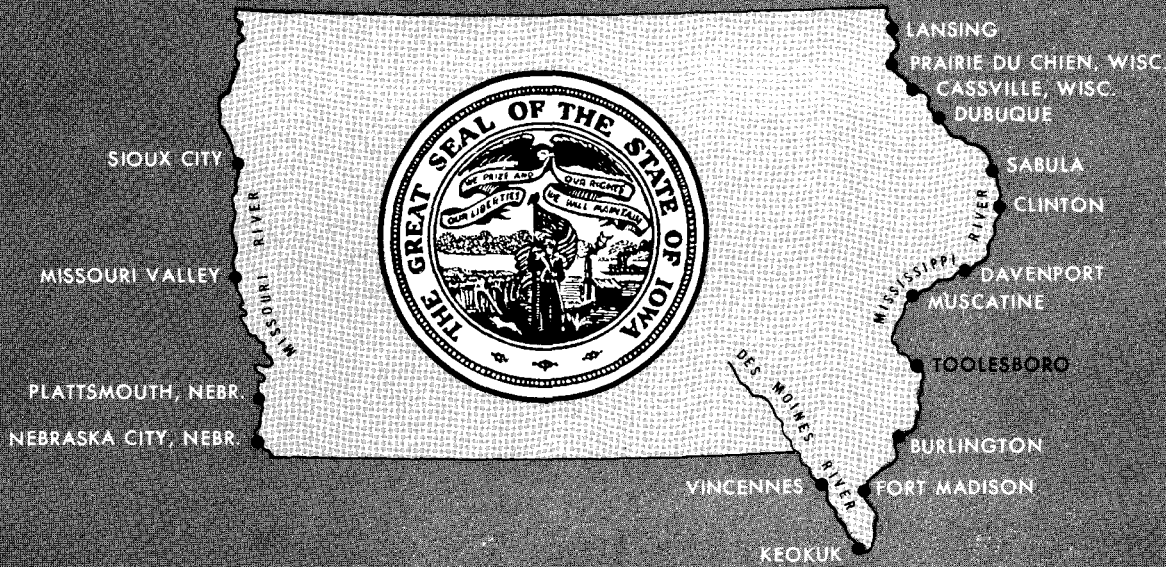


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AUGUST 1968

IOWA STATE HIGHWAY COMMISSION



*Bridge Location,
Revenue and Traffic Studies*

NEAR
TOOLESBORO, IOWA

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

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MISSISSIPPI RIVER TOLL BRIDGE

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155 WHITNEY AVENUE • P. O. BOX 993

New Haven, Conn. 06510

August 9, 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 Toolesboro.

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

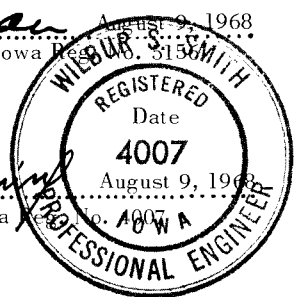
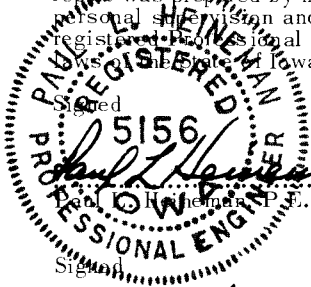
WILBUR SMITH & ASSOCIATES, INC. N.E.

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 _____ Date August 9, 1968
Paul L. Heineman, P.E., Iowa Reg. No. 5156

Signed _____ Date August 9, 1968
Wilbur S. Smith, P.E., Iowa Reg. No. 4007



TOOLESBORO, IOWA

**MISSISSIPPI
RIVER
TOLL
BRIDGE**

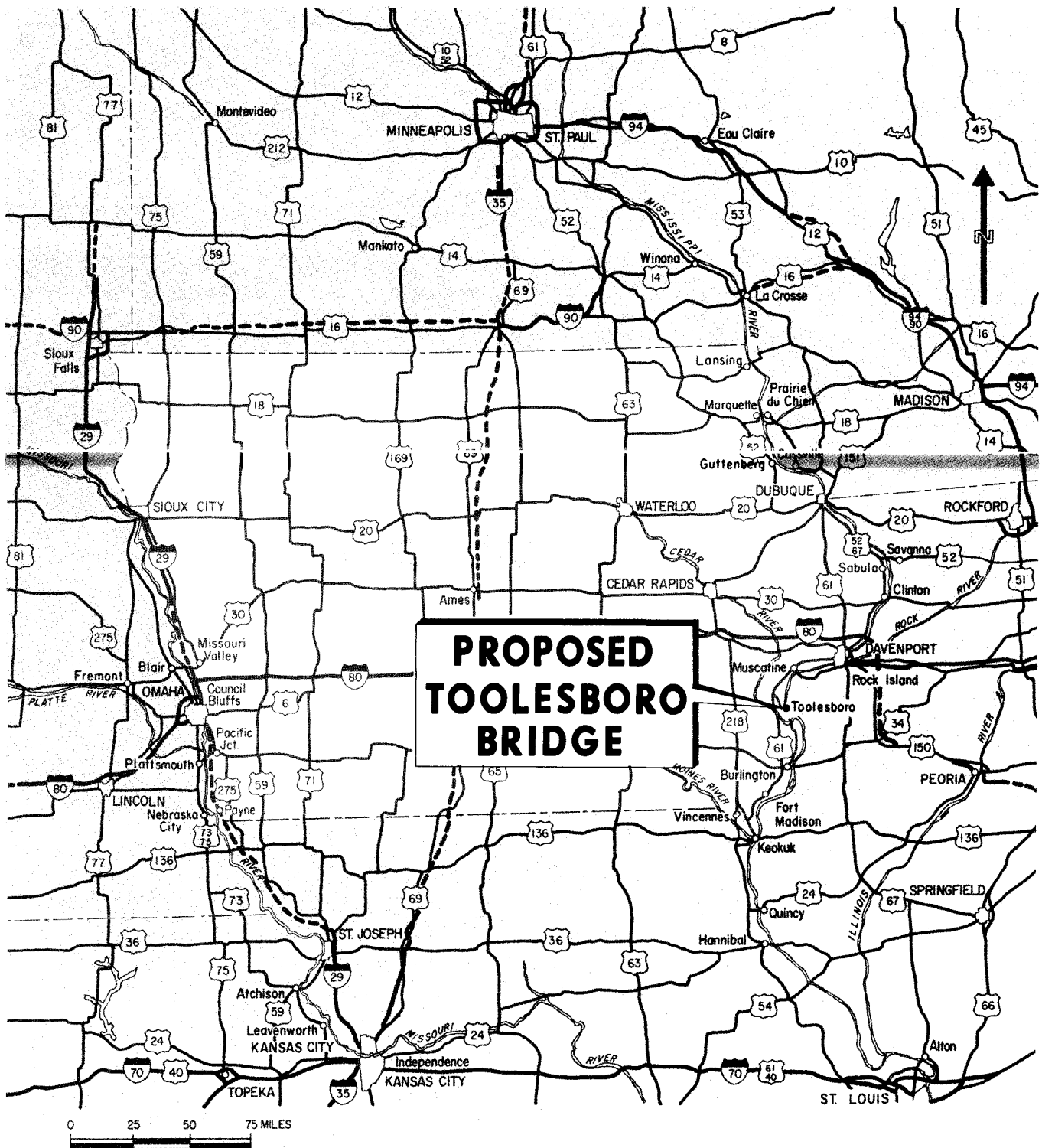
**AUGUST
1968**

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 I
REGIONAL MAP

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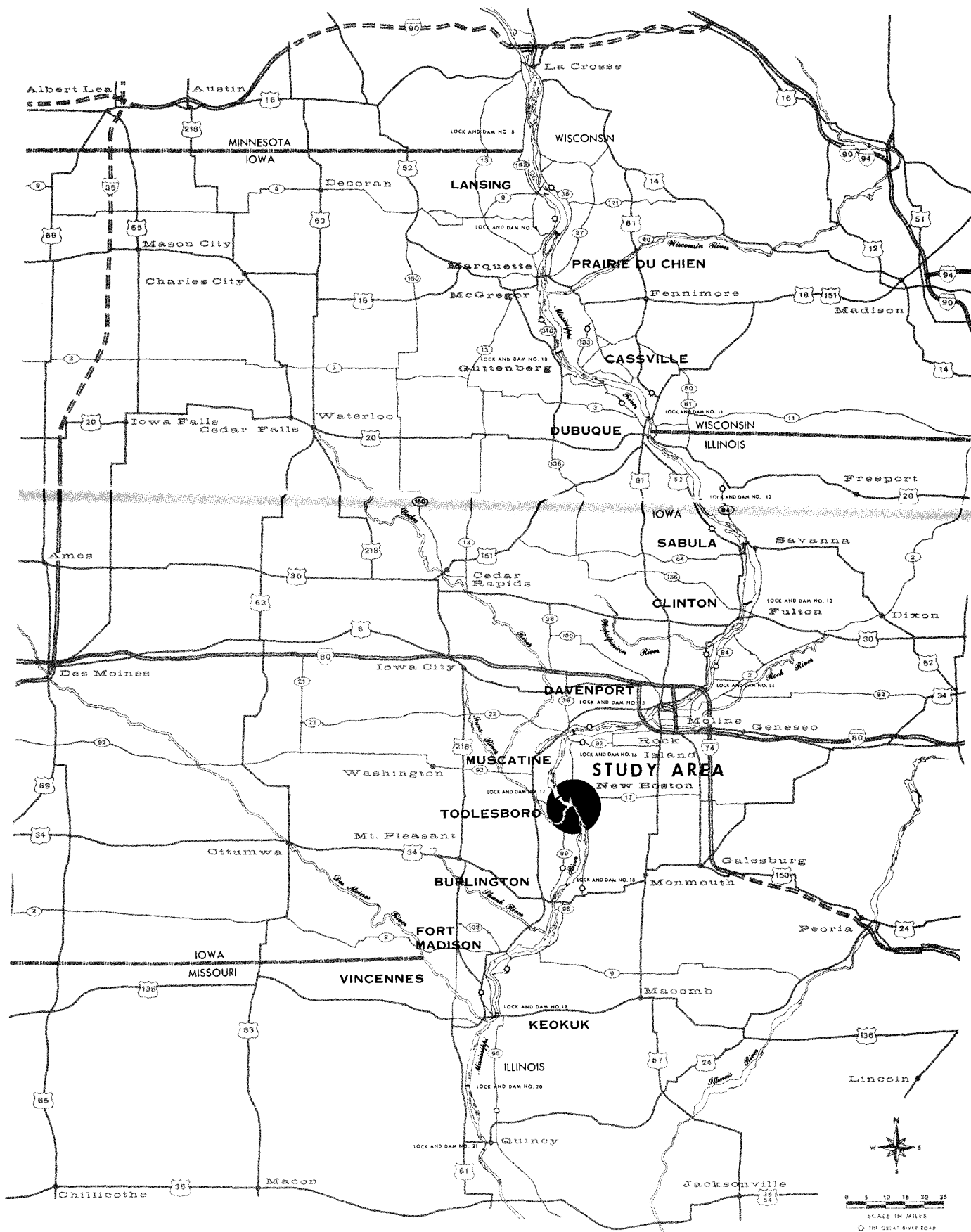


Exhibit 2
VICINITY MAP

SUMMARY OF FINDINGS

At the present time there are no bridges across the Mississippi River between Muscatine and Burlington. If a new bridge were constructed to replace the New Boston Ferry in the vicinity of Toolesboro, the preliminary project cost of a modern, two-lane facility would be approximately \$7,250,000. If the bridge were financed as a revenue bond project, a bond issue of about \$8,700,000 would be required. Annual toll revenues on the bridge would range from an estimated \$135,000 in the first full year of operation, to \$218,000 in 1985.

