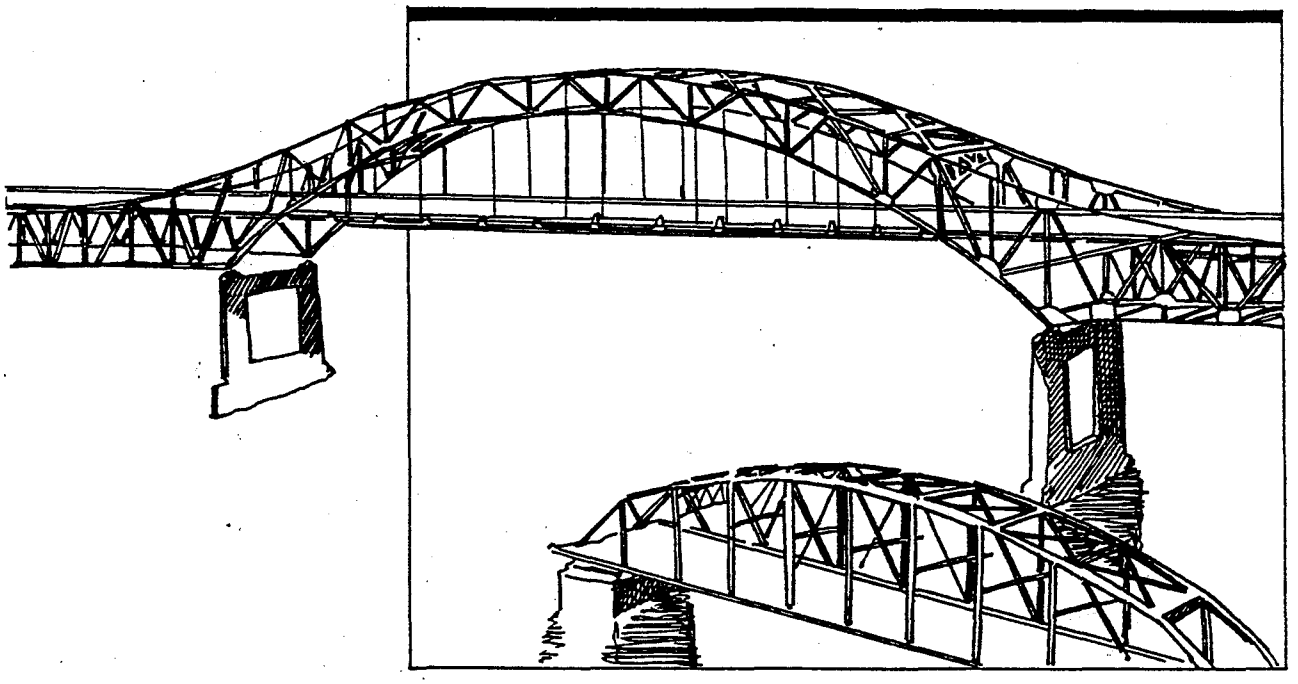
MINNESOTA
Bridge Replacement Program
TASK FORCE REPORT



September 1988

MINNESOTA BRIDGE REPLACEMENT PROGRAM
TASK FORCE REPORT

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BRIDGE REPLACEMENT PROGRAM
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EXECUTIVE SUMMARY

Minnesota's Bridge Replacement Program has reached a critical juncture. Until now it has been successful in removing critical bridge deficiencies. However, without a significant influx of bridge funding, the task of preserving Minnesota's bridge system will be increasingly difficult.

This is due to a set of evolving issues, among which are included:

- By current Federal criteria, 5,281 (27 per cent) of Minnesota's 19,492 bridges are deficient. To reduce that backlog, as well as satisfy anticipated annual replacement needs would require an accelerated bridge replacement program over the next twenty years.

- Many of the bridges becoming and expected to become deficient within the next twenty years are older, larger, and more complicated than deficient bridges dealt with in the past.

- In twenty years, 61 per cent of Minnesota's bridges ..most built immediately following World War II ..will be reaching the end of their useful life.

In light of these, as well as other emerging issues, the Task Force concludes that substantially increased bridge funding is necessary for system preservation. A two-fold program to accomodate projected and current needs is recommended:

- A 20-year program to reduce the current backlog of bridges in need of replacement as well as anticipated replacement needs for the next twenty years.

