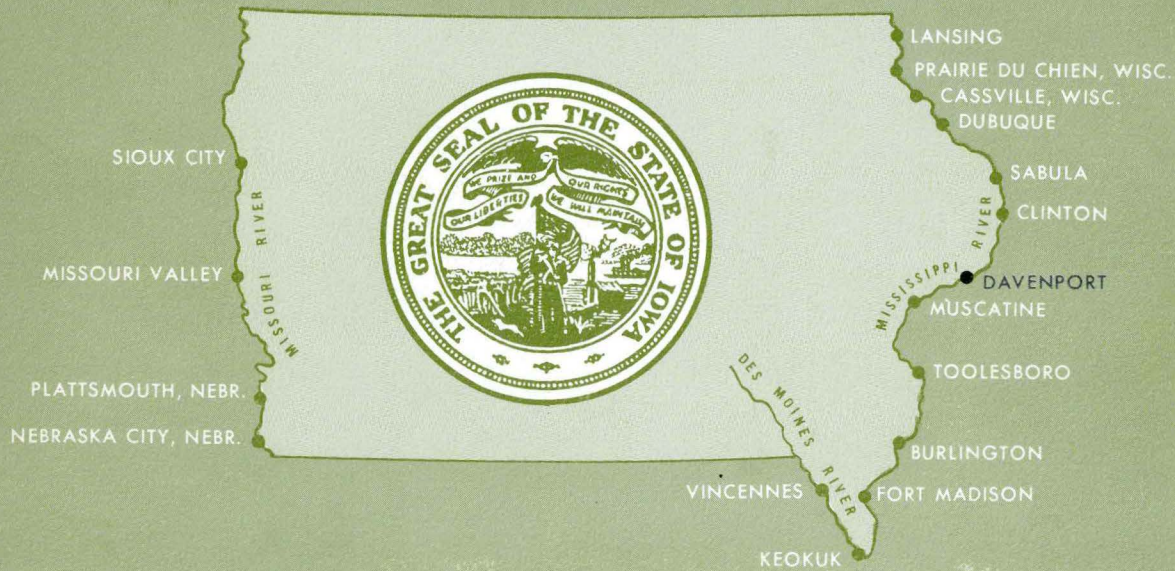


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NOVEMBER 1968

IOWA STATE HIGHWAY COMMISSION



*Bridge Location,
Revenue and Traffic Studies*

AT
DAVENPORT, IOWA

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
AS CITY, MO. NEW YORK, N.Y.

WILBUR SMITH & ASSOCIATES
traffic consultants
NEW HAVEN, CONN.

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MISSISSIPPI RIVER TOLL BRIDGE

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS

HNTB

1805 GRAND AVENUE, KANSAS CITY, MISSOURI 64108

Wilbur Smith & Associates, Inc.

Cable: WILSMITH
(203) 865-2191

TRANSPORTATION CONSULTANTS

155 WHITNEY AVENUE • P. O. BOX 993

New Haven, Conn. 06510

November 12, 1968

Mr. J. R. Coupal, Jr.
Director of Highways
Iowa State Highway Commission
Ames, Iowa 50010

Dear Mr. Coupal:

We are pleased to submit this preliminary report for proposed new Mississippi River crossings in the Quad-Cities area.

The report includes an analysis of alternate bridge locations, preliminary engineering studies, traffic and toll revenue estimates, preliminary project costs and an indication of project feasibility.

Several alternate bridge locations were studied including a Crescent Bridge, a Campbell's Island crossing and a parallel span to the present Centennial Bridge. The first two alternate bridges were found to be clearly unfeasible as revenue bond projects. However, construction of a parallel span to the present Centennial Bridge would produce a relationship of anticipated revenues to project cost close enough to desired levels to warrant serious consideration of more detailed project studies.

We gratefully acknowledge the assistance and cooperation given to us by members of your staff and the numerous other public and private agencies and individuals contacted in the course of our studies.

Respectfully submitted,

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

Paul L. Heineman
Paul L. Heineman

WILBUR SMITH & ASSOCIATES, INC. N.E.

Wilbur S. Smith
Wilbur S. Smith

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.

Signed

Date

5156

Nov. 12, 1968

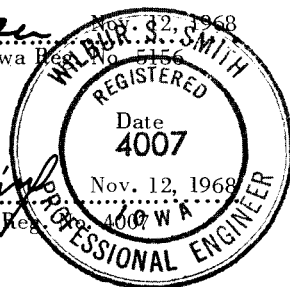
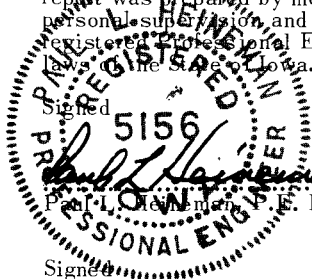
Signed

4007

Nov. 12, 1968

Wilbur S. Smith
Wilbur S. Smith, P.E. Iowa Reg.

4007 W A





VIEW OF CENTENNIAL BRIDGE FROM ROCK ISLAND, ILLINOIS, LOOKING NORTHEAST

DAVENPORT, IOWA

**MISSISSIPPI
RIVER
TOLL
BRIDGE**

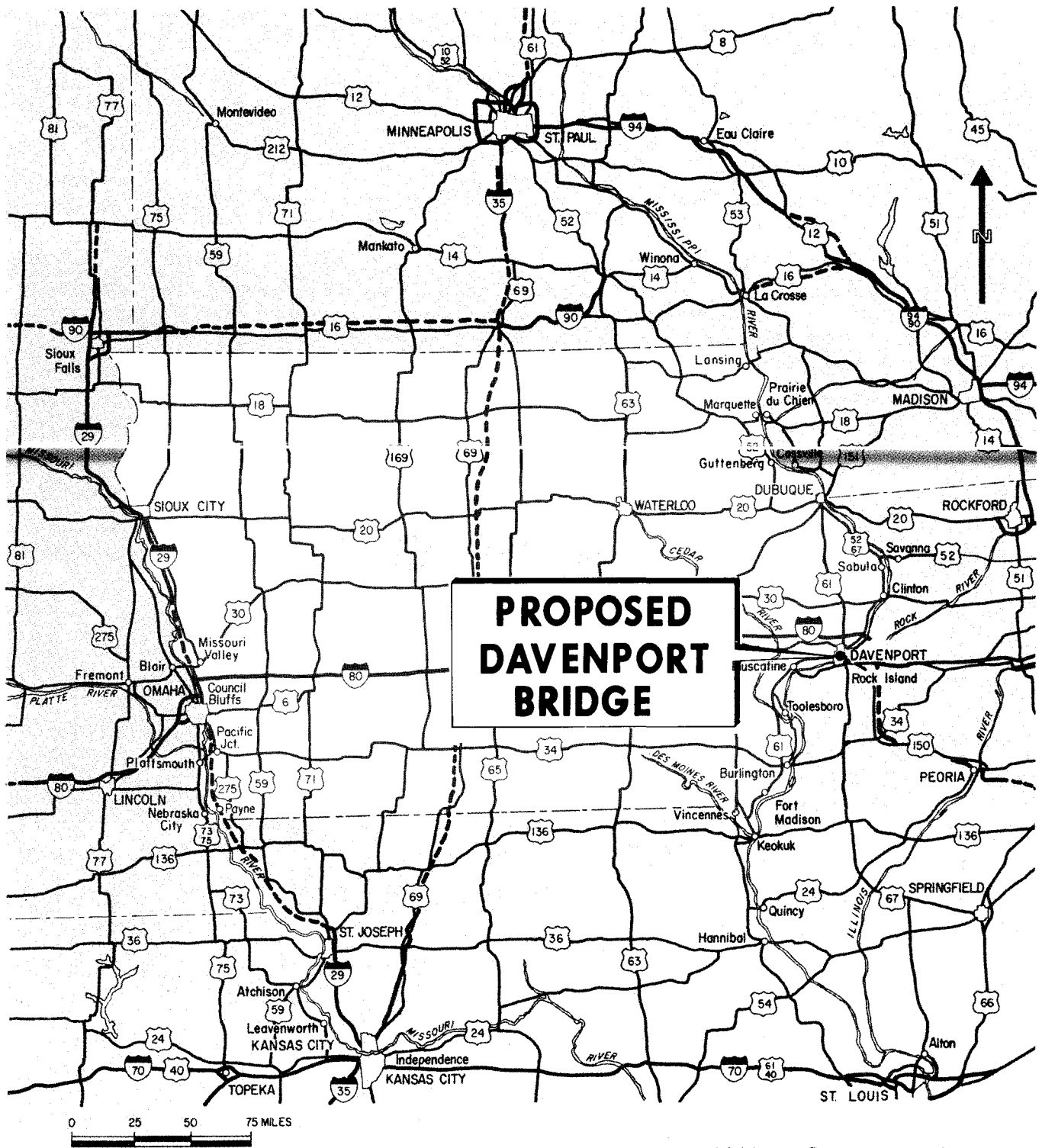
**NOVEMBER
1968**

PRELIMINARY ENGINEERING REPORT

- LOCATION STUDIES
- PRELIMINARY DESIGN
- COST ESTIMATES
- TRAFFIC AND REVENUE STUDIES

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
KANSAS CITY, MO. NEW YORK, N.Y.

WILBUR SMITH & ASSOCIATES
traffic consultants
NEW HAVEN, CONN.



Wilbur Smith and Associates

Exhibit 1
REGIONAL MAP

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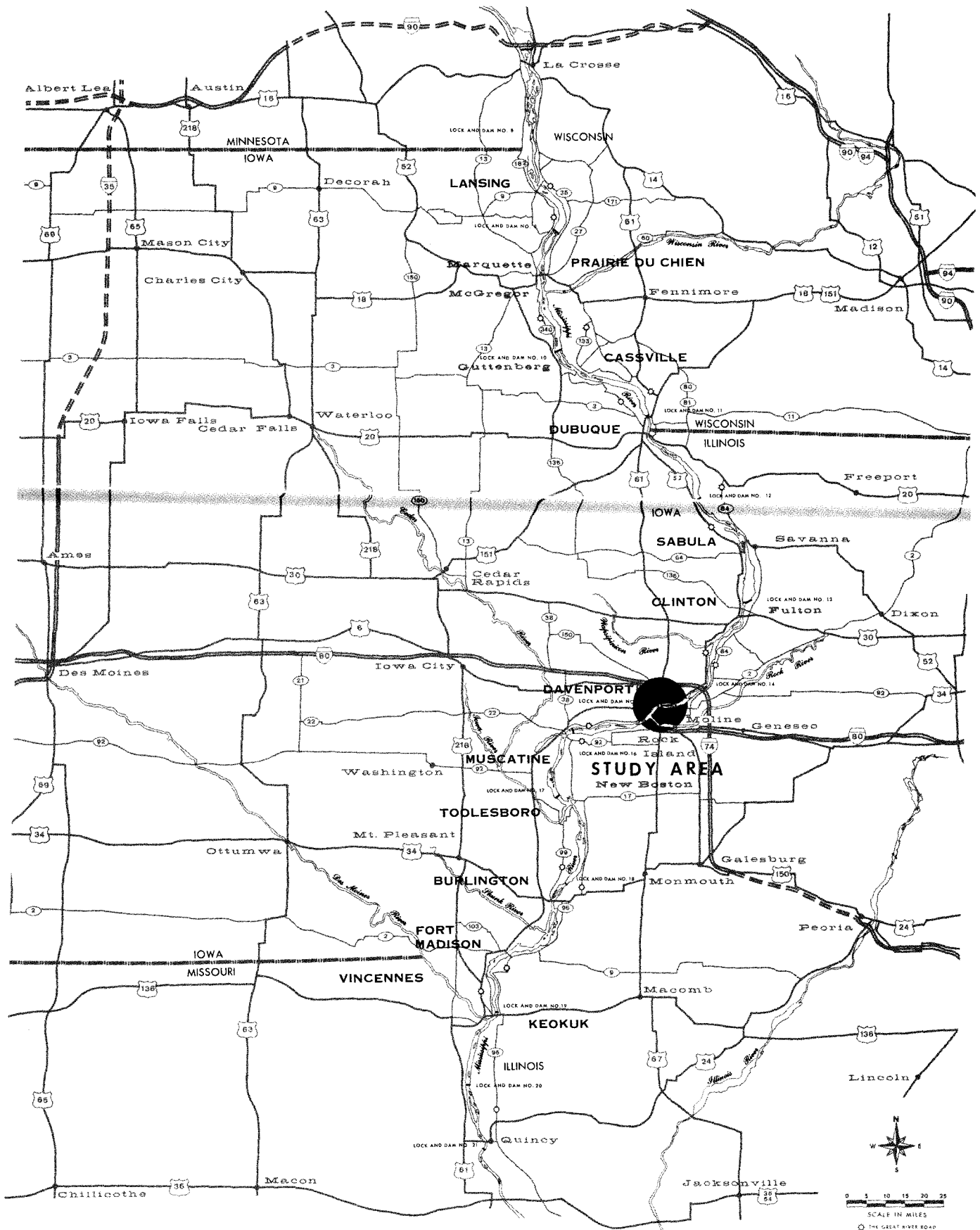


Exhibit 2
VICINITY MAP

SUMMARY OF FINDINGS

Several alternative bridge crossings were studied in the Quad-Cities area to supplement present Mississippi River crossings to meet future trans-river travel demands. Among the alternative alignments studied were a Crescent Bridge, a Campbell's Island crossing and a proposed parallel span to the present Centennial Bridge.

The Crescent and Campbell's Island crossings were found to be unfeasible as revenue bond projects. In the case of the Campbell's Island alignment, traffic assignments were low and while higher levels of traffic were found on the Crescent Bridge alternate, development costs were prohibitive.

However, construction of a parallel span to the present Centennial Bridge would produce traffic and revenue levels which, when related to anticipated project costs, would be very close to desirable financing levels. The Centennial Bridge Parallel Span project would have an estimated first year interest coverage by first year net revenues of 1.25. Average annual net revenues over the earning period of the assumed bond issue would cover level debt service 1.39 times. Over the 28-year earning period of the bond issue, the proposed Parallel Span Bridge would accumulate an estimated total net surplus of \$11,669,000.

INTRODUCTION

Davenport is the largest city in eastern Iowa. As shown in Exhibit 1, it is located at the confluence of the Rock and Mississippi Rivers. Together with Bettendorf and the Illinois cities of Rock Island and Moline, it comprises the Quad-Cities area, a major manufacturing, commercial and cultural center for a large surrounding region in both states, having economic links to national markets.

At present, traffic crossing the Mississippi River at Davenport is served by two toll bridges — the Rock Island Centennial Bridge and the Iowa-Illinois Memorial Bridge. In addition, toll-free crossings are provided by the Government Bridge which links the Rock Island Arsenal with both Davenport and Rock Island and by the Interstate Route 80 Bridge at Le Claire, opened to traffic in late 1966.

The closest crossing west or south of Davenport is located approximately 30 miles away at Muscatine, where a high-level toll bridge provides restricted service, prohibiting tandem-axle vehicles. To the north of Davenport, the nearest crossing is some 20 miles upstream of the Interstate Route 80 Bridge at Clinton. The Gateway Bridge in Clinton is a high-level toll crossing providing service to all types of vehicles.

Authority and Purpose of Report

In December, 1967, the Iowa State Highway Commission authorized preparation of a preliminary feasibility report for possible new toll crossings in the Davenport area. This report is one of several comparable bridge corridor studies to be conducted as part of the Iowa Toll Bridge Program, in accordance with legislation enacted by the Iowa General Assembly, a copy of which is included in the Appendix. The various locations along the Mississippi River to be studied under this program are shown in Exhibit 2.

A copy of the Federal Legislation permitting construction and operation of the present toll bridges at Davenport is included in the Appendix. The legislation permits the collection of tolls for an indefinite period. The Appendix also contains a copy of the General Bridge Act of 1946, the current Federal Law permitting operation of interstate toll bridges. If a new bridge were constructed at Davenport, the period of time during which such a bridge could be operated as a toll facility is limited by this Act to 30 years.

Scope of Services

This report summarizes preliminary engineering, traffic and revenues and feasibility studies for proposed additional toll crossings of the Mississippi River at Davenport. These studies included:

1. Analysis of the physical limitations imposed by navigational requirements, terrain, existing levees, railroads, real property values, and the present street and highway network.
2. Comparison of alternative bridge and approach road locations based on estimates of project cost and annual maintenance and operating expenses.
3. Analyses of the adequacy of present trans-river traffic service in the vicinity of the proposed bridges, measured against present travel demands and anticipated future growth.
4. Development of preliminary traffic estimates for the various alternative alignments and estimates of annual traffic and revenues for the recommended bridge locations, assuming operation as toll facilities.
5. Determination of the preliminary feasibility of the bridge projects, based on the relationship of anticipated project cost and estimated toll revenues.

The engineering, location and cost studies relating to the proposed bridges were prepared by Howard, Needles, Tammen & Bergendoff and are discussed in Part I of this report.

Part II, prepared by Wilbur Smith and Associates, discusses the preliminary traffic and revenue potential of the crossings and project feasibility calculations.

Present Highway System

East-west through travel in the Davenport study area is primarily served by Interstate Route 80, which crosses the Mississippi at the eastern extremity of the Quad-Cities area, at Le Claire. Much travel formerly passing through the Davenport urban area has been removed from city streets and downtown bridges by this new facility. U. S. Route 6 previously served most of this east-west traffic; the Memorial Bridge in Davenport is designated a part of U. S. Route 6. North-south traffic moves through the study area in Iowa via U. S. Route 61 and in Illinois on U. S. Route 67; the Centennial Bridge in Davenport carries the U. S. Route 67 designation.

In addition to the above routes, the Quad-Cities area is served by a network of lesser U. S.-numbered routes, state highways and county roads. These generally follow major elements of the urban street system as they approach the river crossings in both Iowa and Illinois. They include Iowa Routes 22 and 417, generally paralleling the Mississippi River and Iowa Route 150, which serves a corridor northwest of Davenport. In Illinois, U. S. Route 150 serves a corridor generally to the southeast and terminates in Rock Island, while Illinois Routes 2, 84, 92 and 94 link the metropolitan area with other Illinois communities to the east.

Planned Highway Improvements

Interstate highway construction has had and will continue to have an important impact on travel patterns in the Quad-Cities area. The Interstate

Route 80 high-level bridge at Le Claire was opened to traffic in late 1966. Construction programs in both Illinois and Iowa are committed to completion of the southwestern leg of a metropolitan area circumferential freeway, designated Interstate Route 280, which will include a new, high-level, toll-free Mississippi River crossing just south of the Rock River.

Completion of Interstate Route 74 through the study area is programmed for the early 1970's. In the Quad-Cities area, Interstate Route 74 will follow an alignment generally paralleling present U. S. Routes 6 and 150, and will be carried across the Mississippi River via the Memorial Bridge which is scheduled to become a free crossing when its bonds are paid off in 1971. Interstate Route 74 will then proceed northerly through Bettendorf to a junction with Interstate Route 80.

Other programmed highway improvements in the Iowa portion of the study area include widening and resurfacing of U. S. Route 61 east of its planned junction with Interstate Route 280 plus widening and repaving of U. S. Route 67 in Bettendorf from 6th to 26th Street and resurfacing of U. S. Route 150 near the Cedar County line. Iowa Route 22 is to be widened from Buffalo east to Davenport, while U. S. Route 67 is to be widened and resurfaced from its Interstate Route 80 junction northerly to the Clinton County line.

Illinois plans resurfacing improvements on Illinois Route 2 and Blackhawk Road in Moline and South Moline. In Rock Island, consideration is being given to a possible easterly extension of the Centennial Expressway along the riverfront to Moline and the Memorial Bridge.

Present Quad-Cities Area Bridges

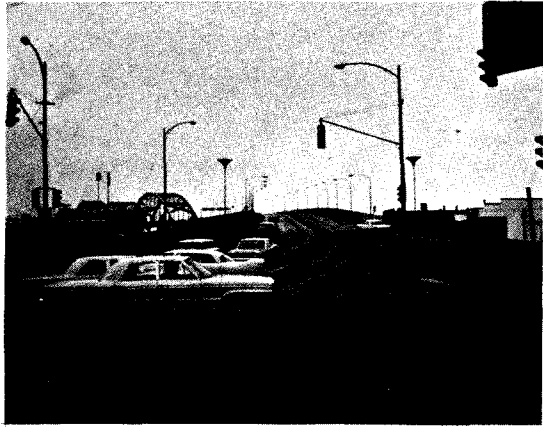
Four bridges presently serve the Davenport metropolitan area, the Centennial, Memorial, Government and Interstate Route 80 Bridges. Of these, the first three are high-level highway bridges while the Government Bridge is a combined railroad-highway, swing-span structure.

Rock Island Centennial Bridge—This four-lane structure was completed in 1940 and has been maintained in excellent condition. The bridge structure consists of five steel tied-arch spans totaling 2,262 feet in length. The two main channel arches each span about 538 feet. They are flanked on the Iowa side by two shorter arch spans and on the Illinois side by a single arch span, each about 394 feet long. Continuous beam and girder viaduct approach spans, totaling 511 feet and 1,075 feet in Rock Island and Davenport, respectively, complete the bridge. The bridge provides clearances of 515 feet horizontally and 66 feet vertically at the navigation channel. Twenty-two-foot roadways are separated by a 2.5-foot raised median and flanked by five-foot sidewalks. Toll collection facilities are provided on the bridge between the two main arch spans. As shown in Table 1, the present toll schedule is based upon a rate of \$0.10 for passenger cars. Trucks pay proportionately higher tolls. Several views of the Centennial Bridge are shown in Exhibit 3.

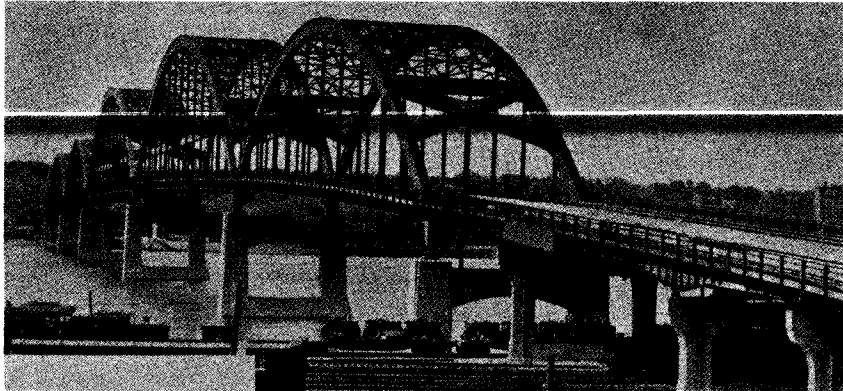
TABLE 1
PRESENT TOLL SCHEDULE
Rock Island Centennial Bridge

<u>TOLL CLASS</u>	<u>DESCRIPTION</u>	<u>TOLL</u>
1	Pedestrian	\$0.05
2	Motorcycles, Bicycles, Passenger Cars with two axles	0.10
3	Trucks with single rear tire, two axles	0.15
4	Trucks, buses with dual rear tires, two axles	0.25
5	All vehicles with three axles	0.30
6	All vehicles with four axles	0.35
7	All vehicles with five axles	0.40
8	All vehicles with six axles	0.45
9	For all vehicles with more than six axles — Each additional axle	0.05
10	For all vehicles with special equipment and weights	Special Rates

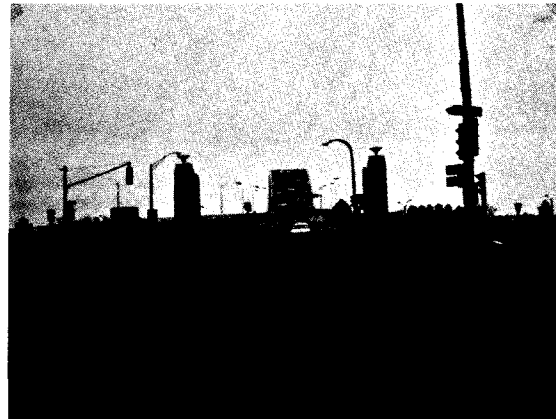
SOURCE: Rock Island Centennial Bridge Commission.



IOWA APPROACH



BRIDGE ELEVATION



ILLINOIS APPROACH

CENTENNIAL BRIDGE

Iowa-Illinois Memorial Bridge — modern, well-maintained toll facility consists of twin, two-lane suspension bridges over the navigation channel and continuous truss spans over the Moline Pool. Both suspension bridges have 740-foot main spans and 370-foot flanking spans. Six truss spans of 222 feet each are grouped into two, three-span units, to complete the main structure. Continuous rolled-beam approach spans tie into each bank of the river. The original bridge, completed in 1935, has a cross-section with a 20-foot roadway and 4-foot sidewalk, while the parallel bridge, completed in 1960, has a 24-foot roadway. Beneath the center suspension spans, a clear channel width of 710 feet and vertical navigation clearances of 66 feet are provided. Toll collection facilities are located between the suspension and truss spans. The present toll schedule for the Memorial Bridge, as shown in Table 2, is based on a one-way cash toll for passenger cars of \$0.15 with ticket books available which reduce the toll to \$0.10. Two profile views of the bridge are depicted in Exhibit 4.

Government Bridge — This low-level, combination railroad-highway bridge is located over the U. S. Government Locks and Dam # 15. It was built in 1896 to provide military access to Arsenal Island from Davenport. It now provides trans-river traffic service, when used in conjunction with the Sylvan Slough Bridge, linking Arsenal Island with Moline. The combination bridge carries double-track rail traffic on an upper level and two lanes of highway traffic on a 25-foot wide lower roadway deck. Sidewalks on each side are carried outside the bridge truss superstructure. Large trucks are prevented from using the bridge by a limiting vertical clearance of 11.5 feet. The structure is composed of three, 216-foot truss spans flanked by 258-foot truss spans, with a 265-foot swing-span centered over the river lock.

Extensive superstructure repairs were made to the Government Bridge in 1959 and to the Sylvan Slough Bridge in 1966-67. During the navigation season, the swing-span opens frequently for river barge traffic, causing considerable delay to highway traffic. In addition, traffic at the approaches of both the Government and Sylvan Slough Bridges is controlled at times by special Arsenal police. At these times, through traffic is delayed and Arsenal traffic given priority in its use of the bridges. Views of the bridge are illustrated in Exhibit 5.

