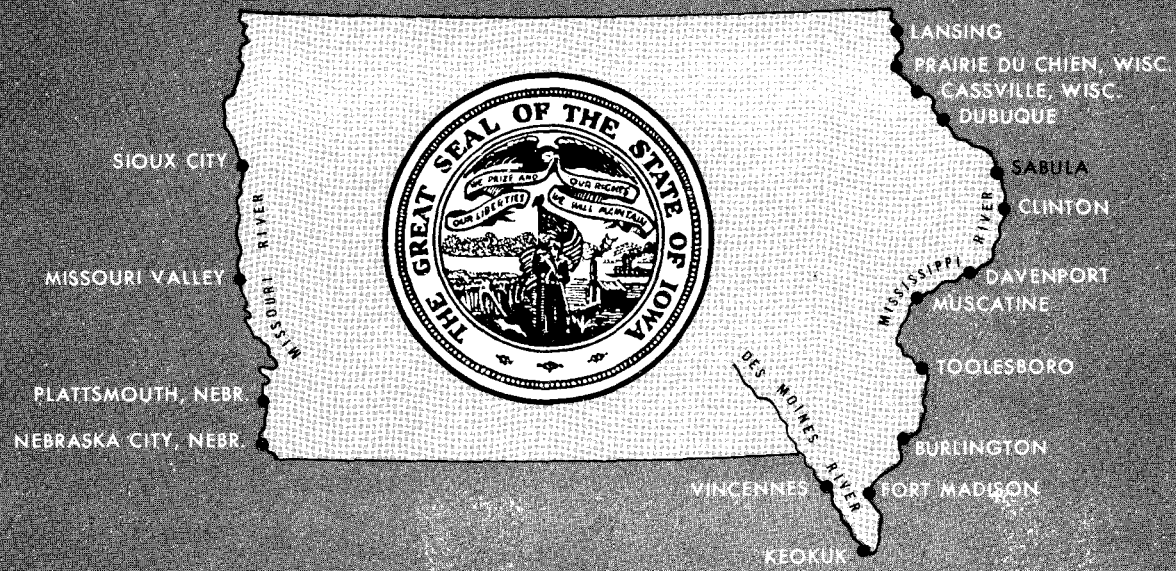


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376  
.S23  
S23  
1968

JULY 1968

IOWA STATE HIGHWAY COMMISSION



*Bridge Location.  
Revenue and Traffic Studies*

NEAR  
**SABULA, IOWA**

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

WILBUR SMITH & ASSOCIATES  
traffic consultants  
NEW HAVEN, CONN.

TGB155  
H83s

MISSISSIPPI RIVER TOLL BRIDGE

*Wilbur Smith & Associates, Inc.*

Cable: WILSMITH  
(203) 865-2191

TRANSPORTATION CONSULTANTS

155 WHITNEY AVENUE • P. O. BOX 993

*New Haven, Conn. 06510*

July 11, 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 feasibility report for a new Mississippi River bridge at Sabula.

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.

The feasibility calculations indicate that substantial subsidies would be required to construct the proposed bridge as a revenue bond project. Net revenues for the project are considerably below the annual payments necessary to meet amortization of an appropriate bond issue.

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

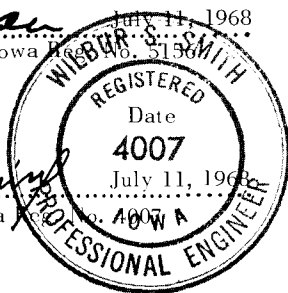
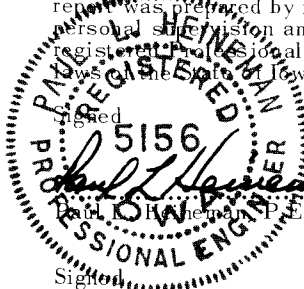
WILBUR SMITH & ASSOCIATES, INC. N.E.

*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: *Paul L. Heineman* Date: July 11, 1968  
*Paul L. Heineman*, P.E. Iowa No. 5156

Signed: *Wilbur S. Smith* Date: July 11, 1968  
*Wilbur S. Smith*, P.E. Iowa No. 4007





**VIEW OF SAVANNA-SABULA BRIDGE LOOKING NORTHWEST**

**SABULA, IOWA**

**MISSISSIPPI  
RIVER  
TOLL  
BRIDGE**

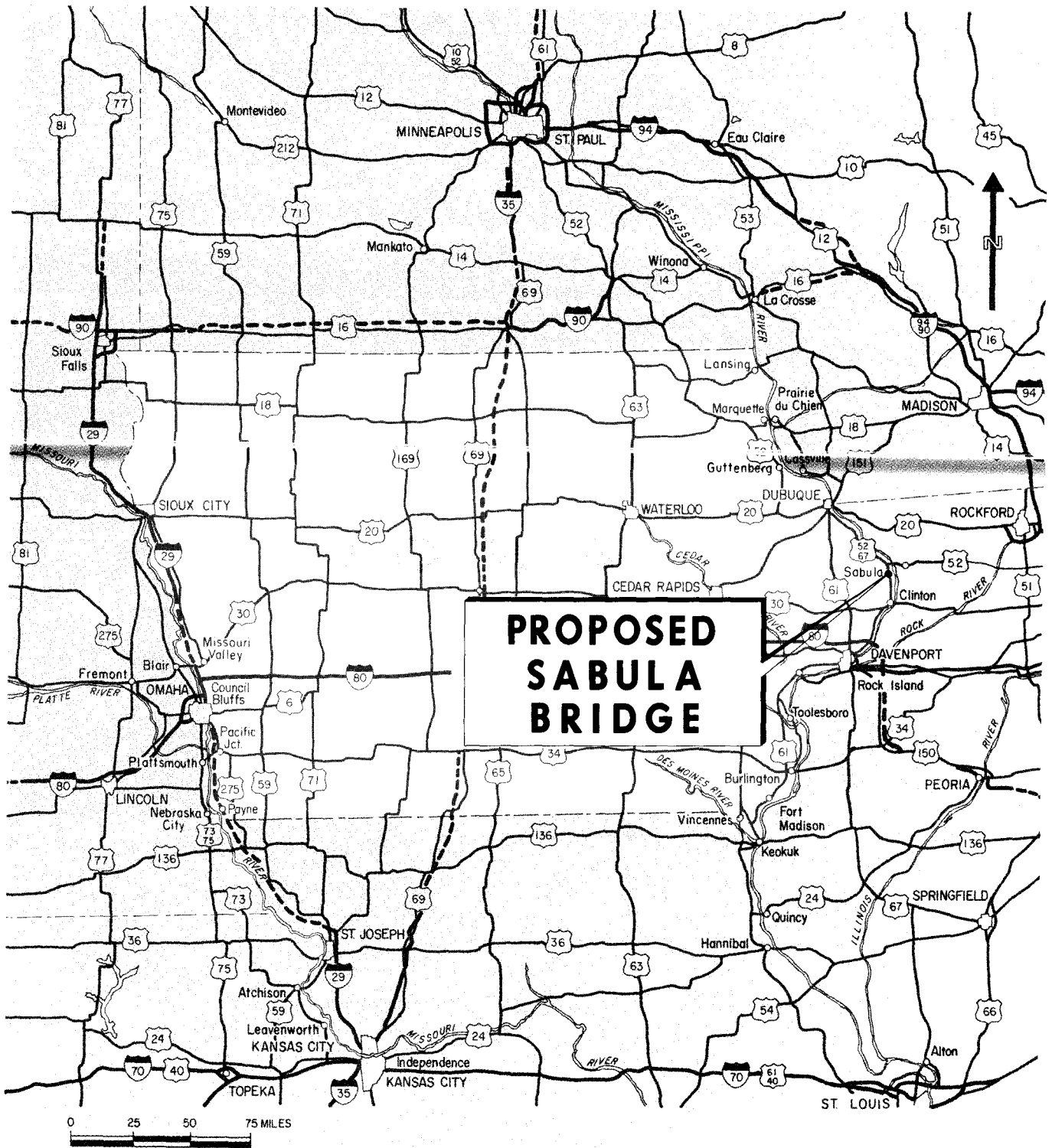
**JULY  
1968**

**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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B.	The General Bridge Act
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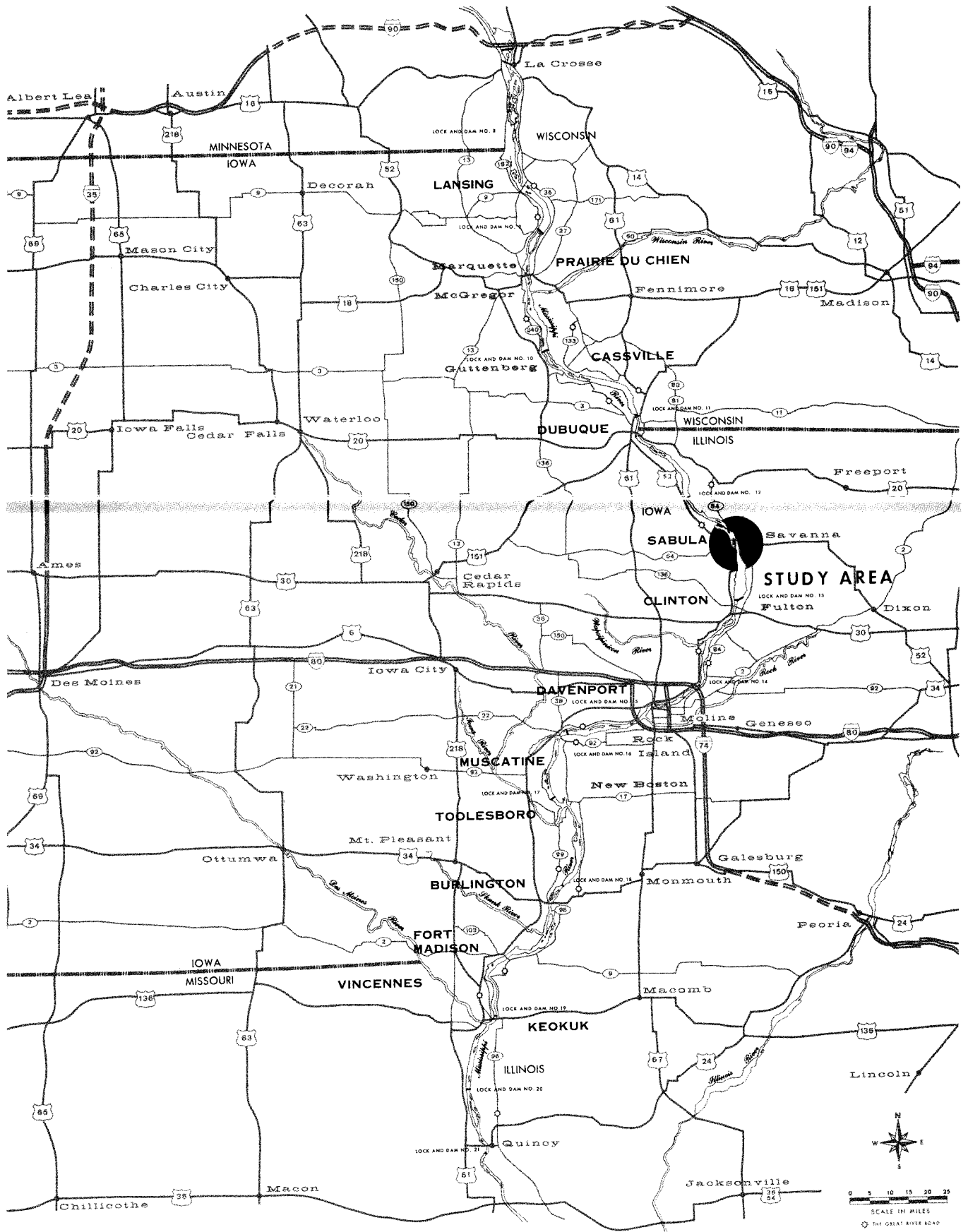


Exhibit 2  
VICINITY MAP

## **SUMMARY OF FINDINGS**

The present Savanna-Sabula Bridge, while providing a reasonable level of traffic service, does not meet modern, two-lane design standards. If a new facility were constructed just south of the existing bridge, capital development costs of about \$4,140,000 are estimated.

Assuming tolls were placed on the proposed Sabula Bridge, annual revenues would range from an estimated \$155,000 in Fiscal 1971, the first full year of operation, to \$199,000 in 1985.

A bond issue, adequate to meet the initial construction costs, of about \$4,968,000 would be required. Assuming a 5.5 per cent interest rate and a 30-year bond term, annual payments to service the bond issue would be approximately \$352,000. After deducting annual maintenance and operation expenses, net toll revenues would average \$97,000 over the 28-year earning period of the bond issue, providing a 0.28 coverage of level debt service.

This coverage value is considerably below that normally considered indicative of financial feasibility. The total subsidy necessary to meet level debt service over the life of the proposed bond issue would be an estimated \$7,150,000.

## **INTRODUCTION**

Sabula, Iowa, as shown in Exhibit 1, is located on the Mississippi River about 38 miles south of Dubuque and 16 miles north of Clinton. It is a community of about 900 persons; cross-river, Savanna, Illinois is a substantially larger municipality with about 5,000 residents.

Presently, the two communities are connected by the Savanna-Sabula Bridge which carries the U. S. Route 52 designation and also serves as a link in State Route 64 in both Iowa and Illinois. The nearest river crossings are the Julien Dubuque Bridge to the north in Dubuque and the Lyons-Fulton Bridge to the south in Clinton.

### **Authority and Purpose of Report**

In December, 1967, the Iowa State Highway Commission authorized the preparation of a preliminary feasibility report for a possible new toll crossing in the Sabula-Savanna area. This report is one of several comparable bridge 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 the construction and operation of the present Savanna-Sabula Bridge is included in the Appendix. Under Public Law 330, collection of tolls is permissible for an indefinite period. The Appendix also contains a copy of the General Bridge Act of 1946, the federal law permitting operation of privately-owned toll bridges, which limits the period of time during which a new bridge could be operated as a toll facility to 30 years.

## **Scope of Services**

This report summarizes preliminary engineering, traffic and revenues and feasibility studies for a proposed toll crossing of the Mississippi River in the Sabula-Savanna area. These studies included:

1. Analysis of the physical limitations imposed by navigational requirements, terrain, existing levees, railroads, real property values, and the present highway network.
2. Comparison of alternate river 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 bridge, 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 location, assuming operation as a toll facility.
5. Determination of the preliminary feasibility of the project, based on the relationship of anticipated project cost and estimated toll revenues.

The engineering, location and cost studies relating to the proposed bridge 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 crossing and project feasibility calculations.

## **Present Highway System**

The present Savanna-Sabula Bridge serves as a link in U. S. Route 52 and State Route 64 in Iowa and Illinois. U. S. Route 52 is an east-west facility in Illinois; in Iowa it follows an alignment north from Sabula, generally paralleling the Mississippi River to Dubuque. Iowa Route 64 begins just east of Sabula and follows an east-west alignment connecting the communities of Miles, Preston, Maquoketa and Baldwin enroute west. U. S. Route 67 begins on the north at Iowa Route 64, near Sabula and generally parallels the Mississippi River to Clinton and points south. Illinois Route 84 is a north-south highway generally following the Mississippi River. Illinois Route 78 is another north-south route and is located to the east of Illinois Route 84.