- A 60-year bridge life cycle replacement rate.

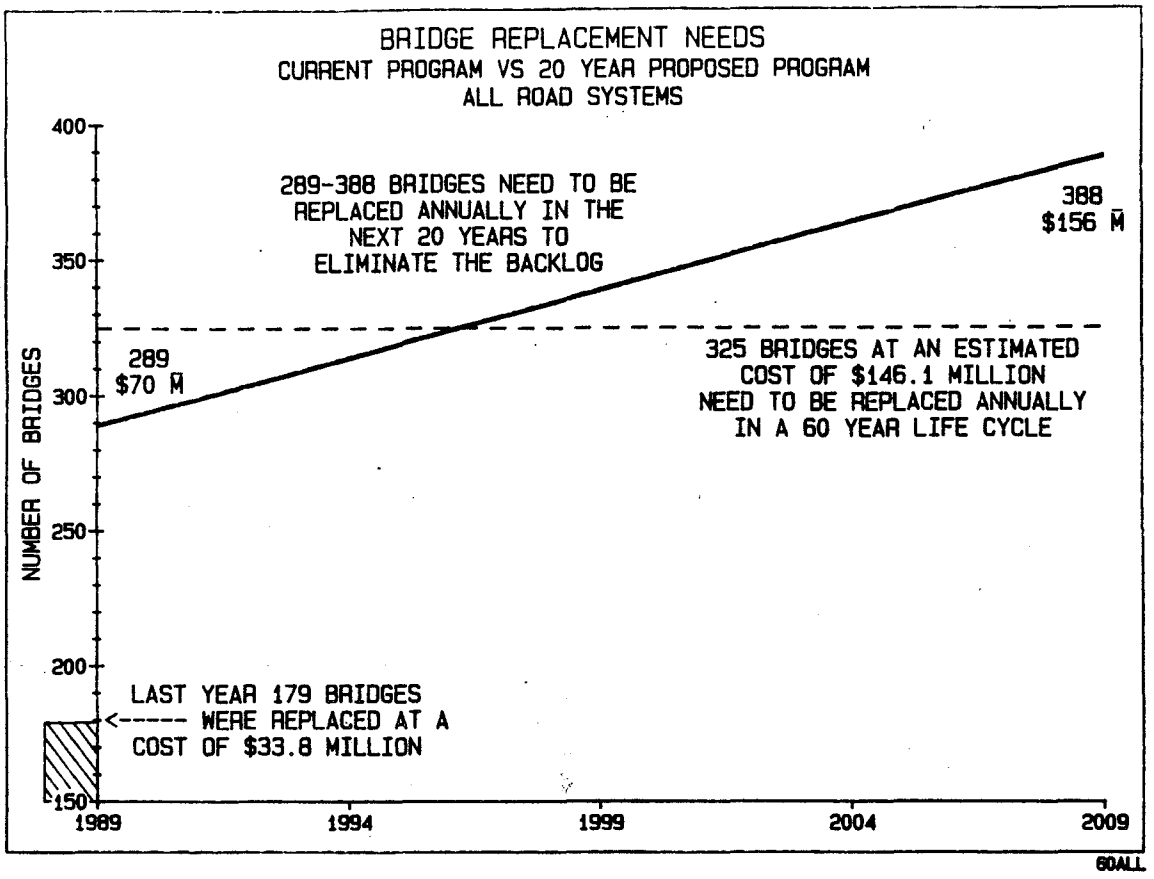
To accomplish both of these, the Task Force recommends:

- Initial annual replacement of 289 bridges (all systems) with an estimated cost of $70 million. By comparison, in 1987, 179 bridges were replaced at a cost of $33.8 million.

- An accelerated bridge replacement level (all systems) spread out over twenty years. In the year 2009, this would require replacement of 388 bridges estimated to cost $156 million.

- Beginning in 2010, maintain a 60-year bridge life cycle replacement annual rate of 325 bridges. A 60-year life cycle annual replacement rate would cost (in todays dollars) $146 million.

Without additional funding, a minimum of a third of the aforementioned bridge replacement needs (all systems) will not be met.



A breakdown of the dollars needed to meet Minnesota's immediate bridge replacement needs shows requirements of :

- $147 million over the next five years, in addition to estimated federal funding, for major trunk highway (state owned) bridge projects through fiscal year 1993.
- An increase of $27 million annually for local road bridge replacement needs.