TABLE 2
PRESENT TOLL SCHEDULE
Iowa-Illinois Memorial Bridge

<u>TOLL CLASS</u>	<u>DESCRIPTION</u>	<u>TOLL</u>
1	Passenger automobiles with seating capacity for not more than seven persons, including driver	\$0.15
	Motorcycles with or without side car	0.15
	Bicycles	0.15
	Automobile trailers	0.15
2	Light trucks with gross weight under 8,000 pounds	0.15
	Trailers towed by light truck	0.15
3	Heavy trucks with gross weight in excess of 8,000 pounds	0.30
	Buses (including all passenger vehicles with seating capacity of over 7 persons including driver)	0.30
	Horse-drawn vehicles, or horse and rider	0.30
4	Trailers towed by heavy trucks or buses	0.20
5	Pedestrians	0.05
6	Loads or vehicles not included in Classes 1 to 4 require special permit	Special Rates

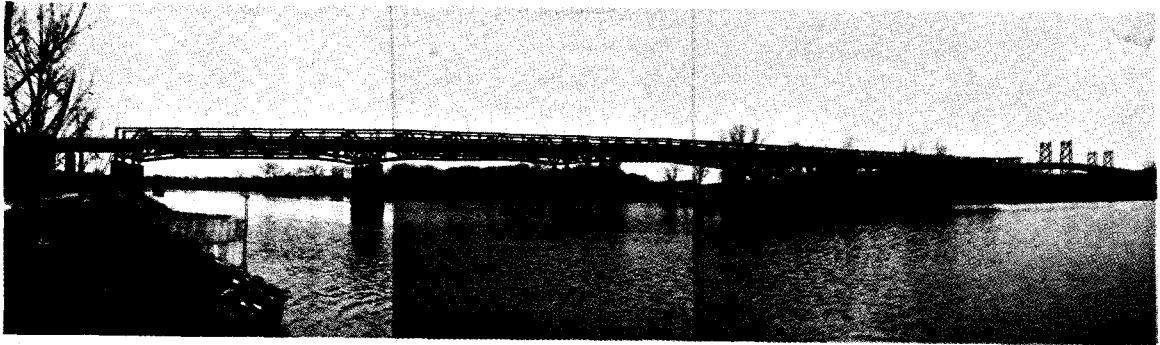
Tickets

Class 1 and 2 tickets	10 for \$1.00
Class 3 tickets	10 for \$2.50

SOURCE: Davenport Bridge Commission.



MAIN CHANNEL SPAN

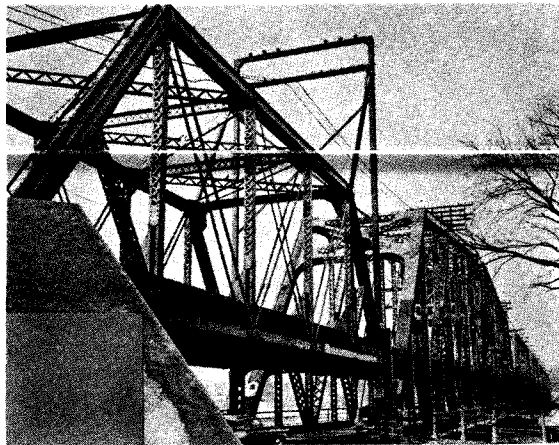


MOLINE POOL SPAN

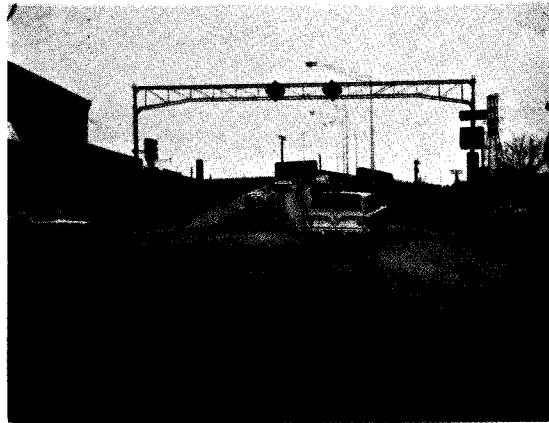
MEMORIAL BRIDGE



IOWA APPROACH



BRIDGE ELEVATION



SYLVAN SLOUGH APPROACH

GOVERNMENT BRIDGE

Interstate Route 80 Bridge — As previously mentioned, the Interstate Route 80 Bridge at Le Claire was opened to traffic in late 1966. It is a modern, high-level structure serving predominately through, longer-distance traffic. The bridge is a four-lane facility with Interstate Express connections on both sides of the river. The first interchange in Iowa is at U. S. Route 67 and in Illinois, at Illinois Route 84.

Alternative River Crossings

Downstream of the Centennial Bridge, the nearest Mississippi River crossing is at Muscatine. The Muscatine Bridge is an old structure providing limited service with tandem-axle vehicles prohibited due to structural limitations. The bridge has substandard roadway widths, unsatisfactory pavement and an awkward alignment. The bridge is operated as a toll facility. As shown in Table 3, the toll is based on a charge of \$0.35 for a passenger car.

TABLE 3
PRESENT TOLL SCHEDULE
Muscatine Bridge

<u>TOLL CLASS</u>	<u>TOLL</u>
Bicycle (or pedestrian)	\$0.10
Motorcycle	0.20
Passenger car	0.35
Truck — 2-axle, 4-tire	0.35
Truck or bus — 2-axle, 6-tire	0.70
Truck — 3-axle and semi-trailer	0.85
Car trailer	0.20
House trailer	0.60
Truck trailer	0.60
Special	5.00

SOURCE: Muscatine Bridge Commission.

North of the Quad-Cities area, the nearest Mississippi River crossing is the Gateway Bridge at Clinton. The Gateway Bridge is a modern toll facility which provides unrestricted service to all types of vehicles. It is owned and operated by the City of Clinton Bridge Commission. As shown in Table 4, tolls are based on a rate of \$0.20 for a passenger car with proportionately higher rates for larger vehicles.

TABLE 4
PRESENT TOLL SCHEDULE
Gateway Bridge

<u>TOLL CLASS</u>	<u>TOLL</u>
Passenger Car	\$0.20
Truck	
Two-axle, four-tire	0.20
Two-axle, six-tire	0.50
Three-axle	1.00
Four-axle	1.25
Five-axle	1.50
Six-axle	1.75
Each additional axle	0.25
Passenger Bus	1.00
Motorcycle	0.10
Car trailers	
One-axle	0.10
Two-axle	0.20
House trailer	0.50
Pedestrian or Bicycle	0.05

SOURCE: City of Clinton Bridge Commission.

Previous studies

All available pertinent data and reports relating to this project were assembled and reviewed. This included information from the Iowa and Illinois Highway Commissions, the Bi-State Regional Planning Agency, other state agencies and numerous municipal and other local contacts.

PART I

LOCATION AND COST STUDIES

BASIC DATA

Considerable information regarding existing conditions and proposed improvements must be procured and analyzed in conjunction with the preparation of bridge studies for a project of this magnitude. General features of the study area are shown on Exhibit I-1. The following are items of data pertinent to a Mississippi River crossing at Davenport.

Geology

The study area lies within the Dissected Till Plains Section of the Central Lowland Physiographic Province. The project area was covered by the Kansan and Illinoian glacial stages during the Pleistocene Epoch. The uplands along the Mississippi River are mantled with up to 30 feet of lowan loess over Illinoian glacial drift. Two of the proposed river crossings are near the Centennial Bridge and the west end of the Rock Island Arsenal Island. Corps of Engineers' borings indicate about 25 feet of alluvial silt, sand and gravel overlaying limestone of the Wapsinpinicon stage, Devonian System. The Devonian rock is known to be highly dissected with large crevices which have been filled with Des Moines shale and sandstone of the Carboniferous System.

Substructure units for the proposed bridge should be founded on bearing piles driven through the alluvium and/or on caissons taken to bedrock. Prior to final design, foundation borings and laboratory soil tests will be required for evaluation of the proper foundation type and any special treatment required for embankment-foundation stability and settlement of the approaches.

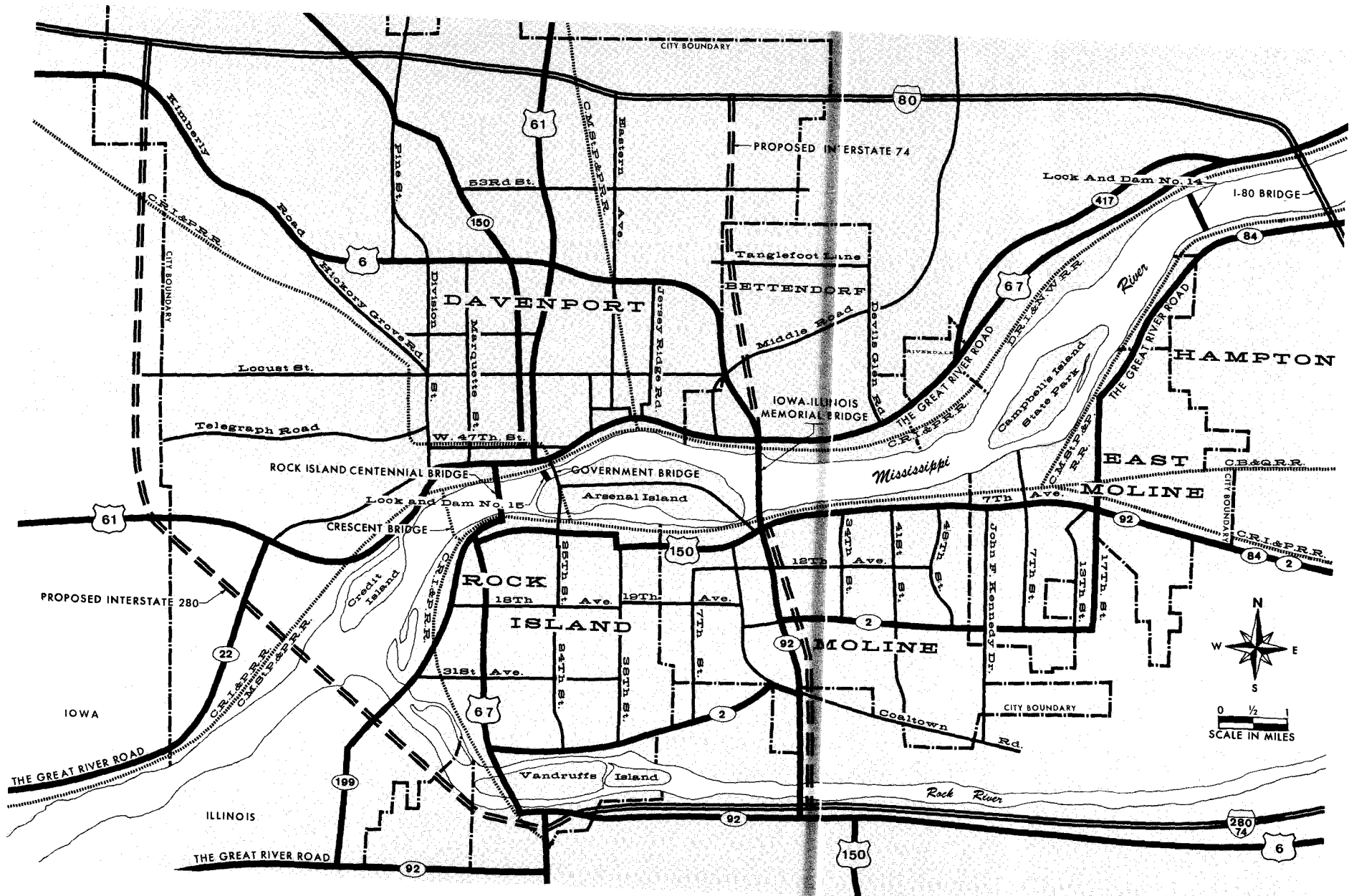


Exhibit I-1
 DAVENPORT STUDY AREA

River Conditions

Eight miles upstream from the Rock Island Centennial Bridge, the navigation channel of the Mississippi River passes northwest of Campbell's Island and follows the Iowa river bank downstream and under the Iowa-Illinois Memorial Bridge at the upstream tip of Arsenal Island. From here to the U.S. Lock and Dam No. 15, connecting Arsenal Island and Davenport at the Island's downstream end, the channel closely follows the island bank. Leaving the locks, a sweeping one degree reverse curve takes the channel under the Centennial Bridge to Credit Island two miles further downstream from the bridge.

Along this ten miles of the river are the Iowa cities of Davenport, Bettendorf, and Riverdale on the north bank and the Illinois cities of Rock Island, Moline, and East Moline on the south bank. Connecting these cities are two swing span truss bridges in addition to the high level bridges previously mentioned. These are the U.S. Government owned railroad-highway bridge (Government Bridge) serving the Chicago, Rock Island, and Pacific Railroad and vehicular traffic over the locks at Arsenal Island and the Davenport, Rock Island, and North Western Railway (Crescent) Bridge three-fourths of a mile downstream of the Centennial Bridge.

Only those portions of the river above the Memorial Bridge to Campbell's Island and below the locks to Credit Island are appropriate for additional bridge crossings. Above and below these points, Interstate Routes 80 and 280 bridges will provide convenient crossings through relatively undeveloped areas while in the reach between the locks and the Memorial Bridge, Arsenal Island creates a natural barrier.

Normal river stages are Elevation 561.0 Mean Sea Level above and Elevation 545.0 Mean Sea Level below U.S. Lock and Dam No. 15. Flooding of areas adjacent to the river was experienced during 1965 in spite of levee protection provided on both banks. At that time water levels reached elevations of 572.0 and 565.0 above and below the dam, respectively. Additional levee work is planned by the Corps of Engineers along the river fronts of Bettendorf and East Moline and along the river front of Rock Island to a point below the Crescent Bridge to provide an adequate

safety factor against possible flooding of the magnitude experienced in 1965.

Existing Railroads

Mainline tracks, spur tracks, and boxcar storage yards line both banks of the Mississippi River along the ten mile length under consideration. The Chicago, Rock Island and Pacific Railroad follows both banks. It shares the Davenport–Bettendorf bank between the water and U.S. Route 67 with the Davenport, Rock Island and North Western Railroad and the Rock Island–Moline river front with both the Davenport, Rock Island, and North Western and the Chicago, Milwaukee, St. Paul, and Pacific Railroad. The Chicago, Burlington, & Quincy Railroad also provides trackage along the Moline river front.

Trackage is generally at low elevations within range of normal flood conditions but protected by levee systems along most of its length. Raising of some isolated trackage is proposed in conjunction with proposed levee improvements and sandbag freeboard closures are indicated where tracks intersect levees below flood level.

Navigation Clearances

Criteria for navigation clearances have been tentatively established by the Rock Island District of the U. S. Army Corps of Engineers.

Upon establishment of the Department of Transportation under the Act of 15 October 1966, PL 89-670, the Secretary of Transportation was given responsibility for certain functions, powers, and duties previously vested in the Secretary of the Army and other offices of the Department of the Army, including those with respect to drawbridge operating regulations (Section 5 of the Act of 18 August 1894 as amended), obstructive bridges (the Act of 21 June 1940 as amended), and location and clearances of bridges and causeways in navigable waters (Section 9 of the

Act of 3 March 1879, the Act of 23 March 1906 as amended, and the General Bridge Act of 1946 as amended, except Section 503).

The criteria cited herein is in conformance with the requirements and past practices of the U. S. Army Corps of Engineers. The assumption has been made, for this exploratory report, that the criteria to be established by the U. S. Coast Guard, the agency delegated by the Secretary of Transportation to assume the responsibility for the functions listed above, will be similar to those of the Corps of Engineers.

Contact with the Coast Guard has confirmed the validity of this assumption for an exploratory study of alternative locations. It should be noted, however, that the particular river conditions existing at each site should be reviewed with the Coast Guard prior to the preparation of a definite project report to establish the navigation requirements.

Although the minimum permissible navigation channel on the Mississippi River is 400 feet, a horizontal clearance of 500 feet is proposed for a new highway bridge at this site. The 400 foot minimum clearance is permitted only when the alignment of the river channel is straight. The opening must be greater where the alignment of the channel is curved under or upstream from the bridge.

Final approval of clearances can be determined only after formal application has been filed and public hearings conducted.

The minimum vertical clearance for a bridge structure is 52 feet above the two per cent waterline elevation or 60 feet above flat pool, whichever is higher. The two per cent waterline is that elevation of the river which will be exceeded only two per cent of the time. The two per cent waterline elevation below the locks at Davenport is 557.0 Mean Sea Level and the flat pool elevation is 545.0 Mean Sea Level. The two per cent criteria governs resulting in a required vertical clearance above flat pool of 64 feet. Both existing high level bridges at Davenport provide 66-foot clearances above flat pool and this same clearance is proposed for all the various bridge locations considered.

ALTERNATE LOCATIONS

General

Four alternative bridge locations were studied and evaluated for a new Mississippi River crossing in the Davenport vicinity. Three of the sites are shown on Exhibit I-2. The fourth site is located approximately eight miles upstream of the Centennial Bridge at Campbell's Island.

Arsenal Island is a U.S. Government restricted area and creates a natural barrier for any crossing between the Memorial Bridge and the locks at the downstream end of the island. Also, crossings in this vicinity would require a considerably greater structure length and would necessarily result in higher project costs.

Severe restrictions are imposed on crossings between the Centennial Bridge and Arsenal Island by the limited right-of-way available for approach roadways in the commercially developed areas adjacent to the Rock Island and Davenport Central Business Districts, the existing railroads on both river banks and the undesirability of terminating the bridge approach within the Davenport Central Business District.

Two alternative locations, one at Brown Street near the existing Centennial Bridge, designated Alternate A, and another at Perry Street, designated Alternate B, were developed in detail and are presented in this report. The principal features and relative merits of each alternate are summarized in the following paragraphs.

Alternate A

Located immediately downstream and generally parallel to the Centennial Bridge as shown on Exhibits I-2 and I-3, this site allows the development of a one-way traffic pair for cross river traffic when the new bridge is used in conjunction with the existing structure. In Davenport, the alignment ties directly to West Second Street between Brown and Gaines Streets with a roadway extension terminating at the intersection of Brown and West Third Streets. The Rock Island terminal is aligned with

Fourteenth Street and includes curved ramp ties to the Centennial Expressway (Southwest Expressway) in addition to a direct connection to Second Avenue. An aerial oblique view of the Davenport approach configuration is shown on Exhibit I-4.

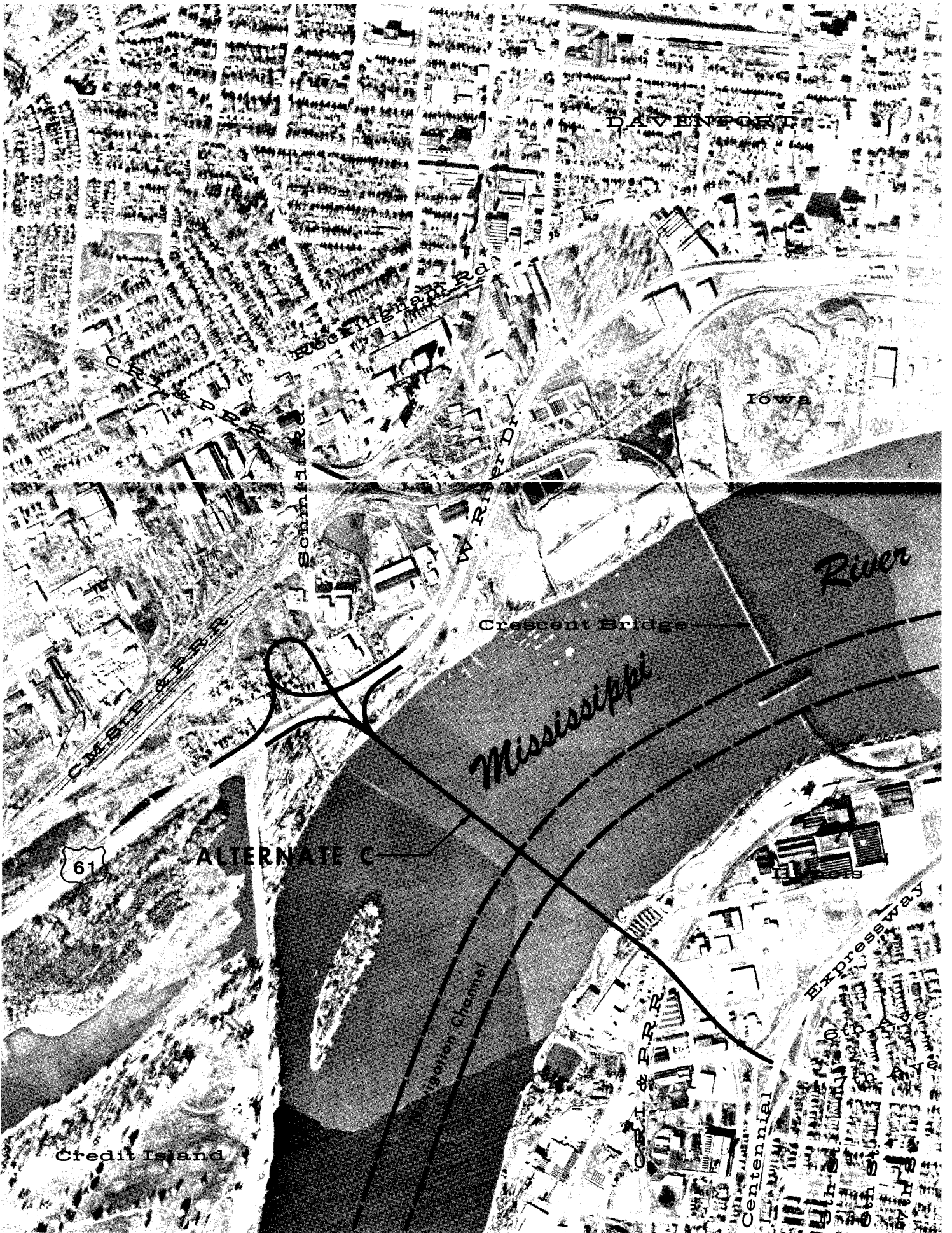
This location nearly doubles the practical traffic capacity of the Centennial Bridge Corridor with the introduction of three new traffic lanes and the widening of the Centennial Bridge lanes through the elimination of the raised center median. The alternate would connect U.S. Routes 61 and 67 in Davenport with U.S. Route 150 and Illinois Route 199, the Centennial Expressway, in Rock Island.

The alignment provides good access to the Central Business and Industrial Districts of both Davenport and Rock Island along existing city streets without intrusion into areas of high right-of-way cost. Additional right-of-way for more complete ramp connections to River Drive in Davenport could be inexpensively purchased. Development of the Rock Island terminal requires shifting the alignment of the Centennial Expressway westbound lanes and its exit ramp to Eleventh Street. An alignment change is also required to convert the existing Centennial Bridge ramp now carrying traffic to the eastbound Expressway lanes to a ramp providing access to the bridge from the westbound Expressway lanes.

Horizontal navigation clearances for a new bridge at the location near Brown Street are governed by the adjacent Centennial Bridge. Due to the close proximity of the two alignments, a new twin structure with relatively identical main channel spans is proposed.

Alternate B

Located just downstream of the Government Bridge, this alternate connects Perry Street at East Second Street in Davenport with Twentieth Street at Third Avenue in Rock Island. Ramps connect the bridge with East River Drive at the Davenport terminal and with an extended Centennial Expressway along First Avenue in Rock Island, included as a second phase of this project. Provision for the addition of ramps to accommodate future extensions of the Expressway into Moline has been taken into consideration.



Davenport

Iowa

River

Crescent Bridge

Mississippi

ALTERNATE C

61

Credit Island

Rockingham Rd

W. River Dr.

Schmitt St

C.M. & ST. P. R.R.