## **Planned Highway Improvements**

Several highway improvements are planned in the bridge influence area in both Iowa and Illinois. In Iowa, improvement of U. S. Routes 52 and 67 between Bellevue and Clinton has been scheduled for 1968 (Bellevue to Sabula) and for 1972 (Sabula to Clinton). The construction program will consist of roadway widening, resurfacing and shouldering. U. S. Route 61, between Dubuque and Davenport, is scheduled for upgrading to freeway standards. Relocation of U. S. Route 20 is proposed south of Dubuque. This major east-west highway, which would be constructed to freeway standards, would cross the Mississippi River about 4.3 miles south of the existing Julien Dubuque Bridge. In Illinois, right-of-way acquisition is scheduled for relocation of a portion of U. S. Route 20 near Illinois Route 84.

## **Present Savanna-Sabula Bridge**

The Savanna-Sabula Bridge was opened to motorists on January 1, 1933. It has been operated as a toll facility by the Savanna-Sabula Bridge Company since that time. The bridge has a total length of 2,475 feet 4 inches. The main portion of the structure consists of a three-span cantilevered through

truss. The center span is 520 feet in length; each anchor span is 320 feet long. There is also a 279-foot simple through-truss span between the cantilever unit and the west approach spans. The cantilever unit is supported by concrete piers founded on bedrock, while the simple-span truss is carried on concrete piers supported by foundation piles.

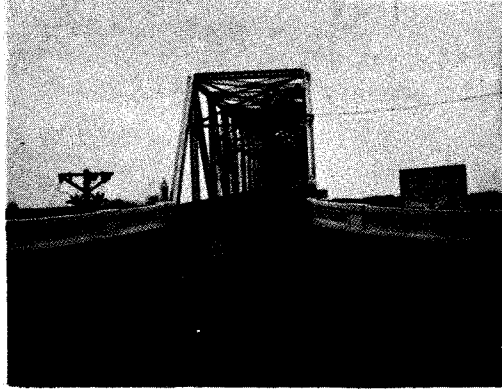
The Iowa approach structure consists of eighteen 53-foot steel beam spans for a total length of 954 feet. Twelve of these spans are supported on concrete pile bents; the remaining six spans are carried on concrete piers supported by foundation piles. The short Illinois approach consists of a three-span reinforced concrete structure having a total length of 78 feet 9 inches.

The Iowa approach to the bridge is a 2.3-mile causeway extending northeast from Sabula. The short east bridge approach extends to a "T"-intersection with Illinois Route 84, near the north edge of Savanna. Maximum gradients on the structure are 4.5 per cent. A two-lane roadway width of 20 feet 0 inches is provided between the face of curbs. The bridge was designed to carry an H-15 standard live load as specified by the American Association of State Highway Officials.

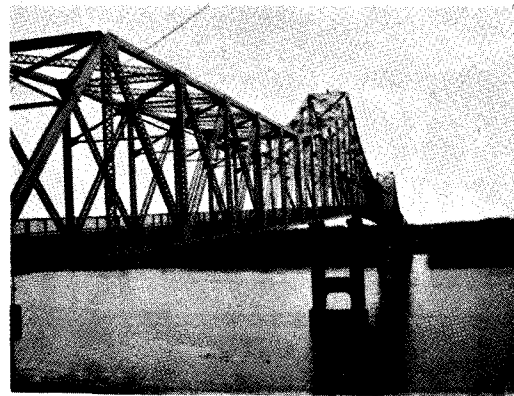
The toll plaza is located on the Iowa side near the bridgehead on the approach road north of Sabula. The present toll schedule is based upon a rate of \$0.35 for passenger cars and light trucks. As shown in Table 1, higher tolls are assessed for larger vehicles. Several views of the bridge are depicted in Exhibit 3.

## **Alternate River Crossings**

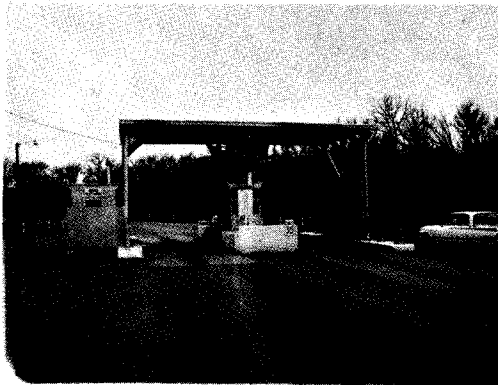
The closest river crossing to the north is the toll-free Julien Dubuque Bridge, about 44 miles northwest of Sabula at Dubuque. The Julien Dubuque Bridge carries U. S. Route 20 across the Mississippi River and provides a good level of traffic service. It was constructed in 1943 and has two 12-foot travel lanes.



**ILLINOIS APPROACH**



**VIEW OF BRIDGE STRUCTURE**



**IOWA APPROACH — TOLL BOOTH**

**PRESENT SAVANNA — SABULA BRIDGE**

**TABLE I**  
**PRESENT TOLL SCHEDULE**  
**Savanna-Sabula Bridge**

<u>TOLL CLASS</u>	<u>TOLL</u>
Passenger Cars	\$0.35
House, Car, Farm Trailers (one or two axles)	0.20
Truck or Bus	
Two Axles four tires	0.35
Two Axles six tires	0.70
Three Axles	0.85
Four Axles	1.00
Five Axles	1.25
Bicycles and Motorcycles	0.15
Farm Tractor	0.45
Pedestrians	0.10
Each Additional Axle	0.35

**SOURCE:** The Savanna-Sabula Bridge Company.

To the south, the Lyons-Fulton Bridge is located about 18 miles away. It is a toll facility which provides limited traffic service with heavy trucks prohibited from using the crossing. The bridge has poor approach connections on both sides of the river and is scheduled for replacement in the near future. The present toll schedule for the Lyons-Fulton Bridge is shown in Table 2. It is based upon a two-axle, four-tire vehicle toll of \$0.20 with larger vehicles assessed higher rates.

The Gateway Bridge is located a short distance to the south, still within the Clinton urban area. It provides a good level of traffic service, carrying U. S. Route 30 across the Mississippi River. Both bridges in Clinton serve primarily as local traffic facilities.



TABLE 2  
PRESENT TOLL SCHEDULE  
Lyons-Fulton Bridge and Gateway Bridge

<u>TOLL CLASS</u>	<u>TOLL</u>
Passenger Car	\$0.20
Truck	
Two Axles, four tires	0.20
Two Axles, six tires	0.50
Three Axles	1.00
Four Axles	1.25
Five Axles	1.50
Six Axles	1.75
Each additional axle	0.25
Passenger Bus	1.00
Motorcycle	0.10
Car Trailers	
One Axle	1.10
Two Axles	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 material included information obtained from the Iowa and Illinois Highway Commissions, other state agencies, and numerous county, municipal and other contacts.

## **PART I**

### **LOCATION AND COST STUDIES**

#### **BASIC DATA**

Considerable information regarding existing conditions and proposed future 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 items of data are pertinent to a Mississippi River crossing at Sabula.

#### **Geology**

The study site, near the existing bridge, is in the Till Plains Section of the Central Lowland Physiographic Province. The upland area adjacent to the flood plain has been covered by the Kansas Glacial Drift and subsequently mantled with a surface deposit of eolian loess. The flood plain consists of deep deposits of alluvium, with over 100 feet of silt, sand and gravel in the pre-glacial Mississippi River channel.

Bedrock in the bluffs along the river is the Manquoketa shale overlying the Galena-Platteville limestone. In the flood plain, the shale has been eroded away and bedrock is principally the Galena-Platteville which dips slightly to the south and east.

Substructures for the proposed bridge should be founded on bearing piles driven to bedrock or other acceptable founding material deep in the alluvium. Approach embankments in the flood plain should present no special problems. Prior to final design, foundation borings and laboratory soil tests will be required in determining the need for, and extent of, any special embankment treatment which might be required for stability and settlement purposes, and to establish the top of suitable founding material.

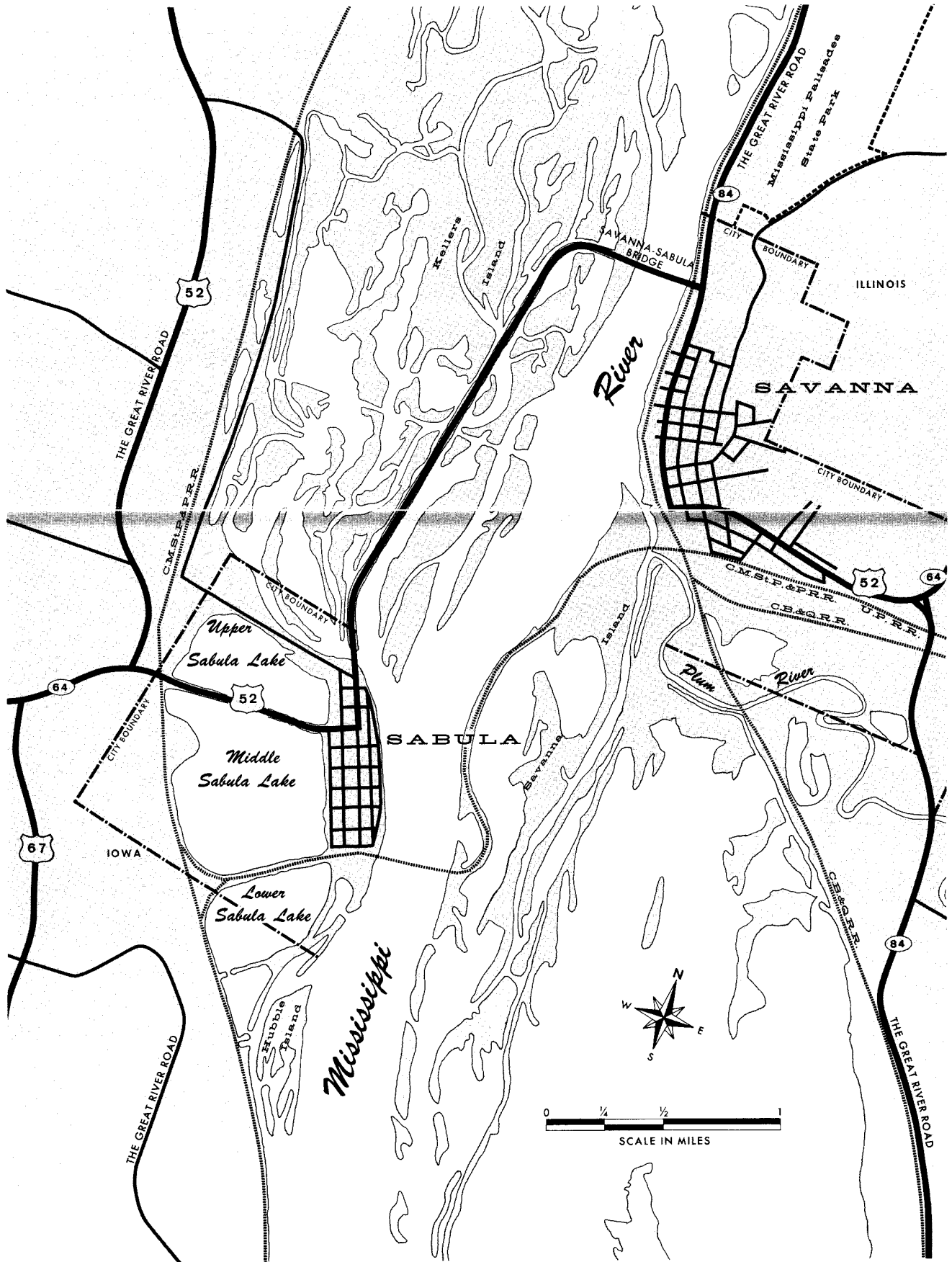


Exhibit I-1

**SABULA STUDY AREA**

## **River Conditions**

The existing Savanna-Sabula Bridge is located approximately midway between U.S. Lock and Dam No. 12 and No. 13. The former is approximately 17 miles upstream, while the latter is about 16 miles downstream from the bridge. The flat pool elevation below the upper dam is 583.0 Mean Sea Level.

The city of Sabula and its western approaches are protected by levees. The approach causeway to the Savanna-Sabula Bridge is located on the low, marshy flood plain of the river. In 1965, record flood crests rose to within two feet of the roadway pavement. The Savanna, Illinois, approach is not subject to flooding since it is located on a bluff about 25 feet above record high water.

## **Existing Railroads**

Mainline tracks of the Chicago, Burlington & Quincy Railroad pass under the bridge adjacent to the Illinois shore. There are no railroad tracks in the vicinity of the bridge on the Iowa side. The railroad tracks are at approximately Elevation 596 Mean Sea Level under the bridge. Record high flood waters rose to within one foot of these tracks in 1965.

## **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 2 per cent waterline elevation, or 60 feet above flat pool whichever is higher. The 2 per cent waterline is that elevation of the river which will be exceeded only 2 per cent of the time. In the Sabula area, low steel elevation required by the 2 per cent specification is 641.0 Mean Sea Level, which is exceeded by the 643.0 Mean Sea Level required by the flat pool specification. The Savanna-Sabula Bridge provides 58.9 feet of vertical clearance above the 2 per cent waterline elevation and 64.9 feet of vertical clearance above the flat pool elevation.