Assuming the bond issue carried an interest rate of 5.5 per cent and extended over a 28-year earning period, average annual payments to meet all interest and principal amortization would amount to \$616,000. After deducting annual maintenance and operating expenses, net toll revenues available to service the proposed bond issue would average \$110,000 over the assumed 28-year earning period. This would provide a 0.18 coverage of level debt service.

This coverage value is considerably below that normally considered indicative of financial feasibility. If annual subsidies were available to meet level debt service over the life of the proposed bond issue, the total subsidy required would be an estimated \$14,167,000.

INTRODUCTION

Presently there are no fixed crossings in the reach of the Mississippi River between Muscatine and Burlington, a distance of approximately 50 miles. As depicted in Exhibit 1, this area is located in southeastern Iowa. Limited seasonal service is provided by a ferry operating between New Boston, Illinois, and a point near Oakville, Iowa. The nearest fixed crossing to the south is the MacArthur Bridge in Burlington. To the north, the nearest bridge is located at Muscatine which provides restricted service, prohibiting tandem-axle vehicles. Further north, several bridges cross the Mississippi River in the Quad-City area.

Authority and Purpose of Report

In December, 1967, the Iowa State Highway Commission authorized preparation of a preliminary feasibility report for a proposed new toll bridge in the vicinity of Toolesboro. 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. The appendix also includes a copy of the General Bridge Act of 1946, the current Federal Legislation providing for the construction of bridges over navigable waters of the United States.

Scope of Services

This report summarizes preliminary engineering, traffic and revenues and feasibility studies for a proposed toll bridge across the Mississippi River in the vicinity of Toolesboro. These studies included:

1. An analysis of the physical limitations imposed by navigational requirements, terrain, existing levees, railroads, real property values, and the present highway network.
2. A comparison of alternate bridge and approach road locations based on estimates of project cost and annual maintenance and operating expenses.

3. An analysis of the adequacy of present trans-river traffic service in the vicinity of the proposed bridge, as 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. A 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

There are no U.S.-designated east-west oriented highways directly serving the proposed Toolesboro Bridge corridor. Iowa Route 99, a portion of the Iowa Great River Road, originates at U.S. Route 61 in Wapello and extends southeast through Toolesboro before turning south and crossing the Iowa River. It passes Oakville and continues south to its termination at U.S. Route 34 in Burlington. New Boston, Illinois, is served by Illinois Route 17 which passes through the city from the east and terminates at the New Boston Ferry landing. North-south traffic through New Boston utilizes the Illinois Great River Road which follows county roads that generally parallel the east bank of the Mississippi River in the area.

Planned Highway Improvements

Beyond the currently-programmed reconstruction of the intersection of Iowa Route 92 and U.S. Route 61 in Louisa County, no further highway improvements are scheduled for the immediate bridge study area. At Burlington, the programmed relocation and reconstruction of U.S. Route 34 will result in increased attractiveness of the Burlington crossing to certain trans-river trips through the study area. Illinois also plans improvements to U.S. Route 34 in the vicinity of the MacArthur Bridge at Burlington.

Present New Boston Ferry

The New Boston Ferry is a privately-owned service which operates a single vessel between its headquarters terminal at New Boston, Illinois, and a ferry landing near Oakville, Iowa. Service is normally provided during the period April 15 to October 15 between the hours of 7:00 A.M. and 7:00 P.M. Service is provided "on call". A flag is located at each ferry landing and service is called by raising the flag. The ferry operates during daylight hours only. The crossing, which covers approximately 1.25 miles, takes about fifteen minutes.

The ferry vessel has a capacity of eight passenger automobiles and a load limit of approximately 22 tons. No overhead clearance limitations exist although very few trucks are accommodated.

During the operating season, service is sometimes curtailed by unfavorable river conditions, such as unusually high or low water. Operating records reveal that the lack of an alternate licensed river pilot caused service to be limited to weekends during May, September and October in 1966. The Iowa ferry landing is located at the U.S. Army Corps of Engineers landing and picnic area on the river side of the levee approximately five miles northeast of Iowa Route 99 at Oakville. The landing is linked to Oakville by county trunk highway X71, a two-lane roadway with a crushed stone surface. The approach road ex-

periences a sharp change in grade as it crosses the levee. On the Illinois side, the ferry terminal is located at the foot of Illinois Route 17 and County Road 14, a two-lane paved road.

The present toll structure on the New Boston Ferry is based on a rate of \$1.50 for a car with driver with a round-trip fare available at \$2.50. As shown in Table 1, tolls for larger vehicles are scaled upward.

TABLE 1
PRESENT TOLL SCHEDULE
New Boston Ferry

<u>TOLL CLASS</u>	<u>TOLL</u>
Automobile with passengers—one way	\$1.50
Automobile with passengers—round trip	2.50
Single-axle trucks—empty	1.50
Single-axle trucks—loaded	3.50
Tandem-axle trucks (according to weight)	2.50 to 6.00
House-trailers	.50 to 4.00
Buses	1.50 to 2.00

SOURCE: Illinois Division of Highways.

Alternate River Crossings

The closest alternative river crossing to the south is the MacArthur Bridge, about 27 miles south, at Burlington, Iowa. The bridge has a 22-foot roadway of open steel mesh construction and was opened to traffic in 1917. The roadway and deck structure were rebuilt and strengthened in 1953 to accommodate modern traffic loadings. Bridge tolls, as given in Table 2, are based upon a passenger car rate of \$0.25 with larger vehicles assessed proportionately higher tolls.

TABLE 2
PRESENT TOLL SCHEDULE
MacArthur Bridge

<u>TOLL CLASS</u>	<u>TOLL</u>
Pedestrians	\$0.05 ⁽¹⁾
Motorcycle — Motor Bike	0.15 ⁽¹⁾
Automobile	0.25 ⁽¹⁾
Pickup and Panel Truck	0.25
Trucks under 8,600 lbs.	0.80
Trucks 8,600 lbs. and under 16,500 lbs.	1.00
Trucks 16,500 lbs. and under 18,500 lbs.	1.25
Trucks 18,500 lbs. and under 20,500 lbs.	1.50
Trucks 20,500 lbs. and under 22,500 lbs.	1.75
Trucks 22,500 lbs. and under 24,500 lbs.	2.00
Trucks 24,500 lbs. and under 25,500 lbs.	2.25
Each additional thousand pounds	0.25
Mobile home 26 feet and under	0.25
Mobile home over 26 feet	0.75
Small farm tractor	0.50
Large farm tractor	1.00
U-haul and camp trailers under 500 lbs.	0.10
U-haul and camp trailers over 500 lbs.	0.25

⁽¹⁾ Receipt can be turned in the same day for free return passage.
SOURCE: City of Burlington.

The nearest river crossing to the north is the Muscatine Bridge, approximately 20 miles upriver. The bridge at Muscatine was built in 1890 and is now in poor condition, with tandem-axle vehicles prohibited from using the facility. The toll schedule, shown in Table 3, is based on a rate of \$0.35 for passenger cars, with trucks charged higher fares.

TABLE 3
PRESENT TOLL SCHEDULE
Muscatine Bridge

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

SOURCE: Muscatine Bridge Commission.

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

Geology

The study area lies within the Dissected Till Plains Section of the Central Lowland Physiographic Province. The entire area was covered with glacial drift during the Pleistocene Epoch and later mantled with loess. The proposed bridge sites lie in a broad flood plain of the Mississippi and Iowa Rivers.

Corps of Engineers' borings downstream from the bridge sites show over 200 feet of alluvial silt, sand and gravel in the old channel of the Mississippi River. The area bedrock is the Kinderhook shale of the Carboniferous System.

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

River Conditions

The proposed Mississippi River Bridge crossing locations near Toolesboro lie four miles downstream of the U.S. Lock and Dam No. 17 and one