Centennial

Expressway

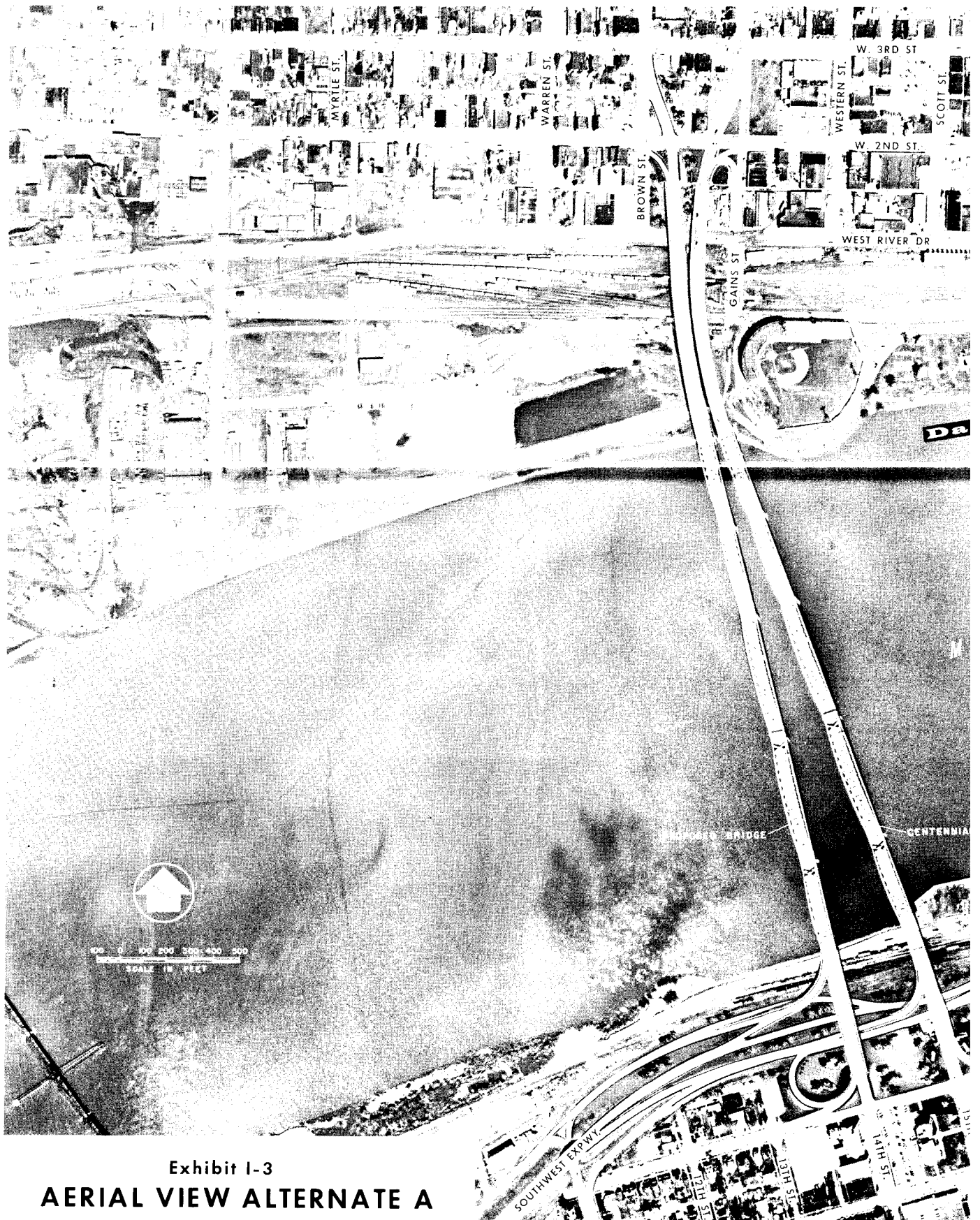


Exhibit I-3
AERIAL VIEW ALTERNATE A



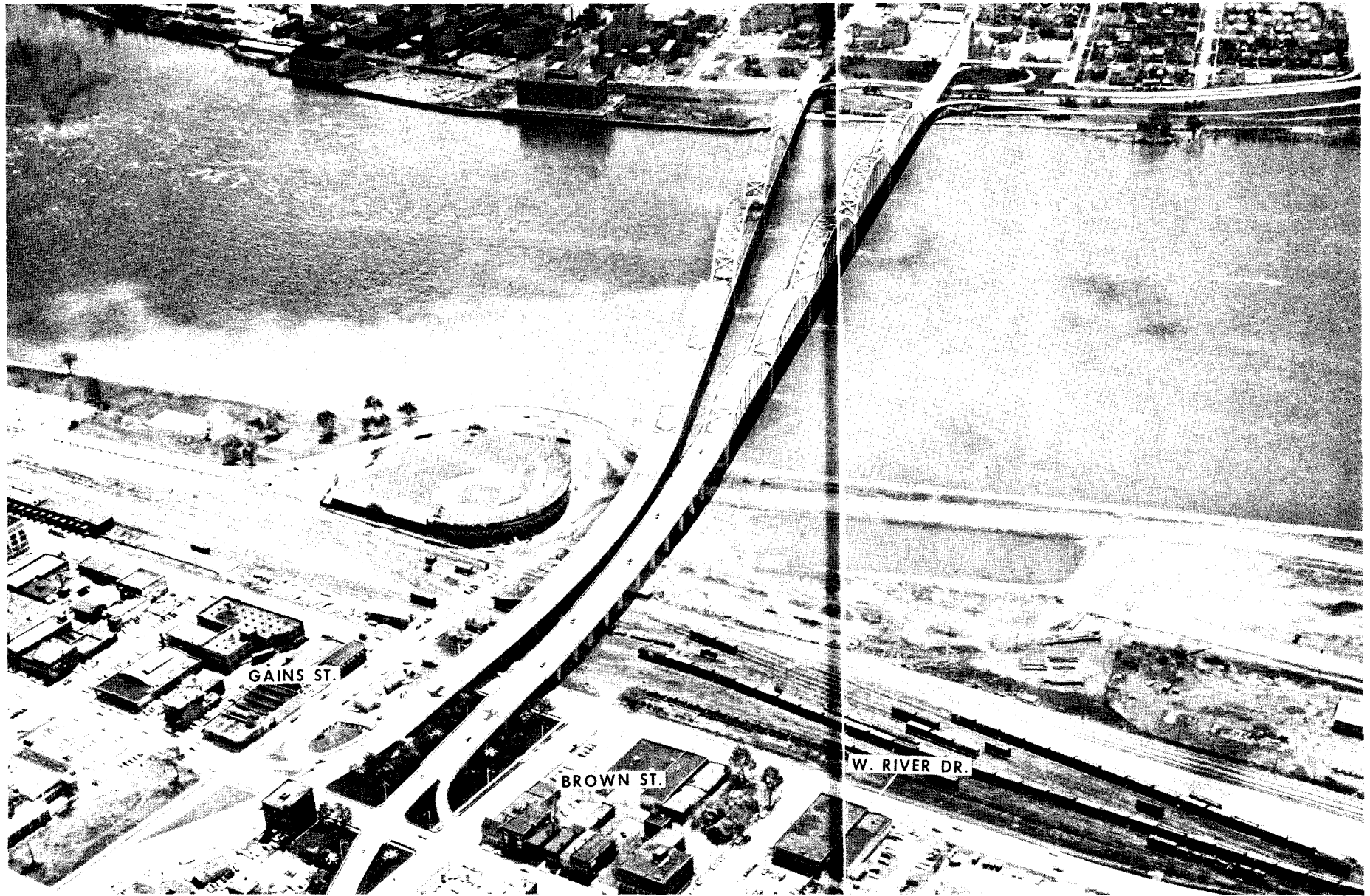


Exhibit I-4

AERIAL OBLIQUE VIEW ALTERNATE A DAVENPORT TERMINAL

Terminal designs, shown on Exhibit I-5, include alternate solutions for the routing of traffic between the bridge and East River Drive in Davenport.

The alignment provides a high level river crossing along the eastern edge of the two cities' Central Business Districts and, with the Centennial Bridge, completes a loop of these areas. Davenport highway connections include U.S. Route 67 along East River Drive, U.S. Route 61 one block west on Brady Street, and Iowa Route 150 three blocks west on Harrison. In Rock Island, the bridge-highway ties are Illinois Route 199 along First Avenue and U.S. Route 150 two blocks south on Fifth Avenue.

Disadvantages of the site include necessary intrusion into the densely developed Davenport Central Business District and the high right-of-way costs in the area that forestall more complete terminal design to handle all required traffic movements. Vertical roadway clearances on existing city streets north of the bridge under the Chicago, Rock Island, and Pacific tracks vary from 10'-9" on Main Street to a maximum of 13'-2" on Pershing Street.

Other Alternates

Alternate C – A Mississippi River crossing site just upstream of Credit Island, as shown on Exhibit I-2, would connect U.S. Route 61 at Schmidt Road on the Davenport bank to the intersection of the Centennial Expressway at Seventh Avenue in Rock Island. This location provides a river crossing through the developing industrial areas toward the western edges of the two cities. It would require extensive roadway construction north from U.S. 61 to provide good access to the developing areas in northwest Davenport.

Alternate D – This site is located at Campbell's Island approximately midway between the Iowa-Illinois Memorial Bridge and the I-80 Bridge at Le Claire. It connects U.S. Route 67 at Fenno Road in Riverdale with Illinois Route 84 in East Moline. The surrounding area on both banks is primarily low lying plain rising to bluffs behind the highways. Some industrial development exists along the river banks but the area is otherwise generally undeveloped.

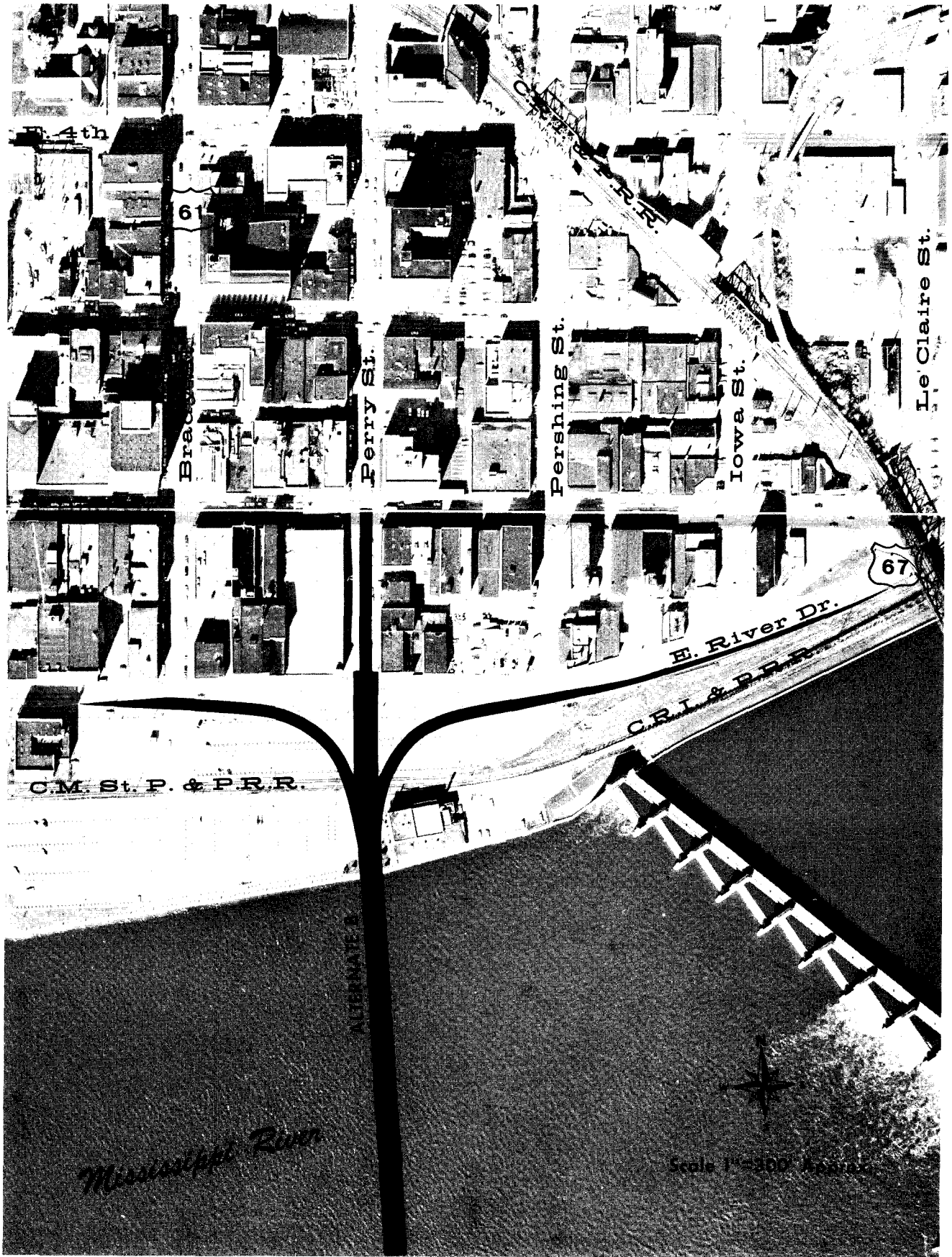


Exhibit I-5

ALTERNATE B DAVENPORT TERMINAL

STRUCTURE TYPE STUDIES FOR NAVIGATION SPANS

The primary intent of structure type studies as a part of this exploration study is to determine the approximate cost of a river crossing. A final recommendation for a specific type of structure cannot be made at this stage of investigation and design. The final selection of a structure type will be contingent upon economics, aesthetic factors, structure considerations, navigation clearance requirements, foundation conditions, highway alignment and vertical controls. All of these control factors should be studied in detail after a preliminary selection of bridge location has been made based on the general considerations outlined and discussed in this report.

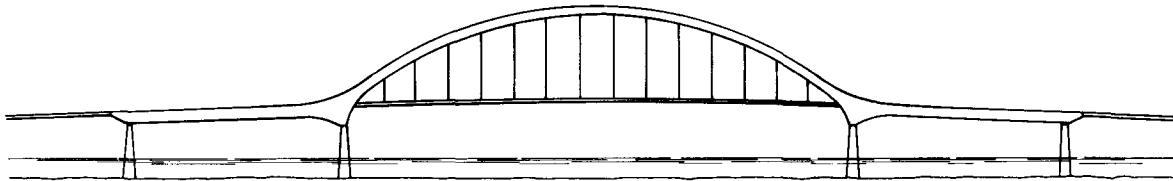
Six types of navigation spans are shown on Exhibit I-6. These types have been used in many major river crossings. The existing Rock Island Centennial Bridge has multiple box girder tied arch spans. This type of span is aesthetically pleasing and permits flatter approach grades than does the continuous girder span.

The new bridge at Alternate A location closely parallels the Centennial Bridge. For this location, it is appropriate to match the existing structure closely in appearance and arrangement of spans.



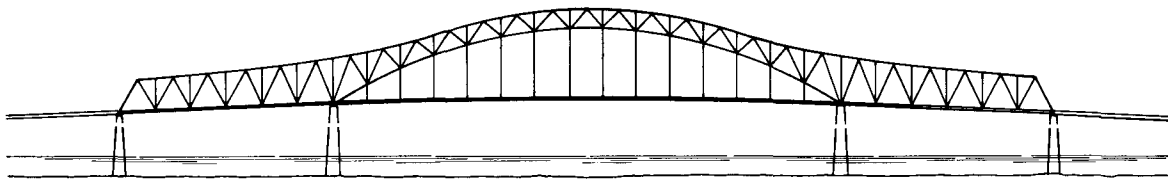
CONTINUOUS GIRDER SPAN

TYPE I



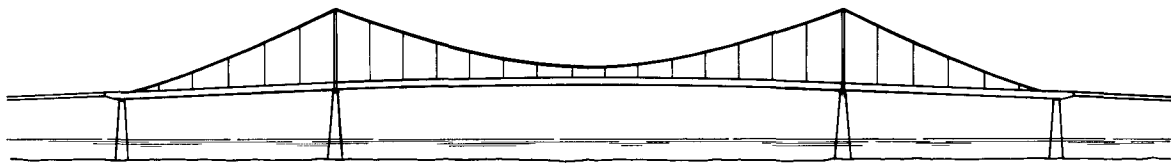
CONTINUOUS BOX GIRDER TIED ARCH SPAN

TYPE II



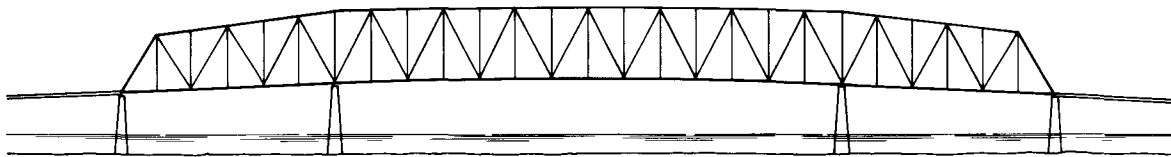
CONTINUOUS TRUSS TIED ARCH SPAN

TYPE III



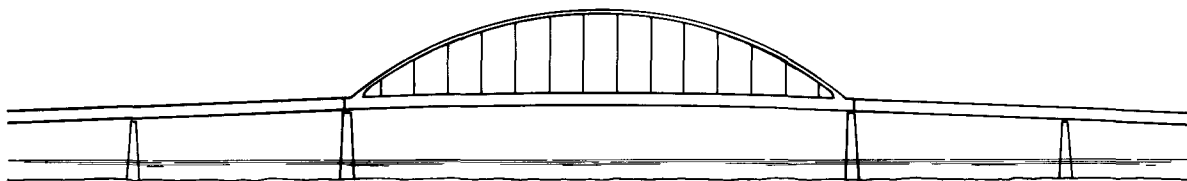
SELF ANCHORED SUSPENSION SPAN

TYPE IV



CONTINUOUS TRUSS SPAN

TYPE V



BOX GIRDER TIED ARCH SPAN

TYPE VI

Exhibit I-6

NAVIGATION SPAN STRUCTURE TYPES

STRUCTURE TYPE STUDIES FOR APPROACH SPANS

Economy is a primary consideration for the approach spans which extend from the bridge abutments to the main river spans. Many types of approach span construction can be blended with the main spans to achieve a pleasing appearance. Based on available geological data, it appears that continuous steel beam spans offer economical construction for the approach roadways.

COST ESTIMATES

General

The preliminary roadway costs were determined by applying current unit prices to preliminary quantity estimates of the principal roadway construction items. Allowances have been included for modest escalations of unit costs during the one year that will elapse before construction could begin.

Right-of-way cost estimates were based upon fair market valuations of all real property involved. Allowances have been included for damages, severance losses and acquisition expenses.

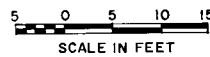
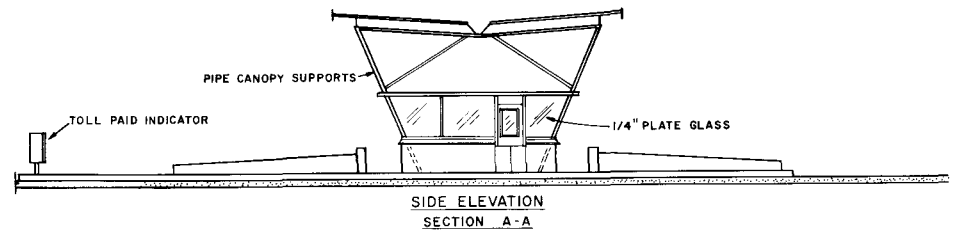
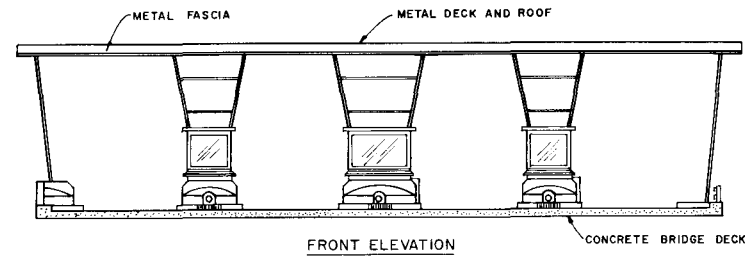
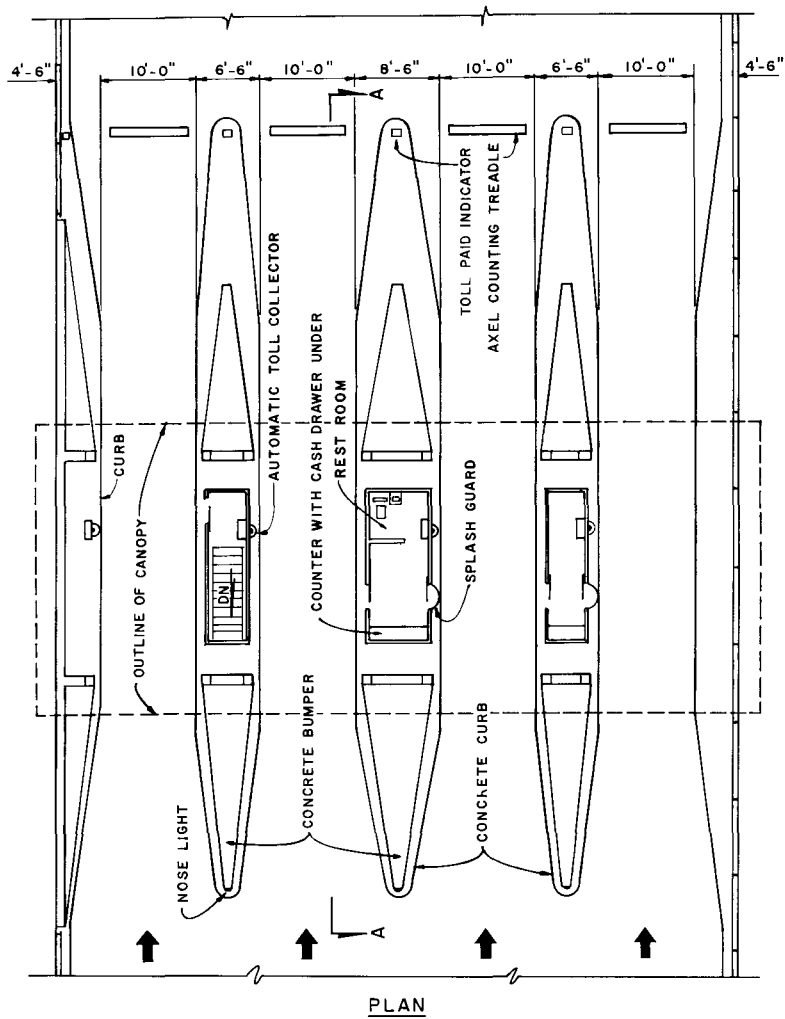
A typical toll booth installation for a new bridge parallel to the Centennial Bridge is shown on Exhibit I-7. The exact location of this facility on the bridge will be established during subsequent study phases.

Prior to preparation of final design plans, additional engineering studies will be required. A complete subsurface investigation will be necessary to provide a firm basis for the determination of substructure type, substructure design and economical span lengths. Main river unit studies will include economic comparisons of several types of construction.

The total project cost does not include any allowance for acquisition of any franchise rights or property now vested in the private toll bridge company.

Alternate A

A plan, elevation and typical section for the Alternate A crossing at Brown Street is shown on Exhibit I-8. The 43-foot wide roadway provides 4 feet 6 inches of lateral clearance between the right hand edge of a typical 12-foot traffic lane and the barrier rail and 3 feet 6 inches to the left hand barrier rail. This clearance from the normal edge of the lane



**Exhibit I-7
GENERAL PLAN AND ELEVATION
TOLL BOOTH**

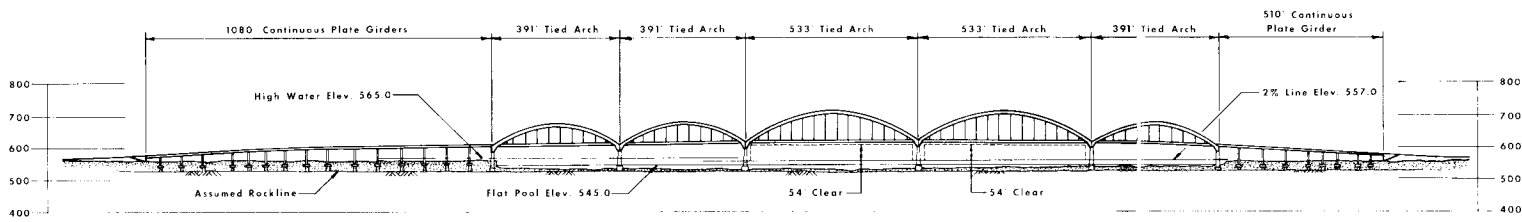
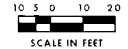
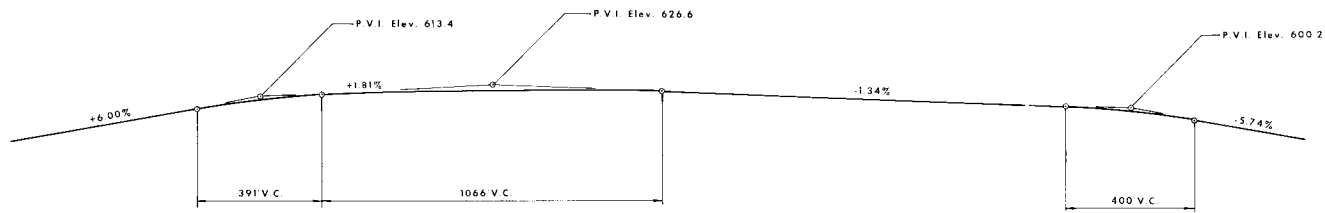
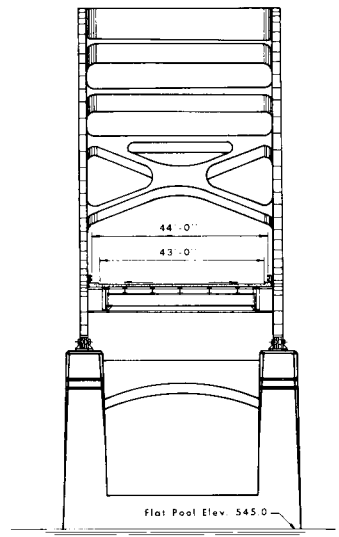
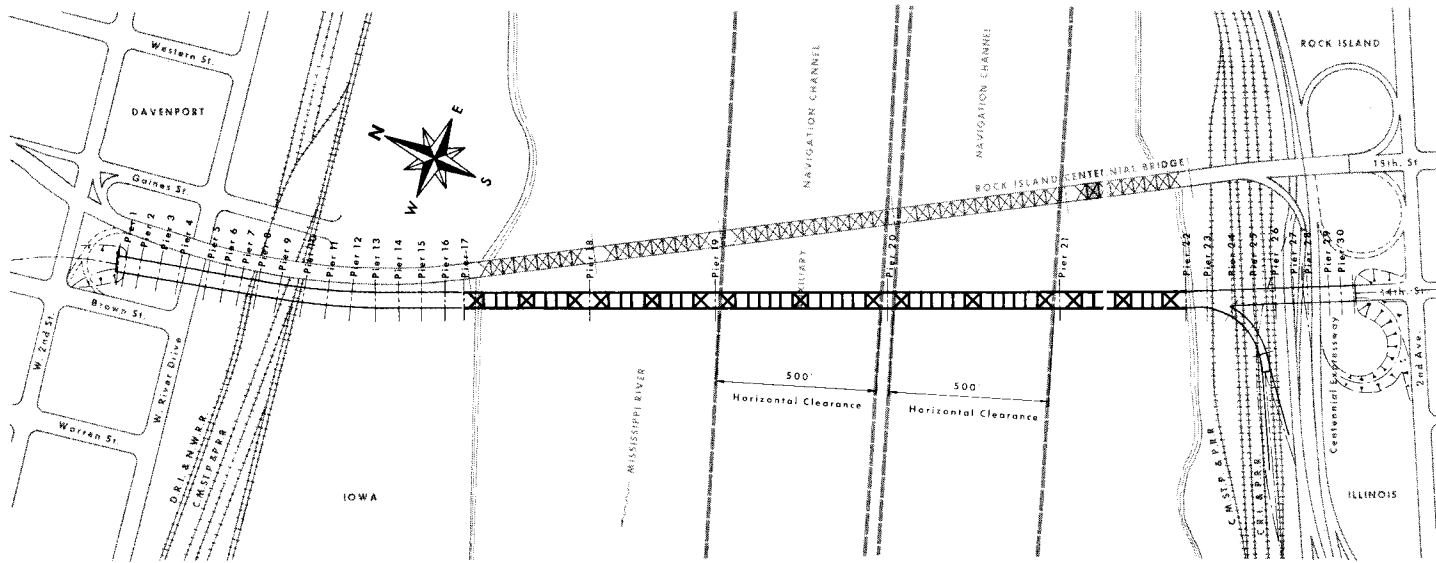


Exhibit I-8
ALTERNATE A LOCATION
GENERAL PLAN AND ELEVATION

conforms to the modern safety requirements of the American Association of State Highway Officials and the Bureau of Public Roads. Sidewalks for pedestrians crossing the river are provided on the existing Centennial Bridge.