EMERGING NEEDS

There are several emerging issues that will significantly impact and most likely add to the cost of Minnesota's bridge needs (all systems) in the next twenty years. These issues include truck growth, revised bridge inspection and rating standards, bridge posting and enforcement, ability of local units of Government to meet growing bridge replacement needs, bridge management programs, decreasing availability of Federal Discretionary Bridge replacement dollars, and a growing list of bridges that not only require replacement, but also special historic and/or architectural treatments, which greatly add to their cost.

Each of these emerging issues is touched on in the body of this report, however, the Task Force recommends further detailed study on each of them so that their true impacts can be more adequately defined.

INTRODUCTION

INTRODUCTION

By current federal criteria, 5,281 of Minnesota's 19,492 bridges* are deficient. In the past six years an annual average of 233 bridges were replaced while 200 more Minnesota bridges became deficient. There is a growing concern that many of the bridges becoming deficient are larger and more costly to replace.

As discussions concerning funding needs and appropriate bridge replacement efforts surfaced, the Bridge Replacement Program Task Force was formed. Charged with determining the appropriate level of Minnesota bridge replacement efforts and recommending the appropriate funding level for both Trunk Highway and local roads, the Bridge Replacement Program Task Force began meeting in May 1988.

The purpose of this report is to explain the Minnesota Bridge Evaluation System and Replacement Program, summarize replacement efforts since 1976, present Task Force recommendations, and acknowledge emerging issues. Although Minnesota has a Trunk Highway Bridge Improvement and Repair Program as well, this Task Force report only focuses on bridge deficiencies as they relate to the Minnesota Bridge Replacement Program.

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* Unless otherwise noted, Minnesota trunk highway, county state aid, municipal state aid, county road, township road, city street, and miscellaneous (see table on page 4) bridges over 10 feet in length are included.

MINNESOTA BRIDGE EVALUATION SYSTEM

MINNESOTA BRIDGE EVALUATION SYSTEM

Bridge Inventory System

The Bridge Inventory System was created in 1967 to provide a computerized information data base for all structures 10 feet or more in length in Minnesota. Since then, the system has been enhanced to meet additional needs. Two major system modifications occurred in 1973 (data elements added to meet new federal requirements) and in 1981 (bridge data file became a subsystem of the Transportation Information System). Data included in the 216 items currently collected are jurisdiction, length, width, structure type, year built, condition, and load capacity.

Maintained by Mn/DOT and updated at least annually, the system is the basis for the required State Inspection Program, the National Bridge Inspection Program, the Federal Replacement/Rehabilitation Program, and the State's Replacement Program and Repair/Improvement Program.

The following chart shows a breakout of Minnesota bridges by road system.

MINNESOTA BRIDGES

Road System	Number of Bridges
Trunk Highway	4,516
County State Aid	5,347
Municipal State Aid	422
County Road	2,206
Township Road	6,019
Unorganized Township Road	69
City Street	738
Miscellaneous (e.g., National and State Forest Roads, Indian Service Roads, etc.)	175
TOTAL	19,492

Bridge Appraisal/Rating System

Two different bridge appraisal/rating systems operate in Minnesota: the Minnesota System, and the Federal System. Minnesota established its appraisal and rating criteria in 1975, three to four years prior to the establishment of federal guidelines. Currently, Minnesota uses both the State System and the Federal System to determine deficient bridges. Eligibility for federal funds is determined by federal guidelines. The deck area of bridges deficient by federal criteria determines Minnesota's share of federal funding. Eligibility for state funds is determined by state guidelines. Currently, more bridges are deficient by federal criteria than by Minnesota criteria.

Minnesota Statutes Chapter 165.03 effective in 1973 require every Minnesota bridge, except those that do not carry vehicular traffic or those that do not cross a public highway or street, to be inspected annually. Minnesota bridge inspections are conducted by city, county, or state inspectors. A copy of the bridge inspection report is in Appendix A.

The Minnesota System determines deficiencies by reviewing each bridge for compliance with criteria on width, underclearance, load-carrying capacity, structural condition, and waterway adequacy. If a bridge does not meet certain minimum criteria for any one of these, the bridge is declared deficient. Appendix B includes bridge deficiency category descriptions.