## **ALTERNATE LOCATIONS**

### **General**

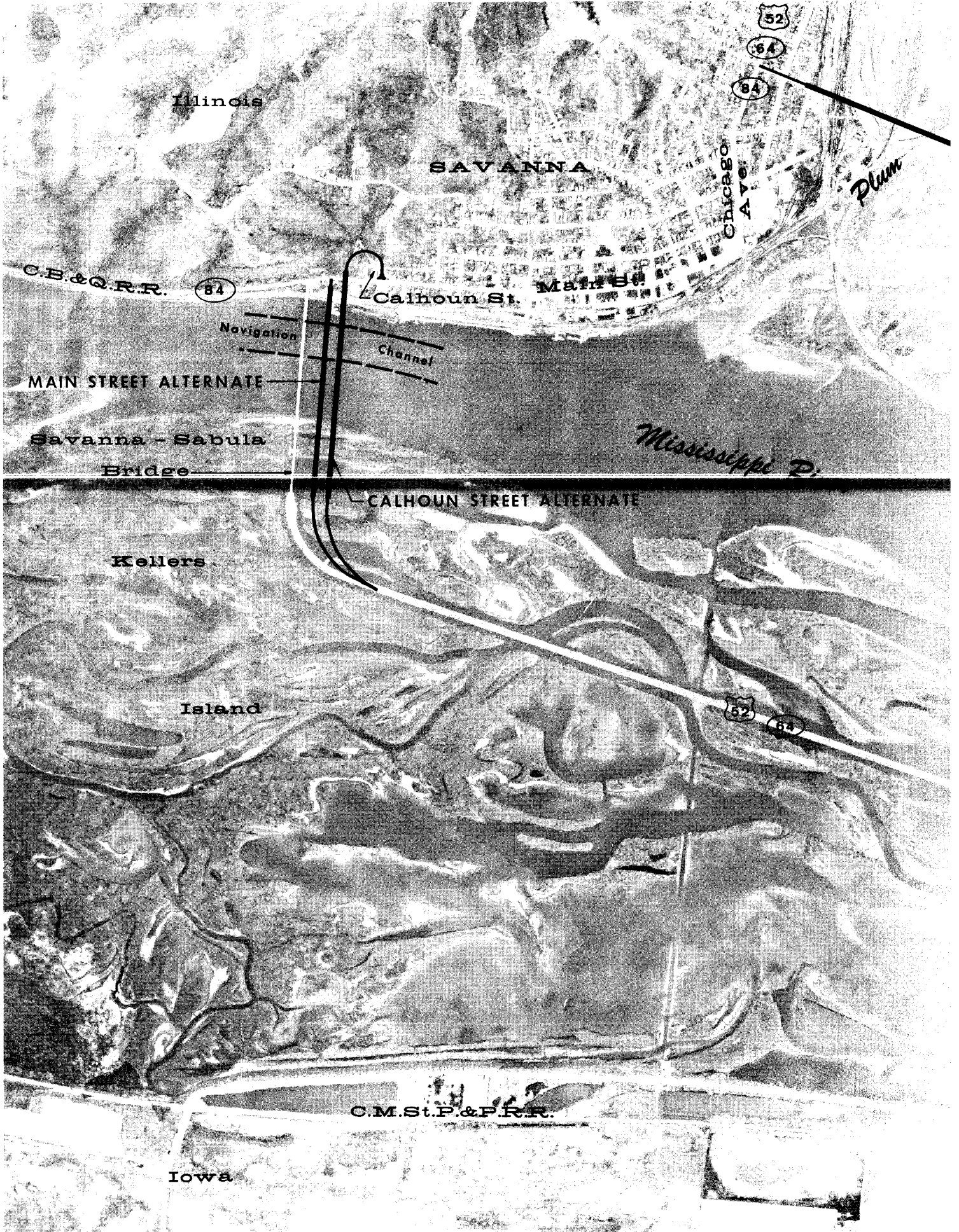
The number of desirable crossing sites in the Savanna-Sabula area is severely restricted by the existing topography. Extensive areas of marshy terrain exist along the Iowa shore and south of Savanna on the Illinois side. Any new bridge site would require a substantial length of approach causeway.

Three alternate locations for a new Mississippi River Bridge, as shown on Exhibit I-2, were studied and evaluated. The principal features and relative merits of these alternate sites are summarized in the following paragraphs.

The principal disadvantage of the alignment of the existing bridge is the poor terminal conditions on the Illinois shore. The poor sight distance on Illinois Route 84 creates a hazard for all traffic using the existing Savanna-Sabula Bridge.

### **Main Street Alternate**

The site offering the best compromise between construction cost and traffic service is the Main Street Alternate, shown on Exhibits I-2 and I-3. This location, parallel to and approximately 300 feet south of the existing structure, provides a natural site for a grade separation structure with the C.B. & Q. R.R. and for a simple tee intersection at the east terminal with north Main Street in Savanna. Main Street (Illinois Route 84) would be reconstructed for a total length of 2,150 feet to provide grades of less than 4 per cent north and south of the proposed intersection. This reconstruction would raise Main Street 16 feet at the terminal with the bridge approach, which would have a grade of 3.5 per cent.



Illinois

SAVANNA

52

64

84

Chicago Ave.

*Plum*

C.B.&Q.R.R.

84

Calhoun St.

Main St.

Navigation

Channel

MAIN STREET ALTERNATE

Savanna - Sabula

Bridge

*Mississippi R.*

CALHOUN STREET ALTERNATE

Kellers

Island

52

64

C.M.St.P.&P.R.R.

Iowa

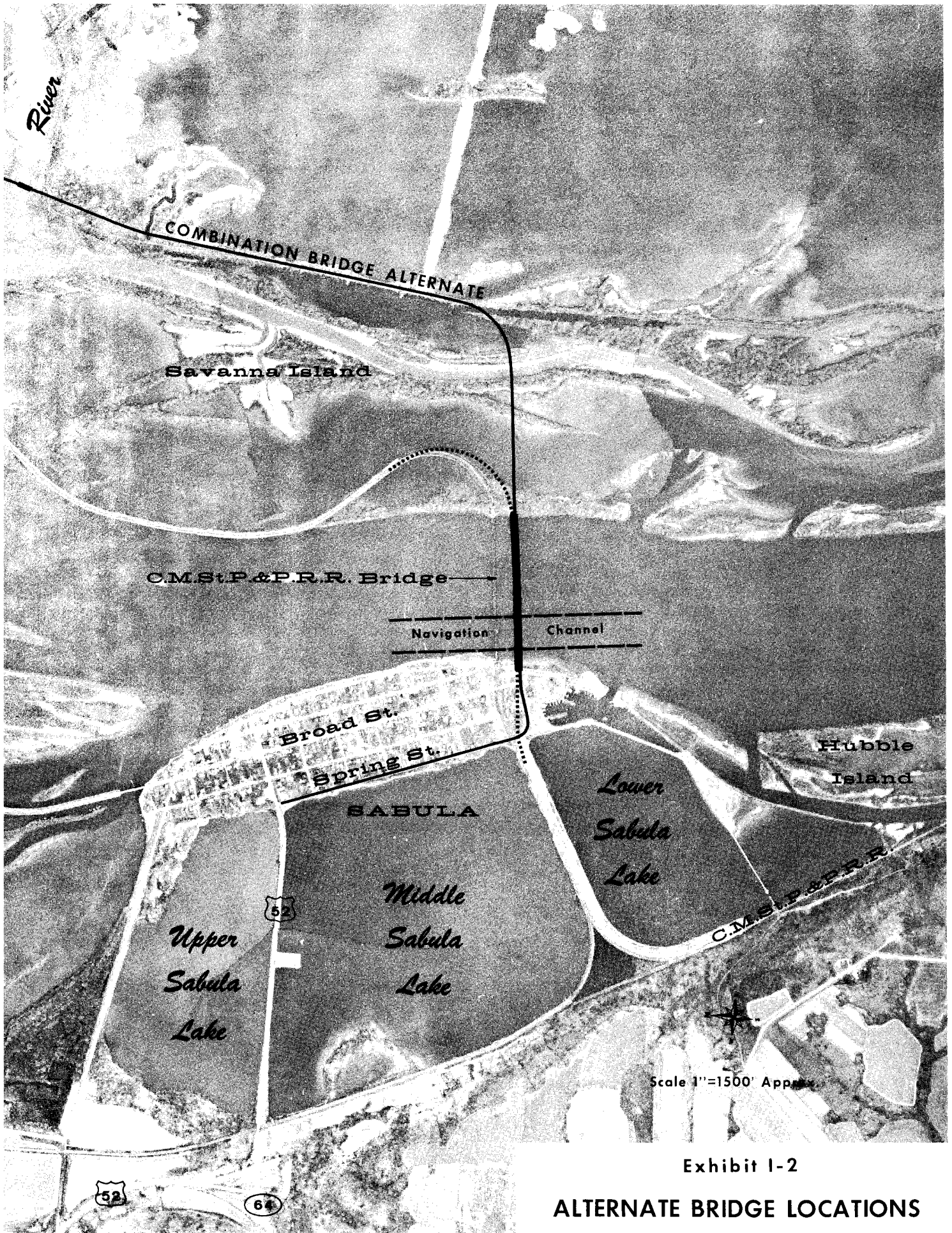


Exhibit I-2

ALTERNATE BRIDGE LOCATIONS



The simplest and most economical solution for the Iowa approach is a connection with the existing approach causeway. Approximately 1,350 feet of new roadway construction would be required.

### **Calhoun Street Alternate**

This alternate is 200 feet downstream from and parallel to the proposed Main Street Alternate. A grade separation at Illinois Route 84 will permit a 3.0 per cent grade on the east approach. Revision of Main Street (Illinois Route 84) will not be required. This scheme would allow initial construction of a simple tee intersection between the east bridge approach and Illinois Route 84; construction of a full interchange, eliminating conflicting traffic turning movements, could be accomplished at a moderate additional cost with ramp connections on the west side of Illinois Route 84. The rate of traffic growth and frequency of accidents would dictate when the additional ramps would be needed.

The Calhoun Street Alternate, as shown on Exhibit I-2, would cost approximately \$20,000 more than the Main Street Alternate.

### **Other Locations**

Crossing sites north of the present bridge location have two major disadvantages:

1. They require greater adverse travel distances for all traffic movements from Iowa destined to Savanna or to points east or south of Savanna.
2. The steep bluff adjacent to the Mississippi Palisades State Park forces Illinois Route 84 closer to the Burlington Railroad and the river. The decreased distance between the highway and railroad severely restricts the design of either an at-grade intersection or an interchange to serve traffic movements between the highway and the east bridge approach.

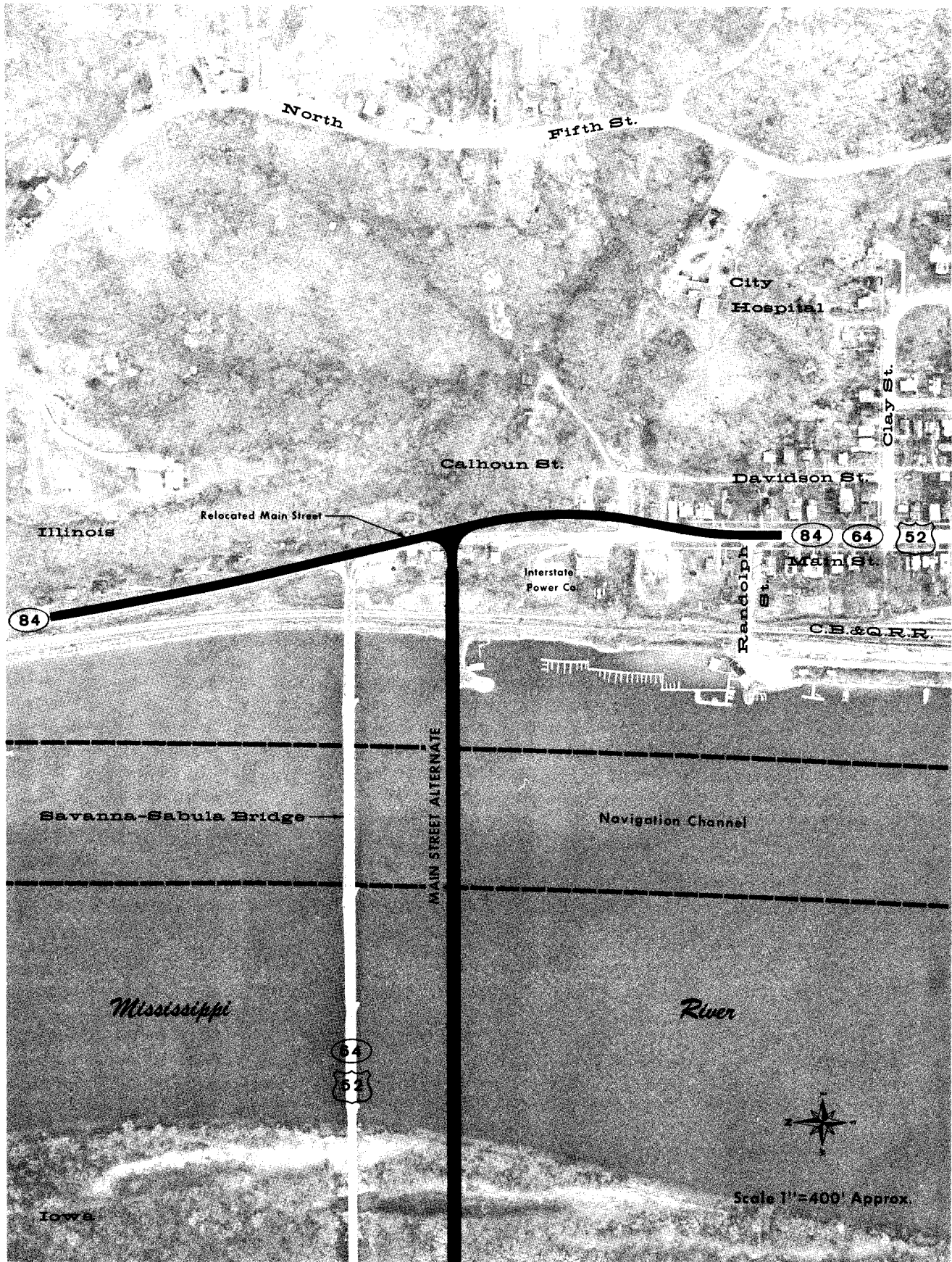


Exhibit I-3

# SAVANNA TERMINAL

Crossing sites south of the Calhoun Street location are restricted by:

1. Developed properties between the highway and the Burlington Railroad.
2. The difficulty of overpassing rail yards and tracks in the area and maintaining acceptable grades on the east bridge approach.

### **Combination Highway-Railroad Bridge Alternate**

A third alternate location, shown on Exhibit I-2, was studied to determine the feasibility of providing a new combination highway-railroad structure to replace both the Savanna-Sabula Highway Bridge and the aging Milwaukee Railroad Bridge. The most desirable site for such a combination bridge would be immediately downstream from the existing railroad bridge.

The existing Milwaukee Railroad Bridge, shown on Exhibit I-4, was constructed in 1905 and provides a single track crossing of the Mississippi River. The overall structure consists of five fixed truss spans, numerous deck girder spans and a through truss swing span. This bridge has been well maintained and, despite its age, is structurally sound. Although the electrical and mechanical equipment is somewhat obsolete and shows considerable wear, it appears that the structural components of the bridge will continue to provide adequate service for railroad traffic for a considerable period of time; replacement of this bridge would be based on benefits to river traffic. Approximately 1,600 openings per year are required for river traffic. Approximately 25 trains cross this bridge each day.

A new combination highway-railroad bridge would offer several advantages. These include:

1. It would be more economical to build a new combination bridge than to build two new bridges – one for the railroad and one for the highway – if replacement of the existing railroad bridge

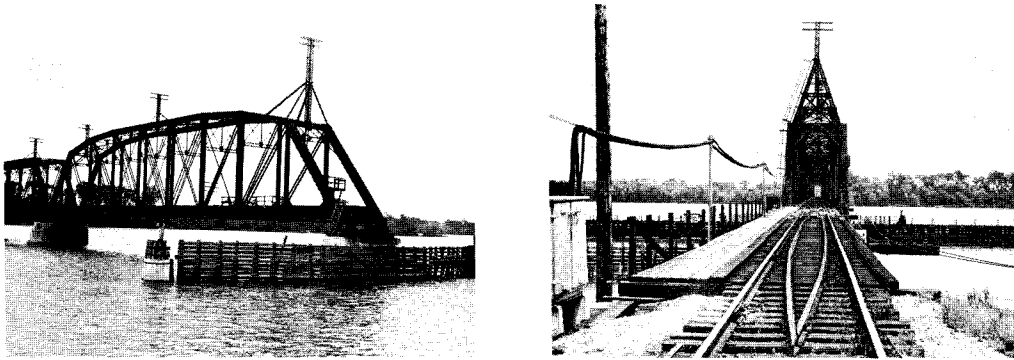


Exhibit I-4

## EXISTING MILWAUKEE RAILROAD BRIDGE

and the existing Savanna-Sabula Highway Bridge becomes necessary at the same time.