A navigation span of approximately 533 feet provides for a 500-foot navigation channel at this site. The Box Girder Tied Arch Span used for this alternate would be an aesthetically pleasing structure duplicating the parallel Centennial Bridge. Its cost will compare favorably with other types of spans.

The estimated construction cost of the bridge at the Brown Street location is \$7,855,600. A detailed breakdown of this cost is shown in Table I-1. Quantities shown are based on a preliminary design of main structural components. Unit prices are based on a review of current construction prices of similar items with modest escalation to reflect the elapse of at least one year before bids could be received for construction contracts.

The total estimated project costs for alternate bridge locations at both Brown Street and Perry Street are shown on Table I-2.

Alternate B

A plan and elevation drawing of Alternate B at Perry Street is not included in this report. The four lane structure estimated at this location provides twin roadways separated by a concrete barrier median. Lateral clearances would be similar to those suggested in Alternate A.

A Continuous Plate Girder structure was used for the purpose of estimating bridge costs at this location. A main river unit with spans of 350, 535, and 350 feet, flanked by plate girder and rolled beam approach spans, has been assumed for the bridge over the Mississippi River. The total length of structure would be 3,150 feet.

The estimated construction cost of the bridge at the Perry Street location is \$8,956,000. A detailed breakdown and a comparison of costs for both alternates are shown in Table I-2.

TABLE I-1
 ESTIMATE OF BRIDGE CONSTRUCTION COST
 ALTERNATE A
 Davenport, Iowa, Bridge

Continuous Girder Spans	1080 ft.
Tied Arch Spans	2239 ft.
Continuous Girder Spans	<u>510 ft.</u>
	3829 ft.

Roadway Width - 43' - 0" Curb-to-Curb

ITEM	QUANTITY	UNIT PRICE	COST
Superstructure:			
Bridge Railing	8,540 L.F.	\$ 12.00	\$ 102,500
Concrete	4,890 C.Y.	90.00	440,100
Reinforcing Steel	1,470,000 Lbs.	0.14	205,800
Tied Arch Steel A-36	5,840,000 Lbs.	0.34	1,985,600
Tied Arch Steel A-441	6,050,000 Lbs.	0.38	2,299,000
Girder Steel A-36	2,870,000 Lbs.	0.29	832,300
Cast Steel and Misc. Metal	324,000 Lbs.	0.70	226,800
Lighting		Lump Sum	<u>167,000</u>
	SUBTOTAL		\$6,259,100
Substructure:			
Concrete	15,110 C.Y.	\$ 65.00	\$ 982,200
Reinforcing Steel	1,540,000 Lbs.	0.14	215,600
Steel Bearing Piles (12BP53)	19,400 L.F.	8.00	155,200
Steel Pile Cofferdams	29,300 S.F.	5.00	146,500
Excavation	9,700 C.Y.	10.00	<u>97,000</u>
	SUBTOTAL		\$1,596,500
			<u><u> </u></u>
	TOTAL BRIDGE COST		\$7,855,600

TABLE I-2

SUMMARY OF ESTIMATED PROJECT COSTS
Davenport, Iowa, Bridges

	ALTERNATE A		ALTERNATE B	
	Iowa	Illinois	Iowa	Illinois
Roadway	\$ 38,000	\$ 259,000	\$ 96,000	\$100,000
Structures	7,855,600	—	8,956,000	—
Modification of Centennial Bridge	150,000	—	—	—
Foundation Borings	90,000	—	95,000	—
Subtotal	\$8,133,600	\$ 259,000	\$9,147,000	\$100,000
Toll Booth Complex	150,000	—	120,000	—
Engineering and Contingencies	2,181,000	68,200	2,440,000	26,300
Total Construction	\$10,464,600	\$ 327,200	\$11,707,000	\$126,300
Right-of-Way	394,000	952,000	125,000	341,800
Acquisitions and Contingencies	79,000	190,000	25,000	68,200
Administration and Legal	72,400	49,800	65,000	17,700
Total	\$11,010,000*	\$1,519,000	\$11,922,000*	\$554,000
Total Project Cost		\$12,529,000		\$12,476,000

*Iowa costs include all costs of the river structure up to and including the south abutments.

Operation and Maintenance

The estimate of first year expenses for operation and maintenance of Alternate A in conjunction with the existing Centennial Bridge is shown in Table I-3. Inasmuch as operation of the bridges by the Iowa State Highway Commission will be somewhat different than that of a private operator, several cost assumptions have been made: (1) No per diem for commissioners or pro rata cost for central administration by the Iowa State Highway Commission; (2) employee fringe benefits will be similar to existing private operation. Since the proposed bridge will be owned by a public agency, it has been assumed that it will not be subject to property or other local taxes.

TABLE I-3
ESTIMATE OF FIRST YEAR EXPENSES
FOR
OPERATION AND MAINTENANCE

Davenport, Iowa, Bridges

ADMINISTRATION

Toll Sergeant	\$ 9,000	
Travel and Car Expense	1,200	
Consulting Engineers	4,800	
Miscellaneous	<u>1,000</u>	
Total Administration		\$ 16,000

OPERATION

Toll Collectors	\$ 70,000	
Utilities	5,500	
Supplies and Postage	3,500	
Employee Benefits	<u>5,000</u>	
Total Operation		\$ 84,000

REPAIRS AND MAINTENANCE* \$ 17,500

INSURANCE \$ 12,500

MAINTENANCE RESERVE \$ 16,000

Total Operation and Maintenance \$ 146,000

*By District maintenance forces on force account cost basis.

PART II

PRELIMINARY ESTIMATES OF TRAFFIC AND REVENUES AND PROJECT FEASIBILITY

INTRODUCTION

A general economic evaluation was made of the Quad-Cities area as a guide in projecting future trans-river traffic growths. Route reconnaissance investigations were conducted to inventory present traffic facilities and to determine average operating speeds and other traffic service characteristics. All available trans-river travel patterns and traffic trend data for the Quad-Cities area bridges and closest alternative crossings were assembled and reviewed.

Using the travel pattern information, travel speed and route inventory data and empirical diversion curves developed from studies of similar facilities, traffic assignments were made assuming construction of additional toll crossings as well as programmed highway improvements. The preliminary assignments were made at several toll rates to determine the rate structure which would optimize toll revenues while still providing a reasonable level of traffic service in the travel corridor.

Preliminary estimates of annual toll revenues were then developed based on the economic and traffic trend studies and forecasts of future area growth. Using the project costs and annual maintenance and operating expense estimates developed by Howard, Needles, Tammen & Bergendoff, a preliminary indication of the relative feasibility of the proposed crossings was determined.

Proposed Quad-Cities Area Bridges

Several locations for new toll bridges in the Quad-Cities area were given preliminary study. The bridge alignments which were selected for more detailed studies are depicted in Exhibit II-1.

Three specific alternative proposed river crossings were studied — the Crescent Bridge, a parallel span to the present Centennial Bridge and a Campbell's Island crossing. The Crescent Bridge would be located downstream of the present Crescent railway crossing, between the Centennial Bridge and the proposed Interstate Route 280 crossing. The parallel span to the Centennial Bridge would be located immediately to the west of the present bridge and the proposed Campbell's Island crossing would connect Campbell's Island with Riverdale and East Moline.

The proposed new bridges would be constructed as modern, multilane structures with minimum approach road grades and adequate lane widths. The Crescent and Campbell's Island Bridges would be designed as two-lane facilities with 32-foot curb-to-curb sections. It was assumed the parallel span to the Centennial Bridge would be constructed as a three-lane structure with a 44-foot section which would be operated as a one-way facility. As a corollary to this, the present Centennial Bridge would be converted to one-way operation in the other direction with the two companion bridges functioning as a one-way pair. Each of the proposed alternative crossings would operate as toll facilities. It was assumed that tolls would continue to be collected on the present Centennial Bridge and that upon programmed completion of Interstate Route 74, the present Memorial Bridge would become toll-free.

AREA GROWTH ANALYSES

Several economic parameters were evaluated to determine relative levels of activity and recent growth trends in the Quad-Cities area. These indices included population, retail sales and average effective buying income per family. In addition, trends in motor vehicle registrations and motor fuel consumption, both excellent measures of highway travel, were analyzed. For study purposes, a bridge influence area was defined which included Scott County, Iowa, and Rock Island and Henry Counties in Illinois.

Local field reconnaissance was conducted in the bridge study area and contact made with various officials and others to obtain information regarding trends and characteristics of land use and economic activities. Available current data and forecasts for the bridge study area were assembled and reviewed.

Study Area Characteristics

Davenport and its neighboring community Bettendorf make up the Iowa portion of the Quad-Cities area, a cluster of urban communities on both sides of the Mississippi River. Davenport, the largest city of the group, is the dominant commercial center, while the Illinois cities of Rock Island, Moline, and East Moline provide a major share of employment in the metropolitan area. Bettendorf has been the fastest growing community in the Quad-Cities area in recent years, and is primarily a "bedroom" or residential community. Recently, however, new manufacturing concerns have moved into Bettendorf which will help offset its heavily residential character.

In the metropolitan area, industrial activity, particularly manufacturing, accounts for a very important segment of employment. Wholesale and retail trade and service activities are also important sources of employment. The Quad-Cities area is world-renowned as a headquarters for farm equipment manufacturing and a recent employment estimate notes that the area's two largest manufacturing concerns are identified with this field, accounting together

for over 22,000 employees. Other major employers in the area are the Rock Island Arsenal, a military weapons manufacturing and research facility; aluminum producers; food products industries, and producers of mechanical and electrical instruments and machine components.

Population Trends

The population figures shown in Table II-1 reveal that the Quad-Cities area comprises a number of sizeable communities. Davenport is the largest city in the area, with a 1960 population of 88,981. Next in size was Rock Island with 51,863, followed by Moline with 42,705. East Moline's population was 16,732 while Bettendorf reported 11,534. Other study area communities had populations less than 10,000. The Davenport-Rock Island-Moline Standard Metropolitan Statistical Area (SMSA) in 1960, was made up of Scott County, Iowa and Rock Island County, Illinois. Its total population was reported as 270,058.

Recent population trends in the area have demonstrated a pattern of healthy and sustained growth. The fastest-growing community in the study area over the period 1950-1966 was Bettendorf, where the 1950 population of 5,132 increased to 18,600, a growth averaging more than 8.3 per cent per year for the period. Davenport's 1950 population of 74,549 had increased to 95,800 by 1966 at a growth rate averaging 1.8 per cent annually between 1950 and 1960 and 1.2 per cent per year between 1960 and 1966. Although the growth rate for Davenport is lower than that for Bettendorf, both communities grew by approximately the same number of persons between 1950 and 1966. Population growth in Moline averaged 1.3 per cent per year consistently throughout the 16-year period; Rock Island's population increased at an average annual rate of slightly more than 0.5 per cent.

The population of the metropolitan area increased from 234,256 in 1950, to an estimated 292,300 in 1966 representing average annual growths of 1.4 per cent between 1950 and 1966 and 1.1 per cent between 1960 and 1966. Population growth in the three-county study area increased an average

TABLE II-1
POPULATION TRENDS

AREA	AVERAGE ANNUAL PER CENT CHANGE		AVERAGE ANNUAL PER CENT CHANGE		1966
	1950		1960		
<i>Municipalities:</i>					
Bettendorf	5,132	8.4	11,534	8.3	18,600
Davenport	74,549	1.8	88,981	1.2	95,800
East Moline	13,913	1.9	16,732	--	N.A.
Genesee	4,325	1.8	5,169	--	N.A.
Le Claire	1,124	3.2	1,546	--	N.A.
Moline	37,397	1.3	42,705	1.3	46,100
Rapids City	487	3.3	675	--	N.A.
Riverdale	300	4.7	477	--	N.A.
Rock Island	48,710	0.6	51,863	0.5	53,500
Silvis	3,055	2.7	3,973	--	N.A.
<i>Davenport-Rock Island-Moline SMSA⁽¹⁾</i>					
	234,256	1.4	270,058	1.1	292,300
<i>Counties:</i>					
Henry	46,492	0.6	49,317	0.4	50,400
Rock Island	133,558	1.2	150,991	1.1	161,000
Scott	100,698	1.7	119,067	1.6	131,300
Three-County Total	280,748	1.3	319,375	1.2	342,700
<i>States:</i>					
Illinois	8,712,176	1.5	10,081,158	1.1	10,775,300
Iowa	2,621,073	0.5	2,757,537	0.3	2,813,600
United States ⁽²⁾	150,697,361	1.7	178,464,236	1.6	196,208,200

N.A. = Not Available.

⁽¹⁾ Standard Metropolitan Statistical Area as defined in 1960 census, comprised of Scott County, Iowa, and Rock Island County, Illinois.

⁽²⁾ Does not include Alaska and Hawaii.

SOURCE: U. S. Department of Commerce, Bureau of the Census; "Survey of Buying Power", *Sales Management*; Iowa State Highway Commission.

of 1.3 per cent between 1950 and 1960 and 1.2 per cent between 1960 and 1966. The population of the study area in 1966 was 342,700.

Statewide population growths in Iowa and Illinois were higher between 1950 and 1960 than in the succeeding six years to 1966. In Illinois, an average annual increase of 1.5 per cent occurred between 1950 and 1960 decreasing to 1.1 per cent per year between 1960 and 1966. Statewide population growth in Iowa averaged 0.5 per cent and 0.3 per cent for the same periods, while the national population growth was 1.7 and 1.6 per cent per year, respectively, during the same 16-year period.

Trends in Retail Sales

Retail sales in the Quad-Cities metropolitan area followed a growth pattern similar to that experienced statewide in Illinois and Iowa and for the nation. The pattern was characterized by modest growth between 1956 and 1961, followed by a period of more rapid growth between 1961 and 1966. In the metropolitan area, sales over the period increased from \$331,491,000 in 1956 to \$530,293,000 in 1966, growing at an average annual rate of 0.4 per cent between 1956 and 1961 and then increasing dramatically to 7.4 per cent per year between 1961 and 1966. During the same periods, retail sales statewide in Illinois increased an average of 2.4 and 6.8 per cent per year, respectively, while in Iowa, average increases of 2.1 and 5.0 per cent annually were recorded. The national growth trend was 2.6 and 6.5 per cent, respectively, during the same periods.

Average Effective Buying Income Per Family Trends

In 1956, the average Quad-Cities area family had an average effective buying income of \$6,140. By 1966, income had increased to \$9,592, slightly less than the \$9,998 reported as the statewide Illinois average but significantly more than the \$8,416 average for Iowa and the \$8,522 average for the nation. Family incomes in the Quad-Cities area have demonstrated vigorous growth,

equalling or exceeding the national average for the past decade. Between 1961 and 1966, area incomes increased an average of 6.0 per cent per year. This increase, although somewhat below the excellent growth of 7.2 per cent recorded statewide in Iowa, was equal to the Illinois statewide growth rate and surpassed the national average of 5.1 per cent for the period.

Trends in Motor Vehicle Registrations

Between 1956 and 1961, motor vehicle registrations in the Quad-Cities area increased at an average annual rate of 2.8 per cent per year, accelerating to 5.2 per cent annually between 1961 and 1966. In 1966, registrations totaled 157,569 vehicles in the SMSA. Over the five-year period, 1961-1966, the increase in motor vehicle registrations in the metropolitan area exceeded the annual growth rates recorded statewide in both Illinois and Iowa, which averaged 3.5 and 3.6 per cent, respectively, and also out-paced the national growth rate, which averaged 4.4 per cent per year for the period.

Motor Fuel Consumption Trends

Reflecting the growths in personal income and motor vehicle registrations over the last decade, personal travel, as measured by motor fuel consumption, has also increased. In Iowa, motor fuel consumption increased an average of 2.0 per cent per year between 1956 and 1961 and 2.5 per cent annually between 1961 and 1966. During the same period, Illinois recorded increases of 2.4 and 3.6 per cent annually, respectively. The national growth rate was somewhat higher.

Future Growth

Population projections for the Quad-Cities area forecast a somewhat higher growth for the period 1960-1980 than has been experienced the past several years. As shown in Table II-2, it is estimated that Davenport's 1960

population of 88,981 will increase to approximately 131,128 by 1980, an increase averaging 2.0 per cent per year. In Bettendorf, it is expected that the 1980 population will total 32,498, an average annual increase of 5.3 per cent over the 1960 population level. The total population of Henry, Rock Island and Scott Counties in 1960 was 319,375. It is expected that by 1980 this will

TABLE II-2
POPULATION PROJECTIONS

<u>AREA</u>	<u>1960</u>	<u>AVERAGE ANNUAL PER CENT CHANGE</u>	<u>1980</u>
<i>Cities:</i>			
Bettendorf	11,534	5.3	32,498
Davenport	88,981	2.0	131,128
Le Claire	2,246	3.9	4,876
Riverdale	477	6.4	1,651
<i>Counties:</i>			
Henry	49,317	1.3	63,700
Rock Island	150,991	1.6	207,650
Scott	119,067	1.9	172,240
<hr/>			
Three-County Total	319,375	1.7	443,590
<i>States:</i>			
Illinois	10,081,158	1.4	13,337,000 ⁽¹⁾
Iowa	2,757,537	0.8	3,192,000

⁽¹⁾ Average of Series I and II projections developed by the Illinois Department of Business and Economic Development.

SOURCE: Iowa State Highway Commission, Bureau of Planning; Illinois Department of Business and Economic Development.

have increased to 443,590, an average annual growth of 1.7 per cent per year. Growth in the metropolitan area is expected to take place at a rate somewhat faster than that estimated for the State of Illinois (1.4 per cent per year) and considerably more rapid than that forecasted for Iowa (0.8 per cent per year).

Further indications of anticipated area growth are shown in Table II-3, which presents forecasts, from other sources, of future population and employment in the greater metropolitan area (made up of Scott, Rock Island and Henry Counties) through the period 1985. The greater metropolitan area population in 1963 was 332,000 and is expected to increase by 26 per cent to 417,000 by 1985. Rock Island County is expected to grow very little during this period, (one per cent) while Scott County is expected to experience a good population growth of 51 per cent, from 124,000 in 1963 to 189,750 in 1985. The forecast for Henry County anticipates a population growth of 34 per cent during this same period.

Employment growth in the greater metropolitan area is expected to keep pace with expanding population; an overall increase of 24 per cent is forecasted. As shown in Table II-3, increases in employment are expected to vary substantially by type of employment with manufacturing employment expected to grow only 10 per cent while service employment will increase an estimated 51 per cent and wholesale and retail trade by 41 per cent.

As leisure time and general prosperity increase, recreational travel will become an increasingly more important component of future trip-making. As all facets of the Quad-Cities economy expand, travel will increase proportionately. Trans-river trips are expected to increase at an even faster pace as the Quad-Cities area grows. The proposed new toll crossings will play an important role in maintaining this healthy growth trend since the present bridges cannot satisfactorily serve future trans-river travel demands.

TABLE II-3
POPULATION AND EMPLOYMENT FORECASTS
GREATER METROPOLITAN AREA⁽¹⁾

<u>ITEM</u>	<u>1963⁽²⁾</u>	<u>1985</u>	<u>PER CENT CHANGE</u>
<i>Population</i>			
Scott County	124,000	189,750	51
Rock Island County	160,000	162,600	1
Henry County	48,000	64,600	34
Metropolitan Area Total	332,000	417,000	26
<i>Employment</i>			
Manufacturing	45,855	50,300	10
Non-manufacturing	18,230	17,700	- 3
Trade (Wholesale-Retail)	21,935	30,900	41
Services ⁽³⁾	24,316	36,700	51
Government	11,971	14,000	29
Other	12,744	17,400	37
TOTAL	135,051	167,000	24

⁽¹⁾ Comprised of Scott, Rock Island and Henry Counties.

⁽²⁾ Interpolated from 1960-1985 forecast figures.

⁽³⁾ Includes Financial, Insurance, Real Estate, Commercial and Personal.

SOURCE: "The Economic Potential of the Davenport-Rock Island-Moline Metropolitan Area", Planning and Zoning Department, City of Moline, 1965.

TRAFFIC STUDIES

Preliminary studies were made to evaluate the traffic potential of the proposed Mississippi River bridges in the Quad-Cities area. These studies included route reconnaissance investigations to evaluate the quality of traffic service provided by present alternative river crossings, as well as the assembly and analysis of data relating to the magnitude and composition of traffic and trans-river travel patterns.

Route Reconnaissance

Approach roads to all present Davenport area bridges, aside from the Interstate Route 80 Bridge, are a part of the city street systems of Davenport, Rock Island, and Moline. Field investigations were conducted to determine present physical condition and traffic operating characteristics.

Iowa Route 22 — Approaching the Centennial Bridge from the west, Iowa Route 22 joins U. S. Route 61 about four miles west of the bridge. The highway has a 48-foot pavement width through Davenport which is in excellent condition and carries a high service rating.

U. S. Route 61 — U. S. Route 61 enters Davenport with a 24-foot pavement width which widens to 56 feet as it approaches the central business district. This portion of the route is rated "excellent". Proceeding easterly toward the Memorial Bridge, the route has a 48-foot pavement width with good structural and service ratings. U. S. Route 61 approaching the Centennial Bridge from the north has a pavement width ranging from 24 to 48 feet between its intersection with Interstate Route 80 and Kimberly Road with good structural and service ratings. Between Kimberly Road and the Centennial Bridge, the pavement width ranges between 48 and 60 feet and is rated in "excellent" condition.

Iowa Route 150 — Approaching the river from the north, Iowa Route 150 proceeds southerly from its junction with Interstate Route 80; it has a pavement width varying from 24 to 48 feet. Between Interstate Route 80 and U. S.

Route 6, the highway has a "good" structural and service rating. Between U. S. Route 6 and the Centennial Bridge, the pavement width varies between 27 and 56 feet with generally good structural ratings and service ratings ranging from "low" to "high."

U. S. Route 67 — U. S. Route 67, west of the Memorial Bridge, has a pavement width ranging from 42 to 48 feet with "fair" to "good" structural ratings and "medium" to "high" service ratings. In Rock Island, widening and resurfacing was recently completed on the east and west approaches to the Centennial Bridge. U. S. Route 67 approaches from the south along 11th Street, and has generally satisfactory surface and service conditions.

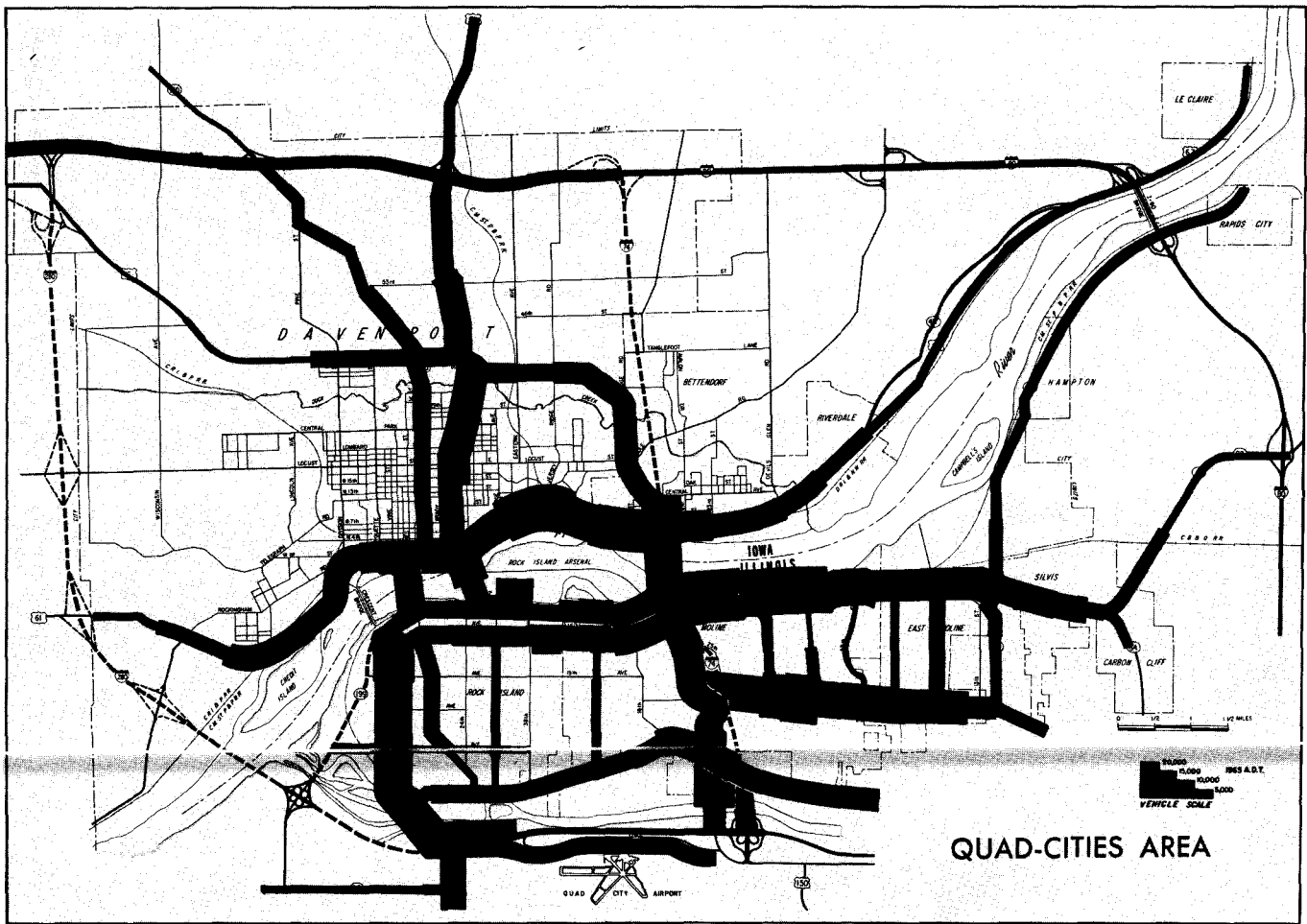
U. S. Route 6 — U. S. Route 6 approaching the Memorial Bridge through Bettendorf has a pavement width ranging from 20 to 30 feet with "fair" structural ratings and "low" to "medium" service ratings.

