soil conditions. The roadway was broadened because the bid submitted was low enough to warrant the alteration with money available.

The county awarded the contract to Corrigan, Lee and Halpin, of Kansas City, Missouri. The field work was carried out under the supervision of Hedrick and Cochrane, Consulting Engineers, of the same city, and J.F. Witt, Dallas County Engineer. Work on the viaduct began in October of 1910 and was completed late in 1911. It incorporated top-quality materials and workmanship, and utilized both proven and innovative techniques. The proposed Trinity River Canal, which would have connected Dallas to the 300-mile-distant Gulf of Mexico, demanded a 90-foot clearance under the viaduct's central span. The use of a concrete arch at this point was prohibited by the height. It was necessary either to build abutment piers on either side of the river capable of receiving the unbalanced thrust of the arches or to transmit the thrust through the river span. The latter scheme was chosen, prompting the design of the special "shoes," which have both the usual horizontal, plus vertical, bearing surfaces on the bridge seat.

Careful construction has proved a valuable investment, for the Houston Street Viaduct continues to serve as a major traffic artery for the county. Newer, nearby bridges over the Trinity are higher, but none have the solidity or visual prominence of the Houston Street Viaduct. The northern, downtown, sections of the bridge begin at Union Terminal (National Register, 1975), and continue over a network of railroad tracks, IH 30, and Reunion Arena. The context of the southern half of the bridge remains little changed, crossing the Trinity River and flood plain into an early and intact section of the Oak Cliff suburb.
### National Register of Historic Places Inventory—Nomination Form

**Reinforced-Concrete Viaduct between Dallas and Oak Cliff, Texas.**


<table>
<thead>
<tr>
<th>Item number</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>1</td>
</tr>
</tbody>
</table>
the viaduct swings to the right through an angle of 47 degrees 44 minutes, crosses the railway tracks overhead, and runs on a level grade in a southwesterly direction to the south banks of the Trinity River, a distance of 2,529 feet. Thence it proceeds in the same direction on a descending grade of 0.74% to the west side of Lancaster Avenue, a distance of 2,009.4 feet. The nomination includes the viaduct structure, from footings through superstructure, and ancillary facilities. The length of the structure nominated is delineated on the enclosed USGS quad map, and extends from UTM grid coordinates A through C; the width is 60 feet.
Houston Street Viaduct
Dallas County
TEXAS

☐ resubmission
☐ nomination by person or local government
☐ owner objection
☐ appeal

Substantive Review: ☐ sample ☐ request ☐ appeal ☐ NR decision

Reviewer’s comments:

Recom./Criteria ___________________________
Reviewer ___________________________
Discipline ___________________________
Date ___________________________

_____ see continuation sheet

Nomination returned for: _____ technical corrections cited below
_____ substantive reasons discussed below

1. Name

2. Location

3. Classification

<table>
<thead>
<tr>
<th>Category</th>
<th>Ownership</th>
<th>Status</th>
<th>Present Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Public Acquisition</td>
<td>Accessible</td>
<td></td>
</tr>
</tbody>
</table>

4. Owner of Property

5. Location of Legal Description

6. Representation in Existing Surveys

Has this property been determined eligible? ☐ yes ☐ no

7. Description

Condition
☐ excellent ☐ deteriorated
☐ good ☐ ruins
☐ fair ☐ unexposed

Check one
☐ unaltered
☐ altered

Check one
☐ original site
☐ moved date

Describe the present and original (if known) physical appearance

☐ summary paragraph
☐ completeness
☐ clarity
☐ alterations/integrity
☐ dates
☐ boundary selection
8. Significance

Period Areas of Significance—Check and justify below

Specific dates Builder/Architect

Statement of Significance (in one paragraph)

☐ summary paragraph
☐ completeness
☐ clarity
☐ applicable criteria
☐ justification of areas checked
☐ relating significance to the resource
☐ context
☐ relationship of integrity to significance
☐ justification of exception
☐ other

9. Major Bibliographical References

10. Geographical Data

Acreage of nominated property
Quadrangle name
UTM References

Verbal boundary description and justification

11. Form Prepared By

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

   _____ national   _____ state   _____ local

State Historic Preservation Officer signature

title  
date

13. Other

☐ Maps
☐ Photographs
☐ Other

Questions concerning this nomination may be directed to

Signed ___________________________ Date ___________________________ Phone: ___________________________

Comments for any item may be continued on an attached sheet
Houston Street Viaduct
Houston Street
Dallas, Dallas County, Texas
Photograph by Peter Flagg Maxson, January 1984
Negative on file, Texas Historical Commission,
Austin
Southeast side, camera facing northwest
Photo 1 of 8
Houston Street Viaduct
Houston Street
Dallas, Dallas County, Texas
Photograph by Peter Flagg Maxson, January 1984
Negative on file, Texas Historical Commission, Austin
Northwest side, camera facing northeast
Photo 2 of 8
Houston Street Viaduct
Houston Street
Dallas, Dallas County, Texas
Photograph by Peter Flagg Maxson, January 1984
Negative on file, Texas Historical Commission, Austin
Northwest side, camera facing southeast
Photo 3 of 8
Houston Street Viaduct
Houston Street
Dallas, Dallas County, Texas
Photograph by Peter Flagg Maxson, January 1984
Negative on file, Texas Historical Commission, Austin
Railing/lamppost detail, camera facing south
Photo 4 of 8
Houston Street Viaduct
Houston Street
Dallas, Dallas County, Texas
Photograph by Peter Flagg Maxson, January 1984
Negative on file, Texas Historical Commission, Austin
Span detail over Industrial Boulevard, camera facing northwest
Photo 5 of 8
Houston Street Viaduct
Houston Street
Dallas, Dallas County, Texas
Photograph by Peter Flagg Maxson, January 1984
Negative on file, Texas Historical Commission, Austin
Arch detail, camera facing southwest
Photo 6 of 8
Houston Street Viaduct
Houston Street
Dallas, Dallas County, Texas
Photograph by Peter Flagg Maxson, April 1984
Negative on file, Texas Historical Commission,
Austin
Trinity River juncture, camera facing southeast
Photo 7 of 8
Houston Street Viaduct
Houston Street
Dallas, Dallas County, Texas
Photograph by Peter Flagg Maxson, April 1984
Negative on file, Texas Historical Commission,
Austin
Plate girder detail, camera facing west
Photo 8 of 8