2. Some federal funds might be available under the Truman-Hobbs Act for replacement of the swing span which could be applied to construction of the combination bridge at such time as the swing span is declared a hazard to navigation.
3. Less adverse travel distance would be required for all crossriver traffic movements between Iowa and U.S. Route 52 and Illinois Route 64.

The principal disadvantages of a new combination bridge crossing at Sabula are:

1. The existing Milwaukee Railroad Bridge must be opened approximately 1,600 times per year to serve barge and other river traffic on the Mississippi River. A greater number of openings could be expected in the future because of increased shipping activity. Since a high level combination bridge is not practical in the Savanna-Sabula area, because of the topography, the main span of the combination bridge would be a lift span. Frequent bridge openings would cause many delays to highway

traffic and could have an adverse effect upon usage and toll revenues.

2. Adverse travel distance would be required for all traffic movements between Iowa and Illinois Route 84 to the north.
3. Approximately two miles of new causeway approach would be required between the bridge and Savanna. A substantial portion of this approach must be on structure.
4. It would be difficult to provide an approach connection to U.S. Route 52 and Illinois Route 84 in the southern section of Savanna because of numerous railroad tracks and extensive land development.

The financial feasibility of this alternative appears to be dependent upon financial participation by the Milwaukee Railroad, which in turn might be based on possible federal funds for replacement of the present bridge. At the present time, there have been no proposals advanced by either the railroad company or the federal government to replace the present railroad swing span. However, if a replacement of the present highway bridge is not planned for early construction, then, at some later date, a combination bridge might be appropriately considered as an alternative to the highway bridge shown herein.

#### **Recommended Location**

The most economical location for a bridge to replace the existing Savanna-Sabula Bridge is the Main Street location. Total cost of construction of such a crossing is used in the feasibility studies developed in Part II.

## 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 investigations and design. The final selection of a structure type will be contingent upon economics, aesthetic factors, structural considerations, navigational clearance requirements, foundation conditions, highway alignment and vertical controls. All of these control factors would 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-5. Type I is a Continuous Girder Span. These contemporary structures are popular because of economics, pleasing appearance and the elimination of obstructions above the roadway. Economic considerations usually limit spans to less than 450 feet, but with increased usage of newer high-strength steels current maximum span lengths may be economically increased. Since structure depths of the girder span are relatively greater than of other structure types, the practicality of the girder span will be dependent upon navigational clearances, existing topography, and approach grades.

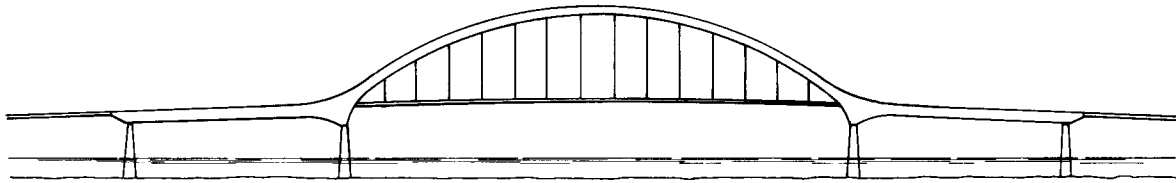
Type II navigation span of Exhibit I-5 is a Continuous Box Girder Tied Arch Span with flexible tie. The tie resists only the thrust of the arch. Without a tie the resistance would have to be provided by river piers. This type of span is considered very practical construction for bridges over the Mississippi River if navigation clearance requirements are limited to a single opening. This type of structure has a very limited depth between the low steel and roadway deck and will, therefore, permit flatter approach grades than a continuous girder design.

Type III navigation span is the Continuous Truss Tied Arch Span. This type of bridge is similar in structural function to Type II, the box girder arch. The difference being that a steel truss system is used for the arch rib and approach spans instead of box girder sections. This type of struc-



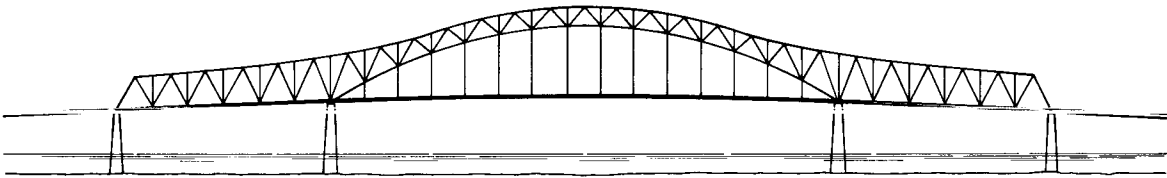
**CONTINUOUS GIRDER SPAN**

**TYPE I**



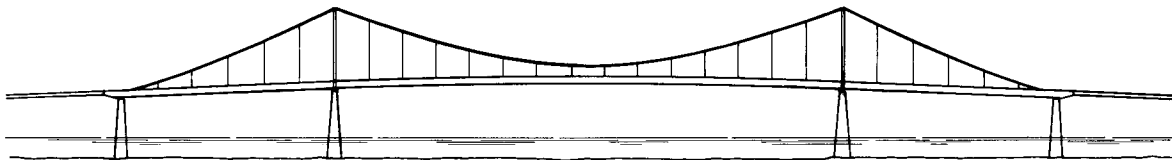
**CONTINUOUS BOX GIRDER TIED ARCH SPAN**

**TYPE II**



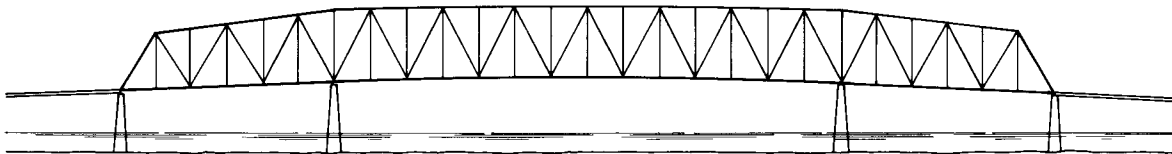
**CONTINUOUS TRUSS TIED ARCH SPAN**

**TYPE III**



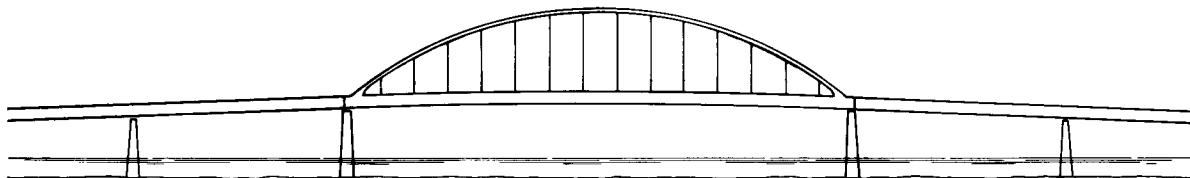
**SELF ANCHORED SUSPENSION SPAN**

**TYPE IV**



**CONTINUOUS TRUSS SPAN**

**TYPE V**



**BOX GIRDER TIED ARCH SPAN**

**TYPE VI**

Exhibit I-5

**NAVIGATION SPAN STRUCTURE TYPES**

ture will be economical for longer spans than the box girder and, with proper proportions, can be aesthetically pleasing.

The suspension bridge is considered one of the most graceful of all bridge structures. The Self Anchored Suspension Span is shown as Type IV. This type of structure generally costs more, up to 20 per cent, than other considered types when the maximum span required is in the 500 to 600 foot range. It offers advantages of pleasing appearance, flatter approach grades and nearly equal vertical clearance in the side spans.

A Continuous Truss Span is shown as Type V. This is a common and economical type of structure. In the past it was particularly popular because of economy in total metal required, its truss members being fabricated from many small pieces of structural steel with rivets. Modern steel technology, by providing larger sizes of structural steel plates, has permitted the designer to develop other types of structures that are aesthetically pleasing and yet are competitive in cost with the continuous truss.

The navigation span identified as Type VI is the Box Girder Tied Arch Span. Side spans will be of continuous girder construction but will function independently of the center span. The tie in the center span is more rigid in comparison with the arch than the flexible tie of Type II. The depth of the tie girder is shallower than the depth of the Continuous Girder Span, Type I. Thus, if vertical clearance requirements would cause excessive approach grades to a Continuous Girder Span, the Box Girder Tied Arch Span offers an advantage. This type of structure is aesthetically pleasing and economical for two-lane roadways for a navigational span greater than 400 feet.

It appears that there would be little, if any, significant difference between the combined costs of fabrication and erection of a tied arch span and a continuous truss span. Decreased erection costs favor the truss span; however, this advantage is offset by lower fabrication costs for the arch. The latter has fewer members since the bridge steel is concentrated in the arch rib and tie. In summary, the continuous girder bridge is suitable when length of approaches allow desirable grades to be used; its



cost is comparable with several other bridge designs. The continuous girder bridge with tied arch main span and box girder bridge with tied arch main span combine a pleasing appearance with economy of construction for the length of span required for a bridge at this site. The continuous truss bridge and continuous truss bridge with tied arch main span, while competitive in construction cost with the girder bridges, are not as attractive. The self anchored suspension span is uneconomical for the span lengths being considered for this project.

Inasmuch as more detailed estimates of construction cost would be developed in subsequent phases of design, a structure type other than the type recommended herein may prove to be more economical upon subsequent refinements in design. The probable variation in costs among the various structure types considered herein is within the accuracy of estimating at this stage of design.

The Box Girder Tied Arch Span Type VI, also shown in a general setting on Exhibit I-6, should be given thorough consideration in future engineering studies for a highway crossing at Sabula, Iowa.

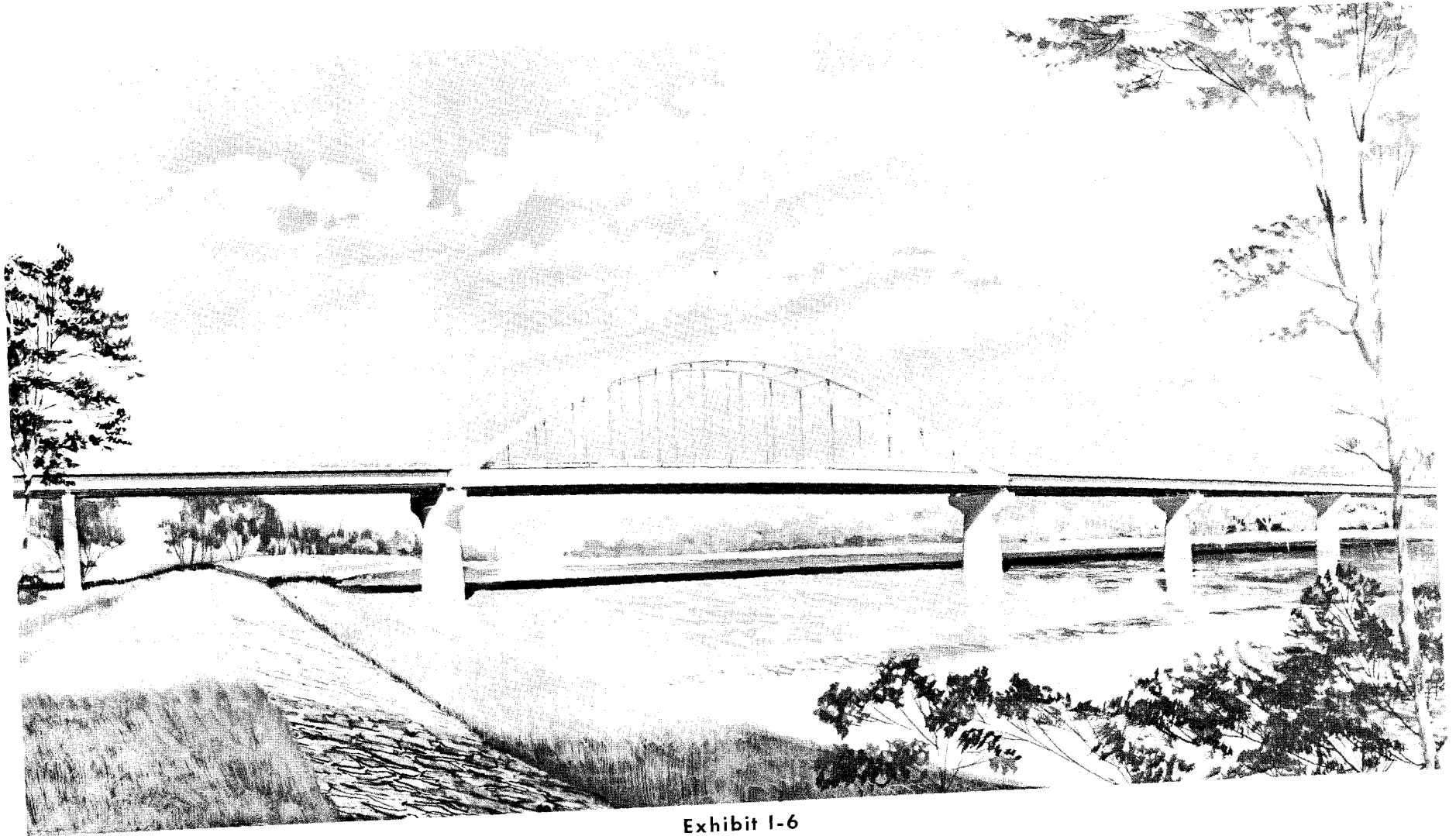


Exhibit I-6

**BOX GIRDER TIED ARCH SPAN**

## 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 unit. Many types of approach span construction can be blended with the main span design to achieve a pleasing appearance. However, a final layout of the most economical span lengths cannot be determined until subsurface investigations have been completed. Prestressed concrete beam spans utilizing low standard design beams would offer economical construction in the river bottoms where pier foundations would not be subject to scour action of the river. These beams are usually limited in length to 80 feet. As the bridge extends into the river, the cost of piers becomes greater. To offset the increased pier cost, longer spans would be used. Steel girders with floorbeams and intermediate stringers offer the greatest economy of construction for spans greater than 80 feet.