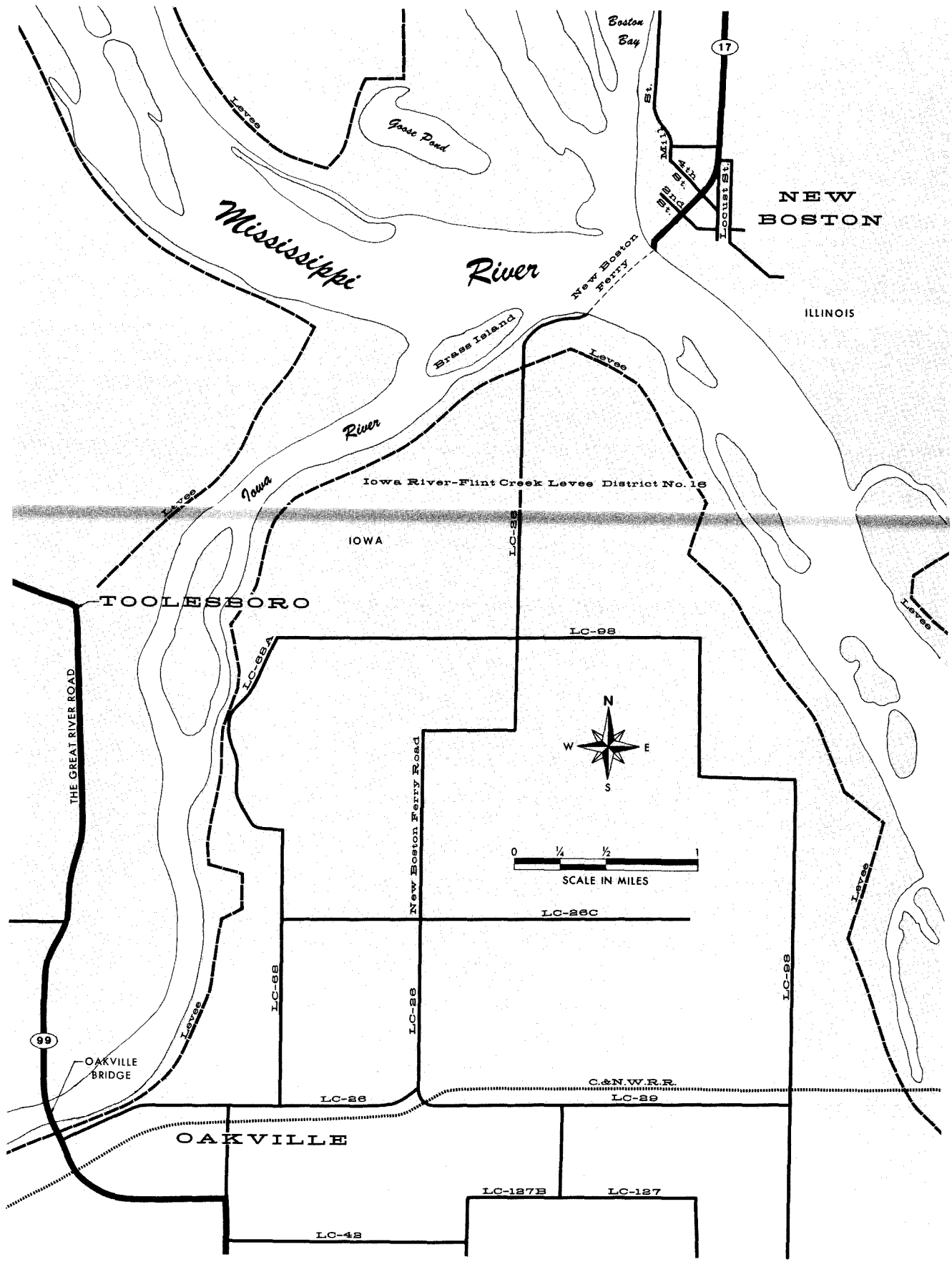


Exhibit I-1
TOOLESBORO STUDY AREA

mile downstream of the confluence of the Iowa and Mississippi Rivers at New Boston, Illinois. The navigation channel through this reach of the Mississippi River follows a one degree reverse curve centered at the mouth of the Iowa River.

With the exception of high bluffs along the Illinois bank extending two miles downstream from New Boston and two miles upstream into Boston Bay, the adjacent land areas are low and protected by levees. The levees along the south bank of the Iowa River and west bank of the Mississippi River and other levees in the vicinity have been improved to provide a top elevation at approximately 552.0 Mean Sea Level. Elevations along the top of the bluffs at New Boston vary from 560.0 to 570.0.

Normal river stage at this location is 528.0 Mean Sea Level with a record flood elevation of 547.5 Mean Sea Level, recorded in 1965, which is estimated to be equivalent to a 75 year flood.

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 450 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. At this site, four miles downstream from U.S. Lock and Dam No. 17, the 2 per cent waterline elevation is 540.6 Mean Sea Level and the flat pool elevation is 528.0 Mean Sea Level. The low steel elevation is governed by the 2 per cent criteria and will be Elevation 592.6 Mean Sea Level.

ALTERNATE LOCATIONS

General

Two alternative bridge locations were studied and evaluated for a Mississippi River Bridge near Toolesboro, Iowa. Both sites terminate on the street system of New Boston, Illinois, and are relatively similar. Exhibit I-2 shows both the Broadway Street Alternate and the Main Street Alternate. The principal features and relative merits of both alternate locations are summarized in the following paragraphs.

Each alternate originates at the county road leading to the existing ferry landing on the Iowa bank, continues at grade to the levee, and proceeds on structure to the Illinois bank and a termination in New Boston. Roadways to the levee and the Iowa approach spans for each location vary only in length, while the main channel span and Illinois approach spans for each site are identical. Approximately 5.5 miles of the light duty gravel county road require improvement and paving to provide a suitable level of traffic service between the Iowa approach terminal and Iowa Route 99 in Oakville. The existing roadway elevation generally follows that of the flat lowlands through which it passes. Improvement of the roads should include raising them to match the elevation of Iowa Route 99 in this area.

Broadway Street Alternate

The bridge alignment at this location joins that of Broadway Street immediately south of its intersection with Webster Street in New Boston. It allows traffic on rerouted Illinois 17 to proceed in a straight line through town without passing through the business district. Right-of-way for the abutment and approach fill slopes is situated in an open area where minimum interference with the adjacent residential property is anticipated. Improvement of Broadway Street from the bridge to its junction with the existing Illinois Route 17 alignment, a distance of approximately 1,900 feet, would be required.





Exhibit I-2
ALTERNATE BRIDGE LOCATIONS

Main Street Alternate

This alignment connects with the present alignment of Illinois Route 17 at Second Street. Right-of-way and street modification costs in the commercial section of New Boston required for this alternate are considerably higher than for the Broadway Street Alternate. Illinois Route 17 presently provides the only access to First Street and the river front; a bridge approach along Route 17 would impair this access. Provisions for an alternate means of access to this river front area would be required should this location be preferred.

Recommended Location

The Broadway Street Alternate is the most economical and functional location for a new bridge in the Toolesboro area. The project cost for a crossing on this location is utilized in the project feasibility studies developed in Part II of this report.

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-3. 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.

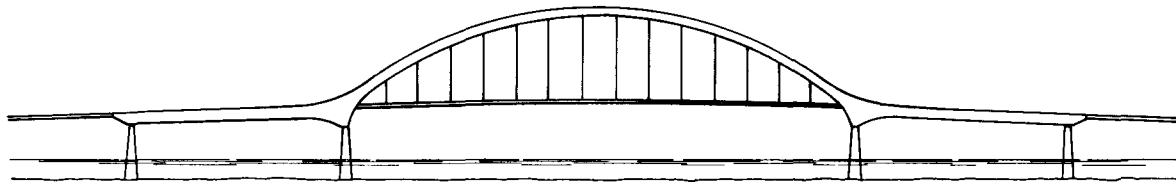
Type II navigation span of Exhibit I-3 is a Continuous Box Girder Tied Arch Span with flexible tie. The tie resists only the thrust of the arch. Without a tie the resistance would have to be provided by river piers. This type of span is considered very practical construction for bridges over the Mississippi 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-



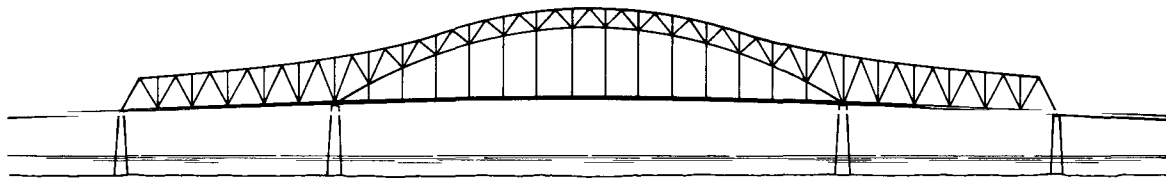
CONTINUOUS GIRDER SPAN

TYPE I



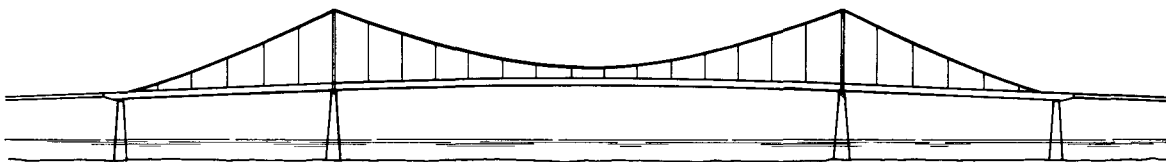
CONTINUOUS BOX GIRDER TIED ARCH SPAN

TYPE II



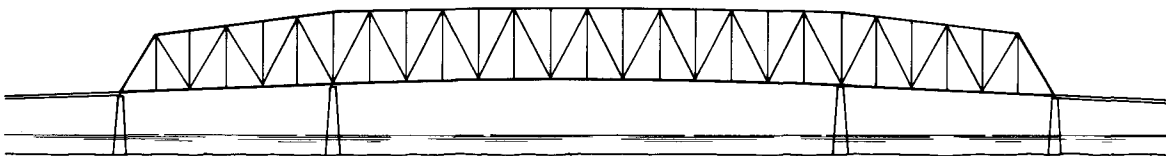
CONTINUOUS TRUSS TIED ARCH SPAN

TYPE III



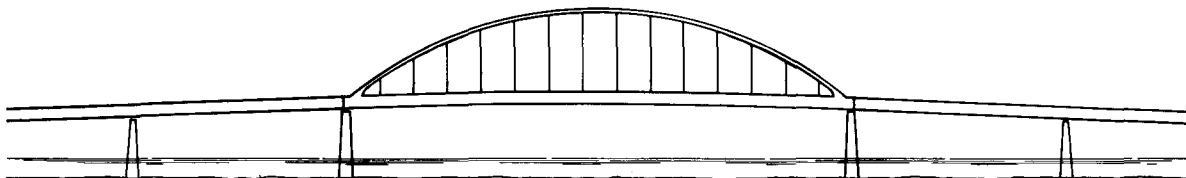
SELF ANCHORED SUSPENSION SPAN

TYPE IV



CONTINUOUS TRUSS SPAN

TYPE V



BOX GIRDER TIED ARCH SPAN

TYPE VI

Exhibit I-3
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-4, should be given thorough consideration in future engineering studies for a highway crossing at Toolesboro, Iowa.

