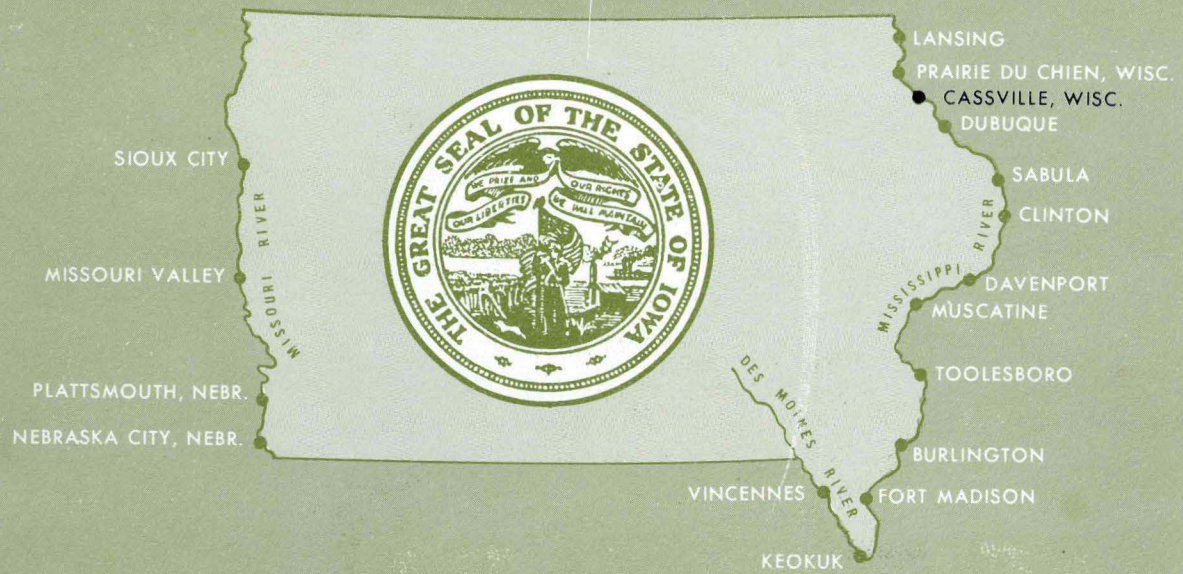
JUNE 1968

IOWA STATE HIGHWAY COMMISSION



Bridge Location, Revenue and Traffic Studies

NEAR

CASSVILLE, WISC.

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

WILBUR SMITH & ASSOCIATES
traffic consultants
NEW HAVEN, CONN.

MISSISSIPPI RIVER TOLL BRIDGE

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS | HNTB

1805 GRAND AVENUE, KANSAS CITY, MISSOURI 64108

Wilbur Smith & Associates, Inc.

Cable: WILSMITH
(203) 865-2191

TRANSPORTATION CONSULTANTS
155 WHITNEY AVENUE • P. O. BOX 993
New Haven, Conn. 06510

June 30, 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 Cassville.

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

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 .....

Paul L. Heineman, P.E. Iowa Reg. No. 5156

REGISTERED PROFESSIONAL ENGINEER 5156 HEINEMAN

June 30, 1968

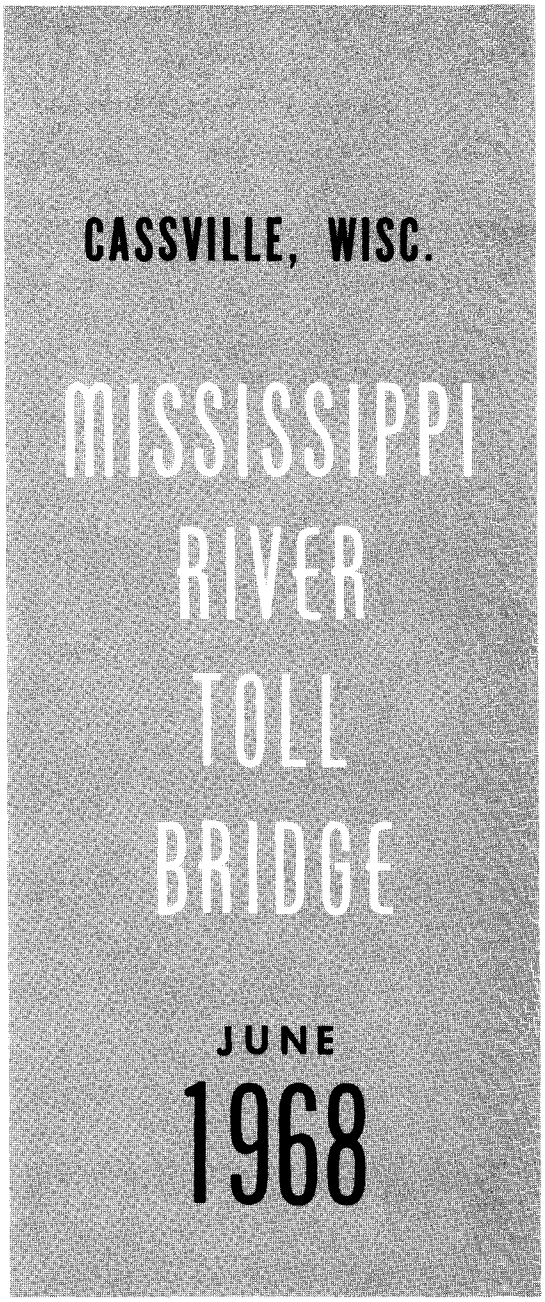
WILBUR S. SMITH REGISTERED Date 4007 June 30, 1968 IOWA PROFESSIONAL ENGINEER

Signed .....

Wilbur S. Smith, P.E. Iowa Reg. No. 4007

WILBUR SMITH & ASSOCIATES, INC. N.E.

Wilbur S. Smith



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.

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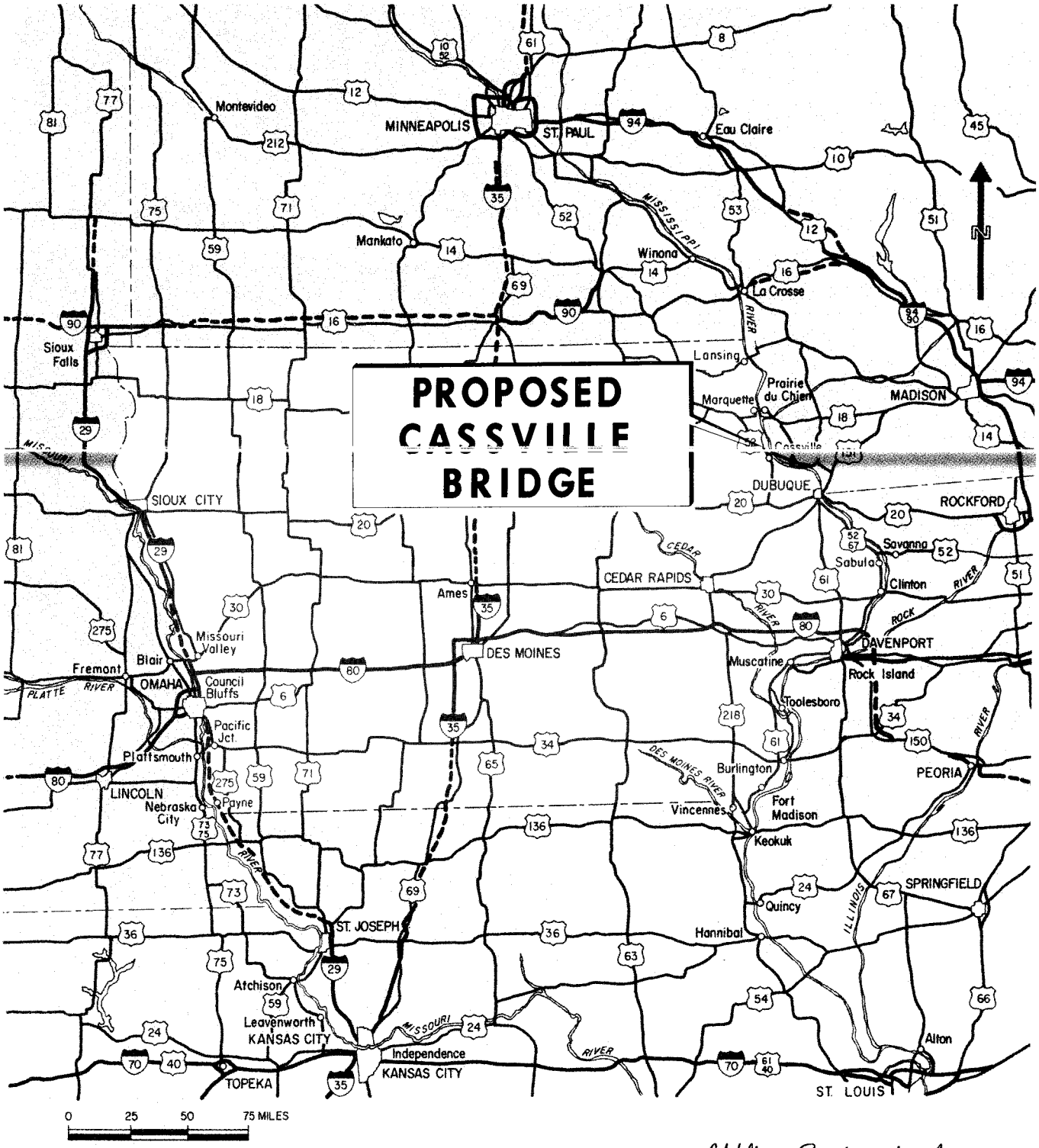

Wilbur Smith and Associates

Exhibit 1

REGIONAL MAP

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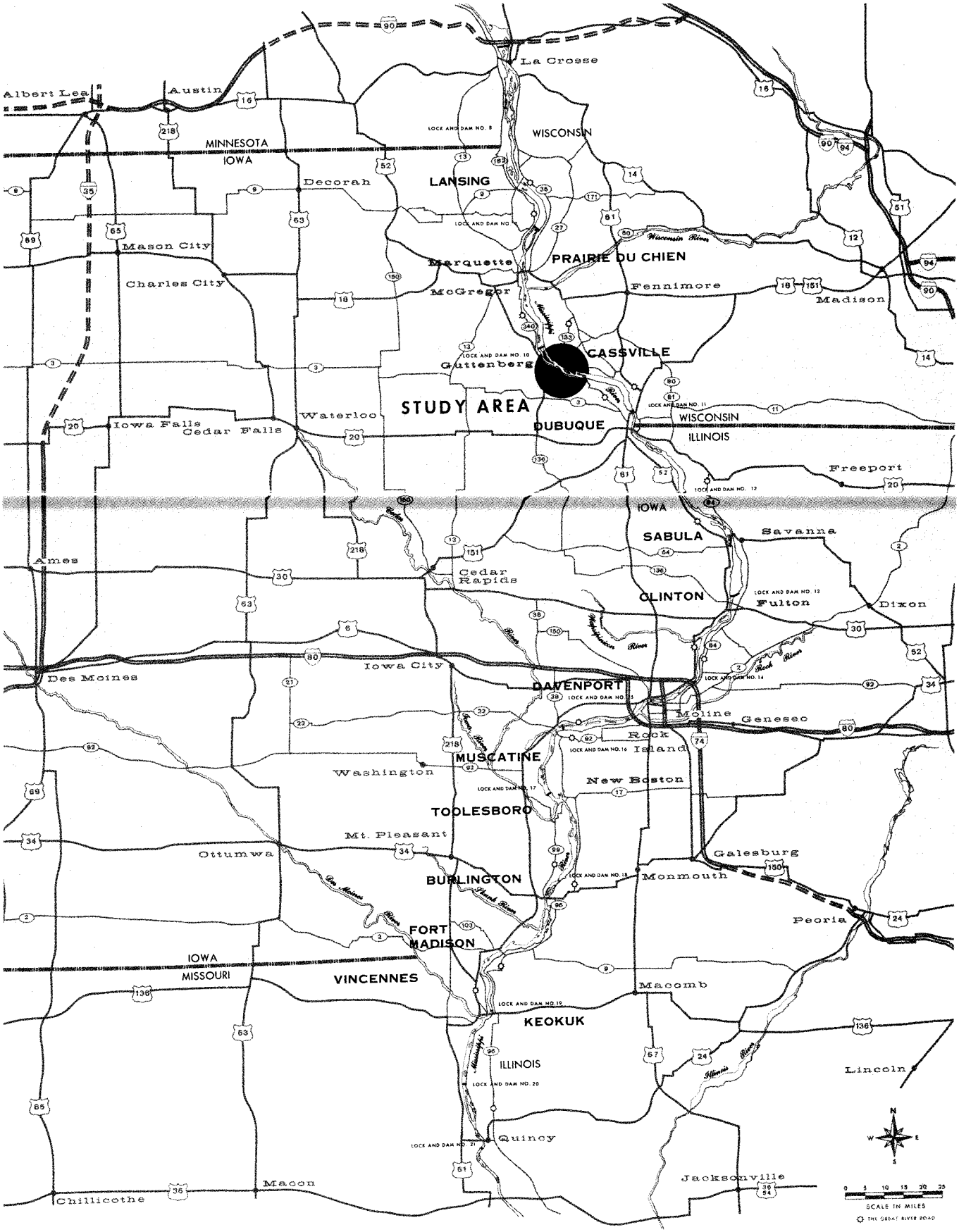


Exhibit 2

VICINITY MAP

SUMMARY OF FINDINGS

At the present time, there are no river crossings in the reach of the Mississippi River between Prairie du Chien and Dubuque. If a new bridge were constructed in the vicinity of Cassville, the preliminary cost of a modern, two-lane facility would be approximately $5,761,000. If the facility were financed as a revenue bond project, a bond issue of about $6,913,000 would be required. Annual toll revenues would range from an estimated $242,000 in 1971 to $477,000 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 ammortization would amount to $490,000. After deducting annual maintenance and operation expenses, net toll revenues available to service the proposed bond issue would average $334,000 over the assumed 28-year earning period. This would provide a 0.68 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 $4,361,000.