## **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.

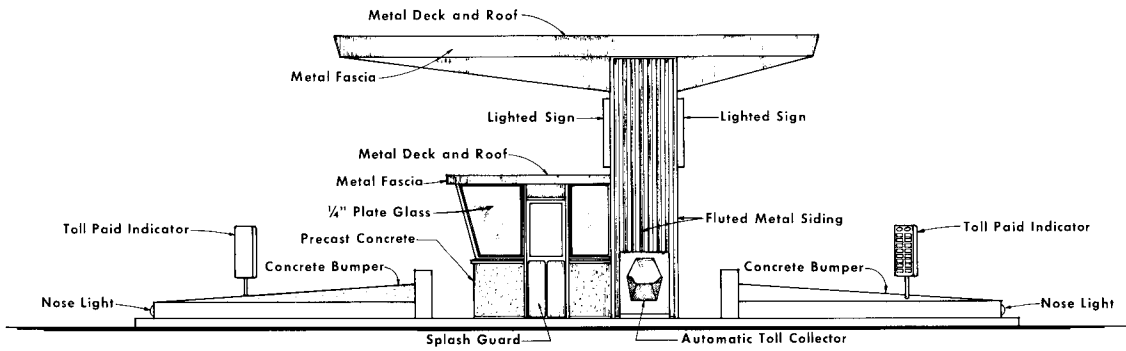
A typical toll booth installation is shown on Exhibit I-7. The exact location of this facility on the bridge approach will be established during subsequent study phases.

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 designs and economical span lengths. Main river unit studies will include economic comparisons of several types of construction.

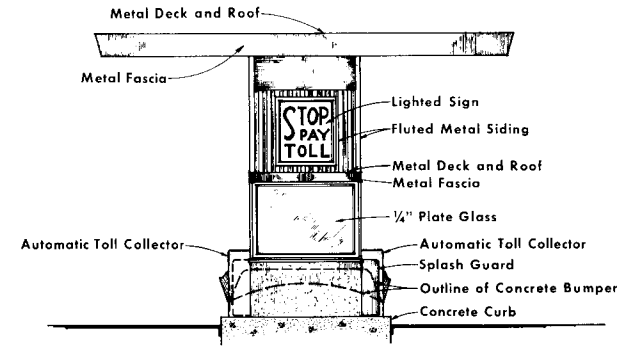
The total project cost does not include any allowance for acquisition of any franchise rights or property now vested in the private toll bridge company, but does include cost of removal of existing bridge upon completion of new bridge.

### **Main Street Alternate**

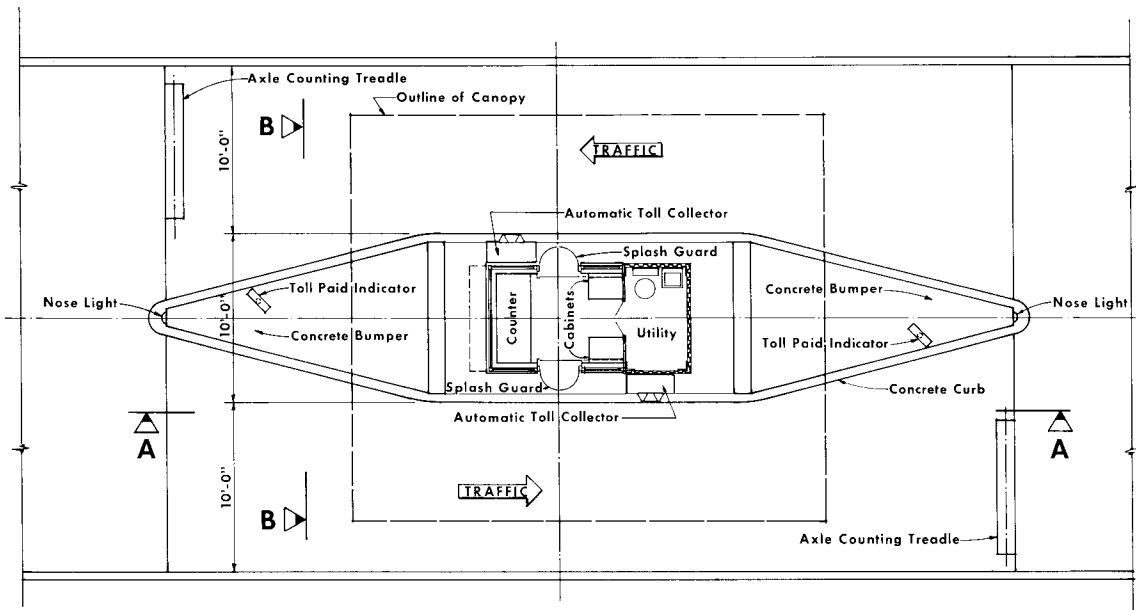
A plan, elevation and typical section for the Main Street Alternate is shown on Exhibit I-8. The 32 foot roadway width provides 4 feet 6 inches of lateral clearance between the righthand edge of a typical 12 foot traffic lane and the barrier rail. This clearance from the normal edge of the lane conforms to the modern safety requirements of the American



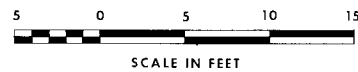
**ELEVATION A-A**



**ELEVATION B-B**



**PLAN**



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

TABLE I-1

## ESTIMATE OF BRIDGE CONSTRUCTION COST

## MAIN STREET ALTERNATE

Sabula, Iowa, Bridge

Continuous Girder Spans	405 ft.
Box Girder Tied Arch Span	515 ft.
Continuous Girder Spans	800 ft.
Prestressed Beam Spans	880 ft.
	<hr/>
	2,600 ft.

Roadway Width - 32' - 0" Curb-to-Curb

ITEM	QUANTITY	UNIT PRICE	COST
Superstructure:			
Bridge Railing	5,240 L.F.	\$ 12.00	\$ 62,900
Concrete	2,430 C.Y.	90.00	218,700
Reinforcing Steel	730,000 Lbs.	0.14	102,200
Tied Arch Steel A-36	1,050,000 Lbs.	0.34	357,000
Tied Arch Steel A-441	1,160,000 Lbs.	0.38	440,800
Girder Steel A-36	513,000 Lbs.	0.29	148,800
Girder Steel A-441	908,000 Lbs.	0.32	290,600
Prestressed Concrete Beam C-7	55 Ea.	1,625.00	89,400
Cast Steel and Misc. Metal	63,000 Lbs.	0.70	44,100
Navigation Lighting	—	Lump Sum	20,000
	SUBTOTAL		<hr/> \$1,774,500
Substructure:			
Concrete	5,870 C.Y.	\$ 65.00	\$ 381,600
Reinforcing Steel	587,000 Lbs.	0.14	82,200
Steel Bearing Piles (12BP53)	10,240 L.F.	8.00	81,900
Steel Bearing Piles (14BP73)	5,690 L.F.	10.00	56,900
Steel Pile Cofferdams	39,630 S.F.	5.00	198,100
Excavation	6,180 C.Y.	10.00	61,800
	SUBTOTAL		<hr/> \$ 862,500
	TOTAL BRIDGE COST		<hr/> <hr/> \$2,637,000

Association of State Highway Officials and the Bureau of Public Roads. There are few pedestrians crossing the river, therefore sidewalks will not be necessary and have not been provided.

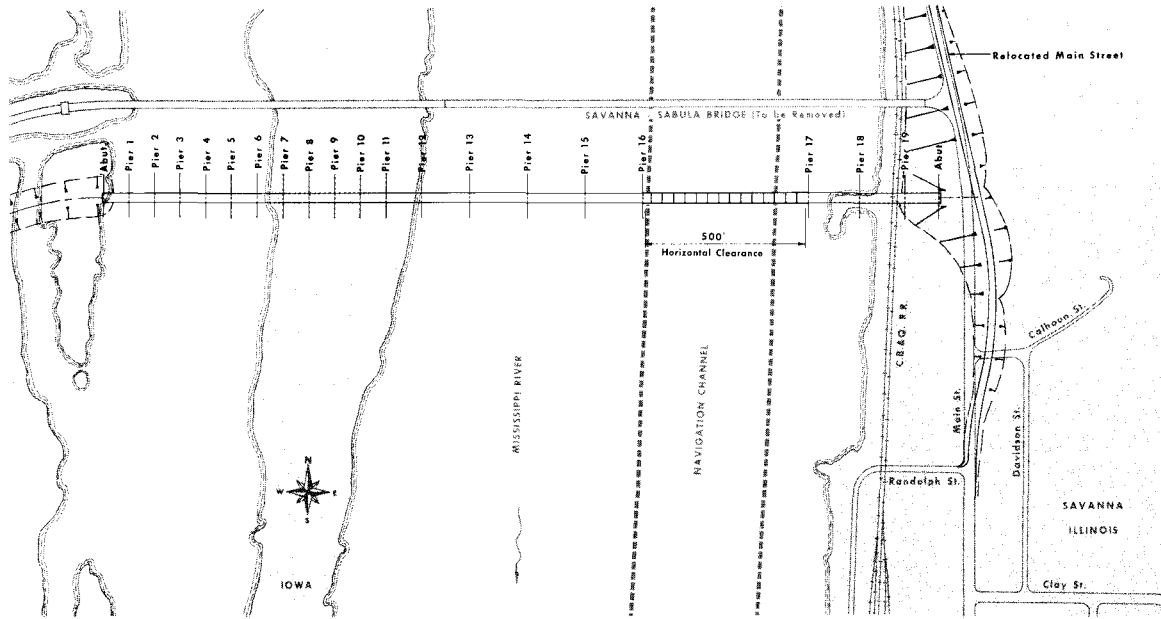
A navigation span of 515 feet permits a 500 foot navigation channel as will probably be required at this site. A Box Girder Tied Arch Span is shown on Exhibits I-5 and I-6. This aesthetically pleasing structure allows desirable approach grades and its cost will compare favorably with other types of spans.

The estimated construction cost of the bridge at the Main Street location is \$2,637,000. A detailed breakdown of this cost is shown in Table I-1. Quantities shown are based on a preliminary design of all structural components. Unit prices are based on a review of current construction prices of similar items with modest escalation to reflect the elaspse of at least one year before bids could be received for construction contracts.

The total estimated project costs for the Main Street Alternate are shown in Table I-2.

### **Operation and Maintenance**

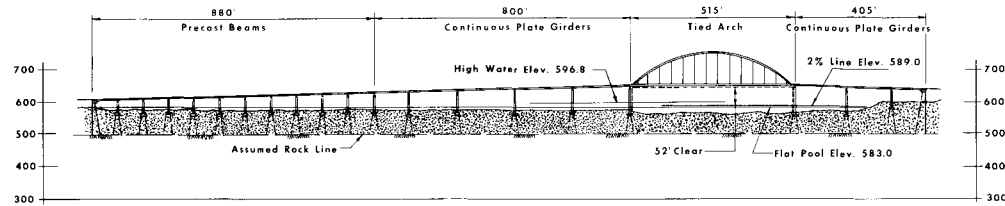
The estimate of first year expenses for operation and maintenance for the Main Street Alternate is shown in Table I-3. Inasmuch as operation of the bridge by the Iowa State Highway Commission will be somewhat different than that of a private operator, several cost assumptions have been made: (1) No per diem for commissioners or pro-rata cost for central administration by the Iowa State Highway Commission; (2) the nominal administration duties performed by the toll sergeant will require no separate administration facilities; and (3) 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.



PLAN



PROFILE GRADE



ELEVATION

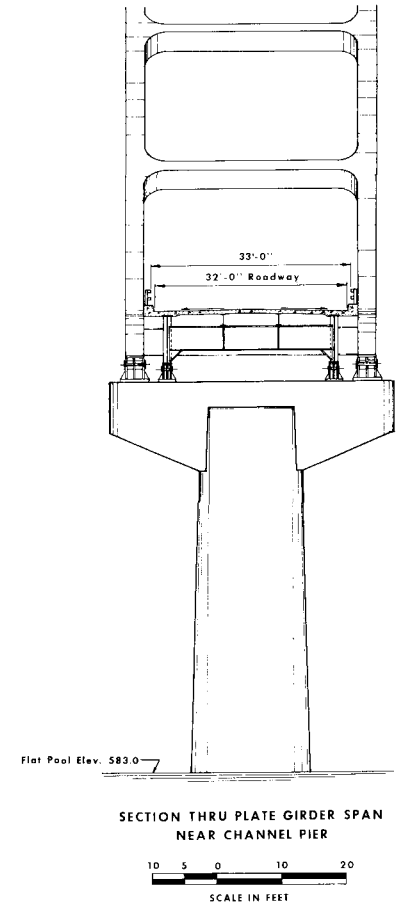


Exhibit I-8  
 MAIN STREET ALTERNATE  
 GENERAL PLAN AND ELEVATION



TABLE I-2

SUMMARY OF ESTIMATED PROJECT COSTS  
Sabula, Iowa, Bridge

	MAIN STREET ALTERNATE	
	Iowa	Illinois
Roadway	\$ 172,000	\$ 180,000
Structures	2,637,000	—
Removal of Existing Bridge	<u>200,000</u>	<u>—</u>
Subtotal	\$ 3,009,000	\$ 180,000
Toll Booth Complex	\$ 85,000	\$ —
Engineering and Contingencies	<u>753,800</u>	<u>36,000</u>
Total Construction	\$ 3,847,800	\$ 216,000
Right-of-Way	\$ —	\$ 58,500
Acquisitions and Contingencies	—	11,700
Administration and Legal	<u>—</u>	<u>6,000</u>
Total	\$ 3,847,800*	\$ 292,200
		<u><u>                    </u></u>
Total Project Cost		\$ 4,140,000

\* Iowa costs include all costs of the river structure up to and including the east abutment.

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

Sabula, Iowa, Bridge

ADMINISTRATION

Toll Sergeant	\$ 6,600	
Travel and Car Expense	1,000	
Consulting Engineers	3,600	
Miscellaneous	<u>800</u>	
Total Administration		\$12,000

OPERATION

Toll Collectors	\$24,000	
Utilities	2,000	
Supplies and Postage	2,000	
Employee Benefits	<u>3,000</u>	
Total Operation		\$31,000

REPAIRS AND MAINTENANCE\* 5,000

INSURANCE 6,000

MAINTENANCE RESERVE 6,000

Total Operation and Maintenance \$60,000

\* By District maintenance forces on force account cost basis.

**PART II**  
**ESTIMATED PRELIMINARY TRAFFIC AND REVENUES**  
**AND PROJECT FEASIBILITY**

**INTRODUCTION**

A general economic evaluation was made of the area which would be directly served by the proposed Sabula Bridge, as a guide in projecting future traffic growth. Route reconnaissance investigations were conducted to inventory existing trans-river traffic facilities and to determine average operating speeds and other traffic characteristics on highways serving the bridge study area. All available trans-river travel pattern and traffic trend data for the present bridge and closest alternate 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 to a modern toll crossing in the Sabula area. Preliminary assignments were made at various toll rates to determine the rate structure which would optimize toll revenues while still providing a high level of traffic service in the travel corridor.