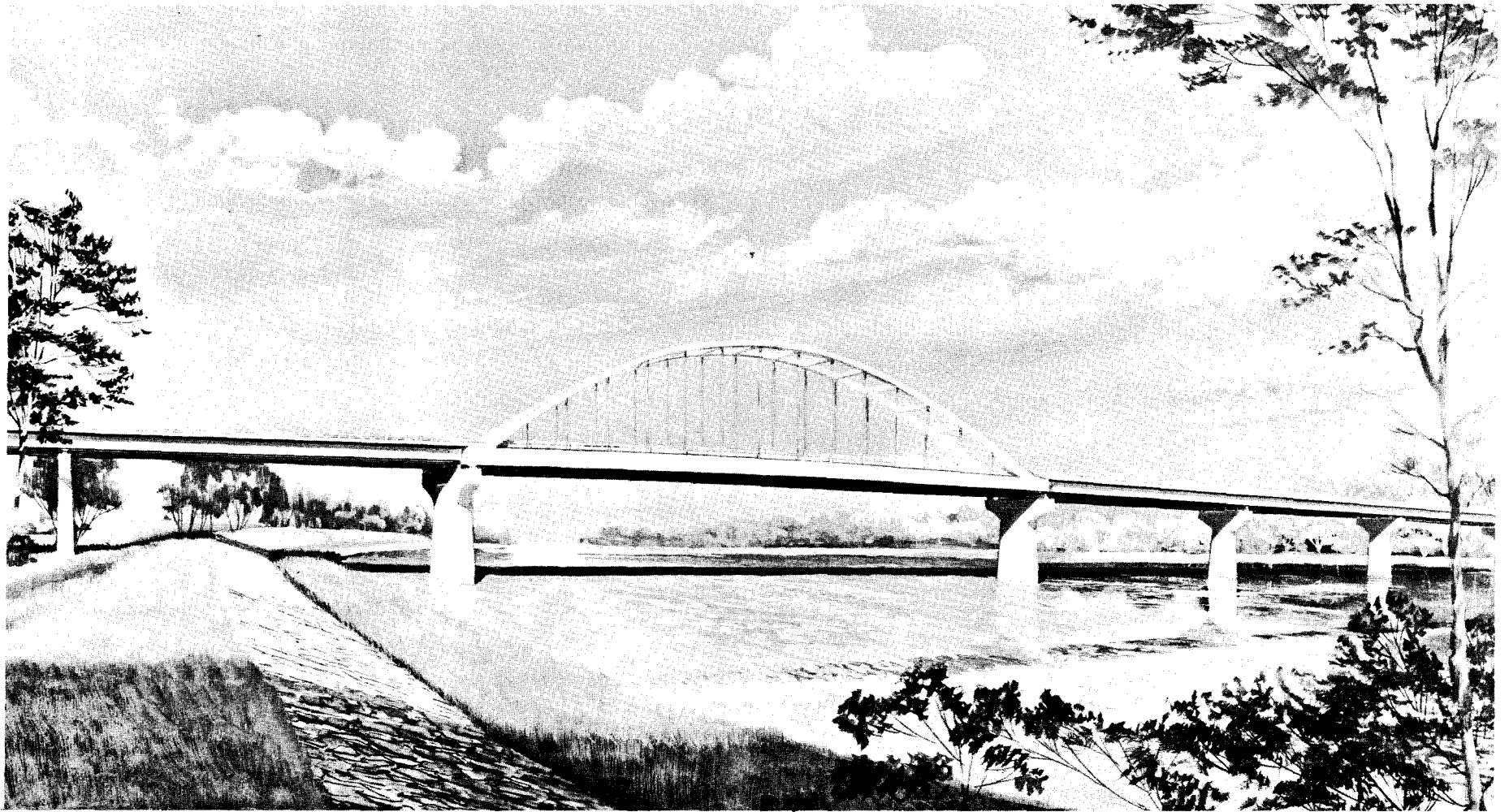


Exhibit I-4

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 lowa 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.

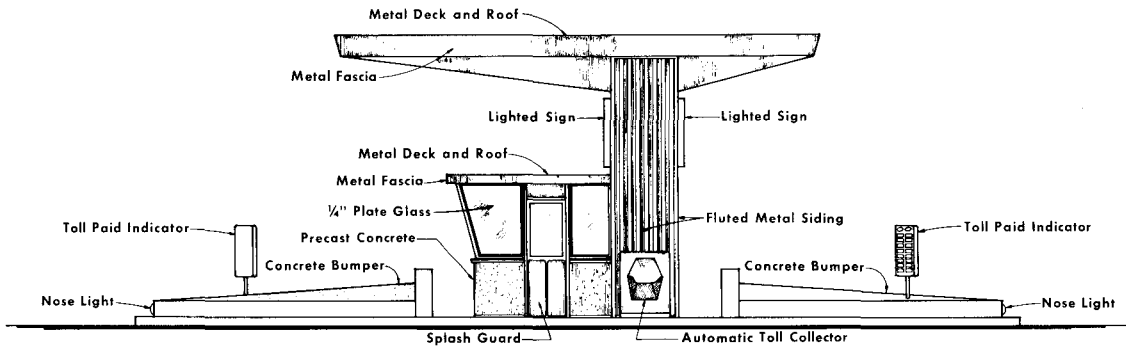
Right-of-way cost estimates were based upon fair market valuations of all real property involved. Allowances have been included for damages, severance losses and acquisition expenses.

A typical toll booth installation is shown on Exhibit I-5. The exact location of this facility on the bridge approach will be established during subsequent study phases.

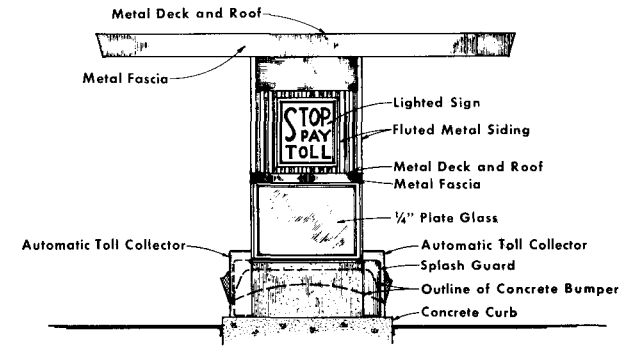
Prior to preparation of final design plans, additional engineering studies will be required. A complete subsurface investigation will be necessary to provide a firm basis for the determination of substructure type, substructure design and economical span lengths. Main river unit studies will include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

Broadway Street Alternate

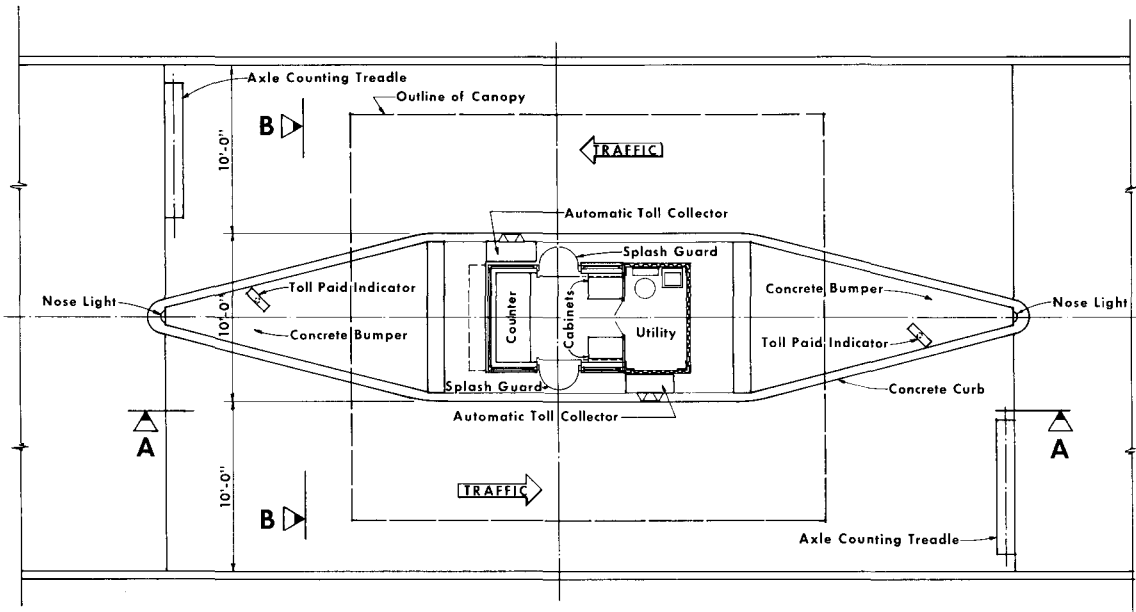
A plan, elevation and typical section for the main channel span of the Broadway Street Alternate Mississippi River crossing is shown on Exhibit I-6. The 32 foot roadway width provides 4 feet 6 inches of lateral clearance between the right hand edge of a typical 12 foot traffic lane and the barrier rail.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



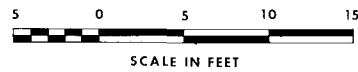
ELEVATION A-A



ELEVATION B-B



PLAN



**Exhibit I-5
GENERAL PLAN AND ELEVATION
TOLL BOOTH**

A navigation span of 450 feet measured face to face between piers on a line normal to the channel was used for estimating purposes. A Box Girder Tied Arch Span structure was estimated. The cost of this aesthetically pleasing structure should compare favorably with other types of spans.

The estimated construction cost of the river bridge at the Broadway Street location is \$3,172,000. 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 elapse of at least one year before bids could be received for construction contracts.

The total estimated project cost for the Broadway Street Alternate is shown in Table I-2.

Operation and Maintenance

The estimate of first year expenses for operation and maintenance for the Broadway Street location 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 those provided by private operation. Since the proposed bridge would be owned by a public agency, it has been assumed that it will not be subject to property or other local taxes.

TABLE I-1

ESTIMATE OF BRIDGE CONSTRUCTION COST

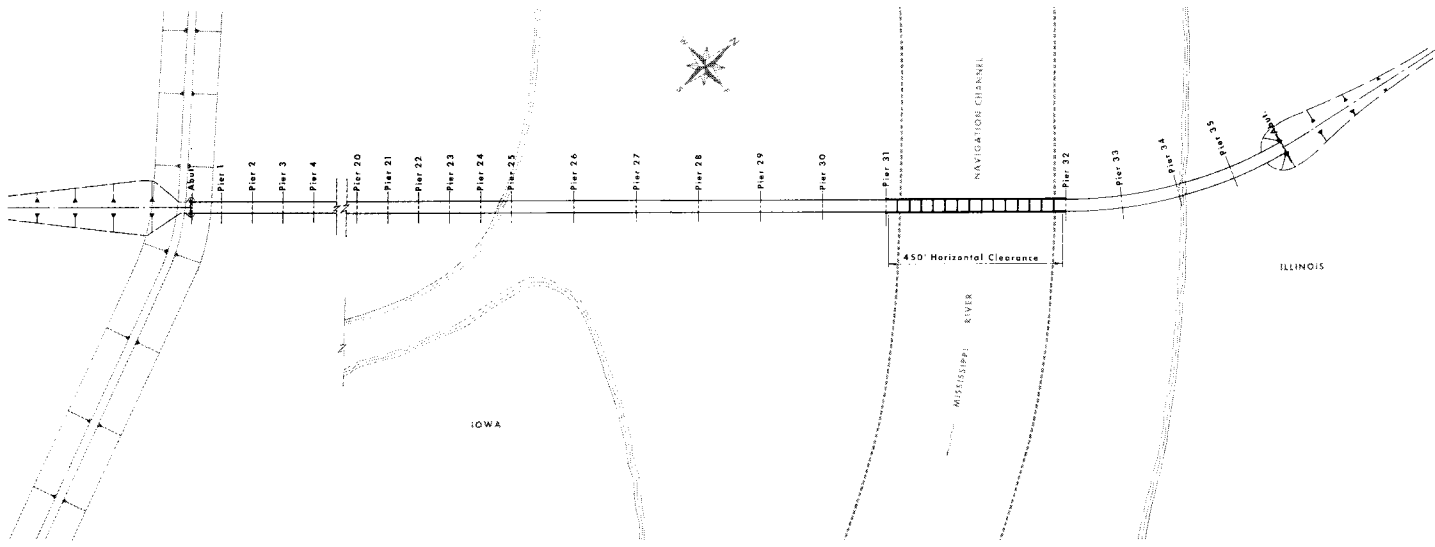
BROADWAY STREET ALTERNATE

Toolesboro, Iowa, Bridge

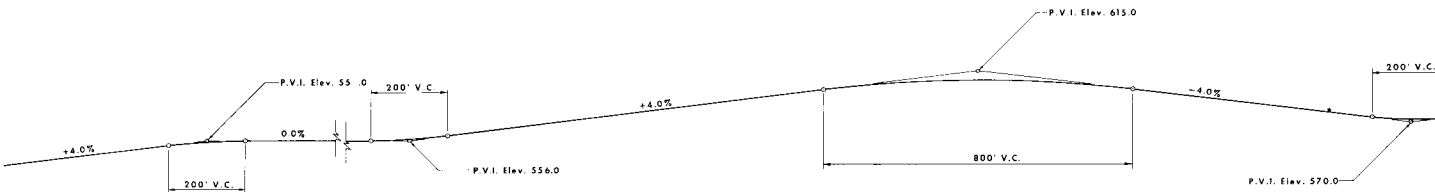
Prestressed Beam Spans	2,000 ft.
Continuous Girder Spans	972 ft.
Box Girder Tied Arch Span	465 ft.
Continuous Girder Spans	<u>592 ft.</u>
	4,029 ft.