INTRODUCTION

Cassville, in southern Wisconsin and Guttenberg, in northeastern Iowa, as shown in Exhibit 1, are both located on the Mississippi River, north of Dubuque. Residents of the Cassville-Guttenberg area must now travel a considerable distance to the north or south to cross the Mississippi River. The two communities are located about midway between Prairie du Chien and Dubuque, the locations of the nearest river crossings. The reach of the Mississippi River between the two present crossings is approximately 50 miles.

Authority and Purpose of Report

In December, 1967, the Iowa State Highway Commission authorized the preparation of a preliminary feasibility report for a proposed toll crossing in the Cassville area. This report is one of several comparable bridge studies to be conducted as part of the Iowa Toll Bridge Program, in accordance with legislation enacted by the Iowa General Assembly, a copy of which is included in the Appendix. The various locations, along the Mississippi River, to be studied under this program are shown in Exhibit 2. The Appendix also contains a copy of the General Bridge Act of 1946, the Federal Law concerning construction of new bridges over navigable waterways.

Scope of Service

This report summarizes preliminary engineering, traffic and revenues, and feasibility studies for a proposed toll bridge across the Mississippi River in the vicinity of Cassville-Guttenberg. 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 alternative 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 east-west oriented U. S. designated highways now serving the Cassville-Guttenberg area. U. S. Route 18, the closest U. S. highway to the north follows an east-west orientation utilizing the Prairie du Chien Bridge; to the south, U. S. Route 20 passes through the Dubuque urban area.

In Wisconsin, the major bridge approach route would be Wisconsin Route 81 which connects with U. S. Route 61 at Lancaster. Service would also be provided by Wisconsin Route 133 to the north and south of Cassville. In Iowa, U. S. Route 52, a predominately north-south facility would serve as the access route to the proposed bridge. On the north, U. S. Route 52 connects with U. S. Route 18 near Froelich. To the south, U. S. Route 52 intersects with Iowa Route 3 at Luxemburg and then follows an easterly orientation to Dubuque.

Planned Highway Improvements

Programmed highway improvements in Clayton County include upgrading of U. S. Route 52 from the Dubuque County line to Iowa Route 13, a distance of 27.9 miles. U. S. Route 18 is to be improved from U. S. Route 52 to a point west of McGregor. Ultimately, U. S. Route 18 from the Mississippi River west to U. S. Route 71, will be upgraded to expressway standards.

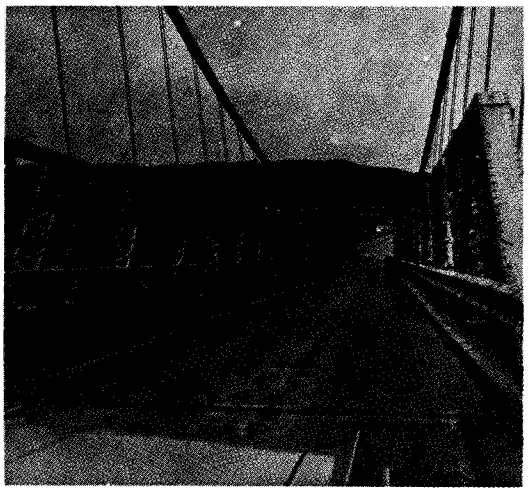
Wisconsin Route 133 is programmed for reconstruction from Cassville to a point nine miles east during 1977. U. S. Route 61-151 will be constructed as a dual freeway during the period 1974 1975 and the portion of U. S. Route 61, from Dickeyville to Lancaster, is programmed for widening and surfacing to provide a good 24-foot pavement width.

Present Alternate River Crossings

The nearest Mississippi River crossing to the north of the Cassville-Guttenberg area is located at Prairie du Chien, some 25 miles away. To the south, the first crossing is at Dubuque, the Eagle Point Bridge, a distance of about 25 miles.

Prairie du Chien Bridge — The Prairie du Chien Bridge carries U. S. Route 18 across the Mississippi River; it also provides local traffic service between Prairie du Chien and the Marquette-McGregor area. The bridge is a marginal, two-lane structure with a poor approach on the Iowa side. It has a 19-foot curb-to-curb roadway section and truck use is limited due to posted weight restrictions. The facility is a toll free crossing. Two views of the Prairie du Chien Bridge and approaches are depicted in Exhibit 3.

Dubuque Bridges — The Eagle Point Bridge is a privately owned toll facility. It was opened to traffic in 1902 and is a narrow, two-lane structure with a sharp change in alignment about midway along the bridge. As illustrated in Exhibit 3, the Iowa approach road to the crossing presents a poor alignment necessitating very slow approach speeds. There is a weight restriction on the bridge prohibiting all semi-trailer traffic. The present toll schedule,



EAST CHANNEL BRIDGE

IOWA APPROACH

PRAIRIE DU CHIEN BRIDGE

PHOTOGRAPHS COURTESY OF THE COURIER PRESS
PRAIRIE DU CHIEN, WISCONSIN

DUBUQUE BRIDGES

PHOTOGRAPHS COURTESY OF TRI-STATE PHOTO

IOWA APPROACH TOLL BOOTH

VIEW OF BRIDGE STRUCTURE

EAGLE POINT BRIDGE

shown in Table 1, is based upon a passenger car and driver toll of $0.15 with higher rates assessed for passenger cars with more than one occupant and for larger vehicles.

TABLE 1

PRESENT TOLL SCHEDULE

VEHICLE TOLL CLASS	TOLL
Passenger Car	
Driver only	$0.15
Two or more occupants	0.25
Hauling one-axle trailer	0.35
Hauling two-axle trailer	0.35
Hauling cabin trailer	0.50
Hauling house trailer	1.00
Bus	1.00
Two-Axle Truck	
1-2 Ton	0.50
Over 2 Ton	0.75
Semis (Prohibited)	$5.00

SOURCE: The Dubuque Bridge Company.

There is a second river crossing in the Dubuque area; the Julien Dubuque Bridge, located south of the Eagle Point crossing, is a toll-free facility carrying the U. S. Route 20 designation. It is a relatively new bridge, constructed in 1943, with two, 12-foot travel lanes. The approach to the bridge in Dubuque is at the eastern and southern fringes of the central business district. Photographs of the Dubuque bridges are shown in Exhibit 3.

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 Wisconsin 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 at Cassville, Wisconsin.

Geology

The study area is in the Driftless Section of the Central Lowland Physiographic Province. The Mississippi River currently occupies the extreme easterly portion of the broad, relatively flat flood plain. The adjacent bluffs are mantled with a deposit of loess, overlying limestone of the Galena-Trenton stage of the Ordovician System.

The flood plains consist of alluvial silt, sand and gravel which exceeds 100 feet in depth. The St. Peter sandstone will most probably constitute the bedrock beneath the alluvium.

Substructures for the proposed bridge should be founded on bearing piles and/or caissons founded on bedrock or other acceptable material in or beneath the alluvium. Approach embankments in the flood plain should present no special problems. Prior to final design, foundation borings and laboratory soil tests will be required in determining the position of suitable founding material and to provide data for analysis of embankment-foundation stability and settlement.

River Conditions

U. S. Lock and Dam No. 10 is located at Guttenberg, 8 miles up-

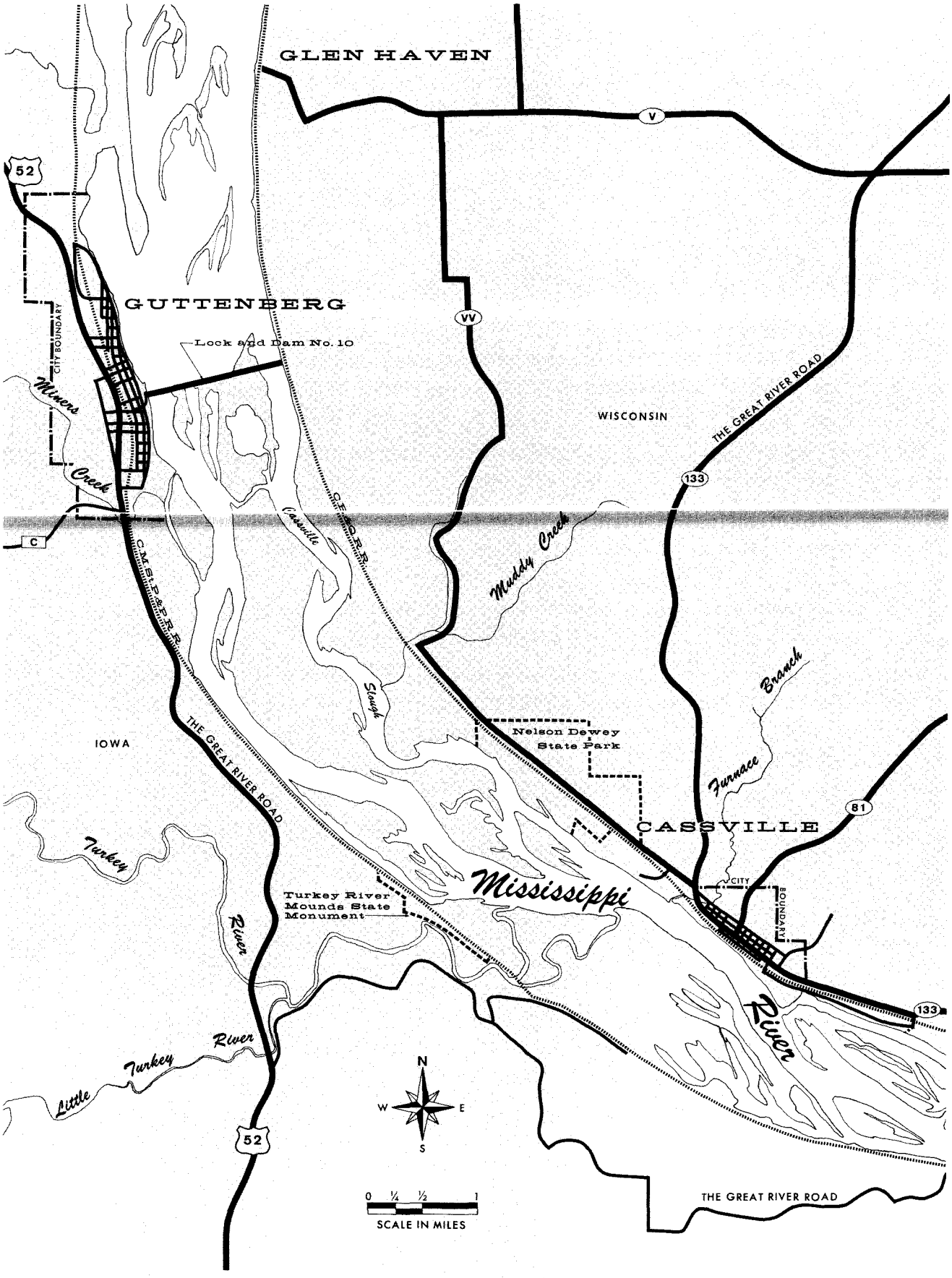


Exhibit I-1

CASSVILLE STUDY AREA

stream from Cassville. The flat pool elevation below the dam is 603.0 Mean Sea Level.

The record flood of 1965 reached Elevation 620.6 Mean Sea Level at Cassville. This flood caused only marginal damage along the river front. The second highest flood of record, in 1951, was about four feet lower than the 1965 flood. The railroads and highways serving Cassville have not been flooded during periods of extreme high water.

The navigation channel alignment consists of a sharp reversed curve upstream and downstream from the Cassville area. Between these two sections and immediately opposite the bluffs at Cassville, the channel is slightly curved for approximately one mile. Turkey River empties into the Mississippi River, from the west, one mile upstream from Cassville.

Existing Railroads

The Chicago, Burlington & Quincy Railroad mainline tracks pass through Cassville near the bank of the Mississippi River. The track elevation is approximately 625 Mean Sea Level in Cassville. Upstream from Cassville these tracks are at the base of the bluffs near the edge of the flood plain of the river.

The Chicago, Milwaukee, St. Paul and Pacific Railroad mainline tracks are located alongside the western edge of the flood plain of the river in Iowa. These tracks pass through Guttenberg, Iowa.

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 regu-

lations (Section 5 of the Act of 18 August 1894 as amended), obstructive bridges (the Act of 21 June 1940 as amended), and location and clearances of bridges and causeways in navigable waters (Section 9 of the Act of 3 March 1879, the Act of 23 March 1906 as amended, and the General Bridge Act of 1946 as amended, except Section 503).

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

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

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

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

The minimum vertical clearance for a bridge structure is 52 feet above the 2 per cent waterline elevation, or 60 feet above flat pool, whichever is higher. The 2 per cent waterline is that elevation of the river which will be exceeded only 2 per cent of the time. In the Cassville area, low steel elevation required by the 2 per cent waterline elevation specification is 664.5 Mean Sea Level, which exceeds Elevation 663.0 Mean Sea Level required by the flat pool specification.