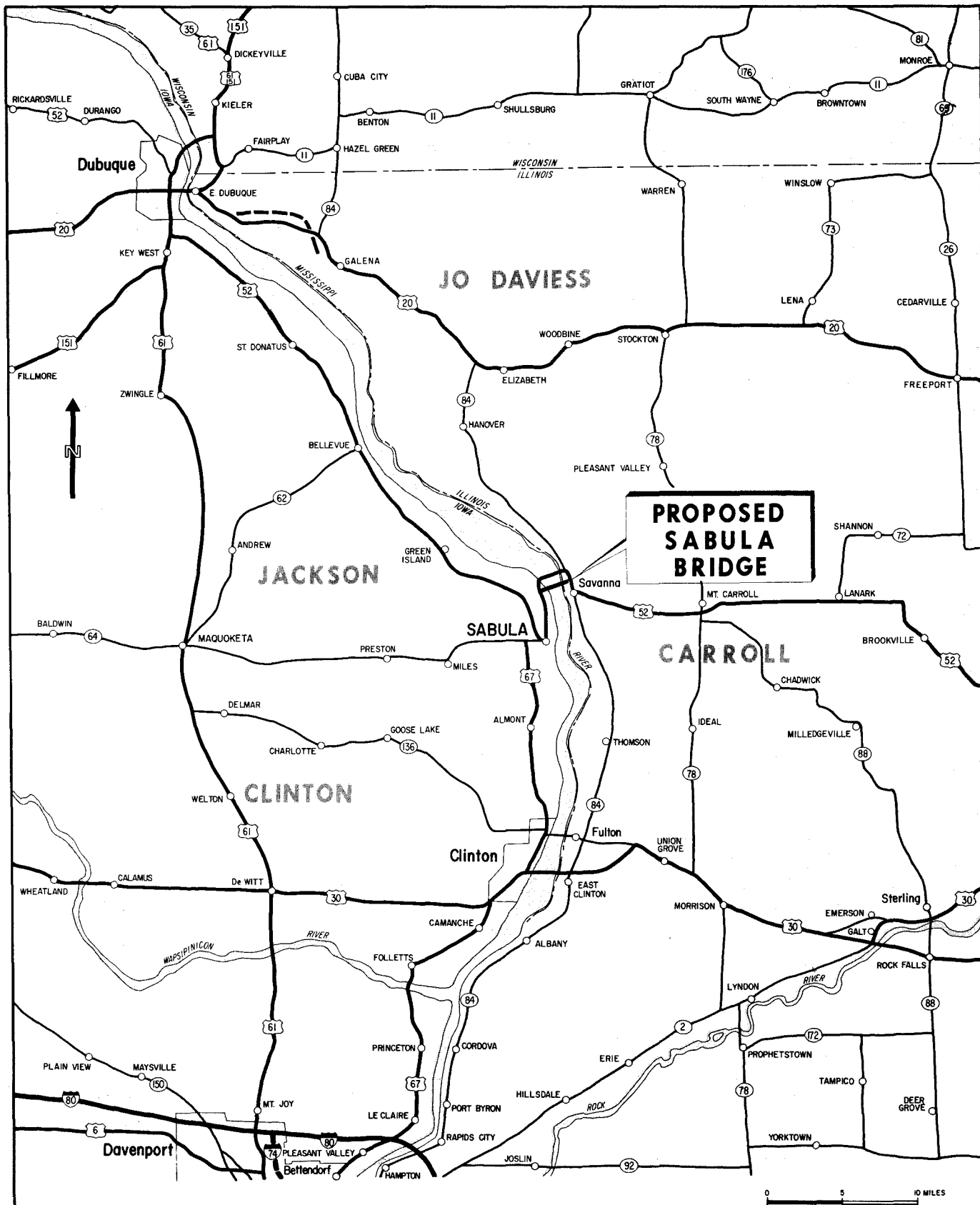
Annual estimates of preliminary toll revenues were then developed based upon the economic and traffic trend studies and forecasts of future growth in the bridge study area. Using the project cost and annual maintenance and operating expense estimates developed by Howard, Needles, Tammen & Bergendoff, a preliminary indication of project feasibility was determined.

**Proposed Sabula Bridge**

It was assumed that the present Savanna-Sabula Bridge would be replaced by a modern, two-lane structure on an alignment just south of the existing crossing. The proposed facility would be constructed to high design

standards with a 32-foot roadway section and approach road grades and radii designed to provide a high level of traffic service for all vehicle types. The project would operate as a toll crossing.

Several alternate alignments for the proposed bridge were studied during the course of this analysis. All of these alignments were confined to the immediate Savanna-Sabula area. The bridge alignment which was selected for more detailed studies is depicted in Exhibit II-1.



**PROPOSED  
SABULA  
BRIDGE**

**LOCATION MAP**

## **AREA GROWTH ANALYSES**

Several economic parameters were evaluated to determine relative levels of activity and recent growth trends in the area which would be directly served by the proposed bridge. 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 indicators of travel growth, were analyzed. For study purposes, the bridge influence area depicted in Exhibit II-1 was defined. The four-county study area includes Clinton and Jackson Counties in Iowa and Carroll and Jo Daviess 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 activity. Available current data and forecasts for the bridge study area were assembled and reviewed.

### **Study Area Characteristics**

The largest employment facility in the Sabula-Savanna area is the Savanna Army Depot, located immediately north of the city. It employs between 700 and 800 civilian employees, many of whom live in Iowa. There are also several smaller industries located in the Savanna area, none of which approach the Army Depot in number of employees.

Savanna serves as the primary retail center in the study area and is considerably larger than Sabula. Beyond the two communities, the area is rural in character with agriculture the principal occupation. While retail facilities are located in Savanna and to a lesser extent in Sabula, residents are attracted to the Clinton and Dubuque urban centers for larger purchases where a greater selection of goods is available.

There are several state parks located within the study area in both Iowa and Illinois. In Iowa, the Bellevue and Maquoketa Caves Parks are well-patronized, with over 42,000 people visiting Bellevue and almost 144,000 people at Maquoketa Caves in 1967. In Illinois, the Mississippi Palisades and Apple River Canyon Parks are also excellent attractions, with Mississippi Palisades ranking fifth in the state in 1967, recording over 821,000 visitors.

### Population Trends

*Notes*  
1930 824  
1970 845

In 1960, Sabula had a population of 894, which reflected little increase over the 1950 population of 888. As already indicated, Savanna is considerably larger with a 1960 population of 4,950, a slight decrease from the 5,058 persons recorded in 1950. There are several other communities, somewhat more removed from the immediate area of the bridge, which would also be served by the proposed facility. As given in Table II-1, Maquoketa had a 1960 population of 5,909 and Bellevue — 2,181. Maquoketa is located on Iowa Route 64, west of Sabula while Bellevue is on U. S. Route 52-67, northwest of Sabula. In Illinois, Galena had a population in 1960 of 4,410 people and Hanover — 1,396. Galena is located on U. S. Route 20 and Hanover on Illinois Route 84, in both instances north of Savanna.

In 1950, the four-county study area had a total population of 108,721. By 1960, this had increased an average of 0.7 per cent per year to 117,142. The 1966 population of the study area was 118,700, representing an average annual growth of 0.2 per cent since 1960. During the period 1950 through 1960, the population growth in the four-county study area exceeded that realized statewide in Iowa but was below the growth rate recorded in Illinois and the nation. During the next six years, the study area population growth was below statewide increases recorded in Iowa and in Illinois and also below the national growth trend.

TABLE II-1  
POPULATION TRENDS

<u>AREA</u>	<u>1950</u>	<u>AVERAGE ANNUAL PER CENT CHANGE</u>	<u>1960</u>	<u>AVERAGE ANNUAL PER CENT CHANGE</u>	<u>1966</u>
<i>Municipalities:</i>					
Bellevue	1,932	1.9	2,181	—	N.A.
Galena	4,648	- 0.5	4,410	—	N.A.
Hanover	1,643	- 3.3	1,396	—	N.A.
Maquoketa	4,307	3.2	5,909	—	N.A.
Sabula	888	—	894	—	N.A.
Savanna	5,058	- 0.2	4,950	—	N.A.
<i>Counties:</i>					
Carroll	18,976	0.3	19,507	- 0.1	19,400
Clinton	49,664	1.0	55,060	0.8	57,800
Jackson	18,622	1.1	20,754	- 0.3	20,200
Jo Daviess	21,459	0.2	21,821	- 0.4	21,300
<b>Four-County Total</b>	<b>108,721</b>	<b>0.7</b>	<b>117,142</b>	<b>0.2</b>	<b>118,700</b>
<i>States:</i>					
Illinois	8,712,176	1.5	10,081,158	1.2	10,775,300
Iowa	2,621,073	0.5	2,757,537	0.3	2,813,600
United States <sup>(1)</sup>	150,697,361	1.7	178,464,236	1.6	196,208,200

<sup>(1)</sup> Does not include Alaska and Hawaii.

N.A. = Not Available.

SOURCE: U. S. Department of Commerce, Bureau of the Census; "Survey of Buying Power," Sales Management.



## **Trends in Retail Sales**

After a nominal growth of 0.6 per cent per year between 1956 and 1961, a good growth in retail sales, averaging 5.1 per cent per year, occurred in the four-county study area between 1961 and 1966. Sales in 1966 totaled \$188,911,000. During the past five years, the growth in retail sales in the study area exceeded that realized statewide in Iowa but was somewhat below the growth recorded in Illinois and for the nation.

## **Average Effective Buying Income Per Family Trends**

In 1966, the average effective buying income per family in the four-county study area was \$7,887. This was considerably below the statewide averages of \$8,416 in Iowa and \$9,998 in Illinois. The national average in 1966 was \$8,522.

While income levels in the study area were below those recorded statewide and nationally, good growths have occurred over the past decade. Between 1956 and 1961, income levels increased an average of 2.1 per cent per year. The growth during the next five years averaged 7.2 per cent annually.

## **Trends in Motor Vehicle Registrations**

Motor vehicle registrations in 1966 in the four-county study area amounted to 62,355. This represented an average annual growth of 2.8 per cent over the 1961 level of 54,293. During the previous five years, 1956-1961, an average annual increase of 1.9 per cent occurred. Over the past five years, the growth in motor vehicle registrations in the four-county study area was somewhat below that recorded statewide in Iowa and Illinois — 3.6 and 3.5 per cent, respectively. The national growth during the same period was 4.4 per cent per year.

## **Motor Fuel Consumption Trends**

Reflecting the growth in personal income and motor vehicle registrations in the last decade, personal travel, as measured by motor fuel consumption, has also increased. Motor fuel consumption in Iowa increased an average of 2.0 per cent per year between 1956 and 1961; this accelerated to an average annual growth of 2.5 per cent between 1961 and 1966. During the same periods, motor fuel consumption in Illinois increased an average of 2.4 and 3.6 per cent per year, respectively. The average annual growths recorded in the two states were below the national growth rates of 3.0 per cent between 1956 and 1961 and 4.0 per cent between 1961 and 1966.

## **Future Growth**

Each of the counties making up the study area are expected to experience population growths during the period 1960 through 1980. As shown in Table II-2, the population of the study area is projected to increase from 117,142 in 1960 to 142,680 in 1980, representing an average annual growth of 1.0 per cent. The projected growth for the study area exceeds the estimated population increase anticipated in Iowa (0.8 per cent per year) and is somewhat below that forecast for Illinois (1.4 per cent annually). Within the study area, the communities of Bellevue and Maquoketa are expected to record population growths during the 1960-1980 period averaging 0.7 and 2.0 per cent, respectively. The population of Sabula is forecast to decline from the 1960 level of 894 to 758 in 1980.

Future travel in the study area will be greatly influenced by increased recreational movements as leisure time and general prosperity increases. For example, over the last two years, statewide use of Iowa State Parks has increased from a total attendance in 1965 of 9,039,199 to 9,851,074 in 1967. More specifically, attendance at Bellevue Park in Jackson County increased dramatically from 30,966 visitors in 1965 to 42,389 in 1967. A comparable growth occurred in visitation to Maquoketa Caves — from 96,610 in 1965 to 143,508 in 1967. In Illinois, visitation to the Apple River Canyon State Park

TABLE II-2  
POPULATION PROJECTIONS

<u>AREA</u>	<u>ACTUAL 1960</u>	<u>AVERAGE ANNUAL PER CENT CHANGE</u>	<u>ESTIMATED 1980</u>
<i>Municipalities:</i>			
Bellevue	2,181	0.7	2,490
Maquoketa	5,909	2.0	8,810
Sabula	894	-0.8	758
<i>Counties:</i>			
Carroll <sup>(1)</sup>	19,507	0.7	22,300
Clinton	55,060	1.4	73,230
Jackson	20,754	0.2	21,650
Jo Daviess <sup>(1)</sup>	21,821	0.8	25,500
<b>Four-County Total</b>	<b>117,142</b>	<b>1.0</b>	<b>142,680</b>
<i>States:</i>			
Illinois	10,081,158	1.4	13,337,150
Iowa	2,757,537	0.8	3,192,000

*824 Actual*

<sup>(1)</sup> Average of Series I and II Projections prepared by Illinois Department of Business and Economic Development.

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

has declined over the past two years. However, the Mississippi Palisades Park showed a good growth between 1965 and 1967 increasing from 682,853 visitors to 821,424.

As visitation to the state parks in both states increases, use of the proposed Sabula Bridge will also grow. It is anticipated that there will be considerable out-of-state visitation to the respective parks in Iowa and Illinois as visitors explore the advantages of other park areas in their general vicinity as well as the one located most conveniently to them.

## **TRAFFIC STUDIES**

Preliminary studies were made to evaluate the traffic potential of the proposed Sabula Bridge. These studies included analysis of the magnitude and composition of traffic and present travel patterns as well as the quality of traffic service provided by the present bridge and the closest crossings to the north and south.

### **Route Reconnaissance**

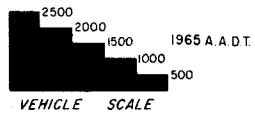
U. S. Route 52 from the Savanna-Sabula Bridge to the Sabula city limits has a 22-foot pavement and a sufficiency rating of "poor". From Sabula north to Bellevue, the route is rated "good" with a pavement width of 22 feet. North of Bellevue to Dubuque, U. S. Route 52 has a 20-foot pavement section and is rated in "poor" condition.

U. S. Route 67, south of Sabula to a point five miles north of Clinton, has a "good" sufficiency rating and a 20-foot pavement from this point south to Clinton, the pavement narrows to 18 feet and the rating drops to "critical". Iowa Route 64 from U. S. Route 52 to Maquoketa has a pavement width of 20 feet and its rating ranges from "good" to "poor".

All of these highways and those within the study area in Illinois, are two-lane facilities. Posted speed limits range from 70 MPH for automobiles on rural sections of principal Iowa routes to less than 30 MPH in built-up areas. Speed and delay surveys revealed generally good travel conditions with no difficulty in maintaining speeds close to the posted limits.

### **Present Traffic Volumes**

The importance of study area highways, in terms of relative traffic volumes, is depicted in Exhibit II-2. U. S. Routes 52 and 67 between Dubuque and Clinton serve somewhat fewer vehicles than the U. S. Route 20-Illinois



**TRAFFIC FLOW MAP**  
**1965 AVERAGE DAILY TRAFFIC**

*Wilbur Smith and Associates*

**EXHIBIT II-2**

Route 84 routing in Illinois. Iowa Route 64 is a major east-west facility. However, significantly higher east-west volumes are depicted in the U. S. Route 52 corridor in Illinois.

The importance of Savanna and, to a much greater extent the Dubuque and Clinton urban areas, in terms of traffic volumes, is clearly indicated. Maquoketa, which has a considerably larger population than Sabula, also generates significant traffic volumes within its area of urban influence.