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

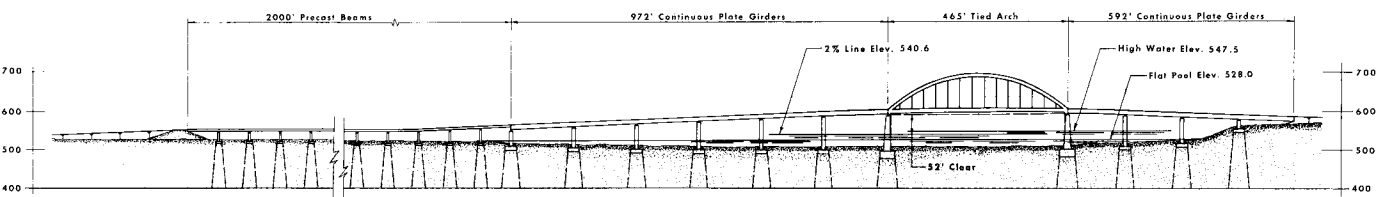
ITEM	QUANTITY	UNIT PRICE	COST
Superstructure:			
Bridge Railing	8,100 L.F.	\$ 12.00	\$ 97,200
Concrete	3,820 C.Y.	90.00	343,800
Reinforcing Steel	1,143,000 Lbs.	0.14	160,000
Tied Arch Steel A-36	1,050,000 Lbs.	0.34	357,000
Tied Arch Steel A-441	1,160,000 Lbs.	0.38	440,800
Girder Steel A-36	642,000 Lbs.	0.29	186,200
Girder Steel A-441	1,222,000 Lbs.	0.32	391,000
Prestressed Concrete Beams	125 Ea.	1,630.00	203,800
Cast Steel and Misc. Metal	71,300 Lbs.	0.70	49,900
Navigation Lighting	—	Lump Sum	<u>20,000</u>
	SUBTOTAL		\$2,249,700
Substructure:			
Concrete	6,250 C.Y.	\$ 65.00	\$ 406,200
Reinforcing Steel	673,000 Lbs.	0.14	94,200
Steel Bearing Piles (12BP53)	27,980 L.F.	8.00	223,800
Steel Pile Cofferdams	25,960 S.F.	5.00	129,800
Excavation	6,830 C.Y.	10.00	<u>68,300</u>
	SUBTOTAL		\$ 922,300
	TOTAL BRIDGE COST		<u><u>\$3,172,000</u></u>



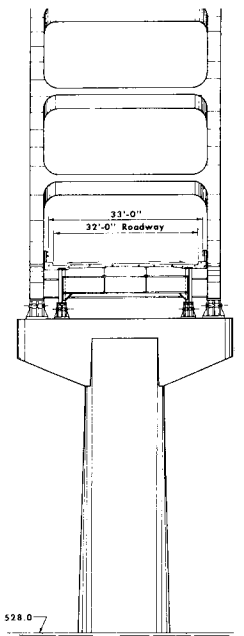
PLAN



PROFILE GRADE



ELEVATION
SCALE IN FEET



SECTION THRU PLATE GIRDER
SPAN NEAR CHANNEL PIER

SCALE IN FEET

Exhibit I-6
BROADWAY STREET ALTERNATE
GENERAL PLAN AND ELEVATION

TABLE I-2

SUMMARY OF ESTIMATED PROJECT COSTS

Toolesboro, Iowa, Bridge

	BROADWAY STREET ALTERNATE	
	Iowa	Illinois
Roadway	\$ 2,658,200	\$ 105,600
Structures	<u>3,172,000</u>	<u>—</u>
Subtotal	5,830,200	105,600
Toll Booth Complex	85,000	—
Engineering and Contingencies	<u>1,183,000</u>	<u>21,100</u>
Total Construction	7,098,200	126,700
Right-of-Way	9,200	10,000
Acquisitions and Contingencies	1,900	2,000
Administration and Legal	<u>1,000</u>	<u>1,000</u>
Total	<u>7,110,300*</u>	<u>139,700</u>
 Total Project Cost	 \$ 7,250,000	

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

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

Toolesboro, 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
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OPERATION

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

Total Operation	\$31,000
-----------------	----------

<u>REPAIRS AND MAINTENANCE*</u>	5,000
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<u>INSURANCE</u>	6,000
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<u>MAINTENANCE RESERVE</u>	<u>6,000</u>
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Total Operation and Maintenance	\$60,000
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*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 now served by the present New Boston Ferry, as a guide in projecting future traffic growths. Route reconnaissance investigations were conducted to inventory present traffic facilities and to determine average operating speeds and other traffic service characteristics. All available trans-river travel patterns and traffic trend data for the Muscatine Bridge as well as the MacArthur Bridge in Burlington, to the south, were assembled.

Using the travel pattern information, travel speed, and route inventory data, and empirical diversion curves developed from studies of similar facilities, traffic assignments were made assuming a modern toll crossing was available in the Toolesboro area. Preliminary assignments were made at several toll rates to determine the rate structure which would optimize toll revenues while still providing a high level of traffic service.

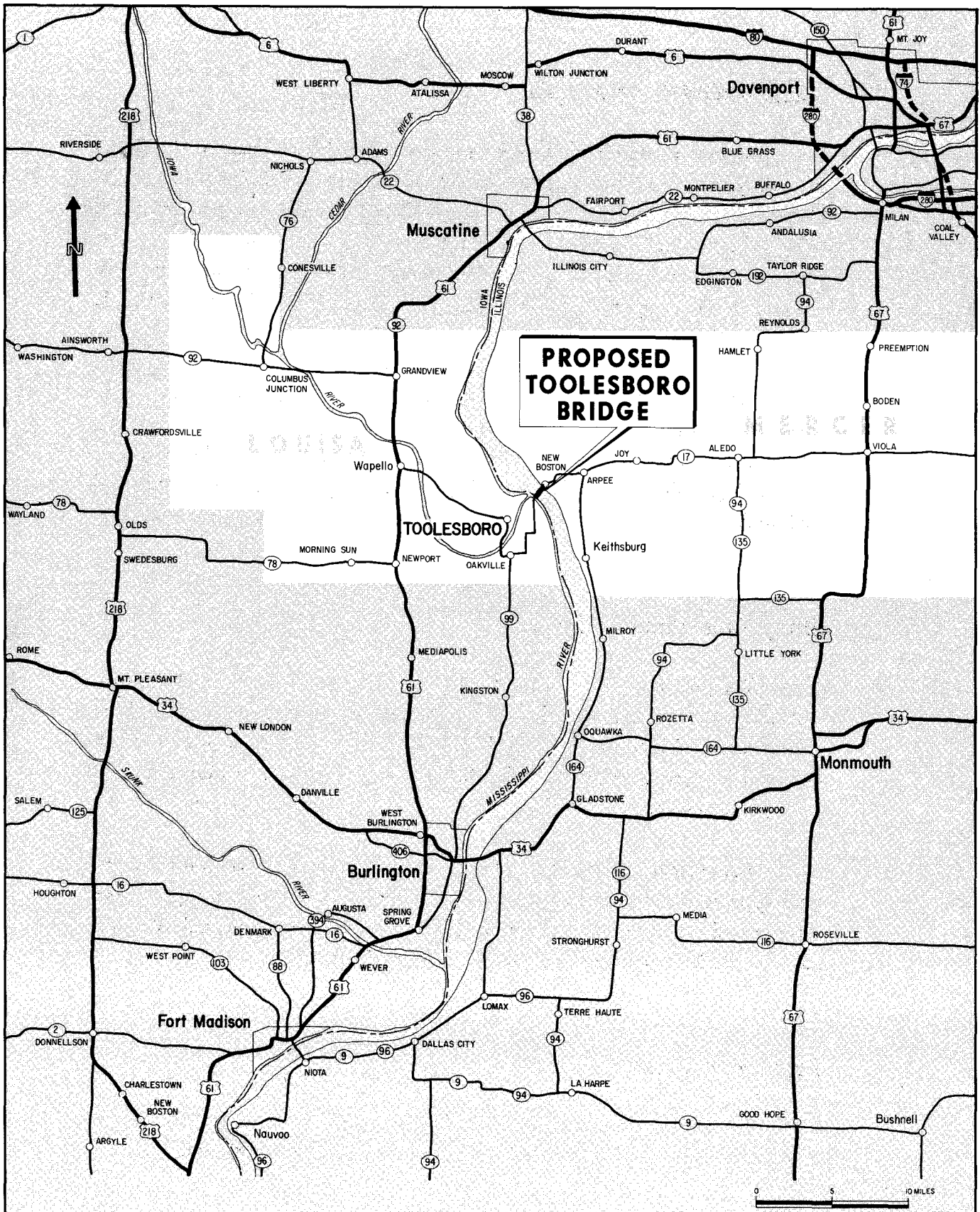
Annual estimates of preliminary toll revenues were then developed based on the economic and traffic trend studies and estimates of future growth in the area. Using the project costs and annual maintenance and operating expense estimates developed by Howard, Needles, Tammen & Bergendoff, a preliminary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

Proposed Toolesboro Bridge

The proposed Toolesboro Bridge would be constructed as a modern, two-lane facility with minimum approach road grades and adequate lane widths. The bridge would have a 32-foot, curb-to-curb section enabling smooth,

efficient and safe passage for all vehicle types. The proposed crossing would operate as a toll bridge.

Several alternate bridge alignments were given preliminary study. The alignment which produced the highest level of traffic service, commensurate with the most economical development cost, was selected for more detailed studies and is illustrated in Exhibit II-1.