ALTERNATE LOCATIONS

General

U. S. Route 52 is adjacent to the flood plain on the Iowa side of the Mississippi River southward from Guttenberg for a distance of two miles. At this point the alignment of the Mississippi River is straight for a distance of approximately 3,000 feet, the only straight section of this length between Guttenberg and Cassville. An Iowa bridge approach in this area would involve minimum roadway construction in Iowa. Minimum approach roadway on the Wisconsin side of the river would be required if the bridge location is in the immediate vicinity of Cassville.

Five alternative bridge locations, as shown on Exhibit I-2, were studied and evaluated for a Mississippi River crossing at Cassville.

The principal features and relative merits of all considered alternatives are summarized in the following paragraphs.

Alternate A

This location for a bridge over the Mississippi River is at the north edge of Cassville, as shown on Exhibits I-2 and I-3.

The Iowa approach road begins at a tee intersection with U. S. Route 52, a major southeast-northwest highway in northeastern Iowa, and passes down the Turkey River Valley to the Mississippi River Valley. This approach road, about 4 miles long, would follow the base of the bluffs on the south side of the Turkey River. After crossing over the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks, the approach road would extend across the flood plain of the Mississippi River to the approach spans near the bank of the main channel. Maximum horizontal curvature on this approach would be 3 degrees 30 minutes and the maximum grade would be 3 per cent. This is the most economical connection to a major highway in Iowa from a bridge located at Cassville, Wisconsin.

Wisconsin
Lock and Dam 2
ALTERNATE
ALTERNATE
Navigation
GUTTENBERG
52

Exhibit I-2

ALTERNATE BRIDGE LOCATIONS

The bridge would span the river at the north edge of Cassville. Advantages of this location are (1) The river is reasonably straight, (2) the river width, about 1,100 feet, is relatively narrow and (3) the navigation channel can be crossed at right angles.

The short Wisconsin approach, about 400 feet long, begins at a tee intersection with Wisconsin Route 133 at the north edge of Cassville, crosses over the Chicago, Burlington & Quincy Railroad and extends to the main spans. The approach grade may be limited to 4.0 per cent if a minimum depth structure is used for the railroad span. Wisconsin Route 81 and the business district of Cassville are only 1/2 mile from this bridge approach via Wisconsin Route 133.

Alternate B

The location of this alternate is approximately seven miles upstream from Cassville and about one mile downstream from Guttenberg as shown on Exhibit I-2. The Iowa approach begins at a tee intersection with U. S. Route 52 about 1/2 mile south of Guttenberg at the west edge of the flood plain. The alignment then crosses over the Chicago, Milwaukee, St. Paul and Pacific Railroad and continues across the Mississippi River flood plain for 1-3/4 miles.

The main portion of the bridge spans the river about 1 mile downstream from Guttenberg. Advantages of this location are (1) The river width, about 1,000 feet, is relatively narrow and (2) the navigation channel can be crossed at right angles.

The Wisconsin approach begins 5 miles northwest of Cassville. It then crosses over the tracks of the Chicago, Burlington & Quincy Railroad. The roadway should be improved from this point to the intersection of County Route VV, 1-1/2 miles to the southeast.

This alternate river crossing location provides better traffic service from Cassville to Guttenberg and points northwest than does the Alternate A location. However, traffic service from Cassville to points southwest is circuitous.

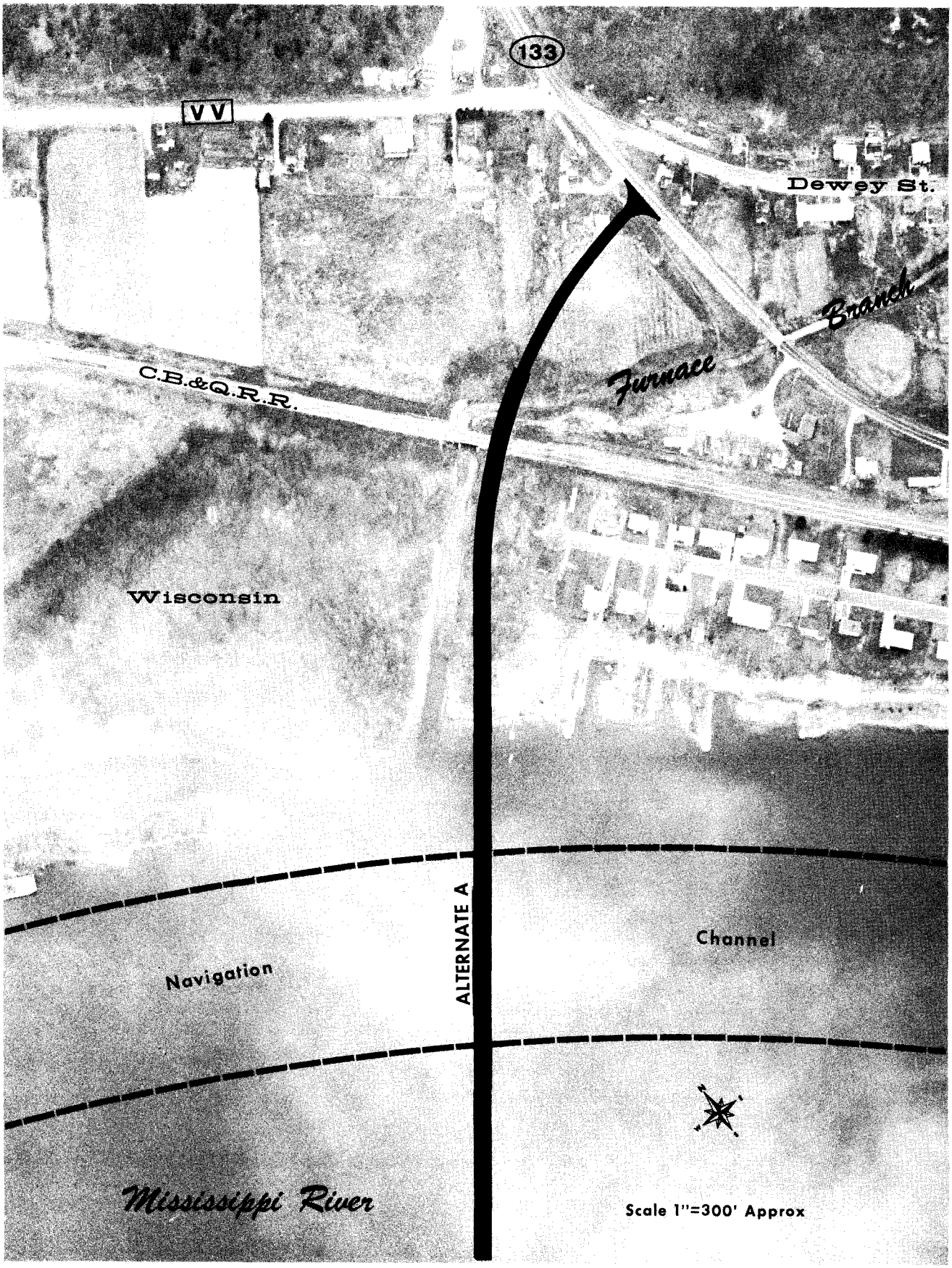


Exhibit I-3

CASSVILLE TERMINAL

Alternate C

This design utilizes the same approach road down the Turkey River Valley as does Alternate A. A somewhat longer approach across the flood plain is required to reach the main bridge at Cassville. The Cassville approach begins at the intersection of Wisconsin Route 133 and Wisconsin Route 81, in the downtown area, thus providing excellent traffic service. However, an excessively steep 7.5 per cent grade would be required to clear the Chicago, Burlington & Quincy Railroad tracks. Right-of-way requirements in Cassville would be greater than those required for Alternate A.

Alternate D

The Iowa approach, which would pass through the north side of the Turkey River Valley, would involve a 100 foot cut through the bluffs in the Turkey River Mounds State Monument adjacent to the river. The main crossing is about 2-1/2 miles upstream from Cassville. The Wisconsin approach begins at County Route VV about 1-1/4 miles from Cassville. Extensive low level trestle construction is required at this site. This location offers no advantages over Alternates A or B, and would be much more expensive.

Alternate E

This crossing is located at Guttenberg below U. S. Lock and Dam No. 10. This crossing would be sharply skewed with the navigation channel, necessitating a long main span. The Wisconsin approach extends easterly from the bridgehead across the flood plain to a point 6 miles northwest of Cassville. The roadway should be improved from this point to the intersection of County Route VV, 2 miles to the southeast. This location offers no advantages over Alternates A or B, and would be much more expensive.

Recommended Location

The Alternate A location is the most economical location for a new Mississippi River crossing in the Cassville–Guttenberg area. The project cost for this alternate is utilized in the feasibility studies developed in Part II of this report.

STRUCTURE TYPE STUDIES FOR NAVIGATION SPANS

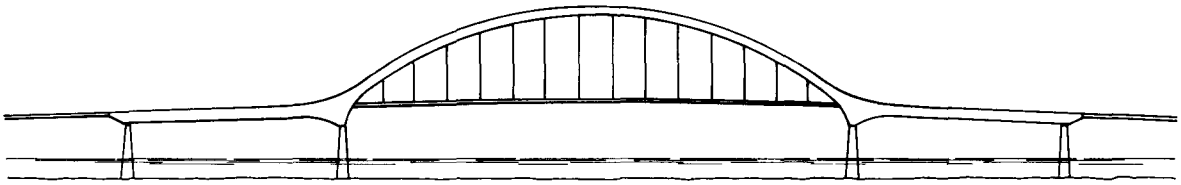
The primary intent of structure type studies as a part of this exploration study is to determine the approximate cost of a river crossing. A final recommendation for a specific type of structure cannot be made at this stage of investigations and design. The final selection of a structure type will be 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-4. 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.

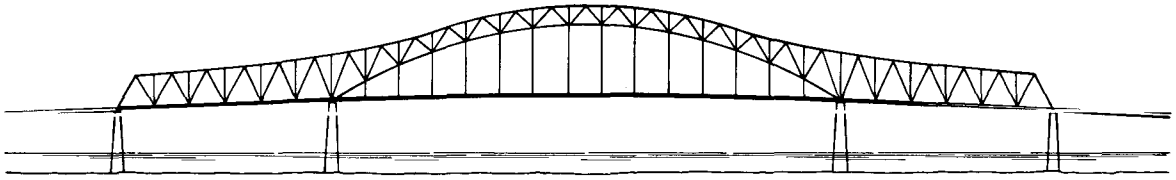
Type II navigation span of Exhibit I-4 is a Continuous Box Girder Tied Arch Span with flexible tie. The tie resists only the thrust of the arch. Without a tie the resistance would have to be provided by river piers. This type of span is considered very practical construction for bridges over the Mississippi 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-

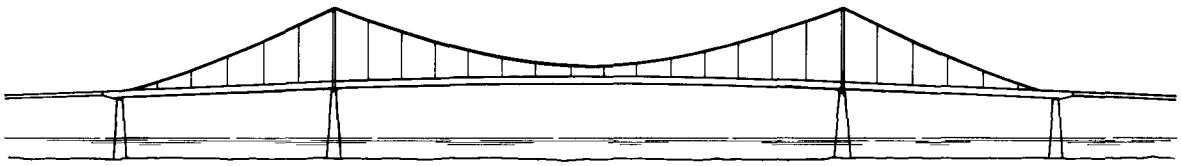
CONTINUOUS GIRDER SPAN — TYPE I



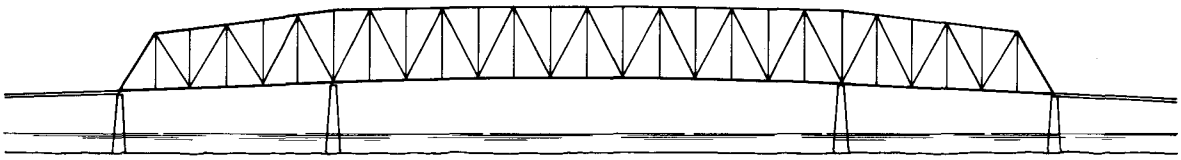
CONTINUOUS BOX GIRDER TIED ARCH SPAN — TYPE II



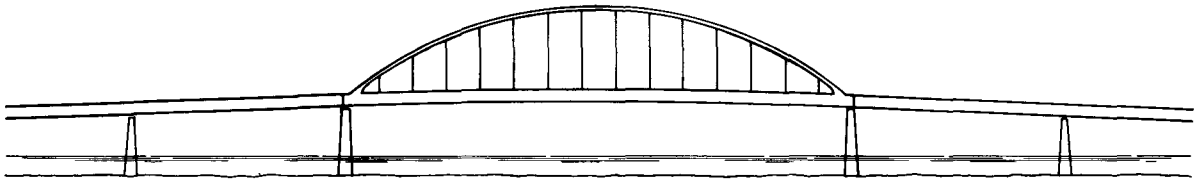
CONTINUOUS TRUSS TIED ARCH SPAN — TYPE III



SELF ANCHORED SUSPENSION SPAN — TYPE IV



CONTINUOUS TRUSS SPAN — TYPE V



BOX GIRDER TIED ARCH SPAN — TYPE VI

Exhibit I-4

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 1. 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