## **Annual Traffic Trends**

Annual traffic trends on the Savanna-Sabula Bridge were assembled and reviewed. In addition, annual use of the closest alternate bridges, the Julien Dubuque Bridge in Dubuque, and the Lyons-Fulton and Gateway Bridges in Clinton were also studied.

*Savanna-Sabula Bridge* — Use of the Savanna-Sabula Bridge has remained static over the past several years. As shown in Table II-3, an average of 862 vehicles per day used the facility in 1959. In 1966, 897 motorists per day used the crossing. The bridge was closed for over two months in 1967, for approach route repairs. Average daily traffic in 1967 was 682 vehicles per day. Over the past seven years, from 1959 to 1966, bridge traffic increased an average of 0.6 per cent per year.

During this same period, annual gross revenues decreased from \$150,179 to \$138,058 — an average annual decrease of 1.2 per cent per year. Since vehicles increased over this period, the number of trucks using the facility has decreased as a proportion of total bridge traffic. No changes in toll schedule have occurred since 1959.

*Lyons-Fulton Bridge* — In 1959, this facility carried 2,200 vehicles per day. In 1966, average daily traffic of 2,530 was recorded. As shown in Table II-4, this represented an average annual growth over the eight-year period of 2.0 per cent. During the last five years, 1961-1966, traffic increased an average of 1.9 per cent annually.

TABLE II-3  
ANNUAL TRAFFIC AND REVENUE TRENDS  
Savanna-Sabula Bridge

<u>YEAR</u>	<u>AVERAGE DAILY TRAFFIC</u>	<u>ANNUAL GROSS REVENUES</u>
1959	862	\$150,179
1960	937	143,980
1961	908	139,822
1962	918	142,410
1963	902	139,634
1964	918	142,902
1965 <sup>(1)</sup>	928	143,180
1966	897	138,058
1967 <sup>(2)</sup>	682	103,471
 <b>AVERAGE ANNUAL PER CENT CHANGE</b>		
1959-1966	0.6	— 1.2
1961-1966	— 0.1	— 0.2

<sup>(1)</sup> Bridge closed 4/22/65 to 5/5/65 — High water.

<sup>(2)</sup> Bridge closed 5/5/67 to 7/18/67 — Approach route repairs.

SOURCE: The Savanna-Sabula Bridge Company.

*Gateway Bridge* — The Gateway Bridge carried an average of 5,300 vehicles per day in 1959. By 1966, this had increased to an average of 5,587 vehicles daily — an average annual growth of 0.8 per cent. Table II-4 shows that annual growth over the past five years has averaged 0.3 per cent.

*Julien Dubuque Bridge* — This facility, located in the vicinity of downtown Dubuque, carries substantially higher volumes than the other river crossings. In 1959, an average of 8,600 vehicles per day used the bridge. By 1967,

**TABLE II-4**  
**ANNUAL TRAFFIC TRENDS**  
Trans-River Crossings

<u>YEAR</u>	<u>SAVANNA- SABULA BRIDGE</u>	<u>JULIEN DUBUQUE BRIDGE</u>	<u>LYONS- FULTON BRIDGE</u>	<u>GATEWAY BRIDGE</u>
	(Annual Average Daily Traffic)			
1959	862	8,600	2,200	5,300
1960	937	9,370	2,200	5,500
1961	908	10,130	2,300	5,500
1962	918	10,900	2,350	5,700
1963	902	11,270	2,350	6,000
1964	918	11,630	2,450	5,700
1965	928	12,000	2,450	5,300
1966	897	12,700	2,530	5,587
1967	682 <sup>(1)</sup>	13,200	N.A.	N.A.
<b>AVERAGE ANNUAL PER CENT CHANGE</b>				
1959-1966	0.6	5.7	2.0	0.8
1961-1966	-0.1	4.6	1.9	0.3

<sup>(1)</sup> Abnormal AADT due to closing of bridge 5/5/67-7/18/67.

N.A. = Not Available.

SOURCE: Illinois State Highway Department; The Savanna-Sabula Bridge Company.

this increased to an estimated 13,200 vehicles per day, representing an average annual growth over the seven-year period of 5.7 per cent. As given in Table II-4, the increase over the last five years averaged 4.6 per cent per year.



## **Monthly Traffic Variations**

Monthly variations in use of the Savanna-Sabula Bridge ranged from a low of 38 per cent below the average month in January to 32 per cent above average in July. The months May through October all recorded above-average monthly traffic volumes. January and February were, by far, the lowest traffic months on the facility.

## **Origin and Destination Studies**

In April, 1968, the Planning Division of the Iowa State Highway Commission conducted field surveys to obtain travel patterns and count data for the Savanna-Sabula Bridge. The surveys were operated during a fifteen-hour period from 6:00 A.M. to 9:00 P.M. Motorists in both directions of travel were interviewed, with the interview sample representing almost 100 per cent of total passing traffic. The interviews were obtained on a typical weekday. Motorists were asked their trip purpose and origin and destination. In addition, vehicle type and hour of interview were recorded. A total of 641 interviews were obtained during the survey period.

## **Vehicle Classification Counts**

While vehicle classification counts were conducted during the interview hours and extended to include a continuous 24-hour period during the 1968 field surveys, accurate vehicle counts are also maintained by the Savanna-Sabula Bridge Company. The classification counts shown in Table II-5 represent a summary of the number of vehicles, by type, using the Savanna-Sabula Bridge in 1966, adjusted to reflect an average day of the year.

The number of passenger cars using the facility far overshadowed all other vehicle types, accounting for 725 of the 897 vehicles using the bridge on an average day. An additional 47 two-axle, four-tired trucks and 38

**TABLE II-5**  
**VEHICLE CLASSIFICATION COUNT**  
**Savanna-Sabula Bridge**  
**1966**

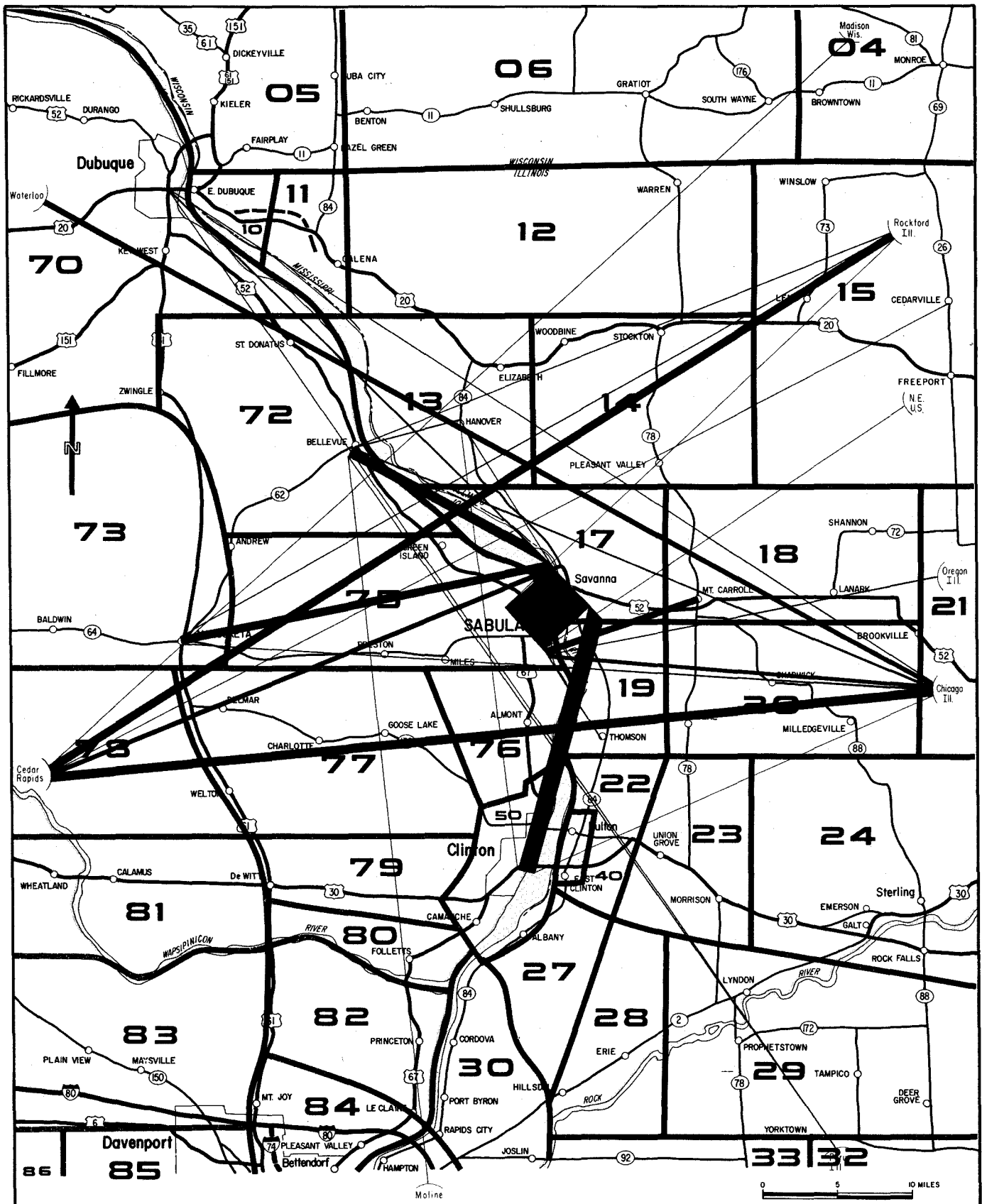
<u>VEHICLE CLASS</u>	<u>AVERAGE ANNUAL DAILY TRAFFIC</u>
Passenger Cars	725
Single Unit Trucks or Buses	
Two Axles, four tires	47
Two Axles, six tires	38
Truck Tractor and Semi-Trailers	
Three Axles	22
Four Axles	25
Five Axles	23
Motorcycles and Bicycles	3
Car and Trailer	14
TOTAL	897

SOURCE: The Savanna-Sabula Bridge Company.

two-axle, six-tired trucks used the facility. A total of 70 truck, tractor and semi-trailer vehicles used the bridge, including 22 — three-axle units, 25 — four-axle units and 23 — five-axle units. The remaining vehicles were either motorcycles, bicycles or cars pulling trailers.

### **Travel Desires**

The origin and destination data collected during the field survey were coded to the geographic traffic zone pattern partially shown in Exhibit II-3.



**TRAVEL DESIRES**  
**SAVANNA - SABULA BRIDGE**  
 1968 AVERAGE DAILY TRAFFIC

*Wilbur Smith and Associates*

**EXHIBIT II-3**

The resulting zone-to-zone traffic movements were then expanded to represent an average day in 1968 and the travel desire lines, also shown in Exhibit II-3, prepared. The width of the travel bands shown in the illustration are proportional to the number of trips moving between each zone pair.

A high percentage of the trips found using the Savanna-Sabula Bridge during the survey period were local trips moving between Sabula and Savanna. This travel desire accounted for 247 trips per day. The next largest movement was significantly smaller — 75 vehicles per day moved between the Savanna area and Clinton. Another important movement recorded was that between Savanna and the Bellevue-St. Donatus area — 48 vehicles daily.

The next most important movements were longer-distance trips. A total of 37 vehicles per day were found moving between the Chicago area and Cedar Rapids; the movements between Rockford and Cedar Rapids and Savanna and Maquoketa each accounted for 35 trips daily. In terms of major termini, the Savanna area was the principal generator of trips in Illinois while Sabula was the most important terminus west of the Mississippi.

### **Typical Time and Distance Relationships**

Representative time and distance relationships for several movements which could use either the proposed Sabula Bridge or the closest crossings to the north or south are shown in Table II-6. The travel times and distances indicated were developed from the reconnaissance studies conducted on all pertinent highways serving the alternate river crossings. The driving times represent average speeds rather than the fastest driving time that could be achieved between the various trip termini indicated.

Between Savanna and Almont, the proposed bridge would be 10 miles and 12 minutes shorter than a routing following the Lyons-Fulton Bridge. Use of the new facility, as opposed to use of the Julien Dubuque Bridge, on movements between Hanover and Maquoketa and between Hanover and Sabula would result in savings of 13 miles and 12 minutes and 49 miles and 62 minutes,

TABLE II-6  
TYPICAL TIME-DISTANCE RELATIONSHIPS

<u>BETWEEN</u>	<u>VIA</u>	<u>DISTANCE</u>	<u>TIME</u>	<u>AVERAGE</u> <u>SPEED</u>	<u>SAVINGS VIA</u> <u>PROPOSED</u> <u>BRIDGE</u>	
					<u>(miles)</u>	<u>(min.)</u>
Savanna and Dubuque	Proposed Bridge	48	63	46	-7	-5
	Julien Dubuque Bridge	41	58	42		
Savanna and Clinton	Proposed Bridge	25	39	38	-5	-12
	Gateway Bridge	20	27	44		
Savanna and Almont	Proposed Bridge	15	22	41	10	12
	Lyons-Fulton Bridge	25	34	44		
Hanover and Maquoketa	Proposed Bridge	44	59	45	13	12
	Julien Dubuque Bridge	57	71	48		
Hanover and Sabula	Proposed Bridge	18	24	45	49	62
	Julien Dubuque Bridge	67	86	47		

respectively. On trips between Savanna and Dubuque and between Savanna and Clinton, a routing via the proposed bridge would be both longer in miles and minutes than use of the Julien Dubuque crossing in Dubuque and the Gateway Bridge in Clinton.

## **ESTIMATED TRAFFIC AND REVENUES**

Estimates of traffic and revenues for the proposed Sabula Bridge are based upon the number of motorists now using the present Savanna-Sabula Bridge who would continue to make trans-river trips via an improved facility under different toll conditions. In addition, the possibility of diversion of some motorists from the closest alternate crossings to the north and south to a new bridge, and vice-versa, was studied.

### **Basic Assumptions**

Estimates of traffic and revenues for the proposed Sabula Bridge are predicated on the following assumptions:

1. The facility will be opened to traffic on July 1, 1971.
2. The bridge will be constructed on the alignment and with the approaches discussed in this report.
3. No new river crossings will be constructed in the reach of the Mississippi River between Dubuque and Clinton. Construction of the planned U. S. Route 20 Bypass in Dubuque would not significantly affect use of the proposed Sabula Bridge.
4. The existing Savanna-Sabula Bridge will be demolished upon opening of the new facility.
5. The toll schedule recommended in this report will be implemented.
6. The bridge will be adequately maintained, efficiently operated, and effectively signed to encourage maximum usage.
7. 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 bridge.

## Recommended Method of Toll Collection

It is recommended that tolls be collected from all motorists using the proposed bridge at a toll booth located between the two travel lanes on the western approach span of the facility. Initially, only one attendant would be necessary to collect tolls from both travel directions. However, provision should be made in the initial design and construction of the booth to provide ultimately for two toll attendants, one collecting tolls from each direction of travel.

## Recommended Toll Schedule

The present Savanna-Sabula Bridge has a toll schedule based upon a rate of \$0.35 for automobiles and higher tolls for larger vehicles. In addition to this toll structure, several other toll rates were analyzed to determine the best toll schedule for the proposed Sabula Bridge. These studies indicated that the preliminary toll schedule, shown in Table II-7, would produce optimum revenues for the proposed facility while maintaining a high level of traffic service. A higher toll would 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 revenues than those projected.