LOCATION MAP

Wilbur Smith and Associates

EXHIBIT II-1

AREA GROWTH ANALYSES

Several economic parameters were evaluated to determine relative levels of activity and recent growth trends in the Toolesboro area. These indices included population, retail sales, and average effective buying income per family. In addition, trends in motor vehicle registrations and motor fuel consumption, both excellent measures of travel growth, were analyzed. For study purposes, the bridge influence area depicted in Exhibit II-1, including Louisa County in Iowa and Mercer County in Illinois, was defined.

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

Study Area Characteristics

The present New Boston Ferry serves an area on both sides of the river which is predominantly agricultural in character. No significant industrial or commercial activities are located in the study area. Residents who are not engaged in agricultural pursuits for the most part commute to Muscatine and Burlington, or comparable urban centers in Illinois, for employment.

The communities in the study area are small in size. These have convenience-type service outlets and small retail stores. However, for more specialized services and comparison shopping needs, residents turn to commercial establishments in Burlington, Muscatine, Monmouth and elsewhere.

Population Trends

The largest community in the study area according to the 1960 Census, was Aledo, Illinois, with a population of 3,080. Wapello and Columbus Junction

in Iowa, recorded populations of 1,745 and 1,016, respectively. As shown in Table II-1, other study area communities had 1960 populations of less than 1,000 persons. The nearest communities to the proposed bridge are New Boston, Illinois and Oakville, Iowa, with 1960 populations of 726 and 346, respectively.

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>					
Aledo	2,919	0.5	3,080	—	N.A.
Columbus Junction	1,123	-1.0	1,016	—	N.A.
Grandview	311	-0.4	300	—	N.A.
Joy	505	0	503	—	N.A.
Morning Sun	939	-0.7	875	—	N.A.
New Boston	767	-0.6	726	—	N.A.
Oakville	360	-0.4	346	—	N.A.
Wapello	1,755	-0.1	1,745	—	N.A.
<i>Counties:</i>					
Louisa	11,101	-0.8	10,290	0.7	10,700
Mercer	17,374	-0.1	17,149	0	17,100
Two-County Total	28,475	-0.3	27,439	0.2	27,800
<i>States:</i>					
Illinois	8,712,176	1.5	10,081,158	1.1	10,775,300
Iowa	2,621,073	0.5	2,757,537	0.3	2,813,600
United States ⁽¹⁾	150,697,361	1.7	178,464,236	1.6	196,208,200

⁽¹⁾ Does not include Alaska and Hawaii

N.A. = Not Available

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

Although the population of the two-county study area declined an average of 0.3 per cent annually between 1950 and 1960, this trend was reversed during the next six years to reflect a nominal growth averaging 0.2 per cent annually. The 1966 population of the study area was 27,800.

The relatively stable population of the agriculturally-oriented study area can be attributed to the nationwide trend of decreasing farm population caused by migration from rural to urban areas which acts to offset natural population increase. During the past six years, 1960-1966, the population of Iowa increased an average of 0.3 per cent per year, Illinois recorded an annual growth of 1.1 per cent and the nation experienced an average annual increase of 1.6 per cent.

Trends in Retail Sales

Retail sales in the two-county study area have increased from \$23,917,000 in 1956 to \$44,985,000 in 1966. This represented average annual growths of 3.9 per cent between 1956 and 1961 and 9.2 per cent between 1961 and 1966. These growths were substantially higher than those realized state-wide in Iowa and Illinois and also for the nation.

Average Effective Buying Income Per Family Trends

Between 1956 and 1961, effective buying income for the average family in the two-county study area increased more slowly than the average for either Iowa or Illinois or for the nation. During the next five years, 1961-1966, the average annual growths in income of 7.3 per cent exceeded the state and national increases. However, the 1966 study area average income of \$6,930 was considerably below the Iowa average of \$8,416, the \$9,998 recorded in Illinois and the national average of \$8,522.

Trends in Motor Vehicle Registrations

Motor vehicle registrations in the two-county study area in 1956 amounted to 13,254. By 1966, this had increased to 16,874, representing average annual growths of 1.5 and 3.4 per cent, respectively, between 1956-1961 and 1961-1966. The growth recorded in the study area during the past five years exceeded that experienced statewide in Iowa and Illinois and also the national average.

Motor Fuel Consumption Trends

Reflecting the growths in personal income and motor vehicle registrations over the last decade, personal travel, as measured by motor fuel consumption, has also increased. Motor fuel consumption in Iowa increased an average of 2.0 per cent per year between 1956-1961. This growth accelerated to an average annual rate 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 national growth trend was even higher.

Future Growth

Population projections indicate a continued nominal growth will occur in the study area through 1980. As shown in Table II-2, the 1960 population of 27,439 is estimated to increase to 29,990 in 1980, an average annual increase of 0.5 per cent. By comparison, growths of 1.4 and 0.8 per cent, respectively, are anticipated in Illinois and Iowa. Continued slight declines in population are anticipated for several communities in Louisa County.

As leisure time and general prosperity increase, recreation travel will become a more important component of total future trip-making. State parks and state forests exist on both sides of the river in or adjacent to the two-county study area. These include Delabar State Park and Henderson State Forest in Illinois, as well as Geode and Oakland Mills State Parks in Des Moines County, Iowa. Pleasure driving and recreational travel is also expected

to increase in importance with the development of additional recreation facilities such as the "Great River Road" project. These developments can be expected to encourage trans-river recreation movements potential to the proposed Toolesboro Bridge.

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>			
Columbus Junction	1,016	0.1	1,029
Grandview	300	- 0.4	272
Morning Sun	875	- 0.7	742
Oakville	346	- 0.4	311
Wapello	1,745	- 0.2	1,664
<i>Counties:</i>			
Louisa	10,290	- 0.7	8,640
Mercer	17,149	1.1	21,350 ⁽¹⁾
Two-County Total	<u>27,439</u>	<u>0.5</u>	<u>29,990</u>
<i>States:</i>			
Illinois	10,081,158	1.4	13,337,000 ⁽¹⁾
Iowa	2,757,537	0.8	3,192,000

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

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

TRAFFIC STUDIES

Preliminary studies were made to evaluate the traffic potential of the proposed Toolesboro Bridge. These studies included route reconnaissance investigations to evaluate the quality of traffic service provided by present alternate trans-river crossings as well as assembly and analysis of data relating to the magnitude and composition of traffic and present trans-river travel patterns.

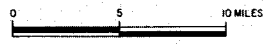
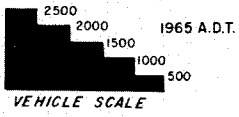
Route Reconnaissance

Iowa Route 92, which approaches the study area from the west, joining U.S. Route 61 about seven miles north of Wapello, has a pavement width of 20 feet through most of Louisa County. Highway sufficiency ratings for this stretch of road place it in the "critical" category. Iowa Route 78, which traverses southern Louisa County to a junction with U.S. Route 61, has a 22-to-24-foot pavement. Its sufficiency ratings vary from "excellent", west of Morning Sun, to "poor" for the eastern portion. U.S. Route 61 is a two-lane highway through Louisa County, with a 24-foot pavement. Its sufficiency rating is "tolerable" within the limits of the study area. Iowa Route 99 is a two-lane road with a pavement varying from 22 to 24 feet. Its sufficiency ratings range from "excellent" to "poor". Illinois Route 17 and other local roads in the study area are also two-lane paved or improved routes.

Posted speed limits in the study area range downward from a daytime limit of 70 miles per hour for automobiles on principal Iowa routes, to less than 30 miles per hour 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 carried, is depicted in Exhibit II-2. U.S. Route 61 carries substantially more north-south oriented traffic through the study area, on the Iowa side,



TRAFFIC FLOW MAP
1965 AVERAGE DAILY TRAFFIC

Wilbur Smith and Associates

EXHIBIT II-2

than does Iowa Route 99. Iowa Route 92 accommodates more east-west motorists than does Iowa Route 78. In Illinois, the major north-south route is U.S. Route 67. Illinois Route 94 and the county route just east of and parallel to the Mississippi River are considerably less important travel routes. Illinois Route 17 serves as the most important east-west route through the heart of the study area.

Annual Traffic Trends

Annual traffic and revenue trends for the New Boston Ferry were assembled and reviewed. In addition, annual use of the closest alternative crossings — the Muscatine Bridge and the MacArthur Bridge at Burlington were evaluated.

New Boston Ferry — Use of the New Boston Ferry is low; an average of 25 vehicles per day used the ferry during its seasonal period of operation in 1963. As shown in Table II-3, by 1967 average daily usage had increased to 34 vehicles per day, an average annual increase of 8.0 per cent over the period.

Muscatine Bridge — Daily traffic levels on the Muscatine Bridge have shown little change since 1956. Table II-3 indicates an average of 1,700 vehicles per day used the bridge in 1956. In 1967, average daily traffic of 1,650 was recorded representing an average annual decrease between 1956 and 1967 of 0.3 per cent. Over the last four years, use of the bridge increased an average of 0.8 per cent each year.

MacArthur Bridge — Annual traffic on the MacArthur Bridge at Burlington has increased from 3,600 vehicles per day in 1956 to 5,750 in 1967. As represented in Table II-3, this represented an average annual growth of 4.3 per cent. Between 1963 and 1967, annual growth in bridge traffic averaged 3.6 per cent.

TABLE II-3
ANNUAL TRAFFIC TRENDS
Trans-River Crossings

<u>YEAR</u>	<u>MUSCATINE BRIDGE⁽¹⁾</u>	<u>NEW BOSTON FERRY</u>	<u>MACARTHUR BRIDGE</u>
	(Average Daily Traffic)		
1956	1,700	N.A.	3,600
1959	1,650	N.A.	4,200
1963	1,600	25	5,000
1964	1,600	28	5,050
1965	1,550 ⁽²⁾	N.A.	5,100 ⁽²⁾
1966	1,550	36	5,600
1967	1,650	34 ⁽³⁾	5,750
AVERAGE ANNUAL PER CENT CHANGE			
1956-1967	-0.3	—	4.3
1963-1967	0.8	8.0	3.6

(1) Fiscal Year ending June 30.

(2) Bridge closed for a period due to Spring floods.

(3) No truck traffic due to construction at landing.

SOURCE: Illinois Division of Highways and Muscatine Bridge Commission.

Monthly Traffic Variations

During its limited period of operation each year, peak traffic on the New Boston Ferry occurs in July and August. These months also are the heaviest travel periods on the Muscatine and Burlington bridges. The low months of usage are January and February.

Origin and Destination Studies

In the summer of 1966, the Iowa State Highway Commission conducted origin and destination surveys in Burlington and Muscatine. As part of these studies, roadside interviews were conducted on typical summer weekdays with

motorists using the MacArthur Bridge at Burlington and the Muscatine Bridge. Information from these interview surveys, together with data from the New Boston Ferry, formed the basis for the travel patterns used in this study.