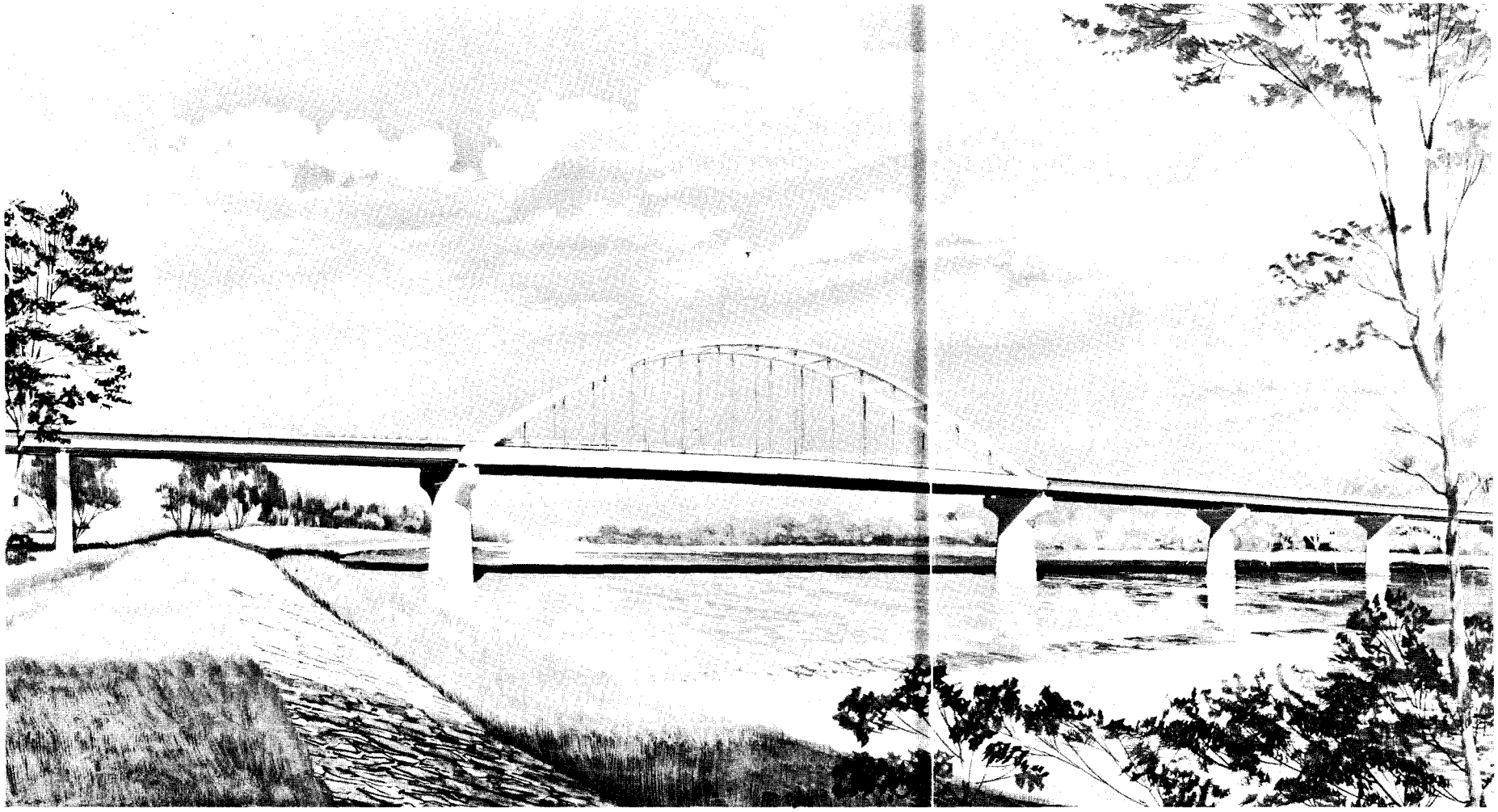


Exhibit 1-5

BOX GIRDER TIED ARCH SPAN

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-5, should be given thorough consideration in future engineering studies for a highway crossing at Cassville, Wisconsin.

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 Iowa 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.

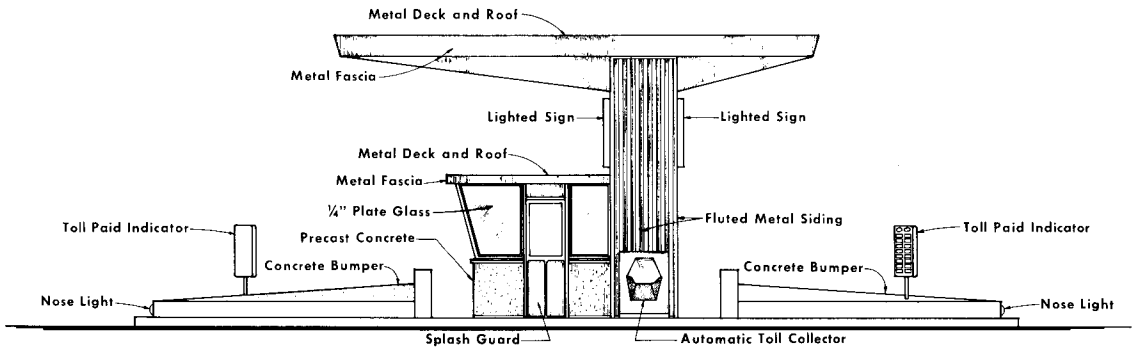
Right-of-way cost estimates were based upon fair market valuations of all real property involved. Allowances have been included for damages, severance losses and acquisition expenses.

A typical toll booth installation is shown on Exhibit I-6. The exact location of this facility on the bridge approach will be established during subsequent study phases.

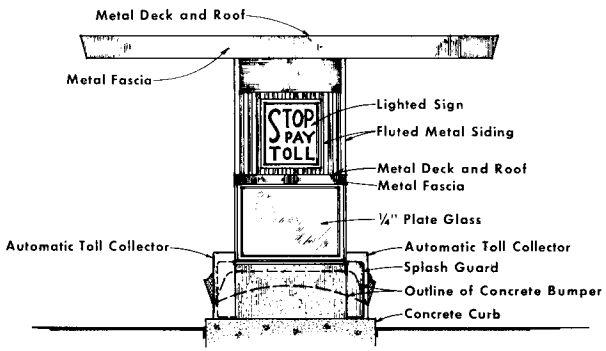
Prior to preparation of final design plans, additional engineering studies will be required. A complete subsurface investigation will be necessary to provide a firm basis for the determination of substructure type, substructure design and economical comparisons of several types of construction.

Alternate A Location

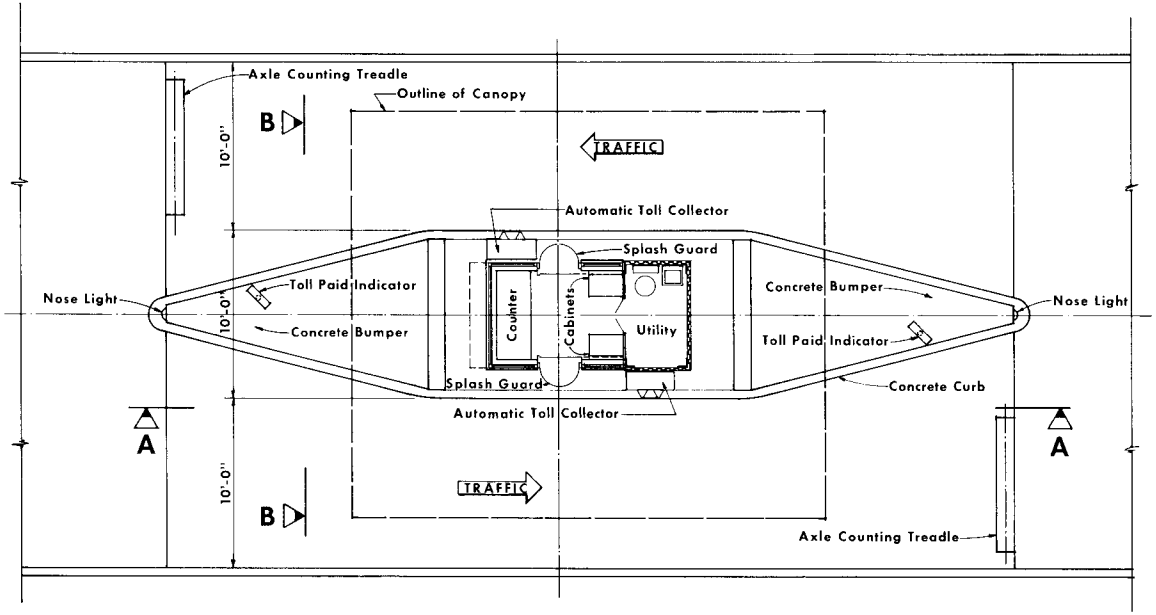
A plan, elevation and typical section for the navigation channel span of the Alternate A Mississippi River crossing is shown on Exhibit I-7. The 32 foot roadway width provides 4 feet 6 inches of lateral clearance between the right hand edge of a typical 12 foot traffic lane and the barrier rail. This 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 would be few pedestrians crossing the river, therefore sidewalks will not be necessary and have not been provided.



ELEVATION A-A



ELEVATION B-B



PLAN

5 0 5 10 15

SCALE IN FEET

Exhibit I-6

GENERAL PLAN AND ELEVATION
TOLL BOOTH

TABLE I-1

ESTIMATE OF BRIDGE CONSTRUCTION COST

ALTERNATE A

Cassville, Wisconsin, Bridge

Prestressed Beam Spans	1010 ft.
Box Girder Tied Arch Span	515 ft.
Continuous Girder Spans	1080 ft.
	2605 ft.

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

ITEM	QUANTITY	UNIT PRICE	COST
Superstructure:			
Bridge Railing	5,250 L.F.	$ 12.00	$ 63,000
Concrete	2,440 C.Y.	90.00	219,600
Reinforcing Steel	733,000 Lbs.	0.14	102,600
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	328,000 Lbs.	0.29	95,100
Girder Steel A-441	1,026,000 Lbs.	0.32	328,300
Prestressed Concrete Beam C-7	60 Ea.	$1630.00	97,800
Cast Steel and Misc. Metal	25,000 Lbs.	0.70	17,500
Navigation Lighting		Lump Sum	20,000
	SUBTOTAL		$1,741,700
Substructure:			
Concrete	5,820 C.Y.	$ 65.00	378,300
Reinforcing Steel	530,000 Lbs.	0.14	74,200
Steel Bearing Piles (14BP73)	9,600 L.F.	10.00	96,000
Steel Pile Cofferdams	47,260 S.F.	5.00	236,300
Excavation	6,850 C.Y.	10.00	68,500
	SUBTOTAL		853,300
	TOTAL BRIDGE COST		$2,595,000

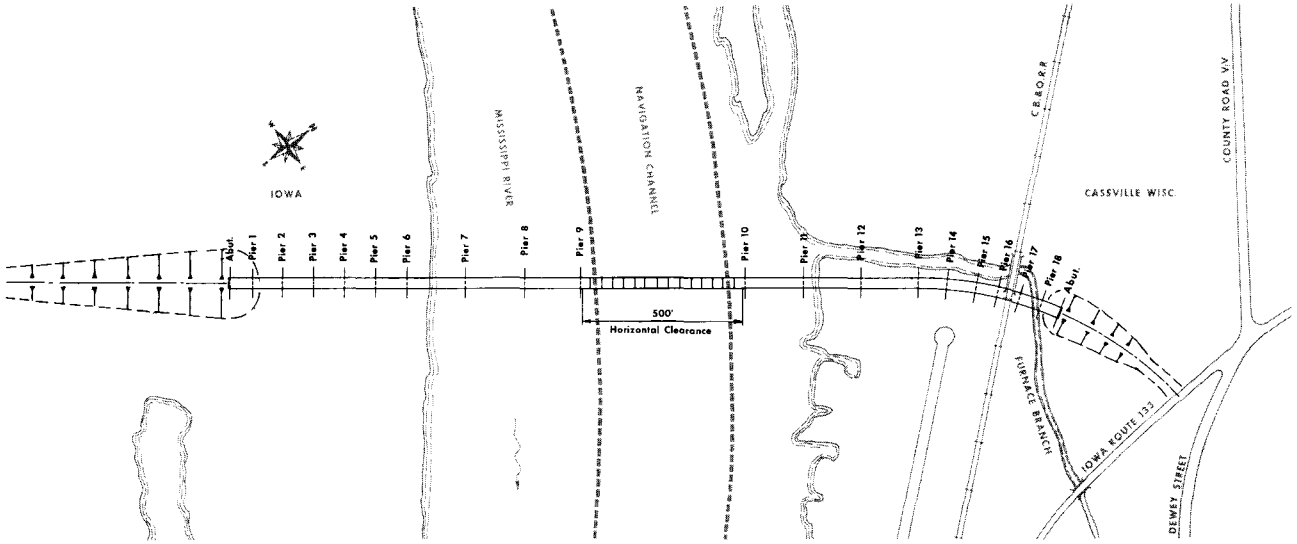
A navigation span of 500 feet measured face to face between piers on a line normal to the channel was used over the navigation channel. A Box Girder Tied Arch Span structure was estimated for this alternate. The cost of this aesthetically pleasing structure should compare favorably with other types of spans.

The estimated construction cost of the river bridge at the Alternate A location is $2,595,000. 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.

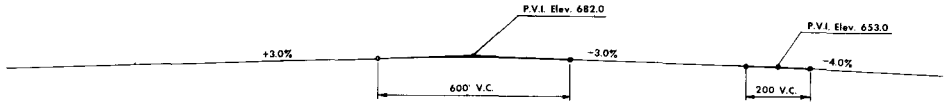
The total estimated project cost for Alternate A is shown in Table I-2.