TABLE II-7  
RECOMMENDED TOLL SCHEDULE

<u>VEHICLE TOLL CLASS</u>	<u>DESCRIPTION</u>	<u>TOLL</u>
1	Two-axle vehicles	\$0.50
2	Two-axle vehicles (ticket)	0.35
3	Three-axle vehicles and vehicle combinations	0.75
4	Four-axle vehicles and vehicle combinations	1.00
5	Five-axle vehicles and vehicle combinations	1.25
	Each additional axle	0.25

Under the recommended toll schedule, a motorist driving a two-axle vehicle would pay a \$0.50 cash toll for each crossing of the bridge. In addition, a commuter or ticket toll would be available for two-axle vehicle patrons who use the bridge frequently. The commuter toll could take the form of a ten-ticket book which would cost \$3.50 and have a time limit of perhaps one week. Upon surrendering a ticket, the motorist would be required to show the toll ticket book to the attendant. More detailed studies might show a larger ticket book would be more practical, say a book containing 20 tickets for \$7.00 and good for a two-week period.

Larger vehicles would pay a cash toll only. For example, a three-axle vehicle or vehicle combination would be assessed \$0.75, a four-axle vehicle — \$1.00 and a five-axle vehicle — \$1.50.

The recommended toll schedule is based upon a per-axle cash toll of \$0.25 which would provide maximum control and auditing benefits as well as being easily understood by bridge users. In addition, local bridge users, those making frequent trips across the facility, would be given the economic benefit of a lower toll through use of the ticket book. The toll schedule recommended would enable those local passenger car drivers making frequent trips to use a ticket toll rate equal to what they are now paying on the present Savanna-Sabula Bridge. The recommended cash toll for larger vehicles would be equal to, or less than, that now in effect on the present bridge.

### **Estimated Base Year, 1968, Traffic Assignments**

The number of motorists who would use the proposed Sabula Bridge at 1968, base year, traffic levels was estimated based upon relative trip costs via the closest alternate crossings to the north and south versus the new facility.

Previous studies indicate a good correlation between the ratio of road-user costs and the proportion of vehicles that will use the alternate routes available. In general, an equal cost indicates an equal division of the traffic movement between the proposed facility and present bridges. A higher



ratio of road-user costs for use of the new facility to cost via the best competitive routing indicates a low percentage of traffic assignable to the proposed bridge. Conversely, a low ratio of road-user cost using the new facility to cost via the most competitive alternate routing indicates that a high percentage of traffic is divertible.

The travel time and distance studies made during the field phases of this project were used as the basis for assigning times and distances via the alternate bridge crossings. In addition to mileage and time costs, tolls were also added to arrive at total trip costs.

The travel patterns determined from the origin and destination studies conducted by the Iowa State Highway Commission were used to determine a trans-river crossing redistribution assuming the proposed Sabula Bridge was constructed. In addition to some diversion of motorists from the present Savanna-Sabula Bridge to the crossings in Dubuque and Clinton, it is anticipated that the somewhat higher toll for some motorists will result in a decrease in overall trip production. A determination of the magnitude of this toll impact or travel decrease was made based largely upon experience on comparable facilities.

As shown in Table II-8, an estimated 813 vehicles at 1968 levels, were assigned to the proposed Sabula Bridge. A total of 405 two-axle vehicles are

TABLE II-8  
BASE YEAR (1968) DIVERTED TRAFFIC

<u>VEHICLE TOLL CLASS</u>	<u>DESCRIPTION</u>	<u>AVERAGE DAILY TRAFFIC</u>
1	Two-axle vehicles	405
2	Two-axle vehicles (ticket)	319
3	Three-axle vehicles and vehicle combinations	39
4	Four-axle vehicles and vehicle combinations	26
5	Five-axle vehicles and vehicle combinations	24
<b>TOTAL</b>		<b>813</b>

It is estimated that traffic on the Sabula Bridge will increase an average of 2.0 per cent annually between 1968 and 1980, with growth decreasing to 1.5 per cent per year between 1980 and 1985. For purposes of conservatism, no normal growth has been projected beyond 1985, although some increase in usage is anticipated.

During the first full year of operation, the twelve-month period beginning July 1, 1971, it is anticipated that an estimated 860 vehicles per day will use the proposed Sabula Bridge. As shown in Table II-9, this will produce an estimated \$155,000 in gross toll revenues. By 1985, the fifteenth full year of operation, an estimated 1,110 vehicles per day are projected on the Sabula Bridge, resulting in estimated revenues of \$199,000.

Average annual revenues over the first five years of operation are estimated at \$161,000. Over the 28-year earning period of an assumed 30-year bond issue, revenues are estimated to average \$187,000 annually.

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

## **PRELIMINARY PROJECT FEASIBILITY**

Net toll revenues from the proposed Sabula Bridge were determined by deducting the estimated annual maintenance and operation costs, developed by Howard, Needles, Tammen & Bergendoff, from gross revenues anticipated from the project. Preliminary project feasibility computations were then developed by relating estimated net revenues to the maximum interest and level debt service requirements of a bond issue sufficient to meet the estimated capital cost of the proposed bridge.

### **Estimated Annual Net Revenues**

Estimated annual net revenues for the proposed Sabula Bridge are presented in Table II-10. During the first full year of operation, net revenues of \$95,000 are estimated, increasing to \$97,000 in 1985, the fifteenth year of operation.

Average annual net revenues over the first five years of operation are estimated at \$95,000 increasing to \$96,000 over the first ten years. During the 28-year earning period, net revenues would average \$97,000 annually.

### **Preliminary Project Feasibility**

There are two "tests" which financial advisers usually employ to determine a relative range of feasibility of a toll project. The first test is the coverage of maximum or first year interest by first year net revenues; the second test is the coverage of level debt service by average annual net revenues over the earning period of an assumed bond issue.

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

**TABLE II-10**  
**ESTIMATED ANNUAL NET REVENUES**

<u>FISCAL<sup>(1)</sup></u> <u>YEAR</u>	<u>GROSS TOLL</u> <u>REVENUES</u>	<u>MAINTENANCE AND</u> <u>OPERATING COSTS<sup>(2)</sup></u>	<u>NET</u> <u>REVENUES</u>
1971	\$155,000	\$ 60,000	\$95,000
1972	158,000	63,000	95,000
1973	161,000	66,000	95,000
1974	164,000	69,000	95,000
1975	167,000	72,000	95,000
1976	171,000	75,000	96,000
1977	174,000	78,000	96,000
1978	178,000	81,000	97,000
1979	181,000	84,000	97,000
1980	185,000	87,000	98,000
1981	188,000	90,000	98,000
1982	190,000	93,000	97,000
1983	193,000	96,000	97,000
1984	196,000	99,000	97,000
1985	199,000	102,000	97,000
Next 13 Years			
Annually	\$199,000	\$102,000	\$97,000

**AVERAGE ANNUAL NET REVENUES**

First Five Years	\$95,000
First Ten Years	\$96,000
Twenty-Eight Years	\$97,000

(1) Twelve-month period beginning July 1.

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

The feasibility computations shown in Table II-11 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 \$4,968,000 would be required for the proposed Sabula Bridge project. The escalation from project cost to bond issue includes such financing items as bond discount, legal and financial fees, capitalized interest during construction, etc. Based on the relationship of project cost to bond issue size for several comparable projects which have been financed, a factor of 1.2 was applied to project costs to determine the size of the bond issue.

**TABLE II-11**  
**PRELIMINARY PROJECT FEASIBILITY**

Bond Term	30 Years
Bond Earning Period	28 Years
Bond Interest Rate	5.5 Per Cent
Preliminary Project Costs <sup>(1)</sup>	\$4,140,000
Estimated Bond Issue <sup>(2)</sup>	4,968,000
First Year Interest	273,000
Level Debt Service Over 28 Years	352,000
Estimated First Year Net Revenues	95,000
Estimated Average Annual Net Revenues — 28 Years	97,000
<b>COVERAGES</b>	
First Year Interest by	
First Year Net Revenues	0.35
Level Debt Service by	
Average Annual Net Revenues — 28 Years	0.28

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<sup>(1)</sup> Estimated by Howard, Needles, Tammen & Bergendoff.

<sup>(2)</sup> Assumes ratio of project cost to bond issue of 1.0 to 1.2.

As shown in Table II-11, first year net revenues for the proposed Sabula Bridge would cover first year maximum interest 0.35 times. Average annual net revenues would cover 28-year level debt service 0.28 times. Both coverage values are considerably below the levels normally assumed as indicative of financial feasibility.

It should be emphasized, however, that the above computations were developed only as a guide and that a final determination of project feasibility should be made by financial advisers selected for this purpose. The coverages do indicate, however, that substantial subsidies will be required to finance the proposed facility.

### **Relationship Between Level Debt Service and Net Revenues**

Some indication of the relative amount of subsidy necessary to supplement net revenues in order to meet level debt service is shown in Table II-12. The proposed Sabula Bridge project would require a total subsidy of \$7,150,000 to meet level debt service requirements over the bond term. Annual subsidies would range from \$257,000 during the first year of operation to \$255,000 in the fifteenth year and annually thereafter.

TABLE II-12  
RELATIONSHIP BETWEEN LEVEL DEBT SERVICE  
AND NET REVENUES

FISCAL <sup>(1)</sup> YEAR	NET REVENUES	LEVEL DEBT SERVICE	NET REVENUES TO LEVEL DEBT SERVICE DEFICIT
1971	\$95,000	\$352,000	\$ 257,000
1972	95,000	352,000	257,000
1973	95,000	352,000	257,000
1974	95,000	352,000	257,000
1975	95,000	352,000	257,000
1976	96,000	352,000	256,000
1977	96,000	352,000	256,000
1978	97,000	352,000	255,000
1979	97,000	352,000	255,000
1980	98,000	352,000	254,000
1981	98,000	352,000	254,000
1982	97,000	352,000	255,000
1983	97,000	352,000	255,000
1984	97,000	352,000	255,000
1985	97,000	352,000	255,000
1986	97,000	352,000	255,000
1987	97,000	352,000	255,000
1988	97,000	352,000	255,000
1989	97,000	352,000	255,000
1990	97,000	352,000	255,000
1991	97,000	352,000	255,000
1992	97,000	352,000	255,000
1993	97,000	352,000	255,000
1994	97,000	352,000	255,000
1995	97,000	352,000	255,000
1996	97,000	352,000	255,000
1997	97,000	352,000	255,000
1998	97,000	352,000	255,000
TOTAL			\$7,150,000

<sup>(1)</sup> Twelve-month period beginning July 1.

# **APPENDIX**

**Iowa Senate File 131**

**The General Bridge Act**

**Public Law 330 - 71st Congress**



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 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 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. (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.

**PUBLIC LAW 330-71ST CONGRESS**

**H.R. 9806**

An Act To authorize the construction of certain bridges and to extend the times for commencing and completing the construction of other bridges over the navigable waters of the United States.

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

**MISSISSIPPI RIVER AT SAVANNA, ILLINOIS <sup>(1)</sup>**

Sec. 2 (a) That in order to facilitate interstate commerce, improve the postal service, and provide for military and other purposes, C. N. Jenks, F. J. Stransky, L. H. Miles, John Grandy, and Bruce Machen, their heirs, legal representatives, and assigns, be, and are 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 Savanna, Illinois, 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.

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(1) Public Law 330 - 71st Congress also authorizes the construction of toll bridges over the Columbia River at Astoria, Oregon, over the Missouri River at Omaha, Nebraska, over the Missouri River at South Omaha, Nebraska, over the Rio Grande at Fort Hancock, Texas, over the Monongahela River at Fayette City, Pennsylvania, over the Mississippi River at Helene, Arkansas, over the Rio Grande at Weslaco, Texas, over the Missouri River at Rulo, Nebraska, over the Missouri River at Brownville, Nebraska, over the Missouri River at Washington, Missouri, over the Mississippi River between New Orleans and Gretra, Louisiana, over the Mississippi River at Baton Rouge, Louisiana, over the Missouri River at Decatur, Nebraska, over the Maumee River near Toledo, Ohio.



(b) There is hereby conferred upon C. N. Jenks, F. J. Stransky, L. H. Miles, John Grandy, and Bruce Machen, their heirs, legal representatives, and 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, 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.

(c) The said C. N. Jenks, F. J. Stransky, L. H. Miles, John Grandy, and Bruce Machen, their heirs, legal representatives, and assigns, as 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.

(d) After the completion of such bridge, as determined by the Secretary of War, either the State of Illinois, the State of Iowa, 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 necessary therefor, by purchase or by condemnation or expropriation, in accordance with the laws of either of such States governing the acquisition of private property for public purposes by condemnation or expropriation. If at any time after the expiration of ten 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 cost 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 con-

structing the bridge and its approaches and acquiring such interests in real property; and (4) actual expenditures for necessary improvements.

(e) If such bridge shall be taken over or acquired by the States or public agencies or political subdivisions thereof, or by either of them as provided in section 2 (d) of this Act, and if tolls are thereafter charged for the use thereof, 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 twenty years from the date of 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, or the rates of toll shall thereafter be so adjusted as to provide a fund of not to exceed the amount necessary for the proper maintenance, repair, and operation of the bridge and its approaches under economical management. 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.

(f) C. N. Jenks, F. J. Stransky, L. H. Miles, John Grandy, and Bruce Machen, their heirs, legal representatives, and assigns, shall, within ninety days after the completion of such bridge, file with the Secretary of War and with the highway departments of the States of Illinois and Iowa 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 War may, and upon request of the highway department of either of such States 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 C. N. Jenks, F. J. Stransky, L. H. Miles, John Grandy, and Bruce Machen, their heirs, legal representatives, and assigns, shall make available all of their records in connection with the construction, financing, and promotion thereof. The findings of the Secretary of War as to the reasonable costs of the construction, financing, and promotion of the bridge shall be conclusive for the purposes mentioned in section 2 (d) of this Act, subject only to review in a court of equity for fraud or gross mistake.

(g) The right to sell, assign, transfer, and mortgage all the rights, powers, and privileges conferred by this Act is hereby granted to C. N. Jenks, F. J. Stransky, L. H. Miles, John Grandy, and Bruce Machen, their heirs, legal representatives, and assigns; and any corporation to which or any person to whom such rights, powers, and privileges may be sold, assigned, or transferred, or who shall acquire the same by mortgage foreclosure or otherwise, is hereby authorized and empowered to exercise the same as fully as though conferred herein directly upon such corporation or person.

#### **REGULATION OF TOLLS OVER CERTAIN BRIDGES**

Sec. 17. In the case of bridges heretofore authorized by Acts of Congress specifically reserving to Congress the right to subsequently regulate tolls on such bridges, such bridges shall, in respect of the regulation of all tolls, be subject to the provisions of the Act entitled "An Act to regulate the construction of bridges over navigable waters," approved March 23, 1906.

Sec. 18. The right to alter, amend, or repeal this Act is hereby expressly reserved.

Approved, June 10, 1930.

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