Other Illinois Approaches — Illinois Route 92 and U. S. Routes 6 and 150 approach the Memorial Bridge from the south along 19th Street in Moline. Nineteenth Street is an urban arterial street with considerable roadside friction and numerous traffic control devices.

Present travel speeds in the bridge study area are characteristic of conditions in heavily-urbanized areas. During off-peak hours traffic moves with reasonable freedom on all bridge approaches through signalized intersections and with relatively minor interference from parking maneuvers and other roadside friction elements. During periods of peak travel, however, there is considerable congestion, with some delay at the bridge approaches.

Present Traffic Volumes

The relative importance of study area highways, in terms of traffic volumes, is depicted in Exhibit II-2. The regional map shows Interstate Route 80 to be the principal east-west travel route through the area, carrying volumes in excess of 7,000 vehicles per day. U. S. Route 150, approaching from the



TRAFFIC FLOW MAP
1965 AVERAGE DAILY TRAFFIC

south in Illinois, is a principal north-south route through the area. U. S. Route 67 is also important, carrying about 5,000 cars per day as it enters the urban area. U. S. Route 61 carries considerably less traffic as it follows the Iowa side of the Mississippi River.

Within the urban area, major routes are seen to be U. S. Route 150 on the Illinois side and U. S. Route 67 on the Iowa side, both generally following the river. U. S. Route 61 proceeding northerly through Davenport carries volumes ranging from 12,000 to 20,000 vehicles per day. Iowa Route 150 accommodates considerably smaller volumes. Approaching the river crossings from the south, U. S. Route 67 carries more than 20,000 vehicles per day through downtown Rock Island, while U. S. Routes 6 and 150 and Illinois Route 92 carry more than 15,000 vehicles per day, as they approach the Memorial Bridge through downtown Moline.

Annual Trans-River Traffic Trends

Annual traffic and revenue trends for the Centennial and Memorial Bridges were assembled and reviewed. In addition, annual trends at the Government Bridge in Davenport and the closest alternative crossings beyond the Quad-Cities area — the toll bridge at Muscatine and Clinton's Gateway Bridge — were reviewed and evaluated.

Centennial Bridge — As shown in Table II-4, 4,066,814 vehicles crossed the Centennial Bridge in 1958, producing toll revenues of \$468,809. By 1968, traffic is estimated to have increased to 6,785,200 vehicles, with annual revenues of approximately \$810,600. Traffic growth averaged 5.2 per cent yearly between 1960 and 1968, while revenues increased an average of 5.7 per cent per year. Exceptionally high traffic and revenue figures were realized for 1966 and 1967, due in substantial measure to the temporary closing to through traffic of the Government Bridge.

Memorial Bridge — Traffic on the Memorial Bridge, as shown in Table II-5, increased from an annual total of 4,115,396 vehicles in fiscal 1958 to an

TABLE II-4
 TRAFFIC AND REVENUE TRENDS
 Centennial Bridge

<u>FISCAL YEAR</u>	<u>TOTAL VEHICLES</u>	<u>TOLL REVENUE</u>
1958	4,066,814	\$ 468,809
1959	4,521,486	520,694
1960	4,505,370	520,401
1961	4,278,540	491,612
1962	4,592,525	527,394
1963	4,826,539	559,348
1964	5,288,566	619,629
1965	5,885,692	703,176
1966 ⁽¹⁾	7,472,836	875,797
1967 ⁽¹⁾	9,915,901	1,059,886
1968 ⁽²⁾	6,785,200	810,600

AVERAGE ANNUAL PER CENT CHANGE

1960-1964	4.0	4.4
1960-1968	5.2	5.7
1964-1968	6.4	7.0

⁽¹⁾ Government Bridge closed to through traffic from September 23, 1966 to November 3, 1967. Interstate Route 80 Bridge at Le Claire opened to traffic October, 1966.

⁽²⁾ Projected by Wilbur Smith and Associates, based on records through September 30, 1968.

SOURCE: Rock Island Centennial Bridge Commission.

TABLE II-5
TRAFFIC AND REVENUE TRENDS
Memorial Bridge

<u>FISCAL YEAR⁽¹⁾</u>	<u>TOTAL VEHICLES</u>	<u>TOLL REVENUES</u>
1958	4,115,396	\$ 545,516
1959 ⁽²⁾	4,231,402	569,059
1960	4,606,915	615,291
1961	4,944,078	663,489
1962	5,445,854	717,600
1963	5,914,433	778,002
1964	6,647,994	886,936
1965 ⁽³⁾	7,421,923	1,015,076
1966 ⁽³⁾	8,241,751	1,126,729
1967 ⁽³⁾	7,265,480	889,465
1968 ⁽⁴⁾	6,583,650	806,000
 AVERAGE ANNUAL PER CENT CHANGE		
1960-1964	9.5	9.5
1960-1968	4.6	3.4
1964-1968	- 0.3	- 2.2

⁽¹⁾ November 1 through October 31.

⁽²⁾ Second span opened to traffic December, 1959.

⁽³⁾ Government Bridge closed to through traffic September 23, 1966 to November 3, 1967. Interstate Route 80 Bridge at Le Claire opened to traffic October, 1966.

⁽⁴⁾ Projected by Wilbur Smith and Associates, based on records through September 30, 1968.

SOURCE: Davenport Bridge Commission.

estimated 6,583,650 in 1968. Revenues grew from \$545,516 to \$806,000 over the same period. Traffic and revenues experienced good growths each year between fiscal 1960 and 1964. The closing to through traffic of the Government Bridge temporarily increased traffic and revenues for fiscal 1965 and 1966. The Interstate Route 80 Bridge at Le Claire, which opened in late 1966, has apparently diverted considerable traffic from the Memorial Bridge, as evidenced by the 1967 and 1968 bridge trends.

Between 1960 and 1966, traffic on the Memorial Bridge increased at an average annual rate of 4.6 per cent. During the first four years, between 1960 and 1964, the annual rate of increase averaged 9.5 per cent, while over the period 1964 to 1968, traffic on the bridge actually decreased an average of 0.3 per cent annually, due to opening of the Interstate Route 80 crossing.

Annual Trans-River Crossing Trends — Muscatine to Clinton — Trends in Mississippi River crossing traffic between Muscatine and Clinton are shown in Table II-6, for the period 1956 through 1966. The 1966 traffic crossing the Davenport area bridges is substantially higher than use of the closest alternative crossings to the west and north. Muscatine recorded 1,650 vehicles on an average day in 1966 and the Gateway Bridge at Clinton — 5,600, while each of the Davenport urban area bridges served more than 17,000 vehicles per day.

The growth trend at Muscatine for the 1956-1966 decade revealed a decline in traffic averaging 0.3 per cent per year. During this same period, use of the Centennial Bridge increased an average of 3.6 per cent per year, the Government Bridge — 0.1 per cent annually, the Memorial Bridge — 6.9 per cent per year and the Gateway Bridge — 2.1 per cent per year.

Monthly Traffic Variations

Monthly traffic trends on the Centennial and Memorial Bridges have remained relatively stable over the past several years and reflect variations typical for urban areas, where traffic levels tend to be more sustained, as compared to rural locations. Traffic at both bridges is at a minimum level during winter months, close to the annual average during spring and fall

and reaches a peak in the summer. Analysis of current traffic and revenue records shows variations at the Centennial Bridge ranging between 19 per cent below average in winter to 15 per cent above average during summer months. At the Memorial Bridge, the range in monthly variations was considerably smaller — from a low of about 10 per cent below average during winter months to a summer peak approximately 9 per cent above average.

TABLE II-6
ANNUAL TRAFFIC TRENDS
Trans-River Crossings
Muscatine to Clinton

YEAR	MUSCATINE	DAVENPORT			CLINTON
	Muscatine Bridge	Centennial Bridge	Government Bridge	Memorial Bridge	Gateway Bridge
		(Annual Average Daily Traffic)			
1956	1,700	12,000	19,000	11,500	4,550
1959	1,560	12,900	17,200	11,700 ⁽¹⁾	5,300
1962	1,550	12,600	18,700	15,200	5,700
1965	1,550	15,700	19,700	20,700	5,300
1966 ⁽²⁾	1,650	17,100	19,200	22,500	5,600
AVERAGE ANNUAL PER CENT CHANGE					
1956-1966	-0.3	3.6	0.1	6.9	2.1

⁽¹⁾ Second span opened to traffic December, 1959.

⁽²⁾ Government Bridge closed to through traffic September 23, 1966 to November 3, 1967.

SOURCE: Illinois, Division of Highways.

Origin and Destination Studies

During the summer of 1961, the Iowa State Highway Commission conducted a comprehensive origin and destination survey in the Quad-Cities area. Interview stations were located at the existing Mississippi River crossings and information obtained from them formed the basis for the development of the trans-river travel patterns used in this study.

Vehicle Classification Counts

Vehicle classification counts for trans-river trips in the Quad-Cities area obtained as part of the Comprehensive Origin and Destination Survey conducted by the Iowa State Highway Commission in 1961, are shown in Table II-7. Two-axle vehicles comprised 94.1 per cent of all traffic on the Centennial Bridge, 97.7 per cent of total traffic on the Government Bridge and 89.2 per cent of all Memorial Bridge traffic. Heavy truck combinations accounted for 2.7 per cent of total Centennial Bridge traffic, 0.1 per cent of Government Bridge traffic and 7.0 per cent of Memorial Bridge traffic.

The opening of Interstate Route 80 has affected the vehicle composition of traffic crossing the bridges in the Quad-Cities area, particularly the Memorial Bridge. Current vehicle classification count estimates, based on an analysis of several sources including 1968 vehicle count and revenue records, are shown in Table II-8. At the Centennial Bridge, two-axle vehicles are estimated to comprise 93.2 per cent of total traffic; three-or-more-axle trucks account for the remaining 6.8 per cent. A significant change in vehicle composition, between 1961 and 1968, is estimated on the Memorial Bridge, with two-axle vehicles making up 96.3 per cent of total traffic and the heavy truck category, three-or-more-axle vehicles, now accounting for only 3.7 per cent of total traffic as compared to the 7.0 per cent measured in the 1961 survey.

Travel Desires

The travel movements determined on the Quad-Cities area bridges during the 1961 Comprehensive Origin and Destination Survey were coded, for analysis purposes, to the geographic zone patterns, partially shown in Exhibit II-3. The resulting zone-to-zone traffic movements were then adjusted to represent an average day in 1961 and the travel desire lines, also shown in Exhibit II-3, were prepared. The width of the travel bands illustrated are proportional to the number of trips between each zone pair.

It can be seen that long distance through-traffic makes up a relatively small percentage of total trans-river traffic in the urban area. Most of the trips

TABLE II-7

VEHICLE CLASSIFICATION COUNT SUMMARY
TRANS-RIVER TRIPS

1961 Comprehensive Origin and Destination Survey

VEHICLE CLASS

<u>BRIDGE</u>		<u>VEHICLE CLASS</u>					<u>TOTAL</u>
		<u>Passenger Cars, Pickup and Panel Trucks</u>	<u>City Buses</u>	<u>Sub- Total</u>	<u>Other Single- Unit Trucks</u>	<u>Truck Combinations</u>	
		(Average Summer Weekday Traffic)					
Centennial	Number	11,732	104	11,836	402	339	12,577
	Per Cent	93.3	0.8	94.1	3.2	2.7	100.0
Government	Number	19,071	80	19,151	428	23	19,602
	Per Cent	97.3	0.4	97.7	2.2	0.1	100.0
Memorial	Number	13,693	8	13,701	585	1,079	15,365
	Per Cent	89.1	0.1	89.2	3.8	7.0	100.0

SOURCE: Iowa State Highway Commission.

TABLE II-8
CURRENT VEHICLE CLASSIFICATION COUNT ESTIMATES
Centennial and Memorial Bridges

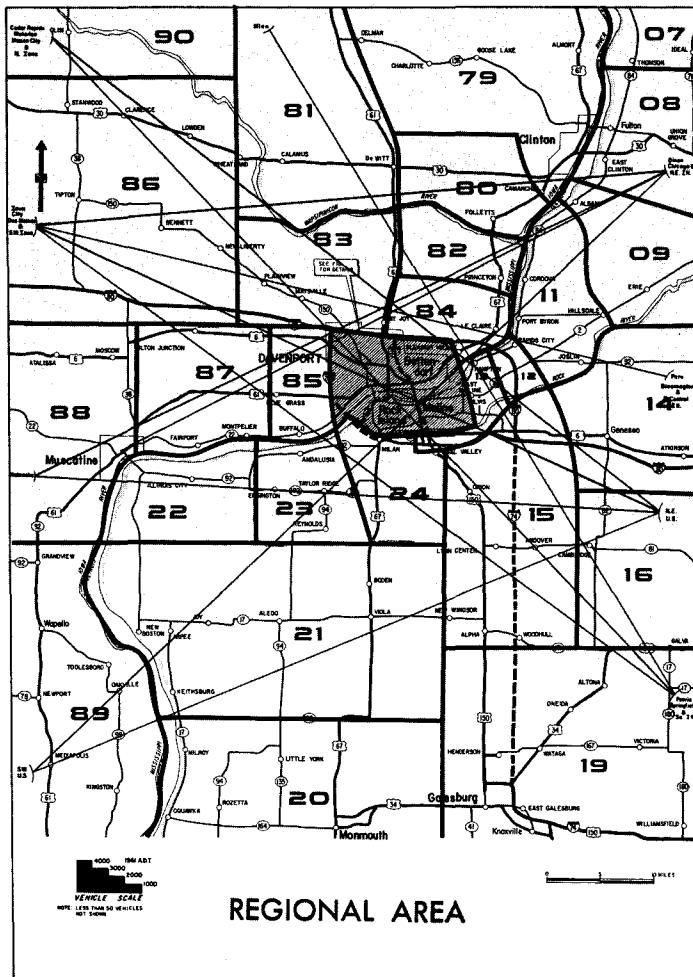
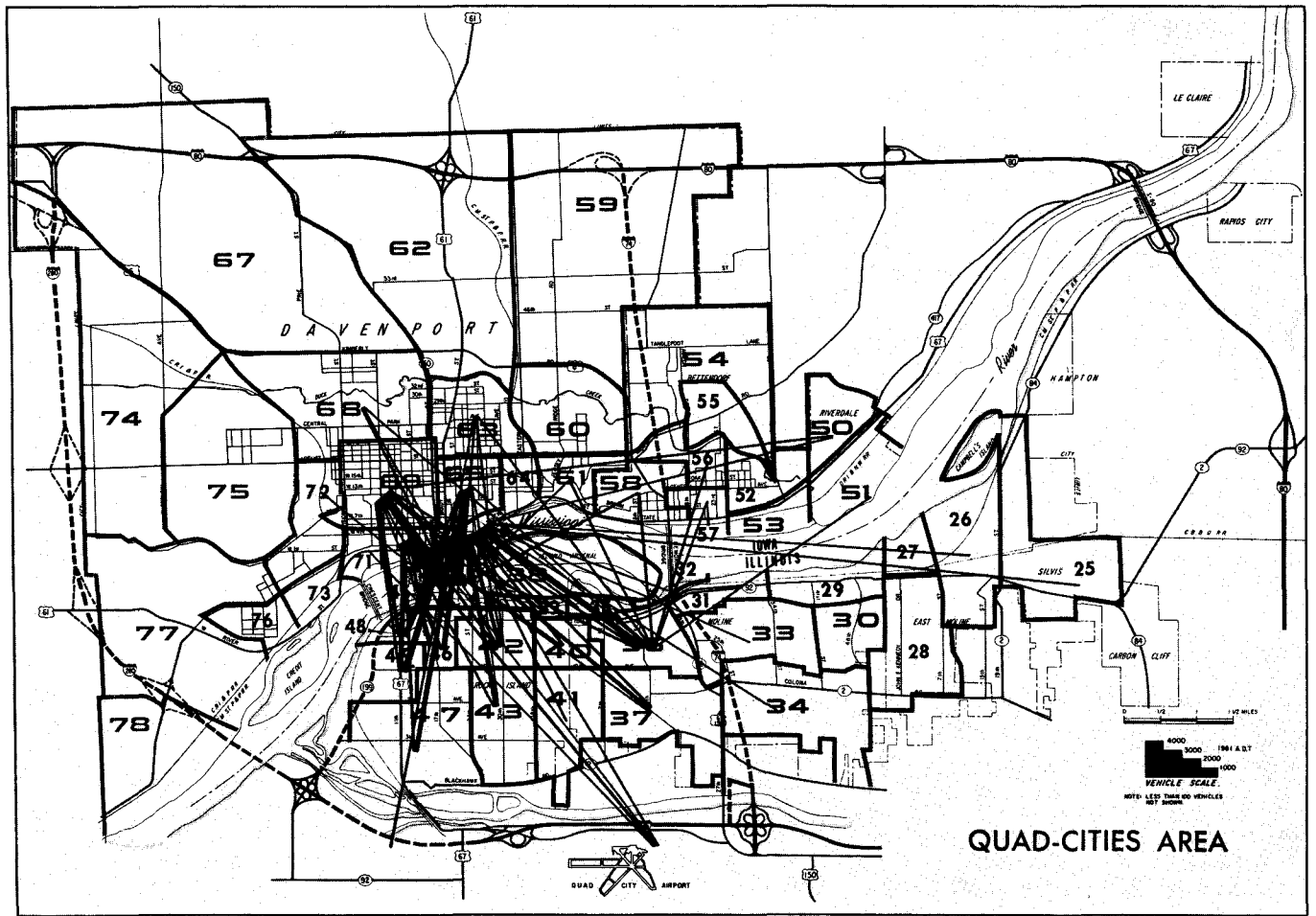
<u>BRIDGE</u>	<u>PASSENGER CARS</u>	<u>TRUCKS</u>				<u>TOTAL VEHICLES</u>
		<u>Two- Axle</u>	<u>Three- Axle</u>	<u>Four- Axle</u>	<u>Five-or- More Axle</u>	
(Average Daily Traffic)						
Centennial						
Number	14,221	3,104	372	242	651	18,590
Per Cent	76.5	16.7	2.0	1.3	3.5	100.0
Memorial						
Number	15,342	2,027	126	90	451	18,036
Per Cent	85.1	11.2	0.7	0.5	2.5	100.0

SOURCE: Estimated by Wilbur Smith and Associates, based on 1968 traffic and earnings records, 1965 vehicle classification counts and 1961 origin and destination survey by Iowa State Highway Commission.

move between traffic zones located close to the river in both Iowa and Illinois, with zonal trans-river trip generations substantially lower for those zones more removed from the densely-developed downtown areas. Heavy trip concentrations are evident in the central business district portions of Davenport, Rock Island and Moline as well as the heavily-industrialized areas immediately adjacent to the river.

Typical Time-Distance Relationships

Representative time and distance relationships for several movements which would have a choice of using one of the present or proposed Quad-Cities area bridges are shown in Table II-9. The travel times and distances indicated



TRAVEL DESIRES
1961 AVERAGE DAILY TRAFFIC

TABLE II-9
TYPICAL TIME-DISTANCE RELATIONSHIPS

<u>BETWEEN</u>	<u>VIA</u>	<u>DISTANCE</u> (miles)	<u>TIME</u> (min.)	<u>AVERAGE SPEED</u> (m.p.h.)	<u>SAVINGS VIA BEST CROSSING</u>	
					(miles)	(min.)
Intersection of U. S. Routes 6 and 61 in Davenport and intersection of Illinois Route 2 and U. S. Route 67, in Rock Island	Proposed I — 280 Bridge	13.6	32.6	25	7.2	10.3
	Proposed Crescent Bridge	7.3	24.3	18	1.1	2.0
	Centennial Bridge	6.4	22.3	18	Best crossing	
Intersection of Locust and Division Streets in Davenport and intersection of 7th Avenue and 16th Street in Moline	Proposed Crescent Bridge	6.4	25.8	15	Best crossing	
	Centennial Bridge	6.5	26.2	15	0.1	0.4
	Memorial Bridge	7.3	25.2	18	0.9	— 0.6
Intersection of U. S. Routes 61 and 67 in Davenport and intersection of 19th Street and Illinois Route 92 in East Moline	Centennial Bridge	9.6	29.8	20	1.3	7.2
	Memorial Bridge	8.5	23.3	22	0.2	0.7
	Proposed Campbell's Island Bridge	8.3	22.6	22	Best crossing	
U. S. Route 67 at 23rd Street in Bettendorf and intersection of 41st Street and Illinois Route 92 in Moline	Centennial Bridge	10.6	32.7	19	7.3	20.2
	Memorial Bridge	3.6	10.5	21	Best crossing	
	Proposed Campbell's Island Bridge	7.6	20.8	22	4.0	10.3

were developed from the route reconnaissance studies conducted on pertinent roadways in the study area. Driving times shown represent average speeds under normal conditions rather than the fastest time that could be achieved between the various trip termini indicated.

For a trip between the intersection of U. S. Routes 6 and 61 in Davenport and the intersection of Illinois Route 2 and U. S. Route 67 in Rock Island, the Centennial Bridge would offer a better routing than the proposed Crescent Bridge with a resulting saving of 1.1 miles and 2.0 minutes. Other sample trips shown in Table II-9 were selected to represent travel between various parts of the Quad-Cities area and illustrate the closely-competitive nature of urban travel choices, under normal conditions. In most cases, time and distance savings over the second-best route are not substantial.

ESTIMATED TRAFFIC AND REVENUES

Estimated traffic and revenues for the proposed Quad-Cities area bridges were based upon an analysis of trip patterns and characteristics of motorists using the present Centennial, Memorial and Government Bridges, who would continue to make trans-river trips over the same bridges or divert to one of the new toll facilities or free Interstate crossings. In addition, study was given to possible diversion of some motorists to the new bridges from the closest alternative crossings beyond Davenport and conversely, possible loss of some motorists from the Quad-Cities bridges to the Clinton and Muscatine crossings.

Basic Assumptions

Traffic and revenue estimates for the proposed Quad-Cities bridges are predicated on the following assumptions.

1. The facilities will be open to traffic on July 1, 1971.
2. The bridges and approaches will be constructed on the alignments discussed in this report.
3. The Interstate Route 280 Bridge will be completed, the Government Bridge will be closed to through, cross-river traffic, and the Memorial Bridge, as part of Interstate Route 74 will become toll-free, prior to July 1, 1971.
4. The recommended toll schedule will be implemented on the proposed toll bridges and also the present Centennial Bridge.
5. The proposed Centennial Bridge Parallel Span will function in conjunction with the present Centennial Bridge, as a one-way traffic pair.
6. No other new river crossings will be constructed in the reach of the Mississippi River between the proposed Interstate Route 280 Bridge and the present Interstate Route 80 crossing.

7. The new bridges will be adequately maintained, efficiently operated and effectively signed to encourage maximum usage.
8. The present general trend in economic activity in the bridge study area will continue and no national emergency will arise which would abnormally restrict the use of motor vehicles.

Any departure from the above conditions could materially affect estimated traffic and revenues for the proposed bridges.

Recommended Method of Toll Collection

It is recommended that tolls be collected from all motorists using the proposed bridges at toll plazas located at or near the Davenport approaches. Initially, three toll lanes would be required at the Centennial Bridge Parallel Span. However, initial design should provide for ultimate expansion to a six-or-eight-lane plaza.

The proposed Crescent Bridge would require a two-to-four-lane toll plaza. The exact number of toll lanes required and the "mix" between attended and automatic lanes could only be determined after more detailed traffic studies.

Toll collection on the proposed Campbell's Island Bridge could be accomplished by a single toll booth located between the two travel lanes. The booth should be designed to ultimately accommodate two attendants, one collecting tolls from each travel direction.

Recommended Toll Schedule

Several toll rates were analyzed to determine the optimum rate structure for the proposed Quad-Cities bridges. These studies indicated that the preliminary toll schedule shown in Table II-10 would produce maximum revenues. A higher toll would tend to discourage usage to the point where toll revenues

would be less than those estimated under the recommended schedule. Conversely, a lower toll would increase usage, but not sufficiently to produce higher aggregate revenues.

TABLE II-10
RECOMMENDED TOLL SCHEDULE

<u>VEHICLE TOLL CLASS</u>	<u>DESCRIPTION</u>	<u>TOLL</u>
1	Two-Axle Vehicles	\$0.20
2	Three-Axle Vehicles and Vehicle Combinations	0.30
3	Four-Axle Vehicles and Vehicle Combinations	0.40
4	Five-Axle Vehicles and Vehicle Combinations	0.50
	Each Additional Axle	0.10

In developing estimated traffic and revenues for the proposed bridges, it was assumed that the recommended toll schedule would also apply to the present Centennial Bridge. Under the recommended toll schedule, drivers of two-axle vehicles would pay a cash toll of \$0.20 for each crossing. Larger vehicles would be charged a toll based on a rate of \$0.10 per axle. For example, three-axle vehicles and vehicle combinations would pay a \$0.30 toll, while four-axle vehicles and vehicle combinations would pay \$0.40. The recommended per-axle toll would provide maximum control and auditing benefits as well as being easily understood by bridge users.

Estimated Base-Year (1961) Traffic Assignments

The number of motorists who would use the proposed Quad-Cities area toll bridges at 1961 traffic levels was estimated by using the total trans-river trip matrix developed from the 1961 Origin and Destination Survey conducted by the Iowa State Highway Commission, and redistributing these trips among the present and proposed bridges based on relative trip costs via the alternate crossings available.

Previous studies indicate a good correlation between the ratio of road-user costs and the proportion of motorists who will use the alternative routes available. In general, equal costs for alternate routes indicate an equal division of a traffic movement. A high ratio of trip costs for use of a new bridge routing to cost via the best alternative routing, indicates a low percentage of traffic assignable to the proposed facility. Conversely, a low ratio of road-user costs via the new facility to costs using the most competitive present routing, indicates that a high percentage of traffic is divertible.

The route reconnaissance studies made during the field phases of this project were used as the basis for determining trip times and distances via alternative crossings. In addition to mileage and time costs, tolls were also added, where appropriate, to arrive at total estimated trip cost.