Unlike Minnesota's requirement for annual inspections, Federal regulations require every bridge to be inspected only once in a 2-year period. Another difference of the Federal System is that each bridge is reviewed on criteria for approach alignment in addition to those listed above.

The Federal System also requires each bridge to be given a rating based on structural adequacy and safety; serviceability and functional obsolescence; and essentiality for public use. This value is the Federal Sufficiency Rating and is a measure of a bridges general condition. A rating of 100 indicates an entirely sufficient bridge, and a rating of Ø indicates an entirely insufficient (or deficient) bridge. According to the Federal Highway Administration's (FHWA) Bridge Replacement and Rehabilitation Program criteria, a structure with a sufficiency rating less than 50.0 is eligible for replacement or rehabilitation; a structure with a sufficiency rating between 80.0 and 50.0 is eligible for rehabilitation only. The ratings each bridge receives are used to develop a current priority list of Minnesota deficient bridges. A diagram of Sufficiency Rating Factors may be found in Appendix B.

Due to different program criteria, Minnesota has operated a dual system of appraising and rating bridges for several years. This situation could potentially cause confusion and reduce program efficiency.

Deficient Bridges

Deficient bridges are not necessarily unsafe. If they are unsafe, their use is restricted or they are closed to the public. (At this time no Trunk Highway bridges, and 81 local road bridges are closed to the public.) Deficient bridges are generally either functionally obsolete or structurally deficient, and typically have weight or clearance restrictions placed on them.

The following tables show that by current state criteria, Minnesota has 3,557 deficient bridges. By federal criteria, Minnesota has 5,281 deficient bridges, 1,724 more than identified by state criteria. In both systems, most of these bridges have deficiencies in more than one rating category.

DEFICIENT BRIDGES BY ROAD SYSTEM
JULY 1988

Road System	Number of Deficient Bridges State Criteria	Federal Criteria
Trunk Highway	303	597
County State Aid	782	1,020
Municipal State Aid	56	106
County Road	473	707
Township Road	1,686	2,461
Unorganized Township Road	23	29
City Street	189	296
Miscellaneous (e.g., National and State Forest Roads, Indian Service Roads, etc.)	45	65
Totals	3,557	5,281

SUMMARY OF BRIDGE DEFICIENCIES BY ROAD SYSTEM
STATE CRITERIA - JULY 1988

ROAD SYSTEM	LOAD	WIDTH	CONDITION	CLEARANCE	WATER
Trunk Highway	44	201	67	54	0
County State Aid	330	470	181	39	2
Municipal State Aid	17	20	13	33	0
County Road	326	172	161	8	9
Township Road	1,131	689	552	16	13
Unorganized Twp.	20	4	8	0	0
City Street	94	60	52	59	2
Miscellaneous	21	27	7	0	2
Total Bridges	1,983	1,643	1,041	209	28

SUMMARY OF BRIDGE DEFICIENCIES BY ROAD SYSTEM
FEDERAL CRITERIA - JULY 1988

ROAD SYSTEM	LOAD	WIDTH	CONDITION	CLEARANCE	WATER	APPROACH
Trunk Highway	44	214	577	54	45	64
County State Aid	330	470	800	39	116	109
Municipal State Aid	17	21	109	33	4	14
County Road	326	401	640	8	76	104
Township Road	1,131	1,675	2,182	16	192	326
Unorganized Twp.	20	11	28	0	2	5
City Street	94	124	279	59	15	39
Miscellaneous	21	53	43	0	5	5
Total Bridges	1,983	2,969	4,658	209	455	666

MINNESOTA BRIDGE REPLACEMENT PROGRAM

MINNESOTA BRIDGE REPLACEMENT PROGRAM

Bridge Replacement Efforts Since 1976

Since 1976, 4,490 bridges have been removed from the deficiency list. Except for a number of major bridges replaced with federal bridge discretionary funds, the majority of past bridge replacements have been smaller, older (built 61 or more years ago), and less complicated. While those bridges were replaced, 4,047 more bridges became deficient. The large number of additional deficiencies were due in part to changing the definition of a bridge from a 20 foot structure to a 10 foot structure; increasing bridge load capacities to 80,000 pounds; and changing the rating needed to declare waterway adequacy deficiencies.