Operation and Maintenance

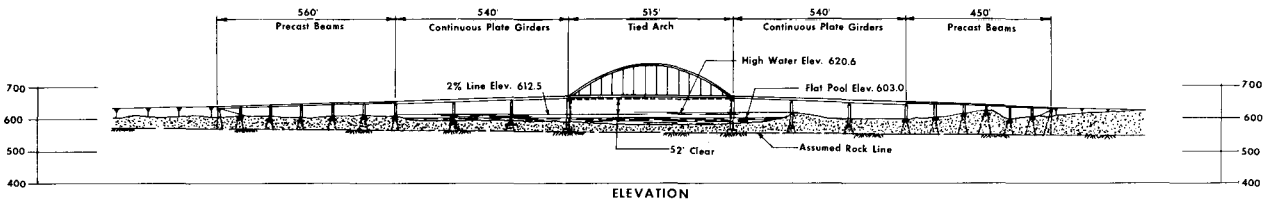
The estimate of first year expenses for operation and maintenance for the Alternate A location is shown in Table I-3. Inasmuch as operation of the bridge by the Iowa State Highway Commission will be somewhat different than that of a private operator, several cost assumptions have been made: (1) No per 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 a private operation. Since the proposed bridge will be owned by a public agency, it has been assumed that it will not be subject to property or local taxes.



PLAN

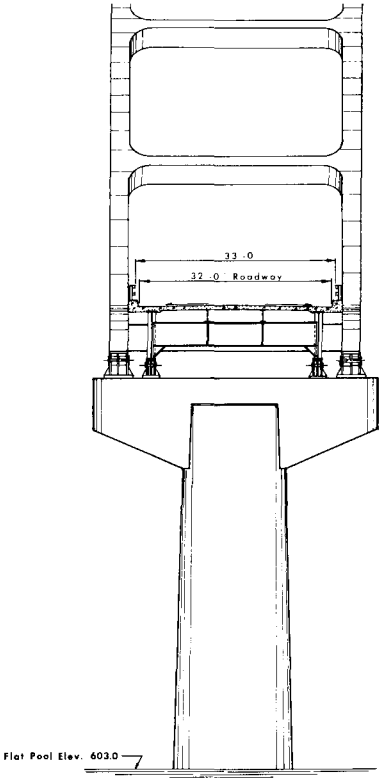


PROFILE GRADE



ELEVATION

100 0 100 200 300 400
SCALE IN FEET



SECTION THRU PLATE GIRDER SPAN
NEAR CHANNEL PIER

10 5 0 10 20
SCALE IN FEET

Exhibit I-7

ALTERNATE A LOCATION

GENERAL PLAN AND ELEVATION

TABLE I-2

SUMMARY OF ESTIMATED PROJECT COSTS

Cassville, Wisconsin, Bridge

	ALTERNATE A	
	IOWA	WISCONSIN
Roadway	$ 1,970,600	$ 38,200
Structures	2,683,000	—
Subtotal	4,653,600	38,200
Toll Booth Complex	85,000	—
Engineering and Contingencies	947,700	6,600
Total Construction	5,686,300	44,800
Right - of - Way	16,700	3,500
Acquisitions and Contingencies	4,300	700
Administration and Legal	3,700	1,000
Total	$ 5,711,000	$ 50,000 *
Total Project Cost	$5,761,000	

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

TABLE I-3

ESTIMATE OF FIRST YEAR EXPENSES
FOR
OPERATION AND MAINTENANCE

Cassville, Wisconsin, Bridge

ADMINISTRATION		
Toll Sergeant	$ 6,600	
Travel and Car Expense	1,000	
Consulting Engineers	3,600	
Miscellaneous	800	
Total Administration		$12,000
OPERATION		
Toll Collectors	$24,000	
Utilities	2,000	
Supplies and Postage	2,000	
Employee Benefits	3,000	
Total Operation		$31,000
REPAIRS AND MAINTENANCE*		5,000
INSURANCE		6,000
MAINTENANCE RESERVE		6,000
Total Operation and Maintenance		$60,000

*By District maintenance forces on force account cost basis.

PART II

ESTIMATED PRELIMINARY TRAFFIC AND REVENUES AND PROJECT FEASIBILITY

INTRODUCTION

A general economic evaluation was made of the area which would be directly served by the proposed Cassville Bridge as a guide in projecting future traffic growth. Route reconnaissance investigations were conducted to inventory present traffic facilities and to determine average operating speeds and other traffic service characteristics.

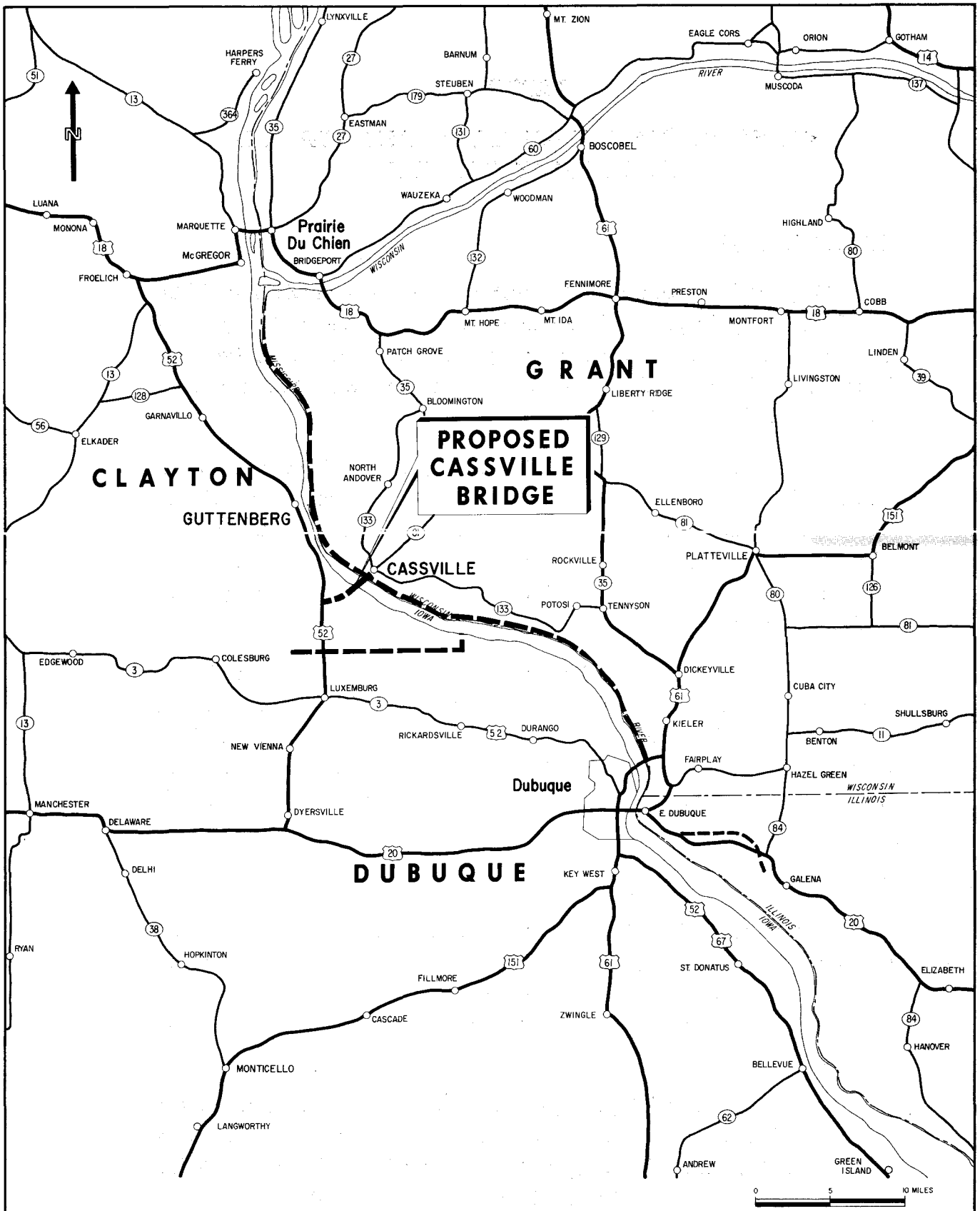
Using available travel pattern information, the travel speed and route inventory data and empirical diversion curves, developed from studies of similar facilities, traffic assignments were made to a modern toll crossing in the Cassville area. Preliminary assignments were made at various toll rates to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

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

Proposed Cassville Bridge

The proposed Cassville Bridge would be designed as a modern, two-lane structure with minimum approach road grades and adequate lane widths. The facility would have a 32-foot, curb-to-curb section enabling smooth, efficient and safe passage for all vehicle types. The bridge would operate as a toll crossing.

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 study. The location of this alignment is depicted 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 and recent growth trends in the area which would be directly served by the proposed bridge. These indices included population, retail sales and average effective buying income per family. In addition, trends in motor vehicle registrations and motor fuel consumption, both excellent indicators of travel growth, were analyzed.

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

Study Area Characteristics

Cassville is located in Grant County and serves as a retail center for the eastern portion of the county. There are two large power plant installations in the Cassville area — the Wisconsin Power and Light Company and the Dairyland Power Cooperative complexes. Like many of the other communities in Grant County, many industrial workers and selective shoppers are attracted to the large industrial and commercial center of Dubuque for employment and shopping.

There are several state parks located in Wisconsin and Iowa in or near the vicinity of the proposed Cassville Bridge. These include Pike's Peak Park in northern Clayton County and Wyalusing State Park in northern Grant County. The Nelson Dewey State Park is located very close to the proposed bridge as is Stonefield Village, which features exhibits of Early American farm machinery, notably the McCormick collection. It has been estimated that 40,000 people will visit Stonefield Village in 1968.

Guttenberg, across the Mississippi River and to the north of Cassville is somewhat larger in population. It serves a considerably larger area as a retail

sales and farm machinery service center. As in the case of Cassville, Guttenberg is also heavily oriented toward Dubuque for employment and selective shopping purposes.

Population Trends

In 1960, Cassville had a population of 1,290. This was a substantial increase over the 1950 population of 984, representing an average annual growth of 2.7 per cent during the intervening decade. As shown in Table II-1, Guttenberg experienced a population increase from 1,912 in 1950 to 2,087 in 1960 — an average annual growth of 0.9 per cent. In 1960, Elkader, a community located to the west of Guttenberg, had a population of 1,526. In Wisconsin, Lancaster, northeast of Cassville, recorded a 1960 population of 3,703. A total of 671 persons resided in Dickeyville and 6,957 in Platteville. To the north, Prairie du Chien had a population of 5,649 and to the south, Dubuque recorded a 1960 population of 56,606.

The three-county study area which would be most advantageously served by the proposed Cassville Bridge is depicted in Exhibit II-1. The counties include Clayton and Dubuque in Iowa and Grant in Wisconsin. Between 1950 and 1960, the combined population of the three-county study area increased an average of 0.8 per cent annually from 135,319 to 146,429. During the next six years, the rate of increase accelerated to an average of 1.0 per cent per year. The 1966 population of the study area was 160,500. Most of the growth within the study area over the past 16 years occurred in Dubuque County. A nominal increase was recorded in Grant County with a slight decrease realized in Clayton County.

The average annual population growth of 1.0 per cent in the three-county study area over the last six years compared with growths of 1.1 per cent recorded statewide in Illinois, 0.3 per cent in Iowa and 1.2 per cent in Wisconsin. The average annual growth recorded nationwide, over the same period, was 1.6 per cent.

TABLE II-1

POPULATION TRENDS

AREA	1950	AVERAGE ANNUAL PER CENT CHANGE	1960	AVERAGE ANNUAL PER CENT CHANGE	1966
Cities:					
Cassville	984	2.7	1,290		N.A.
Dickeyville	269	9.6	671		N.A.
Dubuque	49,671	1.3	56,606	1.9	63,000
Elkader	1,584	—0.4	1,526		N.A.
Guttenberg	1,912	0.9	2,087		N.A.
Lancaster	3,266	1.3	3,703		N.A.
Luxemburg	120	2.9	159		N.A.
Platteville	5,731	2.0	6,957		N.A.
Prairie du Chien	5,392	0.5	5,649	1.0	6,000
Counties:					
Clayton	22,522	—0.2	21,962	0.3	22,400
Dubuque	71,337	1.2	80,048	2.3	92,500
Grant	41,460	0.7	44,419	0.4	45,600
Three-County Total	135,319	0.8	146,429	1.0	160,500
States:					
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
Wisconsin	3,434,575	1.4	3,951,777	1.2	4,247,100
United States[1]	150,697,361	1.7	178,464,236	1.6	196,208,200

N.A. = Not Available.

[1] Does not include Alaska and Hawaii.

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

Trends in Retail Sales

Retail sales in the three-county study area have shown good growths over the last decade. In 1956, total retail sales of $152,069,000 were recorded increasing to $225,673,000 in 1966. The average annual growth over the period 1956-1961 was 4.5 per cent and between 1961 and 1966 — 3.5 per cent. The growth over the first five-year period, 1956-1961, exceeded that experienced in Iowa, Illinois, Wisconsin and the national average. During the next five years, however, the growth rate was somewhat below that recorded individually in the three states and also less than the national growth.

Average Effective Buying Income Per Family Trends

In 1956, the average effective buying income per family in the three-county study area was $5,063. By 1966, this had increased to $7,562 representing an average annual growth of 1.4 per cent between 1956 and 1961 and 7.0 per cent between 1961 and 1966.

The excellent growth recorded over the last five years was slightly below the statewide average for Iowa but considerably above the growths evidenced in Illinois, Wisconsin and the nation. In terms of relative levels, the three-county study area average income in 1966 of $7,562 was considerably below the $9,998 recorded in Illinois, the $8,416 in Iowa, the $8,418 in Wisconsin and the national average of $8,522.

Trends in Motor Vehicle Registrations

Motor vehicle registrations in the three-county study area in 1956 amounted to 56,028. By 1966, this had increased to 73,940 with average annual growths of 2.2 and 3.5 per cent recorded during the periods 1956-1961 and 1961-1966, respectively.