Analysis of trans-river travel patterns from the present Davenport, Muscatine and Clinton crossings indicated that the proposed new toll facilities would not attract trips presently using the bridges at Muscatine and Clinton. The Interstate Route 80 Bridge and proposed Interstate Route 280 crossing will act as buffers to the Quad-Cities toll bridges with the free Interstate Route crossings intercepting any potential trips from the Muscatine or Clinton bridges.

However, since the toll rates recommended for the proposed toll bridges are higher than those presently charged on the Centennial and Memorial Bridges, it was estimated that some motorists would divert to the two Interstate Route crossings and also to the Memorial Bridge which for assignment purposes, was assumed to be a toll-free facility as part of Interstate Route 74.

As shown in Table II-11, 15,613 vehicles per day were assigned to the present Centennial Bridge at the recommended toll rate at 1961 levels, with another 17,598 allocated to a toll-free Memorial Bridge. The proposed Crescent Bridge was assigned 5,258 daily vehicles and the future Interstate Route 280 Bridge — 4,096 vehicles from the Davenport crossings. The Interstate Route 80 Bridge was assigned 1,587 Quad-Cities area motorists and 421 trips were assigned to the proposed Campbell's Island Bridge. The above assignments assumed hypothetically that all of the above crossings were in place in 1961.

TABLE II-11
ESTIMATED BASE-YEAR (1961) DIVERTED TRAFFIC ASSIGNMENTS

VEHICLE CLASS	PROPOSED ⁽¹⁾	PROPOSED	PRESENT	TOLL-FREE	PROPOSED	PRESENT ⁽¹⁾
	I — 280 BRIDGE	CRESCENT BRIDGE	CENTENNIAL BRIDGE	MEMORIAL BRIDGE	CAMPBELL'S ISLAND BRIDGE	I — 80 BRIDGE
	(Average Daily Traffic)					
Two-Axle Vehicles	3,631	5,129	15,366	17,075	400	1,254
Three-or-more Axle Vehicles	465	129	247	523	21	333
TOTAL VEHICLES	4,096	5,258	15,613	17,598	421	1,587

⁽¹⁾ Represents traffic diverted from other Quad-Cities area bridges only.

Proposed Centennial Bridge Parallel Span — Independent traffic assignments were made for two separate bridge construction programs in Davenport. The basic condition was that described above, whereby all of the crossings discussed in Table II-11 were constructed. In evaluating the results of the traffic assignments to the basic bridge construction condition, it was recognized that the proposed Campbell's Island Bridge would be attractive to very few trips, far below the level required for financial feasibility even assuming minimum project development costs. On this basis, the proposed Campbell's Island crossing was dropped from further consideration.

In addition, weighing the substantial development costs estimated for a proposed Crescent Bridge crossing and approaches against the relatively moderate traffic assignments developed, and considering that even with this facility, the traffic assignments showed that additional travel lanes would be required in the Centennial Bridge corridor, this proposed crossing was also deleted from the bridge program in favor of construction of a parallel span or twin bridge to the present Centennial Bridge. Under this condition, it was assumed the two bridges would function as a one-way traffic pair.

Estimated base-year, 1961, traffic assignments to the present Centennial Bridge and proposed Parallel Span are shown in Table II-12. A total of 18,990

TABLE II-12
ESTIMATED BASE-YEAR (1961) TRAFFIC
Present Centennial Bridge with Proposed Parallel Span

<u>VEHICLE CLASS</u>	<u>DESCRIPTION</u>	<u>AVERAGE DAILY TRAFFIC</u>
1	Two-Axle Vehicles	18,680
2	Three-Axle Vehicles and Vehicle Combinations	60
3	Four-Axle Vehicles and Vehicle Combinations	40
4	Five-or-more-Axle Vehicles and Vehicle Combinations	210
TOTAL		18,990

vehicles per day were assigned to the dual crossing at 1961 traffic levels. Of the assigned traffic, 18,680 were estimated as two-axle vehicles; 60— three-axle vehicles and vehicle combinations; 40 — four-axle vehicles and vehicle combinations and 210 — five-or-more-axle vehicles and vehicle combinations.

Estimated Annual Traffic and Toll Revenues

Annual growth in usage of the present Centennial Bridge and proposed Parallel Span was estimated based upon normal increases in trans-river traffic anticipated over the next several years in the bridge travel corridor. Because of the highly-urbanized area in Davenport served by the present Centennial Bridge and since traffic congestion is presently not a critical factor on the bridge, no induced or generated and development traffic was estimated to accrue to the crossing as a result of construction of a Parallel Span.

Estimates of normal growth in the travel corridor were based upon trends in actual use of the present Centennial Bridge and other Quad-Cities area crossings. In addition, consideration was given to trends and projected increases in population, employment and other economic parameters in the bridge study area.

Over the past decade, traffic on the Centennial Bridge has increased an average of 3.6 per cent per year. During the past eight years, the average annual growth was 5.2 per cent. It is estimated that a normal traffic growth of 4.0 per cent per year will occur between 1968 and 1975. Between 1975 and 1980, a growth rate of 3.5 per cent was estimated, decreasing to 3.0 per cent per year through 1985. For purposes of conservatism no normal traffic growth was projected beyond 1985, although some increase in usage is anticipated.

As shown in Table II-13, it is estimated that an average of 31,600 vehicles per day will use the proposed twin Centennial spans in fiscal 1971, producing gross toll revenues of \$2,353,000. By 1985, the fifteenth year of operation, an estimated 50,890 vehicles per day will use the crossing, resulting in gross annual revenues of \$3,790,000.

TABLE II-13

ESTIMATED ANNUAL TRAFFIC AND TOLL REVENUES
Centennial Bridge with Parallel Span

<u>FISCAL YEAR⁽¹⁾</u>	<u>AVERAGE DAILY TRAFFIC</u>	<u>GROSS TOLL REVENUES</u>
1971	31,600	\$2,353,000
1972	32,860	2,447,000
1973	34,170	2,545,000
1974	35,540	2,646,000
1975	36,960	2,752,000
1976	38,260	2,849,000
1977	39,600	2,948,000
1978	40,980	3,052,000
1979	42,420	3,158,000
1980	43,900	3,269,000
1981	45,220	3,367,000
1982	46,570	3,468,000
1983	47,970	3,572,000
1984	49,410	3,679,000
1985	50,890	3,790,000
Next 13 Years Annually	50,890	3,790,000

AVERAGE ANNUAL REVENUES

First Five Years	\$2,549,000
First Ten Years	\$2,802,000
Twenty-Eight Years	\$3,399,000

⁽¹⁾ Twelve-month period beginning July 1.

Average annual gross toll revenues over the first five years of operation are estimated at \$2,549,000. Over the 28-year earning period of the assumed bond issue, average annual revenues are estimated to total \$3,399,000.

These estimates are preliminary and intended to show the earning trend over a period of years rather than the exact earnings for any particular year. There could, of course, be years in which growths in traffic and revenues might be higher or lower than indicated, depending upon economic conditions and other local factors that might affect bridge usage at that time.

PRELIMINARY PROJECT FEASIBILITY

Net revenues derived from the present Centennial Bridge and proposed Parallel Span were determined by deducting annual maintenance and operating costs for the parallel span alone, developed by Howard, Needles, Tammen & Bergendoff, from half of the total annual toll revenues anticipated from the project. As previously indicated, it was assumed the two bridges would carry directional traffic and since bonds are still outstanding on the present Centennial Bridge, only the tolls collected on the parallel span would be available for amortization of the capital costs required to build the parallel bridge.

Estimated Annual Net Revenues

Estimated annual net revenues for the proposed Centennial Bridge Parallel Span are shown in Table II-14. In the first full year of operation, net revenues of \$1,031,000 are estimated, increasing to \$1,651,000 by 1985. Over the first five years of operation, average annual net revenues are estimated at \$1,115,000. Over the 28-year earning period of the assumed bond issue, average annual net revenues of \$1,482,000 are estimated.

Preliminary Project Feasibility

There are two "tests" which financial advisors normally employ to determine the relative range of feasibility of a toll project. The first is the coverage of first-year (maximum) interest by first-year net revenues. The second is the coverage of level debt service by average annual net revenues over the earning period of the assumed bond issue.

As a measure of feasibility, financial interests normally regard a first-year coverage of maximum interest of 1.20 to be satisfactory. A level debt service coverage by average annual net revenues greater than 1.50 is usually considered indicative of financial feasibility.

TABLE II-14

ESTIMATED ANNUAL NET REVENUES
Proposed Centennial Bridge Parallel Span

<u>FISCAL YEAR⁽¹⁾</u>	<u>TOLL REVENUES⁽²⁾</u>	<u>MAINTENANCE AND OPERATING COSTS⁽³⁾</u>	<u>NET REVENUES</u>
1971	\$1,177,000	\$146,000	\$1,031,000
1972	1,224,000	153,000	1,071,000
1973	1,273,000	160,000	1,113,000
1974	1,323,000	167,000	1,156,000
1975	1,376,000	174,000	1,202,000
1976	1,425,000	181,000	1,244,000
1977	1,474,000	188,000	1,286,000
1978	1,526,000	195,000	1,331,000
1979	1,579,000	202,000	1,377,000
1980	1,635,000	209,000	1,426,000
1981	1,684,000	216,000	1,468,000
1982	1,734,000	223,000	1,511,000
1983	1,786,000	230,000	1,556,000
1984	1,840,000	237,000	1,603,000
1985	1,895,000	244,000	1,651,000
Next 13 Years			
Annually	1,895,000	244,000	1,651,000

AVERAGE ANNUAL NET REVENUES

First Five Years	\$1,115,000
First Ten Years	\$1,224,000
Twenty-Eight Years	\$1,482,000

(1) Twelve-month period beginning July 1.

(2) Toll revenues available to the Parallel Span project are assumed as one half of the gross toll revenues estimated for the present Centennial Bridge and proposed Parallel Span combined.

(3) Estimated by Howard, Needles, Tammen & Bergendoff for the Parallel Span project.

The feasibility computations shown in Table II-15 were developed assuming a bond interest rate of 5.5 per cent and a bond term of 30 years. Based on project costs developed by Howard, Needles, Tammen & Bergendoff, it is estimated that a bond issue of \$15,035,000 would be required to construct a parallel span to the Centennial Bridge. The escalation from estimated project cost to bond issue size includes such financing items as bond discount, legal and financial fees and capitalized interest during construction. Based upon the relationship between project costs and bond issue size for several comparable projects which have been successfully financed, a factor of 1.2 was applied to project cost to determine a preliminary bond issue.

As shown in Table II-15, estimated first-year net revenues for the Centennial Bridge Parallel Span would cover first-year interest 1.25 times.

**TABLE II-15
PRELIMINARY PROJECT FEASIBILITY**

ITEM

Bond Term	30 Years
Bond Earning Period	28 Years
Bond Interest Rate	5.5 Per Cent
Preliminary Project Costs ⁽¹⁾	\$12,529,000
Estimated Bond Issue ⁽²⁾	15,035,000
First-Year Interest	827,000
Level Debt Service over 28 Years	1,065,000
Estimated First-Year Net Revenues	1,031,000
Estimated Average Annual Net Revenues Over 28 Years	1,482,000

COVERAGES

First-Year Interest by First-Year Net Revenues	1.25
Level Debt Service by Average Annual Net Revenues	1.39

⁽¹⁾ Estimated by Howard, Needles, Tammen & Bergendoff.

⁽²⁾ Assumes ratio of project cost to bond issue of 1.0 to 1.2.

Average annual net revenues would provide a 1.39 coverage of level debt service. The first-year coverage of interest by net revenues is above that normally considered indicative of financial feasibility. While the level debt service coverage by net revenues is somewhat below the 1.50 level, it is close enough to warrant serious consideration of proceeding with more detailed project studies.

It should be emphasized, however, that the above computations were developed only as a guide and that a final determination of feasibility should be made by financial advisors selected for this purpose.

Relationship Between Level Debt Service And Available Net Revenues

An indication of the amount of surplus funds which would be accumulated during the earning period of the bond issue by relating annual net revenues to level debt service requirements, is shown in Table II-16. It is estimated that the proposed Centennial Bridge Parallel Span would incur a deficit of \$34,000 during the first fiscal year of operation but thereafter annual surpluses would accrue, beginning with \$6,000 in 1972 and increasing to \$586,000 in 1985, and continuing at that level throughout the remainder of the 28-year earning period of the assumed bond issue. The initial-year deficit of \$34,000 would be offset by a total surplus of \$11,703,000 resulting in a net surplus over the life of the bond issue of \$11,669,000.

TABLE II-16
RELATIONSHIP BETWEEN LEVEL DEBT SERVICE AND NET REVENUES

<u>FISCAL YEAR⁽¹⁾</u>	<u>NET REVENUES</u>	<u>LEVEL DEBT SERVICE</u>	<u>NET REVENUES TO LEVEL DEBT SERVICE</u>	
			<u>Deficit</u>	<u>Surplus</u>
1971	\$1,031,000	\$1,065,000	\$34,000	
1972	1,071,000	1,065,000		6,000
1973	1,113,000	1,065,000		48,000
1974	1,156,000	1,065,000		91,000
1975	1,202,000	1,065,000		137,000
1976	1,244,000	1,065,000		179,000
1977	1,286,000	1,065,000		221,000
1978	1,331,000	1,065,000		266,000
1979	1,377,000	1,065,000		312,000
1980	1,426,000	1,065,000		361,000
1981	1,468,000	1,065,000		403,000
1982	1,511,000	1,065,000		446,000
1983	1,556,000	1,065,000		491,000
1984	1,603,000	1,065,000		538,000
1985	1,651,000	1,065,000		586,000
1986	1,651,000	1,065,000		586,000
1987	1,651,000	1,065,000		586,000
1988	1,651,000	1,065,000		586,000
1989	1,651,000	1,065,000		586,000
1990	1,651,000	1,065,000		586,000
1991	1,651,000	1,065,000		586,000
1992	1,651,000	1,065,000		586,000
1993	1,651,000	1,065,000		586,000
1994	1,651,000	1,065,000		586,000
1995	1,651,000	1,065,000		586,000
1996	1,651,000	1,065,000		586,000
1997	1,651,000	1,065,000		586,000
1998	1,651,000	1,065,000		586,000
TOTAL			\$34,000	\$11,703,000
Net Surplus			\$11,669,000	

⁽¹⁾ Twelve-month period beginning July 1.

APPENDIX

Iowa Senate File 131

The General Bridge Act

Public Law 446-75th Congress

Public Law 58-76th Congress

Public Law 682-84th Congress

Public Law 629-85th Congress

Public Law 789-89th Congress

Bond Ordinance

STATE HIGHWAY COMMISSION – INTERSTATE BRIDGES
SENATE FILE 131

AN ACT AUTHORIZING THE STATE HIGHWAY COMMISSION TO ACQUIRE, PURCHASE AND CONSTRUCT INTERSTATE BRIDGES, APPROACHES THERETO AND SITES THEREFOR, TO RECONSTRUCT, COMPLETE, IMPROVE, REPAIR, REMODEL, CONTROL, MAINTAIN, AND OPERATE INTERSTATE BRIDGES, TO ESTABLISH TOLLS AND CHARGES FOR THE USE OF INTERSTATE BRIDGES, TO BORROW MONEY AND ISSUE BONDS PAYABLE SOLELY FROM THE REVENUES DERIVED FROM THE OPERATION OF INTERSTATE BRIDGES, AND TO REFUND BONDS PAYABLE FROM SUCH REVENUES.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF IOWA:

Section 1. The following words or terms, as used in this Act, shall have the respective meanings as stated:

"Toll bridge" shall mean an interstate bridge constructed, purchased or acquired under the provisions of this Act, upon which tolls are charged, together with all appurtenances, additions, alterations, improvements, and replacements thereof, and the approaches thereto, and all lands and interests therein used therefor, and buildings and improvements thereon.

"Commission" shall mean the state highway commission, the agency of the state of Iowa created and provided for under the provisions of chapter three hundred seven (307) of the Code.

"Construct, constructing, construction or constructed" shall include the reconstruction, remodeling, repair, or improvement of any existing toll bridge as well as the construction of any new toll bridge.

"Acquisition by purchase, gift, or condemnation" as used in this Act shall mean acquisition by the state highway commission, whether such terms "purchase, gift, or condemnation" are used singularly or in sequence.

Section 2. The state highway commission shall have full charge of the construction and acquisition of all toll bridges constructed or acquired under the provisions of this Act, the operation and maintenance thereof and the imposition and collection of tolls and charges for the use thereof. The commission shall have full charge of the design of all toll bridges constructed under the provisions of this Act. The commission shall proceed with the construction of such toll bridges and other facilities and the approaches thereto by contract immediately upon there being made available funds for such work and shall prosecute such work to completion as rapidly as practicable. The commission shall advertise for bids for the construction, reconstruction, improvement, repair or remodeling of any toll bridge by publication of a notice once each week for at least two (2) consecutive weeks in a newspaper published and having a general circulation throughout the state of Iowa, the first publication to appear at least fifteen (15) days prior to the date set for receiving bids. The commission shall have the power to accept such offer or offers, propositions or bids, and enter into such contract or contracts as it shall deem to be to the best interest of the state.

Section 3. The commission is hereby authorized to establish and construct toll bridges upon any public highway, together with approaches thereto, wherever it is considered necessary or advantageous and practical for crossing any navigable river between this state and an adjoining state. The necessity or advantage and practicality of any toll bridge shall be determined by the commission. To obtain information for the consideration of the commission upon the construction of any toll bridge or any other matter pertaining thereto, any officer or employee of the state, upon the request of the commission, shall make reasonable examination, investigation, survey, or reconnaissance to determine material facts pertaining thereto and shall report such findings to the commission. The cost thereof shall be borne by the department or office conducting it from funds provided for its functions.

Section 4. The commission is hereby authorized to enter into agreements with any federal bridge commission or any county, city, or town of this state, and with an adjoining state or county, city, or town thereof, for the purpose of implementing an investigation of the feasibility of any toll bridge project for the bridging of a navigable river forming a portion of the boundary of this state and such adjoining state. The commission may use any funds available for the purposes of this section. Such agreements may provide that in the event any such project is determined to be feasible and adopted, any advancement of funds by any state, county, city, or town may be reimbursed out of any proceeds derived from the sale of bonds or out of tolls and revenues to be derived from such project.

Section 5. Whenever the commission deems it necessary or advantageous and practical, it may acquire by gift, purchase, or condemnation any interstate bridge which connects with or may be connected with the public highways and the approaches thereto, except that the commission may not condemn an existing interstate bridge used for interstate highway traffic and combined highway and railway traffic and presently owned by a municipality, or a person, firm, or corporation engaged in

interstate commerce. In connection with the acquisition of any such bridge, the commission and any federal bridge commission or any city, town, county, or other political subdivision of the state are authorized to do all acts and things as in this Act are provided for the establishing and constructing of toll bridges and operating, financing, and maintaining such bridges insofar as such powers and requirements are applicable to the acquisition of any toll bridge and its operation, financing, and maintenance. In so doing, they shall act in the same manner and under the same procedures as provided for establishing, constructing, operating, financing, and maintaining toll bridges insofar as such manner and procedures are applicable. Without limiting the generality of the above provisions, the commission is hereby authorized to cause surveys to be made to determine the propriety of acquiring any such bridge and the rights-of-way necessary therefor, and other facilities necessary to carry out the provisions hereof; to issue, sell, redeem bonds or issue and exchange bonds with present holders of outstanding bonds of bridges being acquired under the provisions of this Act and deposit and pay out of the proceeds of the bonds for the financing thereof; to impose, collect, deposit, and expend tolls therefrom; to secure and remit financial and other assistance in connection with the purchase thereof, and to carry insurance thereon.

Section 6. The commission, its officials, and all state officials are hereby authorized to perform such acts and make such agreements consistent with the law which are necessary and desirable in connection with the duties and powers conferred upon them regarding the construction, maintenance, and operation and insurance of toll bridges or the safeguarding of the funds and revenues required for such construction and the payment of the indebtedness incurred therefor. The commission shall adopt such rules and regulations in accordance with the provisions of chapter seventeen A (17A) of the Code as it may deem necessary for the administration and exercise of its powers and duties granted by this Act, and shall prepare annual financial statements regarding the operation of such toll bridges which shall be made available for inspection by the public and by the holders of revenue bonds issued by the commission under the provisions of this Act at all reasonable times.

Section 7. Whenever the commission deems it to be in the best interest of the primary highway system that any new toll bridge be constructed upon any public highway and across any navigable river between this state and an adjoining state, the commission shall adopt a resolution declaring that the public interest and necessity require the construction of such toll bridge and authorizing the issuance of revenue bonds in an amount sufficient for the purpose of obtaining funds for such construction. The issuance of bonds as provided in this Act for the construction, purchase, or acquisition of more than one (1) toll bridge may, at the discretion of the commission, be included in the same authority and issue or issues of bonds, and the commission is hereby authorized to pledge the gross revenues derived from the operation of any such toll bridge under its control and jurisdiction to pay the principal of and interest on bonds issued to pay the cost of purchasing, acquiring, or constructing any such toll bridge financed under the provisions of this Act. The commission is hereby granted wide discretion, in connection with the financing of the cost of any toll bridge, to pledge the gross revenues of a single toll bridge for the payment of bonds and interest thereon issued to pay the cost of such bridge and to pledge the gross revenues of two (2) or more toll bridges to pay bonds issued to pay the cost of one (1) or more toll bridges and interest thereon as long as the several bridges included herein are not more than ten (10) miles apart.

In addition, if the commission in its discretion determines that the construction of a toll bridge cannot be financed entirely through revenue bonds and that the construction of such toll bridge is necessary, the commission may advance funds from the primary highway fund to pay for that part of the construction cost, including the cost of approaches and all incidental costs, which is not paid out of the proceeds of revenue bonds. After all revenue bonds and interest thereon issued and sold pursuant to this Act and payable from the tolls and revenues of said bridge have been fully paid and redeemed or funds sufficient to pay said bonds and interest, including premium, if any, have been set aside and pledged for that purpose, then such amount advanced from the primary road fund shall be repaid to the primary road fund from the tolls and revenues of said bridge before said bridge is made a toll free bridge under the provisions of this Act.

Section 8. Whenever the commission shall authorize the construction of any toll bridge, the commission is empowered to secure rights-of-way therefor and for approaches thereto by gift or purchase or by condemnation in the manner provided by law for the taking of private property for public purposes.

Section 9. The right-of-way is hereby given, dedicated, and set apart upon which to locate, construct, and maintain toll bridges or approaches thereto or other highway crossings, and transportation facilities thereof or thereto, through, over or across any of the lands which are now or may be the property of this state, including highways; and through, over, or across the streets, alleys, lanes, and roads within any city, town, county, or other political subdivision of the state. If any property belonging to any city, town, county or other political subdivision of the state is required to be taken for the construction of any such bridge or approach thereto or should any such property be injured or damaged by such construction, such compensation therefor as may be proper or necessary and as shall be agreed upon may be paid by the commission to the particular county, city, town, or other political subdivision of the state owning such property, or condemnation proceedings may be brought for the determination of such compensation.

Section 10. Before the commission shall proceed with any action to secure right-of-way or with the construction of any toll bridge under the provisions of this Act, it shall first pass a resolution finding that public interest and necessity require the acquisition of right-of-way for and the construction of such toll bridge. Such resolution shall be conclusive evidence of the public necessity of such construction and that such property is necessary therefor. To aid the commission in determining the public interest, a public hearing shall be held in the county or counties of this state in which any portion of a bridge is proposed to be located. Notice of such hearing shall be published at least once in a newspaper published and having a general circulation in the county or counties where such bridge is proposed to be located, not less than twenty (20) days prior to the date of the hearing. When it becomes necessary for the commission to condemn any real estate to be used in connection with any such bridge, or to condemn any existing bridge, such condemnation shall be carried out in a manner consistent with the provisions of chapters four hundred seventy-one (471) and four hundred seventy-two (472) of the Code. In eminent domain proceedings to acquire property for any of the purposes of this Act, any bridge, real property, personal property, franchises, rights, easements, or other property or privileges appurtenant thereto appropriated or dedicated to a public use or purpose by any person, firm, private, public or municipal corporation, county, city or town, district, or any political subdivision of the state, may be condemned and taken, and the acquisition and use thereof as herein provided for the same public use or purpose to which such property has been so appropriated or dedicated, or for any other public use or purpose, shall be deemed a superior and permanent right and necessity, and a more necessary use and purpose than the public use or purpose to which such property has already been appropriated or dedicated, and any condemnation award may be paid from the proceeds of revenue bonds issued under the provisions of this Act.

Section 11. If the commission determines that any toll bridge should be constructed or acquired under its authority, all costs thereof, including land, right-of-way, surveying, engineering, construction, legal and administrative expenses, and fees of any fiscal adviser, shall be paid out of any funds available for payment of the cost of the bridge.

Section 12. The commission is hereby authorized and empowered to issue revenue bonds for the acquisition, purchase or construction of any interstate bridge. Any and all bonds issued by the commission for the acquisition, purchase, or construction of any interstate bridge under the authority of this Act shall be issued in the name of the Iowa highway commission and shall constitute obligations only of the commission, shall be identified by some appropriate name, and shall contain a recital on the face thereof that the payment or redemption of said bonds and the payment of the interest thereon are secured by a direct charge and lien upon the tolls and other revenues of any nature whatever received from the operation of the particular bridge for the acquisition, purchase, or construction of which the bonds are issued and of such other bridge or bridges as may have been pledged therefor, and that neither the payment of the principal or any part thereof nor of the interest thereon or any part thereof constitutes a debt, liability, or obligation of the state of Iowa. When it is determined by the commission to be in the best public interest, any bonds issued under the provisions of this Act may be refunded and refinanced at a lower rate, the same rate or a higher rate or rates of interest and from time to time as often as the commission shall find it to be advisable and necessary so to do. Bonds issued to refund other bonds theretofore issued by the commission under the provisions of this Act may either be sold in the manner hereinafter provided and the proceeds thereof applied to the payment of the bonds being refunded, or the refunding bonds may be exchanged for and in payment and discharge of the bonds being refunded. The refunding bonds may be sold or exchanged in installments at different times or an entire issue or series may be sold or exchanged at one (1) time. Any issue or series or refunding bonds may be exchanged in part or sold in part in installments at different times or at one (1) time. The refunding bonds may be sold at any time on, before, or after the maturity of any of the outstanding bonds to be refinanced thereby and may be issued for the purpose of refunding a like or greater principal amount of bonds, except that the principal amount of the refunding bonds may exceed

the principal amount of the bonds to be refunded to the extent necessary to pay any premium due on the call of the bonds to be refunded or to fund interest in arrears or about to become due. The gross revenues of any toll bridge pledged to the payment of the bonds being refunded, together with the unpledged gross revenues of any other toll bridges located within ten (10) miles of said bridge, may be pledged by the commission to pay the principal of and interest on the refunding bonds and to create and maintain reserves therefor.