Each state is awarded a share of federal funding based on that state's deficient bridge deck area, as defined by federal guidelines. In other words, states reporting a larger deficient bridge deck area total would receive a larger portion of the total federal funding available for bridge replacement and rehabilitation than states reporting a smaller deficient bridge deck area total. This annual apportionment of federal bridge replacement and rehabilitation funds is divided between Minnesota trunk highway bridges and local road bridges. The federal portion covers up to 80 per cent of eligible costs.

Besides the normal amount of federal funding authorized nationally, discretionary funds are set aside each year to be available for bridge replacement and rehabilitation projects at the option of the Secretary of Transportation. Discretionary funding is directed at bridges costing over $10 million or for bridges costing less than that if they cost twice a State's annual bridge apportionment. Again, the federal portion covers 80 per cent of the eligible costs. Discretionary funding may be used for deficient trunk highway or local road bridges.

To date Minnesota has successfully acquired bridge discretionary funding for the following projects:

Trunk Highway 77	- Cedar Ave. Bridge, Bloomington	$11.3 million
Trunk Highway 2	- Arrowhead Bridge, Duluth-Superior (The above total was received jointly by Minnesota and Wisconsin.)	$59.5 million
Trunk Highway 149	- High Bridge, St. Paul	$18.3 million
Trunk Highway 60	- Wabasha Bridge, Wabasha, Mn. (Wisconsin also received $5.0 million.)	$ 5.0 million

In the process of reviewing bridge replacement efforts since 1976, the Task Force learned that some high priority deficient bridges have not been replaced. Information was then requested from districts, counties, and municipalities to better understand why these high priority bridges were not being replaced. A complete listing of responses as to why specific high priority deficient bridges have not been replaced or scheduled for replacement may be found in Appendix C. In short, of the top 50 trunk highway deficient bridges, 39 are programmed through 1993. Eleven have not yet been programmed. Of the top 100 local road deficient bridges, 38 have been or will be let to contract prior to 1993.

Trunk Highway Bridge Replacement Program

Notably, Minnesota has a Trunk Highway Bridge Repair and Improvement Program as well as a Bridge Replacement Program. The purpose of the Trunk Highway Bridge Repair and Improvement Program is to maintain, protect, and improve existing bridges. Projects include deck and substructure repair, bridge approach panel repair, deck overlay, slope protection repair, painting, and minor widening. Problems that are detected early can often be corrected before significant damage takes place. The service life of a bridge, however, cannot be extended indefinitely. Eventually, older bridges deteriorate to a point where maintenance is no longer cost-effective and total replacement becomes necessary.

The Trunk Highway Bridge Replacement Program is directed at the replacement or rehabilitation of trunk highway system bridges that have been identified as inadequate and/or substandard because of horizontal and vertical clearances, load restrictions, or deterioration. Work includes deficient bridge replacement, approach construction, and major bridge rehabilitation. Because of the magnitude of these projects, the project development process can take four to eight years to complete, with up to two additional years for construction before the bridge is open to traffic. The completion of the project development process for major bridge projects may take up to ten years.

Candidate bridges for the Replacement Program are identified by Mn/DOT district engineers at least every two years. A rating sheet compiled for each bridge provides the data to determine a replacement priority, and the district's listing of deficient bridges prepared by Central Office is used to develop a replacement schedule. Considerations for priority-setting include the replacement of bridge(s) in conjunction with already scheduled area construction projects, the ability to provide an alternate access route, and the time needed to complete project development work. Citizens and interest groups also have opportunities to express their concerns about deficient bridges.

The following table shows accomplishments of the Trunk Highway Bridge Replacement Program.

STATE FISCAL YEAR 1977-88
TRUNK HIGHWAY BRIDGE REPLACEMENT PROGRAM
($ MILLIONS)