Vehicle Classification Counts

Very few trucks now use the New Boston Ferry. As shown in Table II-4, the percentage of commercial vehicles ranged from 5.4 per cent (an average of about 1.5 vehicles per day) in 1964 to zero in 1967, when trucks were prohibited from the facility due to construction activities at the ferry landing.

TABLE II-4
SUMMARY OF VEHICLE CLASSIFICATION COUNTS
New Boston Ferry
(Average Daily Traffic)

	PASSENGER CARS	COMMERCIAL & MISC. ⁽¹⁾	TOTAL
1963	23.6	1.3	24.9
Per Cent of Total	94.7	5.3	100.0
1964	26.6	1.5	28.1
Per Cent of Total	94.6	5.4	100.0
1966 ⁽²⁾	35.0	1.0	36.0
Per Cent of Total	97.2	2.8	100.0
1967 ⁽³⁾	34.0	0 ⁽³⁾	34.0
Per Cent of Total	100.0	0	100.0

⁽¹⁾ Includes trucks, farm vehicles and small boat trailers.

⁽²⁾ Operations limited to weekends during May, September and October.

⁽³⁾ No truck traffic due to construction at landing area.
Operating period curtailed due to pilot shortage.

SOURCE: New Boston Ferry Company.

The MacArthur Bridge carries a higher percentage of trucks than the Muscatine Bridge. As given in Table II-5, trucks represented 16.2 per cent of all traffic at the Burlington crossing in 1965 compared to 12.4 per cent at Muscatine. This reflects, to some extent the condition of the Muscatine Bridge where large trucks are prohibited from using the crossing.

TABLE II-5
VEHICLE CLASSIFICATION COUNT SUMMARY
Muscatine and MacArthur Bridges
(1965 Average Daily Traffic)

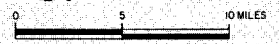
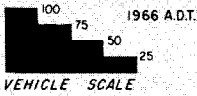
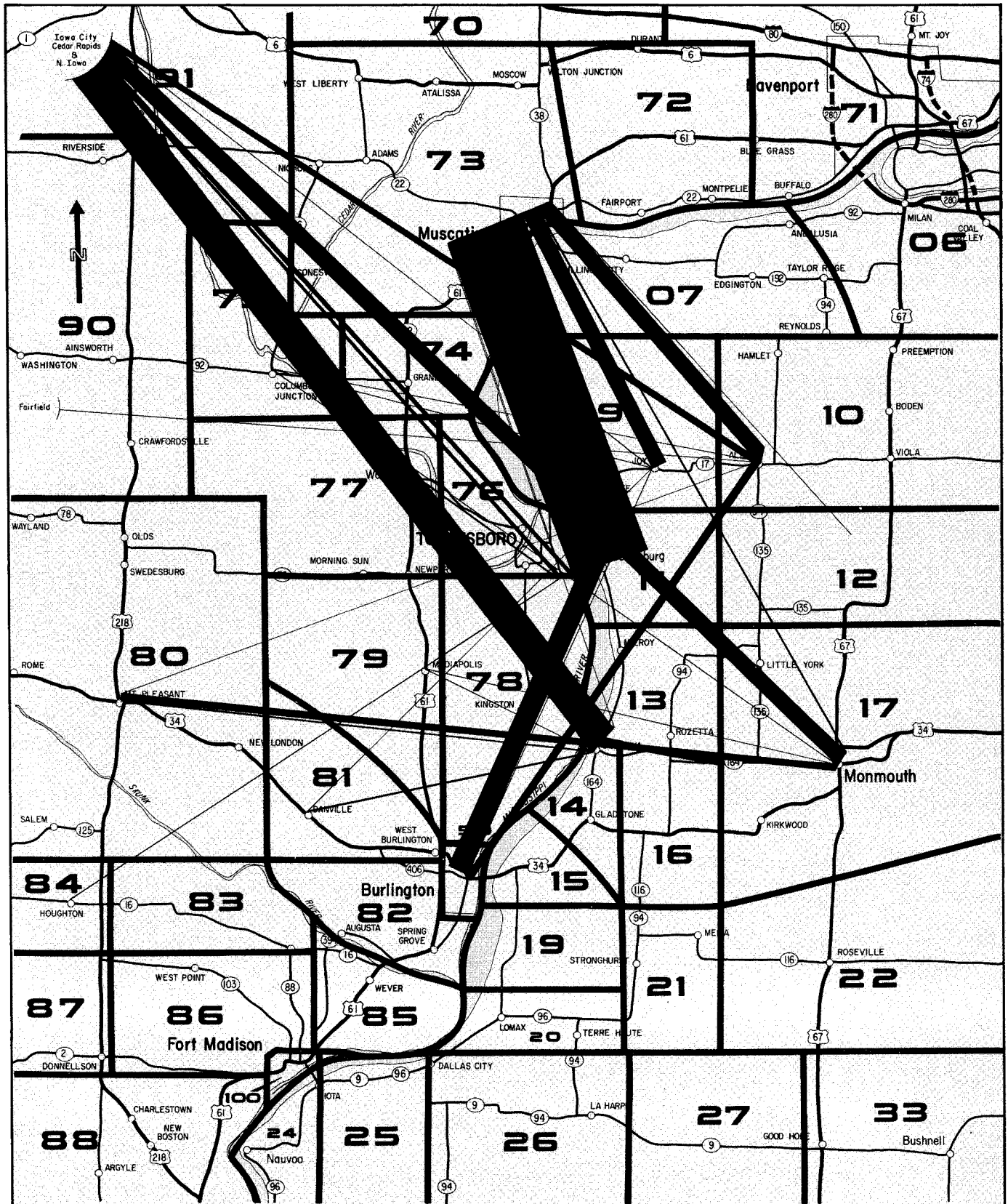
VEHICLE CLASS	MUSCATINE BRIDGE		MACARTHUR BRIDGE	
	Number	Per Cent of Total	Number	Per Cent of Total
Passenger Cars	1,401	87.6	3,954	93.9
Trucks:				
Two-axle	141	8.8	606	12.9
Three-axle	31	1.9	39	0.8
Four-axle	7	0.4	39	0.8
Five-axle	20	1.3	82	1.7
TOTAL	1,600	100.0	4,720	100.0

SOURCE: *Volume of Traffic On Primary Road System*, Iowa State Highway Commission.

Travel Desires

Specific origin and destination data are not available for the New Boston Ferry. However, discussions with the ferry operator indicate that usage is largely of a local or short-trip nature.

Travel desires of motorists using the MacArthur and Muscatine Bridges were developed from the 1966 origin and destination studies. The origin and destination data were coded, for purposes of this study, to the geographic traffic zone pattern partially shown in Exhibit II-3. The resulting zone-to-zone travel



NOTE: MOVEMENTS DEPICTED ARE IN SOME MEASURE POTENTIAL TO PROPOSED TOOLESBORO BRIDGE FROM THE PRESENT MUSCATINE AND BURLINGTON BRIDGE. NEW BOSTON FERRY TRIPS ARE NOT INCLUDED.

TRAVEL DESIRES

PROPOSED TOOLESBORO BRIDGE

1966 AVERAGE DAILY TRAFFIC

Wilbur Smith and Associates

EXHIBIT II-3

movements, adjusted to represent an average day in 1966, were analyzed and those movements considered in some measure potential to the proposed Toolesboro Bridge are also depicted in Exhibit II-3. The widths of the traffic flow bands illustrated are proportional to the number of trips moving between each zone pair.

The largest travel desire shown is that between the Keithsburg area and Muscatine. Muscatine, which was the largest single terminus of trips on the Iowa side, also exchanged important trip movements with the Illinois communities of Joy, Aledo and Monmouth. Iowa City, Cedar Rapids and other points in northern and western Iowa were also important Iowa trip termini with substantial movements indicated from this area to such Illinois communities as Oquawka and Monmouth as well as New Boston and Keithsburg. Other significant movements were those between Mount Pleasant and Monmouth and between the Burlington area and Keithsburg, New Boston and Aledo.

Typical Time and Distance Relationships

Representative time and distance relationships for selected movements which could use either the proposed Toolesboro Bridge or the closest crossings to the north or south, are shown in Table II-6. The travel distances and times indicated were developed from the route reconnaissance studies conducted on pertinent roadways in the study area. Driving times shown represent average speeds rather than the fastest driving time that could be achieved between various trip termini indicated.

Between Muscatine and Keithsburg, a routing by way of the proposed Toolesboro Bridge would be about 23 miles and 20 minutes longer than a routing via the Muscatine Bridge. Between Wapello and Aledo, the proposed Toolesboro Bridge would save about 22 miles and 27 minutes as compared to a routing via the Muscatine Bridge. For a trip between Wapello and Keithsburg, the proposed bridge would save about 28 miles and 22 minutes, compared to a routing by way of the Burlington crossing. Even greater savings in distance and time would accrue to a Toolesboro Bridge routing on trips between Aledo, Joy, Arpee and New Boston and the Oakville-Toolesboro area.

TABLE II-6
TYPICAL TIME-DISTANCE RELATIONSHIPS

<u>BETWEEN</u>	<u>VIA</u>	<u>DISTANCE</u> (miles)	<u>TIME</u> (min.)	<u>AVERAGE</u> <u>SPEED</u> (MPH)	<u>SAVINGS</u> <u>VIA PROPOSED</u> <u>TOOLESBORO</u> <u>BRIDGE</u>	
					(miles)	(min.)
Muscatine and Keithsburg	Proposed Toolesboro Bridge	51	71	43	- 23	- 20
	Muscatine Bridge	28	51	33		
Wapello and Aledo	Proposed Toolesboro Bridge	32	37	52	22	27
	Muscatine Bridge	54	64	51		
Wapello and Keithsburg	Proposed Toolesboro Bridge	29	43	40	28	22
	MacArthur Bridge	57	65	53		

ESTIMATED TRAFFIC AND REVENUES

Estimated traffic and revenues for the proposed Toolesboro Bridge are based upon the number of motorists now using the New Boston Ferry who will use the bridge when the ferry is discontinued and those drivers who would find it attractive to divert from the present Muscatine and MacArthur Bridges. In addition, the new facility is expected to generate additional usage of an induced nature.

Basic Assumptions

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

1. The facility will be open to traffic on July 1, 1971.
2. The bridge and approaches will be constructed on the alignment discussed in this report.
3. The recommended toll schedule will be implemented.
4. The present New Boston Ferry will be discontinued upon opening of the new bridge.
5. No additional river crossings will be constructed in the reach of the Mississippi River between Muscatine and Burlington.
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 directions of travel. However, provision should be made in the initial design and construction of the booth to ultimately provide for two toll attendants, one collecting from each direction of travel.