The commission is empowered to receive and accept funds from the state of Iowa or the federal government or any other state upon a cooperative or other basis for the acquisition, purchase, or construction of any interstate bridge authorized under the provisions of this Act and is empowered to enter into such agreements with the state of Iowa or any other state or the federal government as may be required for the securing of such funds.

The commission is authorized and empowered to spend from annual primary road fund receipts sufficient moneys to pay the cost of operation, maintenance, insurance, collection of tolls and accounting therefor and all other charges incidental to the operation and maintenance of any toll bridge administered under the provisions of this Act.

Section 13. The revenue bonds may be issued and sold or exchanged by the commission from time to time and in such amounts as it deems necessary to provide sufficient funds for the acquisition, purchase, or construction of any such bridge and to pay interest on bonds issued for the construction of any toll bridge during the period of actual construction and for six (6) months after completion thereof. The commission is hereby authorized to adopt all necessary resolutions prescribing the form, conditions, and denominations of the bonds, the maturity dates therefor, and the interest rate or rates which the bonds shall bear. All bonds of the same issue need not bear the same interest rate. Principal and interest of the bonds shall be payable at such place or places within or without the state of Iowa as determined by the commission, and the bonds may contain provisions for registration as to principal or interest, or both. Interest shall be payable at such times as determined by the commission and the bonds shall mature at such times and in such amounts as the commission prescribes. The commission may provide for the retirement of the bonds at any time prior to maturity, and in such manner and upon payment of such premiums as it may determine in the resolution providing for the issuance of the bonds. All such bonds and any coupons attached thereto shall be signed by such officials of the commission as the commission may direct. Successive issues of such bonds within the limits of the original authorization shall have equal preference with respect to the payment of the principal thereof and the payment of interest thereon. The commission may fix different maturity dates, serially or otherwise, for successive issues under any one (1) original authorization. All bonds issued under the provisions of this Act shall have all the qualities of negotiable instruments under the laws of the state of Iowa. All bonds issued and sold hereunder shall be sold to the highest and best bidder on the basis of sealed proposals received pursuant to a notice specifying the time and place of sale and the amount of bonds to be sold which shall be published at least once not less than seven (7) days prior to the sale in a newspaper published in the state of Iowa and having a general circulation in said state. None of the provisions of chapter seventy-five (75) of the Code shall apply to bonds issued under the provisions of this Act but such bonds shall be sold upon terms of not less than par plus accrued interest. The commission may reject any or all bids received at the public sale and may thereafter sell the bonds at private sale on such terms and conditions as it deems most advantageous to its own interests, but not at a price below that of the best bid received at the advertised sale. The commission may enter into contracts and borrow money through the sale of bonds of the same character as those herein authorized, from the United States or any agency thereof, upon such conditions and terms as may be agreed to and the bonds shall be subject to all the provisions of this Act, except that any bonds issued hereunder to the United States or any agency thereof need not first be offered at public sale. The commission may also provide for the private sale of bonds issued under the provisions of this Act to the state treasurer of Iowa upon such terms and conditions as may be agreed upon, and in such event said bonds need not first be offered at public sale. Temporary or interim bonds, certificates, or receipts, of any denomination, and with or without coupons attached, signed by such official as the commission may direct, may be issued and delivered until the definitive bonds are executed and available for delivery.

Section 14. The proceeds from the sale of all bonds authorized and issued under the provisions of this Act shall be deposited by the commission in a fund designated as the construction fund of the particular interstate bridge or bridges for which such bonds were issued and sold, which fund shall not be a state fund and shall at all times be kept segregated and set apart from all other funds and in trust for the purposes herein set out. Such proceeds shall be paid out or disbursed solely for the acquisition, purchase, or construction of such interstate bridge or bridges and expenses incident thereto, the acquisition of the necessary lands and easements there-

for and the payment of interest on such bonds during the period of actual construction and for a period of six (6) months thereafter, only as the need therefor shall arise and the commission may agree with the purchaser of said bonds upon any conditions or limitations restricting the disbursement of such funds that may be deemed advisable, for the purpose of assuring the proper application of such funds. All moneys in such fund and not required to meet current construction costs of the interstate bridge or bridges for which such bonds were issued and sold, and all funds constituting surplus revenues which are not immediately needed for the particular object or purpose to which they must be applied or are pledged may be invested in obligations issued or guaranteed by the United States or by any person controlled by or supervised by and acting as an instrumentality of the United States pursuant to authority granted by the congress of the United States; provided, however, that the commission may provide in the proceedings authorizing the issuance of said bonds that the investment of such moneys shall be made only in particular bonds and obligations within the classifications eligible for such investment and such provisions shall thereupon be binding upon the commission and all officials having anything to do with such investment. Any surplus which may exist in said construction fund shall be applied to the retirement of bonds issued for the acquisition, purchase, or construction of any such interstate bridge by purchase or call and, in the event such bonds cannot be purchased at a price satisfactory to the commission and are not by their terms callable prior to maturity, such surplus shall be paid into the fund applicable to the payment of principal and interest of said bonds and shall be used for that purpose. The proceedings authorizing the issuance of bonds may provide limitations and conditions upon the time and manner of applying such surplus to the purchase and call of outstanding bonds and the terms upon which they shall be purchased or called and such limitations and conditions shall be followed and observed in the application and use of such surplus. All bonds so retired by purchase or call shall be immediately canceled.

Section 15. All tolls or other revenues received from the operation of any toll bridge acquired, purchased, or constructed with the proceeds of bonds issued and sold hereunder shall be deposited by the commission to the credit of a special trust fund to be designated as the toll revenue fund of the particular toll bridge or toll bridges producing such tolls or revenue, which fund shall be a trust fund and shall at all times be kept segregated and set apart from all other funds.

Section 16. From the money so deposited in each separate construction fund as hereinabove provided, at the direction of the commission there shall be transferred to the place or places of payment named in said bonds such sums as may be required to pay the interest as it becomes due on all bonds issued and outstanding for the construction of such particular toll bridge or toll bridges during the period of actual construction and during the period of six (6) months immediately thereafter. The commission shall thereafter transfer from each separate toll revenue fund to the place or places of payment named in the bonds for which said revenues have been pledged such sums as may be required to pay the interest on said bonds and redeem the principal thereof as such interest and principal become due. All funds so transferred for the payment of principal of or interest on bonds issued for any particular toll bridge or toll bridges shall be segregated and applied solely for the payment of said principal or interest. The proceedings authorizing the issuance of the bonds may provide for the setting up of a reserve fund or funds out of the tolls and other revenues not needed for the payment of principal and interest, as the same currently matures and for the preservation and continuance of such fund in a manner to be provided therein, and such proceedings may also require the immediate application of all surplus moneys in such toll revenue fund to the retirement of such bonds prior to maturity, by call or purchase, in such manner and upon such terms and the payment of such premiums as may be deemed advisable in the judgment of the commission. The moneys remaining in each separate toll revenue fund after providing the amount required for the payment of principal of and interest on bonds as hereinabove provided, shall be held and applied as provided in the proceedings authorizing the issuance of said bonds. In the event the proceedings authorizing the issuance of said bonds do not require surplus revenues to be held or applied in any particular manner, they shall be allocated and used for such other purposes incidental to the construction, operation, and maintenance of any toll bridge as the commission may determine and as permitted under sections seven (7) and twelve (12) of this Act.

Section 17. Warrants for payments to be made on account of such bonds shall be drawn by the commission on duly approved vouchers. Moneys required to meet the costs of purchase or construction and all expenses and costs incidental to the acquisition, purchase, or construction of any particular interstate bridge or to meet the costs of operating, maintaining, and repairing the same, shall be paid by the commission from the proper fund therefor upon duly approved vouchers. All interest received or earned on money deposited in each and every fund herein provided for shall be credited to and become a part of the particular fund upon which said interest accrues.

Section 18. The commission may provide in the proceedings authorizing the issuance of bonds or may otherwise agree with the purchasers of bonds regarding the deposit of all moneys constituting the construction fund and the toll revenue fund and provide for the deposit of such money at such times and with such depositories or paying agents and upon the furnishing of such security as may meet with the approval of the purchasers of such bonds.

Section 19. Notwithstanding any provision contained in this Act, the proceeds received from the sale of bonds and the tolls or other revenues received from the operation of any toll bridge may be used to defray any expenses incurred by the commission in connection with and incidental to the issuance and sale of bonds for the acquisition, purchase, or construction of any such toll bridge including expenses for the preparation of surveys and estimates, legal, fiscal and administrative expenses, and the making of such inspections and examinations as may be required by the the purchasers of such bonds; provided, that the proceedings authorizing the issuance of such bonds may contain appropriate provisions governing the use and application of said bond proceeds and toll or other revenues for the purposes herein specified.

Section 20. While any bonds issued by the commission remain outstanding, the powers, duties or existence of the commission or of any other official or agency of the state shall not be diminished or impaired in any manner that will affect adversely the interests and rights of the holders of such bonds. The holder of any bond may by mandamus or other appropriate proceeding require and compel the performance of any of the duties imposed upon any state department, official, or employee or imposed upon the commission or its officers, agents, and employees in connection with the acquisition, purchase, construction, maintenance, operation, and insurance of any bridge and in connection with the collection, deposit, investment, application, and disbursement of all tolls and other revenues derived from the operation and use of any bridge and in connection with the deposit, investment, and disbursement of the proceeds received from the issuance of bonds; provided, that the enumeration of such rights and remedies herein shall not be deemed to exclude the exercise or prosecution of any other rights or remedies by the holders of such bonds.

Section 21. When any toll bridge authorized hereunder is being built by the commission it may carry or cause to be carried such an amount of insurance or indemnity bond or bonds as protection against loss or damage as it may deem proper. The commission is hereby further empowered to carry such an amount of insurance to cover any accident or destruction in part or in whole to any toll bridge. All moneys collected on any indemnity bond or insurance policy as the result of any damage or injury to any such toll bridge shall be used for the purpose of repairing or rebuilding of any such toll bridge as long as there are revenue bonds against any such structure outstanding and unredeemed. The commission is also empowered to carry insurance or indemnity bonds insuring against the loss of tolls or other revenues to be derived from any such toll bridge by reason of any interruption in the use of such toll bridge from any cause whatever, and the proceeds of such insurance or indemnity bonds shall be paid into the fund into which the tolls and other revenues of the bridge thus insured are required to be paid and shall be applied to the same purposes and in the same manner as other moneys in the said fund. Such insurance or indemnity bonds may be in an amount equal to the probable tolls and other revenues to be received from the operation of such toll bridge during any period of time that may be determined upon by the commission and fixed in its discretion, and be paid for out of the toll revenue fund as may be specified in said proceedings. The commission may provide in the proceedings authorizing the issuance of bonds for the carrying of insurance as authorized by this Act and the purchase and carrying of insurance as authorized by this Act shall thereupon be obligatory upon the commission and be paid for out of the toll revenue fund as may be specified in said proceedings.

Section 22. The commission is hereby empowered to fix the rates of toll and other charges for all interstate bridges acquired, purchased, or constructed under the terms of this Act. Toll charges so fixed may be changed from time to time as conditions may warrant. The commission in establishing toll charges shall give due consideration to the amount required annually to pay the principal of and interest on bonds payable from the revenues thereof. The tolls and charges shall be at all times fixed at rates sufficient to pay the bonds and interest as they mature, together with the creation and maintenance of bond reserve funds and other funds as established in the proceedings authorizing the issuance of the bonds, for any particular toll bridge. The amounts required to pay the principal of and interest on bonds shall constitute a charge and lien on all such tolls and other revenues and interest thereon and sinking funds created therefrom received from the use and operation of said toll bridge, and the commission is hereby authorized to pledge a sufficient amount of said tolls and revenues for the payment of bonds issued under the provisions of this Act and interest thereon and to create and maintain a reserve therefor. Such tolls and revenues, together with the interest earned thereon, shall constitute a trust fund for the security and payment of such bonds and shall not be used or pledged for any other purpose as long as such bonds or any of them are outstanding and unpaid.

Section 23. Whenever a proposed interstate bridge is to be acquired, purchased or constructed, any city, town, county, or other political subdivision located in relation to such facility so as to benefit directly or indirectly thereby, may, either jointly or separately, at the request of the commission advance or contribute money, rights-of-way, labor, materials, and other property toward the expense of acquiring, purchasing or constructing the bridge, and for preliminary surveys and the preparation of plans and estimates of cost therefor and other preliminary expenses. Any such city, town, county, or other political subdivision may, either jointly or separately, at the request of the commission advance or contribute money for the purpose of guaranteeing the payment of interest or principal on the bonds issued by the commission to finance the bridge. Appropriations for such purposes may be made from any funds available, including county road funds received from or credited by the state, or funds obtained by excess tax levies made pursuant to law or the issuance of general obligation bonds for this purpose. Money or property so advanced or contributed may be immediately transferred or delivered to the commission to be used for the purpose for which contribution was made. The commission may enter into an agreement with a city, town, county, or other political subdivision to repay any money or the value of a right-of-way, labor, materials or other property so advanced or contributed. The commission may make such repayment to a city, town, county, or other political subdivision and reimburse the state for any expenditures made by it in connection with the bridge out of tolls and other revenues for the use of the bridge.

Section 24. If the commission deems that any land, including improvements thereon, is no longer required for toll bridge purposes and that it is in the public interest, it may negotiate for the sale of such land to the state or to any city, town, county, or other political subdivision or municipal corporation of the state. The commission shall certify the agreement for the sale to the state executive council, with a description of the land and the terms of the sale and the state executive council may execute the deed and deliver it to the grantee.

Section 25. If the commission is of the opinion that any land, including improvements thereon, is no longer required for toll bridge purposes, it may be offered for sale upon publication of a notice once each week for two (2) consecutive weeks in a newspaper published and having a general circulation throughout the state of Iowa, specifying the time and place fixed for the receipt of bids.

Section 26. The commission may reject all such bids if the highest bid does not equal the reasonable fair market value of the real property, plus the value of the improvements thereon, computed on the basis of the reproduction value less depreciation. The commission may accept the highest and best bid, and certify the agreement for the sale to the state executive council, with a description of the land and the terms of the sale and the state executive council shall execute the deed and deliver it to the grantee.

Section 27. If the commission deems it consistent with the use and operation of any toll bridge, the commission may grant franchises to persons, firms, associations, private or municipal corporations, the United States government or any agency thereof, to use any portion of the property of any toll bridge, including approaches thereto, for the construction and maintenance of water pipes, flumes, gas pipes, telephone, telegraph and electric light and power lines and conduits, trams or railways, and any other such facilities in the manner of granting franchises on state highways.

Section 28. Any moneys received pursuant to the provisions of sections twenty-four (24) through twenty-seven (27) of this Act shall be deposited by the commission into the separate and proper trust fund established for the bridge.

Section 29. The commission shall have the right to impose and reimpose tolls for pedestrian or vehicular traffic over any interstate bridges under its control and jurisdiction for the purpose of paying the cost of reconstructing and improving existing bridges and their approaches, purchasing existing bridges, and constructing new bridges and approaches, provided that any such existing bridge or new bridge is located within ten miles of the bridge on which tolls are so imposed or reimposed, to pay interest on and create a sinking fund for the retirement of revenue bonds issued for the account of such projects and to pay any and all costs and expenses incurred by the commission in connection with and incidental to the issuance and sale of bonds and for the preparation of surveys and estimates and to establish the required interest reserves for and during the estimated construction period and for six (6) months thereafter.

Section 30. The bridges herein provided for may be incorporated into the primary road system as toll free bridges whenever the costs of the construction of the bridges and the approaches thereto and the reconstruction and improvement of existing bridges and approaches thereto, including all incidental costs, have been paid and when all revenue bonds and interest thereon issued and sold pursuant to this Act and payable from the tolls and revenues thereof shall have been fully paid and

redeemed or funds sufficient to pay said bonds and interest, including premium, if any, have been set aside and pledged for that purpose. However, tolls may again be imposed as provided in section twenty-nine (29) of this Act.

Section 31. The commission shall have the power and is hereby authorized by resolution to issue, sell, or pledge its revenue bonds in an amount sufficient to provide funds to pay all or any part of the costs of construction of a new bridge and approaches thereto and the reconstruction, improvement, and maintaining of an existing bridge and approaches thereto, including all costs of survey, acquisition of right-of-way, engineering, legal, fiscal and incidental expenses, to pay the interest due thereon during the period beginning with the date of issue of the bonds and ending at the expiration of six (6) months after the first imposition and collection of tolls from the users of said bridges, and all costs incidental to the issuance and sale of the bonds.

Except as may be otherwise specifically provided by statute, all of the other provisions of this Act shall govern the issuance and sale of revenue bonds issued under this section, the execution thereof, the disbursement of the proceeds of issuance thereof, the interest rate or rates thereon, their form, terms, conditions, covenants, negotiability, denominations, maturity date or dates, the creation of special funds or accounts safeguarding and providing for the payment of the principal thereof and interest thereon, and their manner of redemption and retirement.

Such bonds shall include a covenant that the payment of the principal thereof and the interest thereon are secured by a first and direct charge and lien on all of the tolls and other gross revenues received from the operation of said toll bridges and from any interest which may be earned from the deposit or investment of any such revenues. The tolls and charges shall be at all times fixed at rates sufficient to pay the bonds and interest as they mature, together with the creation and maintenance of bond reserve funds and other funds as established in the proceedings authorizing the issuance of the bonds.

Section 32. The commission is hereby authorized to operate and to assume the full control of said toll bridges and each portion thereof whether within or without the borders of the state of Iowa, with full power to impose and collect tolls from the users of such bridges for the purpose of providing revenues at least sufficient to pay the cost and incidental expenses of construction and acquisition of said bridges and approaches in both states in which located and for the payment of the principal of and interest on its revenue bonds as authorized by this Act.

Section 33. Under no circumstances shall any bonds issued under the terms of this Act be or become or be construed to constitute a debt of or charge against the state of Iowa within the purview of any constitutional or statutory limitation or provision. No taxes, appropriations or other funds of the state of Iowa may be pledged for or used to pay such bonds or the interest thereon, but any such bonds shall be payable solely and only as to both principal and interest from the tolls and revenues derived from the operation of any toll bridge or toll bridges acquired, purchased, or constructed under this Act, and the sole remedy for any breach or default of the terms of any such bonds or proceedings for their issuance shall be a proceeding either in law or in equity by suit, action or mandamus to enforce and compel performance of the duties required by this Act and the terms of the resolution under which such bonds are issued.

Section 34. The commission is authorized to enter into such agreement or agreements with other state highway commissions and the governmental agencies or subdivisions of the state of Iowa or other states and with federal bridge commissions as they shall find necessary or convenient to carry out the purposes of this Act, and is authorized to do any and all acts contained in such agreement or agreements that are necessary or convenient to carry out the purposes of this Act. Such agreements may include, but shall not be restricted to, the following provisions:

1. A provision that the commission shall assume and have complete responsibility for the operation of such bridges and approaches thereto, and with full power to impose and collect all toll charges from the users of such bridges and to disburse the revenue derived therefrom for the payment of principal and interest on any revenue bonds herein provided for and to carry out the purposes of this Act.

2. A provision that the commission shall provide for the issuance, sale, exchange or pledge, and payment of revenue bonds payable solely from the revenues derived from the imposition and collection of tolls upon such toll bridges.

3. A provision that the commission, after consultation with the other governmental agencies or subdivisions who are parties to such agreements, shall fix and revise the classifications and amounts of tolls to be charged and collected from the users of the toll bridges, with the further provision that such toll charges shall be

removed after all costs of planning, designing, and construction of such toll bridges and approaches thereto and all incidental costs shall have been paid, and all of said revenue bonds, and interest thereon, issued pursuant to this Act shall have been fully paid and redeemed or funds sufficient therefor have been set aside and pledged for that purpose.

4. A provision that all acts pertaining to the design and construction of such toll bridges may be done and performed by the commission and that any and all contracts for the construction of such toll bridges shall be awarded in the name of the commission.

5. A provision that the state of Iowa and adjoining state and all governmental agencies or subdivisions party to such agreement shall be reimbursed out of the proceeds of the sale of such bonds or out of tolls and revenues as herein allowed for any advances they may have made or expenses they may have incurred for any of the purposes for which said revenue bonds may be issued, after duly verified itemized statements of such advances and expenses have been approved by all parties to such agreement.

6. A provision that when all outstanding indebtedness or other obligations payable from the revenues of such bridges have been paid the adjoining state agrees to accept ownership of that portion of the bridge within such state and agrees to pay the cost of maintaining such portions of the bridge or proportionate share of the total cost of maintaining the bridge.

Section 35. Counties are hereby authorized to issue general obligation bonds for the purpose of contributing money to the commission to help finance the construction of toll bridges across navigable rivers constituting boundaries between the county and an adjoining state. Prior to the issuance of such bonds the board of supervisors shall call and hold an election in said county at which the proposition shall be submitted to the voters of the county in the following form:

Shall the county of _____ issue its bonds in the amount of \$ _____ for the purpose of _____?

Notice of such election, stating the date of the election, the hours of opening and closing the polls, the precincts and polling places therefor, and the question to be submitted shall be published once each week for three (3) consecutive weeks in at least one (1) newspaper published and having a general circulation in the county. The election shall be held on a day not less than five (5) nor more than twenty (20) days after the last publication of such notice. The proposition shall not be deemed carried or adopted unless the vote in favor thereof is equal to at least sixty (60) per cent of the total vote cast for and against said proposition at said election.

Section 36. The exercise of the powers granted by this Act will be in all respects for the benefit of the people of the state of Iowa, for the increase of their commerce and prosperity and for the improvement of their health and living conditions, and as the acquisition, construction, operation, and maintenance by the commission of the projects herein defined will constitute the performance of essential governmental functions, the commission shall not be required to pay any taxes or assessments upon such projects or upon any property acquired or used by the commission under the provisions of this Act or upon the income from such projects, and the bonds issued under the provisions of this Act, their transfer and the income therefrom including any profit made on the sale thereof shall at all times be free from taxation by or within the state of Iowa.

Section 37. Any person who uses any toll bridge and fails or refuses to pay the toll provided therefor shall be punished by a fine of not more than one hundred (100) dollars or by imprisonment for not more than thirty (30) days, or both.

Section 38. This Act shall be construed as providing an alternative and independent method for the acquisition, purchase, or construction of interstate bridges, for the issuance and sale or exchange of bonds in connection therewith and for refunding bonds pertinent thereto, and for the imposition, collection, and application of the proceeds of tolls and charges for the use of interstate bridges, without reference to any other statute, and shall not be construed as an amendment of or subject to the provisions of any other law, and no publication of any notice, and no other or further proceeding in respect to the issuance or sale or exchange of bonds under this Act shall be required except such as are prescribed by this Act, any provisions of other statutes of the state to the contrary notwithstanding.

Section 39. This Act, being necessary for the public safety and welfare, shall be liberally construed to effectuate the purposes thereof. If any provision of this Act or the application thereof to any person or circumstances is held to be invalid, such invalidity shall not affect other provisions or applications of the Act which can be given effect without the invalid provisions or application, and to this end the provisions of this Act are declared to be severable.

Approved June 22, 1967.

GENERAL BRIDGE AUTHORITY

Section 525. Construction and operation of bridges; consent of Congress; approval of plans; private highway toll bridges.

(a) The consent of Congress is granted for the construction, maintenance, and operation of bridges and approaches thereto over the navigable waters of the United States, in accordance with the provisions of sections 525–533 of this title.

(b) The location and plans for such bridges shall be approved by the Chief of Engineers and the Secretary of the Army before construction is commenced, and, in approving the location and plans of any bridge, they may impose any specific conditions relating to the maintenance and operation of the structure which they may deem necessary in the interest of public navigation, and the conditions so imposed shall have the force of law.

(c) Notwithstanding the provisions of subsections (a) and (b) of this section, it shall be unlawful to construct or commence the construction of any privately owned highway toll bridge until the location and plans thereof shall also have been submitted to and approved by the highway department or departments of the State or States in which the bridge and its approaches are situated; and where such bridge shall be between two or more States and the highway departments thereof shall be unable to agree upon the location and plans therefor, or if they, or either of them, shall fail or refuse to act upon the location and plans submitted, such location and plans then shall be submitted to the Bureau of Public Roads and, if approved by the Bureau of Public Roads, approval by the highway departments shall not be required. (Aug. 2, 1946, ch. 753, title V, Section 502, 60 Stat. 847; June 30, 1949, ch. 288, title I, Section 103 (a), 63 Stat. 380; 1949 Reorg. Plan No. 7, Section 1, eff. Aug. 19, 1949, 14 F. R. 5288, 63 Stat. 1070.)

CODIFICATION

The Department of War was designated the Department of the Army and the title of the Secretary of War was changed to Secretary of the Army by section 205 (a) of act July 26, 1947, ch. 343, title II, 61 Stat. 501. Section 205 (a) of act July 26, 1947, was repealed by section 53 of act Aug. 10, 1956, ch. 1041, 70A Stat. 641. Section 1 of act Aug. 10, 1956, enacted "Title 10, Armed Forces", which in sections 3011–3013 continued the military Department of the Army under the administrative supervision of a Secretary of the Army.

SHORT TITLE

Congress in enacting sections 525–533 of this title provided by section 501 of act Aug. 2, 1946 that they should be popularly known as the "General Bridge Act of 1946".

TRANSFER OF FUNCTIONS

The functions of all other officers of the Department of Commerce and the functions of all agencies and employees of such Department were, with a few exceptions, transferred to the Secretary of Commerce, with power vested in him to authorize their performance or the performance of any of his functions by any of such officers, agencies, and employees, by 1950 Reorg. Plan No. 5, Sections 1, 2, eff. May 24, 1950, 15 F.R. 3174, 64 Stat. 1263, set out in note under Section 591 of Title 5, Executive Departments and Government Officers and Employees.