STATE FISCAL YEAR	FEDERAL FUNDS TOTAL	FEDERAL FUNDS ALLOC (1)	STATE FUNDS TOTAL MATCH	STATE FUNDS 100% SF		TOTAL EXPEND.	# OF BRS.
1976 (2)	--	--	--	--	--	--	--
1977 (3)	2.3	--	16.9	0.9	16.0	19.2	41
1978 (4)	19.3	--	9.3	4.8	4.5	28.6	40
1979	8.5	(13.4)	10.9	2.1	8.8	19.4	35
1980	11.6	(20.0)	10.5	2.9	7.6	22.1	25
1981 (5)	7.1	(19.8)	3.0	1.8	1.2	10.1	11
1982	18.5	(14.9)	6.6	4.6	2.0	25.1	26
1983 (6)	19.2	(15.6)	9.3	4.8	4.5	28.5	30
1984	18.6	(15.3)	17.2	4.7	12.5	35.8	41
1985	9.9	(13.4)	3.5	2.5	1.0	13.4	20
1986	26.4	(15.4)	6.6	6.6	--	33.0	32
1987	26.0	(10.6)	10.5	6.5	4.0	36.5	32
1988	11.9	(9.8)	9.5	3.0	6.5	21.4	18
TOTAL	179.3 (7)	(148.2)	113.8	45.2	68.6	293.1	351

NOTES:
(1) Portion of total federal apportionment allocated to Trunk Highways from Highway Bridge Replacement and Rehabilitation Program (HBRRP) established by Highway Safety Act of 1978
(2) Laws of 1976; Chapter 339; $25 Million (1/2 General Obligation Bonds and 1/2 General Fund)
(3) Laws of 1977; Chapter 277; $50 Million Trunk Highway Bonds for Bridge Replacements
(4) HBRRP
(5) Laws of 1981; Chapter 261; $95 Million General Obligation Bonds for Bridge Replacement and Interstate (only $39.1 Million sold); $17.1 Million used for Bridge Replacement
(6) Laws of 1983; Chapter 17; $56 Million Trunk Highway Bonds for Bridge Replacement, Major Construction, Reconditioning and Reconstruction; $14.1 Million used for Bridge Replacement
(7) Includes $29.3 Million Federal Bridge Discretionary Dollars

Local Road Bridge Replacement Program

Three separate bridge replacement programs, managed by the Mn/DOT Office of State Aid in the Technical Services Division, constitute the overall bridge replacement program for local units of government. They are the Federal Bridge Replacement and Rehabilitation Program, the Town Bridge Program, and the Minnesota State Transportation Program.

Unlike Mn/DOT under the Trunk Highway Bridge Replacement Program, the local unit of government is responsible for funding design and construction engineering, right of way acquisition, approach grading, and old bridge removal costs. However, when a road is built in lieu of a bridge, all costs except engineering fees are eligible for reimbursement from either the Town Bridge Account or the Minnesota State Transportation Fund.

The Federal Bridge Replacement and Rehabilitation Program requires the in-place deficient structure to have a clear span over 20 feet in length to qualify for federal funding. Federal participation is limited to 80 per cent of the cost of eligible items. State and/or local funds provide the 20 per cent match.

The Town Bridge Program requires the in-place deficient structure to be at least 10 feet in length, or requires the replacement structure to be 10 feet or more in length as supported by a hydrological survey, to qualify for state town bridge funds. Town Bridge monies are limited to 90 per cent of the cost of eligible items. Other state and/or local funds make up the difference.

The Minnesota State Transportation Program has the same requirements as the Town Bridge Program, except that 100 per cent of the cost of eligible items may be reimbursed. Both programs may be used to finance the removal of an existing deficient bridge where no replacement is necessary. They may also be used to finance the construction of a roadway in lieu of a bridge where the cost to construct a roadway is more cost-effective than replacing the deficient bridge.

Mn/DOT initiates priority-setting in the local bridge replacement program by giving the local County or City Engineer a deficient bridge listing of local bridges. The County or City Engineer will then hold a public meeting to gain input before formally prioritizing the local bridge replacement program and beginning the application process.

Local applications and construction plans are reviewed and prioritized according to Mn/DOT's deficient bridge listing as they are received in the Office of State Aid. Any structure closed to traffic receives top priority. Bridges qualifying for federal funds require completion of the project development process, in addition to completion of applications and plans, before construction is authorized. Projects to be funded with federal dollars are withheld from review until all required documentation is complete. When construction plans are complete, rights of way verified, and utilities accounted for, a final priority list, which will aid in authorizing construction projects, is made. Location, number of projects and dollars previously authorized in the area, other funds available to the local unit of government, and the Mn/DOT deficient bridge listing are all taken into account when the final priority list is determined.

The following table shows accomplishments of the Local Road Bridge Replacement Program.