Over the last five years, the average annual growth in motor vehicle registrations in the three-county study area compared very favorably with the growths realized in Illinois (3.5 per cent), Iowa (3.6 per cent), Wisconsin (2.8 per cent) and the nation (4.4 per cent).

Motor Fuel Consumption Trends

Reflecting the growths in personal income and motor vehicle registrations in the last decade, personal travel, as measured by motor fuel consumption, also increased substantially. Motor fuel consumption in Iowa increased an average of 2.0 per cent per year between 1956 and 1961; this accelerated to an average annual growth of 2.5 per cent between 1961 and 1966. Motor fuel consumption growths in Iowa during the past ten years were somewhat below those recorded in Illinois and Wisconsin and also the nation.

Future Growth

Aside from Clayton County, available projections indicate a continued growth in population in the study area through 1980 and1990. For the total study area, anticipated increases in population will far exceed the slight decrease forecast for Clayton County. As shown in Table II-2, an average annual population increase of 1.6 per cent is projected for Dubuque County, a growth of 0.8 per cent for Grant County, and a nominal decrease of 0.3 per cent for Clayton County. Among the several communities in the bridge influence area, population growths are anticipated in Luxemburg, Guttenberg and Dubuque. Elkader is expected to realize a slight decrease in population.

Extensive studies have been made by the Wisconsin Department of Resource Development of future population and employment growths in the SW Wisconsin Planning Area IV which includes La Crosse, Monroe, Vernon, Crawford, Richland, Sauk, Grant, Iowa, Lafayette and Green Counties. As

TABLE II-2

POPULATION PROJECTIONS

AREA	ACTUAL 1960	AVERAGE ANNUAL PER CENT CHANGE	ESTIMATED 1980	ESTIMATED 1990
Municipalities:				
Dubuque	56,606	1.5	75,913	
Elkader	1,526	— 0.5	1,388	
Guttenberg	2,087	0.8	2,421	
Luxemburg	159	2.7	270	
Counties:				
Clayton	21,962	— 0.3	20,470	
Dubuque	80,048	1.6	110,580	
Grant	44,419	0.8		56,209
States:				
Iowa	2,757,537	0.8	3,192,000	
Wisconsin	3,951,777	1.4		5,916,775

SOURCE: Iowa State Highway Commission; Wisconsin Department of Resource Development.

shown in Table II-3, a slight population decrease is projected between 1960 and 1970 with the trend reversing during the next decade to reflect a nominal growth in population, averaging 0.2 per cent per year.

Employment projections for the SW Wisconsin Planning Area IV envision a generally stable outlook for the next two decades. It is anticipated that agricultural employment will continue to steadily decline with compensating growths occurring in professional-educational and industrial employment.

TABLE II-3

POPULATION AND EMPLOYMENT PROJECTIONS

ITEM	1960	AVERAGE ANNUAL PER CENT CHANGE	1970	AVERAGE ANNUAL PER CENT CHANGE	1980
Population					
SW Wisconsin Planning Area IV[1]	307,600	— 0.1	305,663	0.2	313,018
Employment					
SW Wisconsin Planning Area Total	78,344	— 0.4	74,665	—	74,614
Agriculture	31,368	— 2.2	23,743	— 1.9	18,930
Retail Trade	16,369	—	16,369	—	16,369
Prof'l. & Educ.	12,684	2.0	15,466	2.0	18,864
Industrial	17,923	0.6	19,087	0.7	20,451

[1] Established for analysis and planning purposes by the Wisconsin Department of Resource Development and comprised of La Crosse, Monroe, Vernon, Crawford, Richland, Sauk, Grant, Iowa, Lafayette and Green Counties.

SOURCE: Wisconsin Department of Resource Development.

Future travel in the study area will be greatly influenced by increased recreational movements as leisure time and general prosperity increases. For example, over the last two years, statewide use of Iowa State Parks has increased from a total attendance in 1965 of 9,031,100 to 9,851,074 in 1967. Comparable growths have occurred in usage of state parks located in Wisconsin and Illinois. There are numerous state parks in Iowa and Wisconsin within easy driving range of the bridge influence area and this, in itself, will serve to generate additional travel in the bridge corridor.

The Wisconsin Outdoor Recreation Plan, has forecast substantial increases in all types of recreational activities. Between 1960 and 1980, it is estimated that recreational activity will expand at an average annual rate slightly less than 3.0 per cent per year. It is expected that this rate of growth will accelerate to almost 4.0 per cent per year during the period beyond 1980.

One important recreational activity — pleasure driving — is expected to record excellent growths into the foreseeable future. For example, in Crawford and Grant Counties it is estimated that pleasure driving activity on an average summer Sunday, will increase at an average annual rate of approximately 3.5 per cent between 1960 and 1980 and that participation by out-of-state drivers, notably Iowa, will exceed the growth rate of participation by local Wisconsin residents. It is expected that participation by out-of-state drivers will increase at an average annual rate of 4.2 per cent with approximately 5,170 pleasure driving trips made in the two-county area by out-of-state residents in 1960. By 1980, it is expected that this figure will have increased to more than 10,000 trips.

Many of these out-of-state pleasure driving trips will originate in Iowa. A high percentage of these motorists entering the two-county area will be potential to the proposed Cassville Bridge.

Future highway programs will include the Great River Road, planned as a scenic route on both sides of the Mississippi River. This road is proposed to be developed along the entire length of the Mississippi River by improving suitable sections of existing roads to parkway-like standards and incorporating them into a continuous route with sections of new construction as needed.

In Cassville, there is local interest in establishing a Comprehensive Planning Program; notification of approval and funding by the State Department of Resources Development has been received. Approval of an application to the Department of Housing and Urban Development for financing the development of the river front area under the open space program has been received. A proposed harbor improvement project, which could accommodate up to 120 small craft, has received plan approval by the Rock Island District of the U. S. Army Corps of Engineers.

TRAFFIC STUDIES

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

Route Reconnaissance

All of the highways located in the rural portions of the bridge travel corridor are two-lane facilities. U. S. Route 52, from Luxemburg to U. S. Route 18, has an 18-foot pavement with a sufficiency rate of critical. Iowa Route 3, between Luxemburg and Dubuque, has recently been repaved and has a pavement width ranging from 20 to 24 feet in rural areas to 48 feet near Dubuque; sufficiency ratings range from good on the newly paved section to critical on other segments. U. S. Route 18, from McGregor to U. S. Route 52, has a pavement width of 18 feet with a sufficiency rating of critical.

Posted speed limits in the bridge study area range downward from the 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 Volume

The importance of the study area highways, in terms of relative traffic volumes carried, is depicted in Exhibit II-2. Both U. S. Route 52 in Iowa and U. S. Route 61 in Wisconsin are shown as the major north-south oriented traffic arteries in the area. U. S. Route 20 to the south of Dubuque carries the highest east-west oriented traffic volumes with U. S. Route 18, the next most traveled route. Presently, Wisconsin Routes 81 and 133 serve relatively low volumes — less than 500 vehicles per day in the vicinity of Cassville.

TRAFFIC FLOW MAP

1965 AVERAGE DAILY TRAFFIC

Wilbur Smith and Associates

EXHIBIT II-2

The importance of larger urban areas such as Dubuque and Prairie du Chien, in relation to the smaller communities in the proposed Cassville Bridge corridor is illustrated in Exhibit II-2. Significant traffic volume build-ups occur on the highways approaching the Marquette-Prairie du Chien area and the major routes entering the Dubuque urban area.

Annual Traffic Trends

Annual traffic trends on the Prairie du Chien Bridge and the two bridges in Dubuque — the Eagle Point and Julien Dubuque crossings — are shown in Table II-4.

Prairie du Chien Bridge — Use of the Prairie du Chien Bridge has increased from an average daily traffic level of 2,370 vehicles in 1957 to 3,390 in 1967. This represents an average annual growth of 3.6 per cent. During the last five years, 1962 to 1967, an average annual increase of 4.3 per cent was realized.

Eagle Point Bridge — In 1958, the Eagle Point Bridge carried an average of 1,690 vehicles per day. In 1967, an average of 2,670 vehicles were accommodated on an average day representing an average annual growth of 5.2 per cent since 1958. During the last five years, 1962-1967, an average annual increase in bridge usage of 5.9 per cent occurred.

Julien Dubuque Bridge — This facility, located in the vicinity of downtown Dubuque carries substantially higher volumes than the other two river crossings. In 1957, an average of 8,600 vehicles per day used the bridge. By 1967, this increased to an estimated 13,200 vehicles per day representing an average annual growth over the ten-year period of 4.4 per cent. The increase over the last five years averaged 3.9 per cent per year.

TABLE II-4

ANNUAL TRAFFIC TRENDS
Trans-River Crossings

YEAR	PRAIRIE DU CHIEN BRIDGE	EAGLE POINT BRIDGE	JULIEN DUBUQUE BRIDGE
		(Average Daily Traffic)	
1957	2,370	N.A.	8,600
1958	2,400	1,690	8,600
1959	2,590	1,780	8,600
1960	3,210	1,860	9,370
1961	3,250	2,020	10,130
1962	2,740	2,000	10,900
1963	3,130	2,080	11,270
1964	2,980	2,210	11,630
1965	2,840	2,250	12,000
1966	3,270	2,580	12,700
1967	3,390	2,670	13,200[1]
AVERAGE ANNUAL GROWTH			
1957-1967	3.6	5.2[2]	4.4
1962-1967	4.3	5.9	3.9

N.A. = Not Available.

[1] Estimated AADT.

[2] Nine-year average.

SOURCE: Wisconsin Department of Transportation, Illinois State Highway Department, The Dubuque Bridge Company.

Monthly Traffic Variations

Monthly variations in traffic on U. S. Route 18 and Wisconsin Route 35 in Wisconsin and U. S. Route 52 in Iowa, in the vicinity of the proposed bridge, indicate that the months of July and August represent peak travel periods with volumes ranging from 18 to 45 per cent above the average month. On all three highways, the period January through March recorded the lowest traffic volumes — dropping as low as 38 per cent below the average month of the year.

Origin and Destination Studies

In the summer of 1961, the Iowa State Highway Commission participated with adjoining states to conduct roadside origin and destination surveys at a series of locations adjacent to the Mississippi River as part of a Regional Multiple Screenline Study. One of the study locations was the U. S. Route 18 bridge at Prairie du Chien. The travel patterns developed from the interview survey were used to determine what trips might be divertible from this bridge to the proposed Cassville Bridge.

In the spring of 1965, the Planning Division of the Iowa State Highway Commission conducted field surveys to obtain travel pattern data for an origin and destination traffic report for the Dubuque Metropolitan Area. As part of the study, roadside interview stations were conducted on all primary and secondary highways on a cordon line at the Dubuque Metropolitan Area boundary. The study area included East Dubuque in Illinois. These data were supplemented by home interview surveys conducted within the cordon limits of the study area. Utilizing the combined external station and home interview data, total trans-river trips in the Dubuque Metropolitan Area were determined and used in making traffic assignments to the proposed bridge at Cassville.

Vehicle Classification Counts

Vehicle classification counts were made by the Wisconsin Department of Transportation on the Prairie du Chien Bridge in 1967. Vehicle type composition on the Eagle Point Bridge was determined from records of the Dubuque Bridge Company.

As shown in Table II-5, the number of passenger cars using the Prairie du Chien Bridge far overshadowed all other vehicle types accounting for 2,816 of the total of 3,390 vehicles recorded on an average day in 1967. Two-axle trucks were the next most important vehicle type — 471 vehicles. Due to weight restrictions in effect on the bridge, relatively few larger vehicles were recorded.

TABLE II-5

VEHICLE CLASSIFICATION COUNT
Prairie du Chien Bridge
1967

VEHICLE CLASSIFICATION	AVERAGE ANNUAL DAILY TRAFFIC
Passenger Cars	2,816
Single Unit Trucks	
Two-axle	471
Three-axle	39
Buses	
School	5
Two-axle	2
Semis	
Three-axle	13
Four-axle	24
Five-axle	20
TOTAL	3,390

SOURCE: Wisconsin Department of Transportation.

Semi-trailer trucks are prohibited on the Eagle Point Bridge. As a result, most of the vehicles now using the facility are passenger cars or light trucks. As shown in Table II-6, on an average day in 1967, 2,582 of the 2,670 vehicles using the bridge were automobiles with 1,018 having but one occupant and the remaining 1,564 with two or more occupants.

TABLE II-6

VEHICLE CLASSIFICATION COUNT
Eagle Point Bridge
1967

VEHICLE TOLL CLASS	AVERAGE ANNUAL DAILY TRAFFIC
Passenger Car	
Driver only	1,018
Two or more occupants	1,564
Hauling one-axle trailer	18
Hauling two-axle trailer	1
Hauling cabin trailer	4
Hauling house trailer	1
Bus[1]	
Two-Axle Truck	
1-2 ton	57
Over 2 ton	7
Semis (Prohibited)	
TOTAL	2,670

[1] Negligible.