The Public Roads Administration, which was transferred to the Bureau of Public Roads within the General Services Administration, was transferred to the Department of Commerce by 1949 Reorg. Plan No. 7.

All functions of the Public Roads Administration were transferred to the Bureau of Public Roads within the General Services Administration by section 103 (a) of Act June 30, 1949. Section 103 (a) is set out as section 630b (a) of Title 5, Executive Departments and Government Officers and Employees.

RESERVATION OF RIGHT TO ALTER, AMEND, OR REPEAL

Section 511 of act Aug. 2, 1946, provided: "The right to alter, amend, or repeal this title (sections 525–533 of this title) is hereby expressly reserved as to any and all bridges which may be built under authority hereof (said sections)."

Section 526. Amount of tolls.

If tolls shall be charged for the transit over any interstate bridge of engines, cars, street cars, wagons, carriages, vehicles, animals, foot passengers, or other passengers, such tolls shall be reasonable and just, and the Secretary of the Army may, at any time, and from time to time, prescribe the reasonable rates of toll for such transit over such bridge, and the rates so prescribed shall be the legal rates and shall be the rates demanded and received for such transit. (Aug. 2, 1946, ch. 753, title V, Section 503, 60 Stat. 847.)

Section 527. Acquisition of interstate bridges by public agencies; amount of damages.

After the completion of any interstate toll bridge constructed by an individual, firm, or corporation, as determined by the Secretary of the Army, either of the States in which the bridge is located, or any public agency or political subdivision of either of such States, within or adjoining which any part of such bridge is located, or any two or more of them jointly, may at any time acquire and take over all right, title, and interest in such bridge and its approaches, and any interest in real property for public purposes by condemnation or expropriation. If at any time after the expiration of five years after the completion of such bridge the same is acquired by condemnation or expropriation, the amount of damages or compensation to be allowed shall not include good will, going value, or prospective revenues or profits, but shall be limited to the sum of (1) the actual cost of constructing such bridge and its approaches, less a reasonable deduction for actual depreciation in value; (2) the actual costs of acquiring such interests in real property; (3) actual financing and promotion costs, not to exceed 10 per centum of the sum of the cost of constructing the bridge and its approaches and acquiring such interests in real property; and (4) actual expenditures for necessary improvements. (Aug. 2, 1946, ch. 753, title V, Section 504, 60 Stat. 848.)

Section 528. Statement of construction costs of privately owned interstate bridges; investigation of costs; conclusiveness of findings; review.

Within ninety days after the completion of a privately owned interstate toll bridge, the owner shall file with the Secretary of the Army and with the highway departments of the States in which the bridge is located, a sworn itemized statement showing the actual original cost of constructing the bridge and its approaches, the actual cost of acquiring any interest in real property necessary therefor, and the actual financing and promotion costs. The Secretary of the Army may, and upon request of a highway department shall, at any time within three years after the completion of such bridge, investigate such costs and determine the accuracy and the reasonableness of the costs alleged in the statement of costs so filed, and shall make a finding of the actual and reasonable costs of constructing, financing, and promoting such bridge. For the purpose of such investigation the said individual, firm, or corporation, its successors and assigns, shall make available all of its records in connection with the construction, financing, and promotion thereof. The findings of the Secretary of the Army as to the reasonable costs of the construction, financing, and promotion of the bridge shall be conclusive for the purposes mentioned in section 527 of this title subject only to review in a court of equity for fraud or gross mistake. (Aug. 2, 1946, ch. 753, title V, Section 505, 60 Stat. 848.)

Section 529. Sinking funds; rate of tolls, cancellation of tolls.

If tolls are charged for the use of an interstate bridge constructed or taken over or acquired by a State or States or by any municipality or other political subdivision or public agency thereof, under the provisions of sections 525–533 of this title, the rates of toll shall be so adjusted as to provide a fund sufficient to pay for the reasonable cost of maintaining, repairing, and operating the bridge and its approaches under economical management, and to provide a sinking fund sufficient to amortize the amount paid therefor, including reasonable interest and financing cost, as soon as possible under reasonable charges, but within a period of not to exceed thirty years from the date of completing or acquiring the same. After a sinking fund sufficient for such amortization shall have been so provided, such bridge shall thereafter be maintained and operated free of tolls. An accurate record of the amount paid for acquiring the bridge and its approaches, the actual expenditures for maintaining, repairing, and operating the same, and of the daily tolls collected, shall be kept and shall be available for the information of all persons interested. (Aug. 2, 1946, ch. 753, title V, Section 506, 60 Stat. 848; May 25, 1948, ch. 336, 62 Stat. 267.)

AMENDMENTS

1948–Act May 25, 1948, extended the amortization period from 20 to 30 years.

Section 530. Bridges included and excluded.

The provisions of sections 525-533 of this title shall apply only to bridges over navigable waters of the United States, the construction of which is approved after August 2, 1946, under the provisions of said sections; and the provisions of the first proviso of section 401 of this title, and the provisions of sections 491-498 of this title, shall not apply to such bridges. (Aug. 2, 1946, ch. 753, title V, Section 507, 60 Stat. 849.)

Section 531. International bridges.

Sections 525-533 of this title shall not be construed to authorize the construction of any bridge which will connect the United States, or any Territory or possession of the United States, with any foreign country. (Aug. 2, 1946, ch. 753, title V, Section 508, 60 Stat. 849.)

Section 532. Eminent domain.

There are conferred upon any individual, his heirs, legal representatives, or assigns, any firm or corporation, its successors or assigns, or any State, political subdivision, or municipality authorized in accordance with the provisions of sections 525-533 of this title to build a bridge between two or more States, all such rights and powers to enter upon lands and acquire, condemn, occupy, possess, and use real estate and other property in the respective States needed for the location, construction, operation, and maintenance of such bridge and its approaches, as are possessed by railroad corporations for railroad purposes or by bridge corporations for bridge purposes in the State in which such real estate or other property is situated, upon making just compensation therefore to be ascertained and paid according to the laws of such State, and the proceedings therefor shall be the same as in the condemnation or expropriation of property for public purposes in such State. (Aug. 2, 1946, ch. 753, title V, Section 509, 60 Stat. 849.)

Section 533. Penalties.

Any person who fails or refuses to comply with any lawful order of the Secretary of the Army or the Chief of Engineers issued under the provisions of sections 525-533 of this title, or who fails to comply with any specific condition imposed by the Chief of Engineers and the Secretary of the Army relating to the maintenance and operation of bridges, or who refuses to produce books, papers, or documents in obedience to a subpoena or other lawful requirement under said sections, or who otherwise violates any provisions of said sections, shall, upon conviction thereof, be punished by a fine of not to exceed \$5,000 or by imprisonment for not more than one year, or by both such fine and imprisonment. (Aug. 2, 1946, ch. 753, title V, Section 510, 60 Stat. 849.)

Section 534. Conveyance of right, title, and interest of United States in bridges transferred to States or political subdivisions; terms and conditions.

The Secretary of the Army is authorized to transfer or convey to State authorities or political subdivisions thereof all right, title, and interest of the United States, in and to any and all bridges heretofore or hereafter constructed or acquired in connection with the improvement of canals, rivers and harbors, or works of flood control, together with the necessary lands, easements, or rights-of-way, upon such terms and conditions and with or without consideration, as may be determined to be in the best interest of the United States by the Chief of Engineers: Provided, That such transferred bridges shall be toll-free. (May 17, 1950, ch. 188, title I, Section 109, 64 Stat. 168.)

CODIFICATION

Section was not enacted as a part of the General Bridge Act of 1946 which comprises sections 525-533 of this title.

CHAPTER 48 – PUBLIC LAW 446

H. R. 8466

75TH CONGRESS, 3RD SESSION

An Act Authorizing the city of Rock Island, Illinois, or its assigns, to construct, maintain, and operate a toll bridge across the Mississippi River at or near Rock Island, Illinois, and to a place at or near the city of Davenport, Iowa.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in order to promote interstate commerce, improve the postal service, and provide for military and other purposes, the city of Rock Island, Illinois, or its assigns be, and is hereby, authorized to construct, maintain, and operate a bridge and approaches thereto across the Mississippi River, at a point suitable to the interests of navigation, at or near Rock Island, Illinois, and to a place at or near Davenport, Iowa, in accordance with the provisions of the Act entitled "An Act to regulate the construction of bridges over navigable waters", approved March 23, 1906, and subject to the conditions and limitations contained in this Act.

Sec. 2. There is hereby conferred upon the city of Rock Island, Illinois, or its assigns, all such rights and powers to enter upon lands and to acquire, condemn, occupy, possess, and use real estate and other property needed for the location, construction, maintenance, and operation of such bridge and its approaches as are possessed by railroad corporations for railroad purposes or by bridge corporations for bridge purposes in the State in which such real estate or other property is situated, upon making just compensation therefor, to be ascertained and paid according to the laws of such State, and the proceedings therefor shall be the same as in the condemnation or expropriation of property for public purposes in such State.

Sec. 3. The city of Rock Island, Illinois, or its assigns, is hereby authorized to fix and charge tolls for transit over such bridge, and the rates of toll so fixed shall be the legal rates until changed by the Secretary of War under the authority contained in the Act of March 23, 1906.

Sec. 4. In fixing the rates of toll to be charged for the use of such bridge the same shall be so adjusted as to provide a fund sufficient to pay for the reasonable cost of maintaining, repairing, and operating the bridge and its approaches under economical management, and to provide a sinking fund sufficient to amortize the cost of such bridge and its approaches, including reasonable interest and financing cost, as soon as possible, under reasonable charges, but within a period of not to exceed thirty years from the completion thereof. After a sinking fund sufficient for such amortization shall have been so provided, such bridge shall thereafter be maintained and operated free of tolls. An accurate record of the cost of the bridge and its approaches; the expenditures for maintaining, repairing, and operating the same; and of the daily tolls collected shall be kept and shall be available for the information of all persons interested.

Sec. 5. The right to alter, amend, or repeal this Act is hereby expressly reserved.

Approved, March 18, 1938.

CHAPTER 102 – PUBLIC LAW 58

H. R. 4527

76TH CONGRESS, 1ST SESSION

An Act To extend the times for commencing and completing the construction of a bridge across the Mississippi River at or near Rock Island, Illinois, to a place at or near the city of Davenport, Iowa.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the times for commencing and completing the construction of a bridge across the Mississippi River at or near Rock Island, Illinois, to a place at or near the city of Davenport, Iowa authorized to be built by the city of Rock Island, Illinois, or its assigns, by an Act of Congress approved March 18, 1938, are hereby extended one and three years, respectively, from the date of the approval of this Act.

Sec. 2. The right to alter, amend, or repeal this Act is hereby expressly reserved.

Approved, April 26, 1939.

CHAPTER 555 – PUBLIC LAW 682

(S.2091)

84TH CONGRESS, 2ND SESSION

An Act Authorizing the reconstruction, enlargement, and extension of the bridge across the Mississippi River at or near Rock Island, Illinois.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the first section of the Act entitled "An Act authorizing the city of Rock Island, Illinois, or its assigns, to construct, maintain, and operate a toll bridge across the Mississippi River at or near Rock Island, Illinois, and to a place at or near the city of Davenport, Iowa", approved March 18, 1938, is amended by inserting "(a)" immediately after "That" and by adding at the end thereof the following new subsection:

"(b) The city of Rock Island, Illinois, or any State or political subdivision thereof which may have acquired the bridge constructed pursuant to the subsection (a) of this section, is hereby authorized, subject to the prior approval of the plans by the Chief of Engineers and the Secretary of the Army, to reconstruct and enlarge such bridge and to reconstruct, enlarge, and extend the approaches to such bridge, including, but not limiting the generality of the foregoing, the altering, widening, laying out, opening, or constructing of any streets, avenues, or boulevards within or without any municipality deemed necessary by said city, or any State, public agency, or political subdivision that may take over or acquire said bridge in order to provide adequate traffic regulations and approach or approaches to the said bridge: **Provided,** That such approaches shall include only those necessary portions of streets, avenues, and boulevards which are directly connected with the bridge, or which are located immediately adjacent thereto, and whose principal use is to provide access to the bridge."

Sec. 2. Section 2 of such Act of March 18, 1938, is amended by inserting "(including reconstructing, enlarging, and extending such bridge and its approaches)" after "and its approaches".

Sec. 3. Section 4 of such Act of March 18, 1938, is amended to read as follows:

"Sec. 4. In fixing the rates of toll to be charged for the use of such bridge the same shall be so adjusted as to provide a fund sufficient to pay for the reasonable cost of maintaining, repairing, and operating the bridge and its approaches (including the reasonable cost of reconstructing, enlarging, and extending such bridge and its approaches) under economical management, and to provide a sinking fund sufficient to amortize the cost of such bridge and its approaches, including reasonable interest and financing cost, as soon as possible, under reasonable charges, but within a period of not to exceed thirty years from the completion of the reconstruction, enlargement, and extension of such bridge and its approaches as provided in subsection (b) of the first section of this Act. After a sinking fund sufficient for such amortization shall have been so provided, such bridge shall thereafter be maintained and operated free of tolls in accordance with such arrangement as may be agreed upon by the city of Rock Island, Illinois, or its assigns, and the State highway departments or other appropriate agencies of the States of Iowa and Illinois. An accurate record of the cost of the bridge and its approaches; the expenditures for maintaining, repairing, and operating the same; the expenditures for reconstructing, enlarging, and extending the same; and all of the daily tolls collected shall be available for the information of all persons interested."

Approved, July 11, 1956.

PUBLIC LAW 85-629

S. 3392

85TH CONGRESS, 2ND SESSION

An Act Establishing the time for commencement and completion of the reconstruction, enlargement, and extension of the bridge across the Mississippi River at or near Rock Island, Illinois.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the first section of the Act entitled "An Act authorizing the city of Rock Island, Illinois, or its assigns, to construct, maintain, and operate a toll bridge across the Mississippi River at or near Rock Island, Illinois, and to a place at or near the city of Davenport, Iowa," approved March 18, 1938, as amended by the Act entitled "An Act authorizing the reconstruction, enlargement and extension of the bridge across the Mississippi River at or near Rock Island, Illinois", approved July 11, 1956, is amended by adding at the end thereof the following new subsection:

"(c) The reconstruction, enlargement, and extension of such bridge and its approaches pursuant to subsection (b) of this section shall be commenced not later than July 1, 1960, and shall be completed within three years after said date."

Approved August 14, 1958.

PUBLIC LAW 89-789 – 89TH CONGRESS

S. 3710

An Act Authorizing the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I – RIVERS AND HARBORS⁽¹⁾

Sec. 108. (a) Subsection (b) of the first section of the Act entitled "An Act authorizing the city of Rock Island, Illinois, or its assigns, to construct, maintain, and operate a toll bridge across the Mississippi River at or near Rock Island, Illinois, and to a place at or near the city of Davenport, Iowa," approved March 18, 1938 (52 Stat. 110), as amended, is amended by striking out the comma after "foregoing" and inserting in lieu thereof the following: "(1) the construction of an additional span to increase the capacity of the bridge and (2)".

(b) Subsection (c) of the first section of such Act of March 18, 1938, as amended, is amended by inserting before the period at the end thereof a comma and the following: "except that the construction of an additional span authorized as part of such reconstruction, enlargement, and extension shall be commenced not later than April 1, 1970, and shall be completed within three years after such date".

(1) Sec. 101 through Sec. 113 of Title I includes works of improvement of rivers and harbors and other waterways for navigation, flood control, and other purposes.

(c) Nothing in this section or the amendments made by this section shall be construed to interfere with or delay future construction of a properly authorized bridge over the Mississippi River at or near the city of Davenport, Iowa.

Approved November 7, 1966.

BOND ORDINANCE ⁽¹⁾

An Ordinance authorizing and directing the issuance of an aggregate principal amount of \$4,650,000 Centennial Bridge Revenue Bonds of the city of Rock Island, Rock Island County, Illinois, for the purpose of providing funds for the improvement of said bridge and its approaches, and providing for the payment, security and delivery of said Bonds.

Section 8. Said City covenants and agrees that no additional bonds on a parity with any of the bonds issued under the terms of this Ordinance shall be issued except:

(A). The right is reserved by the City to issue not to exceed \$250,000 in bonds to complete the Centennial Bridge Improvements described in this Ordinance upon receipt of a certificate of the consulting engineers in responsible charge of constructing said Centennial Bridge Improvements

(i) giving a detailed description as to amount and purpose of all expenditures made of the proceeds of \$4,650,000 aggregate principal amount of bonds herein authorized;

(ii) stating in reasonable detail the work to be completed, the cost estimate and time of completion thereof; and

(iii) showing the feasibility of such additional financing with a reference to then existing tolls, rates and charges and anticipated earnings based thereon, which said certificate shall be approved by the City Council of said City and made of record in the proceedings of said City Council prior to the authorization of any such additional bonds and shall be filed with the Trustee; or

(B). For the purpose of reconstructing, enlarging, extending, and improving said bridge or its approaches, but only when the average annual gross revenues derived from said bridge for the three complete fiscal years next preceding the date of the authorization of said additional bonds

(1) Portions of the, October 21, 1958, city of Rock Island ordinance pertinent to the study of a new Mississippi River crossing at Davenport.

(as shown by an audit of an independent certified public accountant) were sufficient to pay all costs of operation and maintenance and to leave a balance equal to at least 150% of the aggregate of (a) one year's interest on all bonds then outstanding payable from the revenues of said bridge, (b) one year's interest on all the bonds then proposed to be issued, (c) the principal amount of all bonds then outstanding payable from the revenues of said bridge, which mature in the then current Fiscal Year, (d) the amount required to be transferred to the Redemption Account for Series B of 1958 Bonds in the then current Fiscal Year as specified in Subsection B (ii) of Section 6 hereof, and (e) an amount computed by dividing (i) the total principal amount of additional bonds then proposed to be issued, plus the total principal amount of any additional bonds then outstanding which have theretofore been issued pursuant to this Section, by (ii) the number of years from the date of issue of the bonds then proposed to be issued to the final maturity date of such bonds then proposed to be issued or to the final maturity date of any additional bonds theretofore issued, pursuant to this Section, whichever is later in time; provided, however, that if prior to the payment of all the Bonds hereby authorized it shall be found desirable to refund a part of said Bonds, then the said Bonds may be refunded, notwithstanding the restrictions as to the issuance of additional bonds set forth in this subparagraph (with the consent of the holders thereof, unless the Bonds to be refunded are subject to redemption and provision for call and redemption thereof is duly made) and any refunding bonds so issued shall be on a parity with the portion of the Bonds hereby authorized which are not refunded but only if such Bonds are refunded in such manner that the interest rate is not increased or the maturity of the refunding bonds is not at a date earlier than the maturity of the Bonds refunded.

(C). Any additional bonds issued pursuant to the provisions of this Section shall mature on April 1 of any year in which the principal of such bonds shall mature, and interest on any such additional bonds shall be payable semiannually on April 1 and October 1 of each year. When the conditions of this Section have been met, then upon the issue thereof any such additional bonds, when issued, shall be entitled to the equal and proportionate benefit and security of the pledge of the revenue and income derived and to be derived from the operation of said bridge with the

Bonds herein authorized, without preference, priority or distinction as to participation of such pledge of revenue or in the benefit of any bond or coupon of any issue over or from any other issue by reason of priority in execution, issue, delivery or negotiation thereof, or by reason of the date or dates of any said bonds, or the date or dates of maturity thereof, or for any other reason whatsoever, the intent hereof being that each and all of said bonds, as aforesaid, and the coupons evidencing interest thereon, shall have the same right and pledge as to payment and security, with the same legal effect as if each and all of said bonds and coupons had been issued, executed, delivered and negotiated simultaneously as one proceeding.

Section 16. Said City covenants and agrees with the holder and holders of the bonds authorized hereunder, so long as the same are outstanding and unpaid,

(a) That said City has acquired all real and personal property (including rights in land, rights of way, easements, licenses and franchises) necessary for the present management, operation and maintenance of the existing Centennial Bridge and has good and merchantable title thereto free and clear of all liens and encumbrances, and that it will continuously manage, operate, maintain and repair said bridge so that the same will be economically and efficiently operated at all times on the basis of sound business principles.

(b) That the present effective schedule of tolls, rates and charges for the use of the bridge and all other existing rules and regulations relating to the management, maintenance and operation of said bridge shall be continuing in full force and effect until changed or revised as provided by law or as required by the terms of this Ordinance; and that no free vehicular passage will be permitted in, over, on or upon said bridge, except to officers, employees and representatives of the said City while in discharge of their official duties and except to police officers of the United States of America, of the State of Illinois and of the State of Iowa and of their political subdivisions.

(c) That it will at any and all times do, execute, act and deliver and cause to be done, executed, acted and delivered all such further acts,

deeds, conveyances, assignments, transfers and assurances in law as shall be required for the security of the holders of the bonds and interest coupons issued hereunder, and that it will do all acts and things necessary or required by law, in order fully to preserve, continue and protect the security of the bonds and the rights and remedies of the holders thereof.

(d) That it will require the City Treasurer, upon the effective date of this Ordinance, to post a separate corporate surety bond which shall be subject to the approval of the Mayor of said City, conditioned upon the faithful performance of the duties of the City Treasurer under this Ordinance and for the accounting for all moneys coming into the hands of said official from the issuance of any of the bonds herein authorized and from the operation of said bridge; and will provide for fidelity insurance or a fidelity bond or bonds covering all officers, employees or agents of the City at any time employed on said bridge who receive or handle or have access to the revenues of said bridge in an amount sufficient to cover the maximum amount of revenues received during any calendar week.

(e) That it will not create or give or permit the creation of or giving of any mortgage, lien or pledge on any property (real or personal) or equipment now owned or hereafter acquired by the City and used in connection with or related to the said bridge and the operation thereof and the construction of the Centennial Bridge Improvements, or upon any revenues or other funds pledged or held under the terms of this Ordinance, except as security for all the bonds issued hereunder, and that it will not permit the sale, lease or other disposition of said bridge, or any part thereof; provided that said City may sell or dispose of property no longer necessary, useful, profitable, appropriate or required for the efficient operation of said bridge, and when the sale or disposal thereof will not reduce the revenues to be derived from the operation of said bridge, all as shown by a certificate of the consulting engineers employed for that purpose, and filed with the City Clerk of said City, and all proceeds received from any such sale or disposal shall be deposited in the Sinking Fund hereinabove created to be used and held for use as provided in Subsection (B) of Section 6 hereof.

(f) That the bonds and the interest coupons appurtenant thereto, issued and delivered under this Ordinance, shall be payable at the Paying Agent and Co-Paying Agent therein designated, without exchange or collection charges to the owner or holder of any such bonds or interest coupons.

(g) That any holder of a bond or bonds or any of the interest coupons issued hereunder may either in law or in equity by suit, action, mandamus or other proceedings, enforce or compel the performance of all duties required by and all covenants and agreements contained in this Ordinance, or the Acts of Congress or the laws of the State of Illinois under which the bonds hereby authorized are issued, including the fixing, maintaining and collecting of such rates, tolls or charges for the use of such bridge and its approaches, as will be sufficient for all the purposes provided by this Ordinance, and the application of income and revenues therefor, and in case of default a receiver may be appointed by a court of competent jurisdiction to take possession of, operate and maintain such bridge, charge and collect tolls and segregate and apply the moneys received in accordance with the terms of this Ordinance.

(h) That it will promptly upon the receipt of the proceeds of any bonds issued under this Ordinance forthwith proceed to construct the Centennial Bridge Improvements as hereinabove described, with all expedition practicable in accordance with the engineering report of Howard, Needles, Tammen & Bergendoff, Consulting Engineers of Kansas City, Missouri, and that upon the purchase of any real property required in the construction of said Centennial Bridge Improvements, it will obtain a policy of title insurance from a recognized title insurance company, insuring the City for the full purchase price or cost of acquisition of such real property or abstracts of title showing good and merchantable title thereto in said City, free and clear of all liens and encumbrances except the lien of this Ordinance.

(i) That said City will keep and provide accurate books and records of account showing all revenues received from said bridge and the daily tolls collected and all expenses and transactions of and in relation to managing, maintaining, operating, repairing and insuring said bridge, which

shall be available at the office of the City Clerk for inspection by any holder of bonds or interest coupons issued pursuant to this Ordinance, and for the information of all persons interested; and that, within sixty (60) days after the closing of each fiscal year, it will cause an audit of said books and records of account relating to said bridge for such year to be made and certified by an independent certified public accountant of recognized standing selected by the City, which annual audit shall show all income and expenses and receipts and disbursements for such year, a balance sheet, the status of all funds and accounts created by this Ordinance, showing the balance at beginning of the year, receipts, disbursements and balance at end of the year, and the auditor's comments on the compliance or noncompliance by the City, the Trustee, and the Depository with all the provisions of this Ordinance relating to the financial transactions of said bridge. Such audit shall be filed with the City Clerk and the Trustee and copies thereof shall be made available on request to any holder of bonds or interest coupons issued pursuant to this Ordinance. That once in each month a report of the operation of said bridge shall be made for the next preceding calendar month showing in detail for each said next preceding calendar month (a) the revenues collected and expended by the City, (b) the amount of bonds purchased or called for prior redemption, (c) the amount of moneys on deposit with the Trustee, the Depository and other banks, (d) the nature and amount of all investments held for all Funds and Accounts created by this Ordinance, and such other information concerning the management, operation, maintenance, repair and insurance and the revenues and expenses of said bridge, as the holders of said bonds may reasonably request.

(j) That said City is hereby constituted a trustee to receive hold or disburse, as in this Ordinance provided, all funds received by it under any of the provisions of this Ordinance, and is also hereby constituted a trustee to administer, allocate and disburse as provided in this Ordinance all funds received by it with all the powers and duties herein prescribed, and that this Ordinance shall constitute a contract between said City and the holders of the bonds herein authorized to be issued, and that after the issuance of said bonds, no changes, additions, alterations or amendments of any kind shall be made to this Ordinance in any manner, except as here-

inabove provided, until such time as all of said bonds issued hereunder and interest thereon shall be paid in full or unless and until provisions shall have been made for the payment of all bonds hereby authorized and interest thereon in full.

(k) That it will not acquire, construct, operate, or maintain any other bridge or other facility which will be competitive with said bridge, and that it will not grant a franchise for the acquisition, construction, operation, or maintenance of any other bridge or other facility which will be competitive with said bridge.

Approved October 21, 1958.

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