CALENDAR YEAR 1976-87
LOCAL ROAD BRIDGE REPLACEMENT PROGRAM
($ MILLIONS)

CALENDAR YEAR	FEDERAL FUNDS	STATE FUNDS M.S.T.F.(1)	TOTAL T.B.F.(2)	TOTAL EXPEND.	# OF BRS.
1976	1.3	--	--	1.3	41
1977	3.2	19.4	1.4	24.0	332
1978	6.8	34.4	2.3	43.5	514
1979	9.1	11.2	1.3	21.6	315
1980	16.2	10.0	1.5	27.7	326
1981	11.8	9.3	1.3	22.4	258
1982	7.5	5.6	1.9	15.0	197
1983	7.2	6.9	1.9	16.0	200
1984	8.4	5.7	2.0	16.1	187
1985	11.8	6.7	2.1	20.6	227
1986	9.2	6.9	1.9	18.0	269
1987	6.9	3.9	1.6	12.4	161
TOTAL	99.4	120.0	19.2	238.6	3,227

NOTES:
(1) Minnesota State Transportation Fund established by Laws of 1976; Chapter 339
(2) Town Bridge Fund established by Laws of 1975; Chapter 203

The above data accounts for local structures funded with Federal Bridge Replacement and Rehabilitation Funds, Town Bridge Funds, and Minnesota State Transportation Funds. Over 900 other structures have been replaced, rehabilitated, or removed with other funds available to the local units of government.

Current Status

Progress in replacing Minnesota's deficient bridges in the Minnesota Bridge Replacement Program has been made. During the time that many deficient bridges were replaced or removed (4,490), however, many other bridges became deficient (4,047). Although the total number of bridges becoming deficient each year has been relatively constant at approximately 1 per cent (yearly average of 200 over the last six years), our funding needs are increasing. This is because the bridges currently becoming deficient are larger, more complicated in terms of project development work, and generally, more costly to replace. Appendix D includes a graph showing deck areas of all bridges by age, and a graph showing average age of all bridges by road system.

Currently by state criteria, Minnesota has 3,557 deficient bridges with an estimated replacement cost of $619 million. This includes a $105 million estimated replacement cost for two categories of bridges not eligible for federal bridge replacement funding. The first category includes 775 deficient bridges less than 20 feet in length, and the second category includes 186 deficient railroad bridges over highways. Currently by federal criteria, Minnesota has 5,281 deficient bridges with an estimated replacement cost of $887.3 million.

At the present time, funds from the Minnesota State Transportation Fund which are used for local road structures less than 20 feet in length are depleted. Money is available for the 20 per cent match to federal funds for bridges 20 feet or more in length.

As of July 1, 1988, Mn/DOT's Office of State Aid had 446 applications from local road authorities for replacing deficient bridges, with an estimated total cost of $102 million. Of the submitted applications, 311 qualify for federal participative funding.

Also, as of July 1, 1988, Mn/DOT's Office of State Aid had 140 plans from local units of government, with an estimated construction cost of $15.8 million, awaiting construction authorization. Sixty-seven of these projects have completed the project development process and are eligible to use federal funds. Estimated cost for these 67 is $12.9 million. Estimated cost for the other 73, not eligible for federal funds, is $2.9 million.

Trunk Highway bridge replacements scheduled for fiscal year 1989 through fiscal year 1993 are based on anticipated state and federal revenues. Federal apportionments for bridge replacements are anticipated to remain at current levels through fiscal year 1991 when a new transportation bill is expected. Appendix E contains the Trunk Highway Bridge Replacement Program for fiscal years 1989-1993.

The following chart indicates the anticipated number of bridge replacements and their cost estimates in the Mn/DOT Trunk Highway Bridge Replacement Program:

MN/DOT FIVE-YEAR TRUNK HIGHWAY
BRIDGE REPLACEMENT PROGRAM SUMMARY

Fiscal Year	Number of Bridges	$ Millions
1989	24	43.7
1990	41	51.1
1991	44	46.7
1992	32	39.5
1993	34	41.2
TOTAL	175	$222.2

This summary includes discretionary bridge projects on the Trunk Highway System (with the exception of Bridge No. 9030) as identified in the next table.