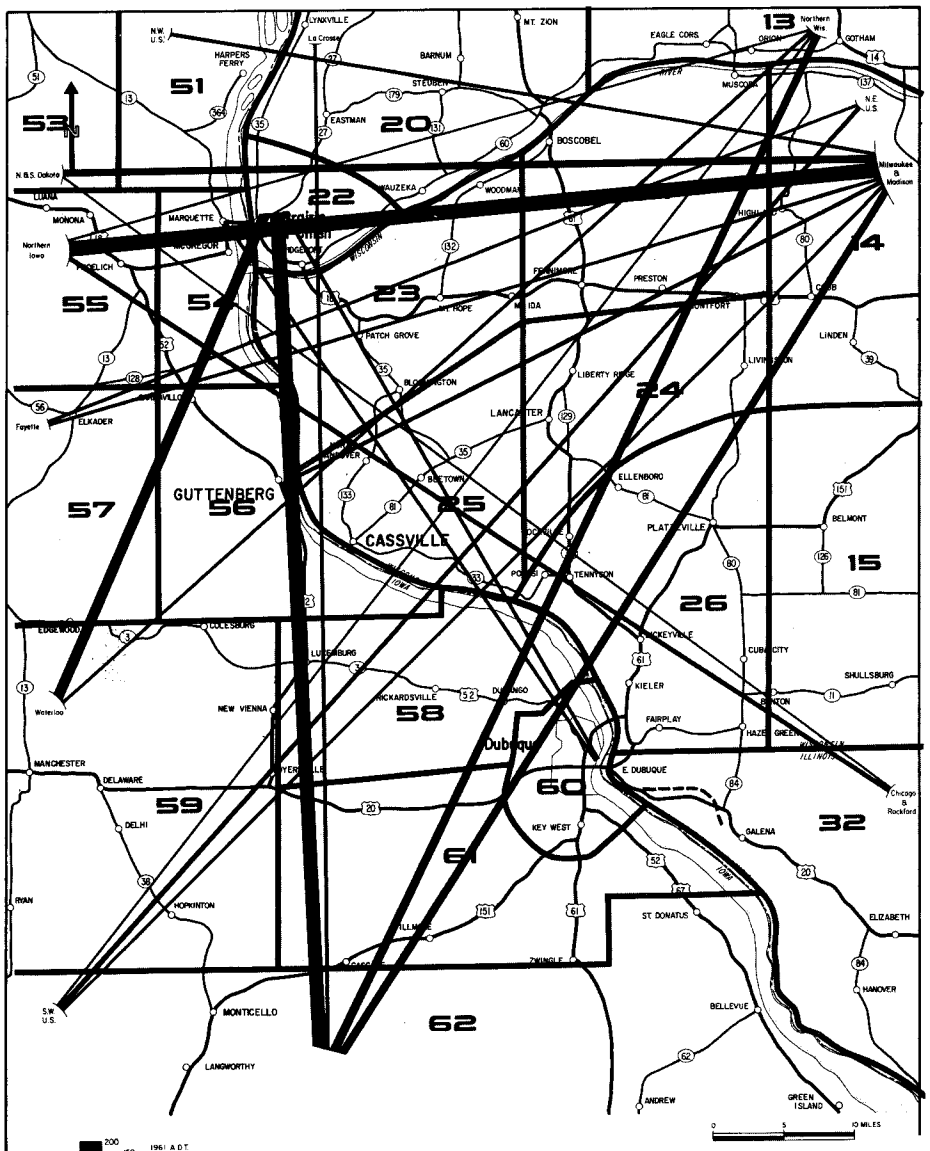
SOURCE: The Dubuque Bridge Company.

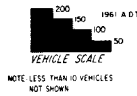
Travel Desires

The origin and destination data collected during the 1961 interview survey on the Prairie du Chien Bridge and the 1965 data obtained on the Dubuque bridges were coded to the geographic traffic zone patterns partially shown in Exhibit II-3. The illustration also depicts the travel desires which would be wholly or partially potential to the proposed Cassville Bridge. The Prairie du Chien Bridge desire lines represent an average day in 1961 and the Dubuque bridges travel desires — an average day in 1965. The width of the flow bands shown in the illustration are proportional to the number of trips moving between each zone pair.

Relatively little local traffic, potential to the proposed bridge, was found on the Prairie du Chien crossings. The majority of the movements, considered in some measure assignable to the new facility, were longer distance trips. For example, the largest movement was that between the Madison-Milwaukee area and central-western Iowa — 67 vehicles per day. The next largest movements were 66 vehicles per day moving between Prairie du Chien and the east-central-southeastern portion of Iowa and 51 vehicles between Prairie du Chien and central-western Iowa. The remaining movements were of considerably smaller magnitude.

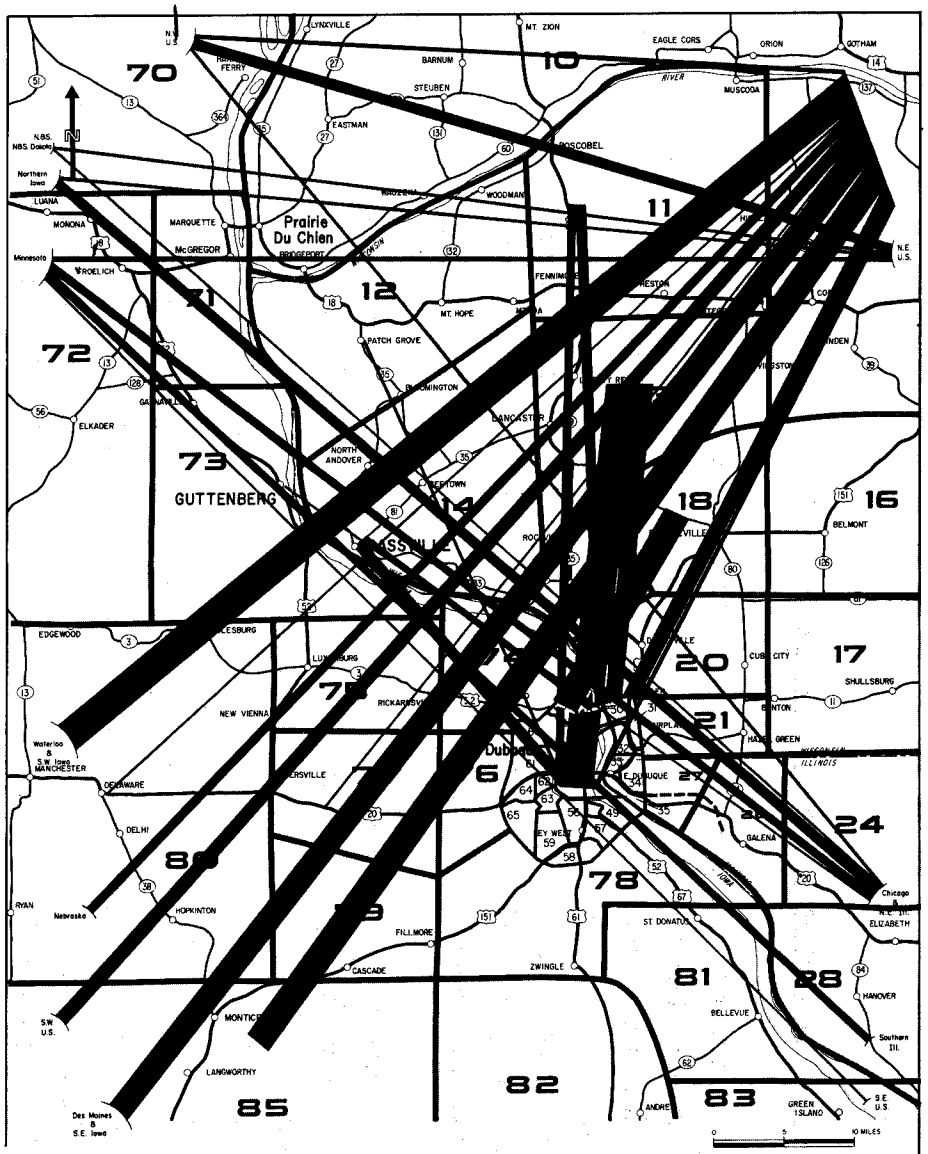
The area in Wisconsin beyond Grant and Lafayette Counties was the generator of a high percentage of trips considered in some measure assignable to the proposed Cassville Bridge from the Dubuque bridges. For example, 142 vehicles per day had origins or destinations in that area and their other trip terminus in north-central-southwestern Iowa, 125, had western termini in east-central Iowa and 107 in southeastern Iowa. The most important local or shorter distance movement was between the Platteville area and an urban area traffic zone in northern Dubuque near Sageville — 125 trips per day. The remainder of the trips now using the Dubuque bridges and considered in some measure potential to the proposed Cassville Bridge, were all under 100 vehicles per day.

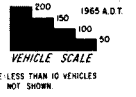




PRAIRE DU CHIEN BRIDGE

1961 AVERAGE DAILY TRAFFIC





DUBUQUE BRIDGES

1965 AVERAGE DAILY TRAFFIC

TRAVEL DESIRES

Wilbur Smith and Associates

EXHIBIT II-3

Typical Time-Distance Relationships

Representative time-distance relationships for several movements which could use either the proposed Cassville Bridge or the closest crossings to the north or south are shown in Table II-7. The travel times and distances indicated were developed from the route reconnaissance studies conducted on all pertinent highways serving the alternate river bridges. The driving times represent average speeds rather than the fastest driving time that could be achieved between the various trip termini indicated.

On a trip between Cassville and Guttenberg, the proposed bridge would provide very significant time and distance savings — 68 minutes and 45 miles over the best existing routing using the Prairie du Chien Bridge. Good savings would also result through use of the proposed bridge on trips between Cassville and McGregor — 11 miles and 16 minutes and between Guttenberg and Fennimore — 13 miles and 25 minutes. On a trip between Cassville and Dubuque, the proposed bridge would save one mile and four minutes while use of the bridge on a movement between Elkader and Lancaster would be nine miles longer but three minutes shorter in travel time than the best present crossing.

TABLE II-7

TYPICAL TIME-DISTANCE RELATIONSHIP

BETWEEN	VIA	DISTANCE (Miles)	TIME (Min.)	AVERAGE M.P.H.	SAVINGS VIA PROPOSED BRIDGE (Miles)	SAVINGS VIA PROPOSED BRIDGE (Min.)
Cassville and Guttenberg	Proposed Bridge	9	14	37	45	68
	Prairie du Chien Bridge	54	82	40		
Cassville and McGregor	Proposed Bridge	26	40	38	11	16
	Prairie du Chien Bridge	37	56	40		
Cassville and Dubuque	Proposed Bridge	37	51	44	1	4
	Eagle Point Bridge	38	55	42		
Elkader and Lancaster	Proposed Bridge	66	82	48	−9	3
	Prairie du Chien Bridge	57	85	40		
Guttenberg and Fennimore	Proposed Bridge	38	52	44	13	25
	Prairie du Chien Bridge	51	77	40		

ESTIMATED TRAFFIC AND REVENUES

Estimated traffic and revenues for the proposed Cassville Bridge are based upon the number of motorists who will be diverted from the present bridges at Prairie du Chien and Dubuque. 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 Cassville Bridge are predicated on the following assumptions:

1. The facility will be open to traffic on July 1, 1971.
2. The bridge will be constructed on the alignment and with the approaches discussed in this report.
3. No other new river crossings will be constructed in the reach of the Mississippi River between Prairie du Chien and Dubuque.
4. The toll schedule recommended in this report will be implemented.
5. The bridge will be adequately maintained, efficiently operated and effectively signed to encourage maximum usage.
6. The present general trend in economic activity in the bridge study area will continue and no national emergency will arise which will abnormally restrict the use of motor vehicles.

Any departure from the above conditions could materially affect estimated usage 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 the best toll structure for the proposed Cassville Bridge. These studies indicated that the preliminary toll schedule, shown in Table II-8, would produce optimum revenues for the proposed facility while maintaining a high level of traffic service. A higher toll would discourage usage to the point where total revenues would be less than those estimated under the recommended schedule. Conversely, a lower toll would increase usage but not sufficiently to produce higher revenues than those projected.

Under the recommended toll schedule, motorists driving two-axle vehicles would pay an $0.80 cash toll for each crossing; a commutation or ticket toll would be available for two-axle patrons who use the bridge frequently. The commutation toll could take the form of a 10-trip ticket book which would

TABLE II-8

RECOMMENDED TOLL SCHEDULE

VEHICLE TOLL CLASS	DESCRIPTION	TOLL
1	Two-axle vehicles (cash)	$0.80
2	Two-axle vehicles (ticket)	0.40
3	Three-axle vehicles and vehicle combinations	1.20
4	Four-axle vehicles and vehicle combinations	1.60
5	Five-axle vehicles and vehicle combinations	2.00
	Each additional axle	0.40

cost $4.00 and have a time limit of one week. Upon surrendering a ticket, the motorist would also have to show the toll ticket book to the attendant. More detailed studies might show that a larger ticket book would be more practical, say a book containing 20 tickets for $8.00 and good for a two-week period.

Larger vehicles would pay a cash toll only. For example, a three-axle vehicle or vehicle combination would be assessed $1.20, a four-axle vehicle — $1.60 and a five-axle vehicle — $2.00.

The recommended toll schedule is based upon a per-axle cash toll of $0.40 which will provide maximum control and auditing benefits as well as being easily understood by bridge users. In addition, local bridge users, those making frequent trips across the facility, would be given the economic benefit of a lower toll through use of a ticket book.

Estimated Base Year (1967) Traffic Assignments

The number of motorists that would use the proposed Cassville Bridge at 1967 (base year) traffic levels, was estimated based upon relative trip costs via the closest fixed crossings to the north and south versus the new facility.

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

The travel time and distance studies made during the field phases of this project were used as the basis for assigning trip times and distances via the alternate crossings. The travel patterns determined from the 1961 origin and destination survey, conducted as part of the Multiple Screenline Study for

the Prairie du Chien Bridge, and similar data from the 1965 traffic surveys conducted in the Dubuque urban area, were individually factored to represent a 1967 average daily traffic level. Each movement considered in anyway potential to the proposed Cassville Bridge was then independently analyzed to determine relative trip times, distances and total costs via the new bridge versus the best present crossing. 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 Cassville.