Recommended Toll Schedule

Several toll rates were analyzed to determine an optimum toll structure for the proposed Toolesboro Bridge. These studies indicated that the preliminary toll schedule, shown in Table II-7, would produce maximum revenues for the proposed facility while still maintaining a reasonable level of traffic service. A higher toll would tend to discourage usage to the point where toll revenues would be less than those estimated under the recommended rate. Conversely, a lower toll would tend to increase usage somewhat but not sufficiently to produce higher toll 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	\$1.20
2	Three-axle vehicles and vehicle combinations	1.80
3	Four-axle vehicles and vehicle combinations	2.40
4	Five-axle vehicles and vehicle combinations	3.00
	Each additional axle	0.60

Under the recommended toll schedule, drivers of two-axle vehicles would pay a cash toll of \$1.20 for each crossing. Larger vehicles would be charged a toll based upon a rate of \$0.60 per axle. For example, three-axle vehicles and vehicle combinations would pay a toll of \$1.80, four-axle vehicles — \$2.40 and five-axle vehicles — \$3.00. The recommended per-axle toll would provide maximum control and auditing benefits as well as being easily understood by bridge users.

Estimated Base Year (1966) Traffic Assignments

The number of motorists that would use the proposed Toolesboro Bridge at base year (1966) traffic levels was estimated based upon relative trip costs via routings using the closest river crossings to the north and south versus a routing across the new facility.

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

The route reconnaissance studies made during the field phases of this project were used as a basis for assigning trip times and distances via alternative crossings. In addition to mileage and time costs, tolls were added to arrive at total trip costs. Travel pattern data obtained from the ferry operator and from the origin and destination studies conducted by the Iowa State Highway Commission were used to establish the present trans-river travel distribution. Each movement considered in any way potential to the new bridge was then independently analyzed to determine relative trip times, distances and total costs via the new crossing and the best present alternative route. Using empirical

diversion curves developed from similar studies, a redistribution of present trans-river travel patterns was determined assuming construction of a new crossing at Toolesboro.

As shown in Table II-8, an estimated 200 vehicles per day, at 1966 levels, were assigned to the proposed Toolesboro Bridge. All of the traffic now using the ferry was assigned to the bridge; an estimated 116 trips daily were diverted from the MacArthur Bridge and 48 from the Muscatine Bridge. Of the total assignment, 189 vehicles or about 94.5 per cent would be two-axle passenger cars or light trucks. An additional three—three-axle vehicles, three—four-axle vehicles and five—five-axle vehicles were assigned.

Several alternate bridge alignments in the vicinity of Toolesboro were considered during the course of the preliminary studies. Due to the distance of the proposed bridge corridor from the closest present crossings to the north and south, traffic assignments to any alternate alignment within this corridor would be basically equal.

TABLE II-8
ESTIMATED BASE YEAR (1966) DIVERTED TRAFFIC

VEHICLE TOLL CLASS	DESCRIPTION	ASSIGNED FROM			TOTAL
		New Boston Ferry	MacArthur Bridge	Muscatine Bridge	
		(Average Daily Traffic)			
1	Two-axle vehicles	36	106	47	189
2	Three-axle vehicles and vehicle combinations	—	2	1	3
3	Four-axle vehicles and vehicle combinations	—	3	—	3
4	Five-or-more axle vehicles and vehicle combinations	—	5	—	5
	TOTAL	36	116	48	200

Estimated Annual Traffic and Toll Revenues

Annual growth in usage of the proposed Toolesboro Bridge was estimated based upon normal increases in trans-river traffic which might be anticipated over the next several years in the bridge travel corridor and also on generated and development traffic. Generated traffic would consist of additional trips made by motorists now moving in the bridge travel corridor, solely due to the convenience and attractiveness of the new facility. Development traffic is growth in residential, commercial and industrial activity resulting from the location and access advantages afforded by and directly attributed to the proposed bridge.

Estimates of normal growth in the travel corridor were based upon traffic trends at the New Boston Ferry, the MacArthur Bridge at Burlington, and the Muscatine Bridge. In addition, trends and projected changes in population and other economic parameters in the bridge study area were considered in developing normal growth estimates.

It is estimated that a normal traffic growth of 3.0 per cent per year will occur between 1966 and 1975 decreasing to 2.5 per cent annually between 1975 and 1980 and 2.0 per cent annually thereafter through 1985. For purposes of conservatism, no normal travel growth was projected beyond 1985, although some increase in usage is anticipated.

Induced or generated and development growth was estimated based on experience during the early years of operation of similar facilities. The development potential of the bridge study area was also considered, particularly the closer integration the bridge would provide between the small communities in both Iowa and Illinois that it would serve as an all weather, year-round crossing.

An induced traffic growth of 25 per cent was estimated during the first full year of operation, decreasing to ten per cent during the second year and to five per cent in the third year.

As shown in Table II-9, it is estimated that an average of 290 vehicles per day will use the proposed Toolesboro Bridge during the first full year of

TABLE II-9

ESTIMATED ANNUAL TRAFFIC AND REVENUES

<u>FISCAL YEAR ⁽¹⁾</u>	<u>AVERAGE DAILY TRAFFIC</u>	<u>GROSS REVENUES</u>
1971	290	\$ 135,000
1972	328	152,000
1973	355	165,000
1974	365	170,000
1975	376	175,000
1976	386	179,000
1977	395	183,000
1978	405	188,000
1979	415	193,000
1980	426	198,000
1981	434	202,000
1982	443	206,000
1983	452	210,000
1984	461	214,000
1985	470	218,000
Next 13 Years Annually	470	\$ 218,000

AVERAGE ANNUAL GROSS REVENUES

First Five Years	\$ 159,000
First Ten Years	174,000
Twenty-Eight Years	201,000

⁽¹⁾ Twelve-month period beginning July 1.

operation, producing gross toll revenues of \$135,000. By 1985, the 15th year of operation, an estimated 470 vehicles per day will use the crossing, resulting in gross toll revenues of \$218,000. Average annual toll revenues over the first five years of operation are estimated at \$159,000. Over the 28-year earning period of the assumed bond issue, average annual revenues of \$201,000 are estimated.

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

PRELIMINARY PROJECT FEASIBILITY

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

Estimated Annual Net Revenues

Estimated annual net revenues for the proposed Toolesboro Bridge are shown in Table II-10. In the first full year of operation, net revenues of \$75,000 are estimated, increasing to \$116,000 in 1985. Over the first five years of operation, annual net revenues are expected to average \$93,000. Average annual net revenues over the 28-year earning period are estimated at \$110,000.

Preliminary Project Feasibility

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

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

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 \$8,700,000 would be required for the proposed Toolesboro Bridge. The escalation from estimated project costs to bond

TABLE II-10

ESTIMATED ANNUAL NET REVENUES

<u>FISCAL YEAR⁽¹⁾</u>	<u>GROSS REVENUE</u>	<u>MAINTENANCE AND OPERATING COSTS⁽²⁾</u>	<u>NET REVENUES</u>
1971	\$135,000	\$ 60,000	\$ 75,000
1972	152,000	63,000	89,000
1973	165,000	66,000	99,000
1974	170,000	69,000	101,000
1975	175,000	72,000	103,000
1976	179,000	75,000	104,000
1977	183,000	78,000	105,000
1978	188,000	81,000	107,000
1979	193,000	84,000	109,000
1980	198,000	87,000	111,000
1981	202,000	90,000	112,000
1982	206,000	93,000	113,000
1983	210,000	96,000	114,000
1984	214,000	99,000	115,000
1985	218,000	102,000	116,000
Next 13 Years Annually	\$218,000	\$102,000	\$116,000

AVERAGE ANNUAL NET REVENUES

First Five Years	\$ 93,000
First Ten Years	100,000
Twenty-Eight Years	110,000

⁽¹⁾ Twelve-month period beginning July 1.

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

issue size includes such financing items as bond discount, legal and financial fees, and capitalized interest during construction. Based upon the relationship between project costs and bond issue size for several comparable projects which have been successfully financed, a factor of 1.2 was applied to project costs to determine a preliminary bond issue.

As shown in Table II-11, estimated first-year net revenues for the proposed Toolesboro Bridge would cover first-year interest 0.16 times. Average annual net revenues would provide a 0.18 coverage of level debt service. Both coverage values are far below levels usually considered adequate for financing purposes.

TABLE II-11
PRELIMINARY PROJECT FEASIBILITY

<u>ITEM</u>	
Bond Term	30 Years
Bond Earning Period	28 Years
Bond Interest Rate	5.5 Per Cent
Preliminary Project Cost ⁽¹⁾	\$7,250,000
Estimated Bond Issue ⁽²⁾	8,700,000
First-Year Interest	479,000
Level Debt Service over 28 Years	616,000
Estimated First-Year Net Revenues	75,000
Estimated Average Annual Net Revenues Over 28 Years	110,000
 Coverages	
First-Year Interest by:	
First-Year Net Revenues	0.16
Level Debt Service by:	
Average Annual Net Revenue Over 28 Years	0.18

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

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

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

Relationship Between Level Debt Service and Net Revenues

An indication of the amount of subsidy required during the earning period of the bond issue to supplement net revenues in order to meet level debt service, is shown in Table II-12.

It is estimated that a deficit of \$541,000 would be incurred during the first year of operation of the proposed Toolesboro Bridge decreasing to \$500,000 annually by 1985, and continuing at that level thereafter throughout the bond term.

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

FISCAL YEAR ⁽¹⁾	NET REVENUES	LEVEL DEBT SERVICE	NET REVENUES TO LEVEL DEBT SERVICE DEFICIT
1971	\$ 75,000	\$616,000	\$541,000
1972	89,000	616,000	527,000
1973	99,000	616,000	517,000
1974	101,000	616,000	515,000
1975	103,000	616,000	513,000
1976	104,000	616,000	512,000
1977	105,000	616,000	511,000
1978	107,000	616,000	509,000
1979	109,000	616,000	507,000
1980	111,000	616,000	505,000
1981	112,000	616,000	504,000
1982	113,000	616,000	503,000
1983	114,000	616,000	502,000
1984	115,000	616,000	501,000
1985	116,000	616,000	500,000
1986	116,000	616,000	500,000
1987	116,000	616,000	500,000
1988	116,000	616,000	500,000
1989	116,000	616,000	500,000
1990	116,000	616,000	500,000
1991	116,000	616,000	500,000
1992	116,000	616,000	500,000
1993	116,000	616,000	500,000
1994	116,000	616,000	500,000
1995	116,000	616,000	500,000
1996	116,000	616,000	500,000
1997	116,000	616,000	500,000
1998	116,000	616,000	500,000
TOTAL			\$14,167,000

⁽¹⁾ Twelve-month period beginning July 1.

A total deficit of \$14,167,000 is indicated over the 28-year earning period of the proposed bond issue.

APPENDIX

Iowa Senate File 131

The General Bridge Act

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 RE-CONSTRUCT, 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 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.

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