As presented in Table II-9, an estimated 523 vehicles per day, at 1967 levels, were considered assignable to the proposed Cassville Bridge. Of this total, 207 vehicles were diverted from the existing Prairie du Chien Bridge and the remaining 316 vehicles from the Dubuque bridges. Of the total assignment to the new facility, it is estimated that over 90 per cent would be two-axle

TABLE II-9

ESTIMATED BASE YEAR (1967) DIVERTED TRAFFIC

VEHICLE TOLL CLASS	DESCRIPTION	ASSIGNED FROM		TOTAL AVERAGE DAILY TRAFFIC
		Prairie du Chien Bridge	Dubuque Bridges	
1	Two-axle vehicles (cash)	190	225	415
2	Two-axle vehicles (ticket)	6	50	56
3	Three-axle vehicles and vehicle combinations	6	25	31
4	Four-axle vehicles and vehicle combinations	3	13	16
5	Five-axle vehicles and vehicle combinations	2	3	5
	TOTAL	207	316	523

vehicles of which 415 would pay the proposed cash toll and 56 — the ticket or commutation rate. An additional 31— three-axle vehicles and vehicle combinations, 16 — four-axle vehicles and 5 — five-axle vehicles were assigned.

Several alternate bridge alignments in the immediate vicinity of Cassville were considered during the course of these preliminary studies. Due to the distance of the immediate bridge corridor from the existing bridges at Prairie du Chien and Dubuque, assignments to each of the alternate alignments would be basically equal. However, since anticipated usage of the proposed facility is expected to be heavily oriented toward Dubuque rather than to the north, the furthest alternate alignment to the south would provide the best measure of traffic service. Based on these considerations and the design and cost factors relating to approach road grades in Cassville, the bridge alignment shown in Exhibit II-1 was selected.

Estimated Annual Traffic and Toll Revenues

Annual growth in usage of the proposed Cassville Bridge was estimated based upon normal increases in trans-river traffic which might be anticipated over the next several years and on generated and development traffic. Generated traffic consists of additional trips made by motorists now traveling in the bridge 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.

Normal corridor growth was based upon trends in use of the Prairie du Chien Bridge and the bridges in Dubuque. In addition, trends and projected changes in population and other economic parameters in the bridge study area were considered in developing the normal growth estimates.

It is estimated that traffic on the proposed Cassville Bridge will increase an average of 4.5 per cent per year between 1967 and 1973, decreasing to 4.0 per cent between 1973 and 1976, to 3.5 per cent between 1976 and 1980

and to 3.0 per cent per year through 1985. For purposes of conservatism, no normal growth was projected beyond 1985, although some increase in traffic 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 evaluated, particularly the closer integration the bridge would provide between the communities of Cassville and Guttenberg. An induced growth of 30 per cent was estimated during the first full year of operation, decreasing to 15 per cent in the second year and to 5 per cent in the third year.

During the first full year of operation, the twelve-month period beginning July 1, 1971, it is anticipated that an estimated 810 vehicles per day will use the proposed Cassville Bridge. As shown in Table II-10, this will produce an estimated $242,000 in gross toll revenues. By 1985, an estimated 1,600 vehicles per day are projected on the Cassville Bridge, producing estimated annual revenues of $477,000. Average annual revenues over the first five years of operation are estimated at $306,000 increasing to an average of $425,000 over the 28-year earning period of an assumed 30-year bond issue.

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

TABLE II-10

ESTIMATED ANNUAL TRAFFIC AND REVENUES

FISCAL[1] YEAR	AVERAGE DAILY TRAFFIC	GROSS REVENUES
1971	810	$242,000
1972	980	291,000
1973	1,070	319,000
1974	1,110	331,000
1975	1,160	345,000
1976	1,200	358,000
1977	1,250	371,000
1978	1,290	384,000
1979	1,340	397,000
1980	1,380	411,000
1981	1,420	424,000
1982	1,470	436,000
1983	1,510	450,000
1984	1,560	463,000
1985	1,600	477,000
Next 13 Years Annually	1,600	$477,000

AVERAGE ANNUAL REVENUES	
First Five Years	$306,000
First Ten Years	$345,000
Twenty-Eight Years	$425,000

[1] Twelve-month period beginning July 1.

PRELIMINARY PROJECT FEASIBILITY

Net revenues derived from the proposed Cassville Bridge were determined by deducting the 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 calculated by relating estimated net revenues to the maximum interest and level debt service requirements of a bond issue sufficient to meet the estimated capital costs of the proposed bridge.

Estimated Annual Net Revenues

Estimated annual net revenues for the proposed Cassville Bridge are presented in Table II-11. During the first full year of operation, net revenues of $182,000 are estimated, increasing to $375,000 in 1985, the fifteenth year of operation.

Average annual net revenues over the first five years of operation are estimated at $240,000 increasing to $271,000 over the first ten years. During the 28-year earning period, net revenues would average $334,000 annually.

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 test is the coverage of maximum or first year interest by first year net revenues; the second test is the coverage of level debt service by average annual net revenues over the earning period of an assumed bond issue.

As a measure of feasibility, financial interests normally 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 greater than 1.50 is normally considered indicative of financial feasibility.

The feasibility computations shown in Table II-12 were developed assuming a bond interest rate of 5.5 per cent and a bond term of 30 years.

TABLE II-11

ESTIMATED ANNUAL NET REVENUES

FISCAL YEAR[1]	GROSS REVENUES	MAINTENANCE AND OPERATING COSTS[2]	NET REVENUES
1971	$242,000	$ 60,000	$182,000
1972	291,000	63,000	228,000
1973	319,000	66,000	253,000
1974	331,000	69,000	262,000
1975	345,000	72,000	273,000
1976	358,000	75,000	283,000
1977	371,000	78,000	293,000
1978	384,000	81,000	303,000
1979	397,000	84,000	313,000
1980	411,000	87,000	324,000
1981	424,000	90,000	334,000
1982	436,000	93,000	343,000
1983	450,000	96,000	354,000
1984	463,000	99,000	364,000
1985	477,000	102,000	375,000
Next 13 Years Annually	$477,000	$102,000	$375,000

AVERAGE ANNUAL NET REVENUES	
First Five Years	$240,000
First Ten Years	$271,000
Twenty-Eight Years	$334,000

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(1) Twelve-month period beginning July 1.

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

TABLE II-12

PRELIMINARY PROJECT FEASIBILITY

ITEM	
Bond Term	30 Years
Bond Earning Period	28 Years
Bond Interest Rate	5.5 Per Cent
Preliminary Project Costs[1]	$5,761,000
Estimated Bond Issue[2]	6,913,000
First Year Interest	380,000
Level Debt Service over 28 Years	490,000
Estimated First Year Net Revenues	182,000
Estimated Average Annual Net Revenues — 28 Years	334,000
COVERAGES	
First Year Interest by First Year Net Revenues	0.48
Level Debt Service by Average Annual Net Revenues	0.68

[1] Estimated by Howard, Needles, Tammen & Bergendoff.

[2] Assumes ratio of project cost to bond issue of 1.0 to 1.2.

Based on project costs developed by Howard, Needles, Tammen & Bergendoff, it is estimated that a bond issue of $6,913,000 will be required for the proposed Cassville Bridge project. The escalation from project cost to bond issue includes such financing items as bond discount, legal and financial fees, capitalized interest during construction, etc. Based on the relationship of project cost to bond issue size of several comparable projects which have been financed, a factor of 1.2 was applied to project cost to determine a preliminary bond issue.

As shown in Table II-12, first year net revenues for the proposed Cassville Bridge would provide a 0.48 coverage of first year maximum interest. Average annual net revenues would cover 28-year level debt service, 0.68 times. Both coverage values are considerably below the levels normally assumed as indicative of financial feasibility.

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

Relationship between Level Debt Service and Net Revenues

Some indication of the relative amount of subsidy necessary to supplement net revenues in order to meet level debt service is shown in Table II-13. The computations were developed assuming a 30-year bond term and an earning period of 28 years.

Assuming the bonds carried an interest rate of 5.5 per cent, the proposed Cassville Bridge project would require a total subsidy of $4,361,000 to meet level debt service requirements over the bond term.

TABLE II-13

RELATIONSHIP BETWEEN LEVEL DEBT SERVICE AND NET REVENUES

FISCAL[1] YEAR	NET REVENUES	LEVEL DEBT SERVICE	NET REVENUES TO LEVEL DEBT SERVICE DEFICIT
1971	$182,000	$490,000	$308,000
1972	228,000	490,000	262,000
1973	253,000	490,000	237,000
1974	262,000	490,000	228,000
1975	273,000	490,000	217,000
1976	283,000	490,000	207,000
1977	293,000	490,000	197,000
1978	303,000	490,000	187,000
1979	313,000	490,000	177,000
1980	324,000	490,000	166,000
1981	334,000	490,000	156,000
1982	343,000	490,000	147,000
1983	354,000	490,000	136,000
1984	364,000	490,000	126,000
1985	375,000	490,000	115,000
1986	375,000	490,000	115,000
1987	375,000	490,000	115,000
1988	375,000	490,000	115,000
1989	375,000	490,000	115,000
1990	375,000	490,000	115,000
1991	375,000	490,000	115,000
1992	375,000	490,000	115,000
1993	375,000	490,000	115,000
1994	375,000	490,000	115,000
1995	375,000	490,000	115,000
1996	375,000	490,000	115,000
1997	375,000	490,000	115,000
1998	375,000	490,000	115,000
	TOTAL		$4,361,000

[1] Twelve-month period beginning July 1.

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 RECONSTRUCT, COMPLETE, IMPROVE, REPAIR, REMODEL, CONTROL, MAINTAIN, AND OPERATE INTERSTATE BRIDGES, TO ESTABLISH TOLLS AND CHARGES FOR THE USE OF INTERSTATE BRIDGES, TO BORROW MONEY AND ISSUE BONDS PAYABLE SOLELY FROM THE REVENUES DERIVED FROM THE OPERATION OF INTERSTATE BRIDGES, AND TO REFUND BONDS PAYABLE FROM SUCH REVENUES.

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

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

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

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

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

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

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

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

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

Section 5. Whenever the commission deems it necessary or advantageous and practical, it may acquire by gift, purchase, or condemnation any interstate bridge which connects with or may be connected with the public highways and the approaches thereto, except that the commission may not condemn an existing interstate bridge used for interstate highway traffic and combined highway and railway traffic and presently owned by a municipality, or a person, firm, or corporation engaged in interstate commerce. In connection with the acquisition of any such bridge, the commission and any federal bridge commission or any city, town, county, or other political subdivision of the state are authorized to do all acts and things as in this Act are provided for the establishing and constructing of toll bridges and operating, financing, and maintaining such bridges insofar as such powers and requirements are applicable to the acquisition of any toll bridge and its operation, financing, and maintenance. In so doing, they shall act in the same manner and under the same procedures as provided for establishing, constructing, operating, financing, and maintaining toll bridges insofar as such manner and procedures are applicable. Without limiting the generality of the above provisions, the commission is hereby authorized to cause surveys to be made to determine the propriety of acquiring any such bridge and the rights-of-way necessary therefor, and other facilities necessary to carry out the provisions hereof; to issue, sell, redeem bonds or issue and exchange bonds with present holders of outstanding bonds of bridges being acquired under the provisions of this Act and deposit and pay out of the proceeds of the bonds for the financing thereof; to impose, collect, deposit, and expend tolls therefrom; to secure and remit financial and other assistance in connection with the purchase thereof, and to carry insurance thereon.

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

Section 7. Whenever the commission deems it to be in the best interest of the primary highway system that any new toll bridge be constructed upon any public highway and across any navigable river between this state and an adjoining state, the commission shall adopt a resolution declaring that the public interest and necessity require the construction of such toll bridge and authorizing the issuance of revenue bonds in an amount sufficient for the purpose of obtaining funds for such construction. The issuance of bonds as provided in this Act for the construction, purchase, or acquisition of more than one (1) toll ridge 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 interestate 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 depositaries or paying agents and upon the furnishing of such security as may meet with the approval of the purchasers of such bonds.

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

Section 20. While any bonds issued by the commission remain outstanding, the powers, duties or existence of the commission or of any other official or agency of the state shall not be diminished or impaired in any manner that will affect adversely the interests and rights of the holders of such bonds. The holder of any bond may by mandamus or other appropriate proceeding require and compel the performance of any of the duites 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 imdemnity 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, convenants, negotiability, denominations, maturity date or dates, the creation of special funds or accounts safeguarding and providing for the payment of the principal thereof and interest thereon, and their manner of redemption and retirement.

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

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

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

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

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

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

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

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

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

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

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

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

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

Notice of such election, stating the date of the election, the hours of opening and closing the polls, the precints 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.

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

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

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

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

CODIFICATION

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

SHORT TITLE

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

TRANSFER OF FUNCTIONS

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

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

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

RESERVATION OF RIGHT TO ALTER, AMEND, OR REPEAL

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

Section 526. Amount of tolls.

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

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

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

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

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

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

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

AMENDMENTS

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

Section 530. Bridges included and excluded.

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

Section 531. International bridges.

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

Section 532. Eminent domain.

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

Section 533. Penalties.

Any person who fails or refuses to comply with any lawful order of the Secretary of the Army or the Chief of Engineers issued under the provisions of sections 525–533 of this title, or who fails to comply with any specific condition imposed by the Chief of Engineers and the Secretary of the Army relating to the maintenance and operation of bridges, or who refuses to produce books, papers, or documents in obedience to a subpena 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.