MAJOR BRIDGE REPLACEMENT/REHABILITATION
Discretionary Funding Candidates

Road System	Bridge No.	Location	Est. Bridge Cost(1) $ Millions	Anticipated Letting
Trunk Highway	4654	Stillwater (2)	20.0	1993
Trunk Highway	6009	Prescott (2)	14.8	1989
Trunk Highway	9098	North Star (Mankato)	10.5	1991
Trunk Highway	4190	Mendota	12.0	1992
Trunk Highway	9030	Blatnik (2)	24.5	1992
Trunk Highway	6520	Lake Street	17.5	1989
Non-Tr. Highway	1698	Bloomington Ferry	51.5	1991
Non-Tr. Highway	6524	Wabasha St. (St. Paul)	15.0	1991
		TOTAL NEED	165.8	

NOTES:
(1) Bridge construction costs only
(2) Shared costs with Wisconsin

Mn/DOT will continue to agressively pursue federal discretionary funding and seek other funding options necessary to keep all projects on line.

TASK FORCE RECOMMENDATIONS and RATIONALE

TASK FORCE RECOMMENDATIONS AND RATIONALE

Appraisal/Rating System

REC. 1. Adopt the Federal Proposed Bridge Appraisal Guidelines for establishing appraisal values on width and underclearance.

No federal appraisal guidelines were available when Minnesota developed its appraisal system in 1975. Since then, the Federal Highway Administration (FHWA) proposed a set of guidelines for appraising bridges. The Task Force reviewed these January 1987 guidelines.

Although the Task Force is not in complete agreement with these proposed standards, it is supportive of a single, consistent system to appraise and rate bridges. For this reason, the Task Force supports adoption of the federal guidelines.

In the May 27, 1988 issue of the AASHTO (American Association of State Highway and Transportation Officials) Journal, the General Accounting Office (GAO) urged the FHWA to improve the accuracy of state bridge inventories with the intent of better identifying bridge funding needs and assuring a more equitable basis for apportioning bridge funds. The Task Force feels that a federally-directed program would help to accomplish this.

Adoption of the federal standards could increase the number of Minnesota bridges reported deficient in terms of width and underclearance by as much as 10 per cent. Minnesota's share of federal funds is dependent on deficiencies reported by Minnesota and by other states. Although it is not certain at this time, Mn/DOT anticipates that federal funding for Minnesota bridges will increase with this action.

REC. 2. Request a comparison report from the FHWA of appraisal systems used by other states.

A comparison of other states' appraisal systems is needed to better evaluate Minnesota's federal funding position. This was an issue too involved for the Task Force to study in depth during its existence. A comparison would involve traffic volumes, bridge widths, functional classifications, and approach surface widths.

The Task Force is interested in uniformity among all states, as is the GAO (cited earlier in this report). Data should be collected by the FHWA and reviewed for consistency.

REC. 3. Adopt Federal Rating Criteria for determining deficient bridges.

Ratings assign figures to appraisal values to determine deficiencies. Because Minnesota uses federal rating criteria to determine bridge deficiencies for federal reporting, adopting this recommendation would not affect federal funding, but would give Minnesota a unified system of appraising and rating bridges. As many as 1,724 additional deficient bridges, not currently included in Minnesota's total, would be claimed.

REC. 4. Adopt the Federal Sufficiency Rating System to replace the Mn/DOT rating system.

This recommendation is consistent with recommendations one and three in this section, and is supportive of a single system to appraise and rate bridges.

REC. 5. Mn/DOT should develop sufficiency ratings for bridges less than 20 feet in length and railroad bridges over highways.

Because bridges less than 20 feet in length or railroad bridges over highways are not eligible for federal funding, they are not given a sufficiency rating. Presently Minnesota has 6,240 bridges on the Trunk Highway and Local Road Systems in these categories. Development of sufficiency ratings for bridges 10 feet to 20 feet in length would assist Mn/DOT and local authorities in allocating and prioritizing bridge replacement funds. This recommendation is related to recommendation four above.

REC. 6. Mn/DOT should continue to assign a high priority to replacing structures that are posted at maximum load weights.

Load-posted bridges are a severe hindrance to the commerce of the state and should be replaced as quickly as possible. An estimated $325.9 million is needed to replace 1,983 structures that are currently load-posted statewide. Although load-posted bridges are found on both the Trunk Highway and Local Road Systems, the majority of load-posted bridges are on local roads.

REC. 7. Revise the appraisal/rating system to show as a deficiency any bridge with an approach surface driving width wider than the bridge width. Bridges should be equal to or wider than the approach surface driving width. Efforts should be made to ascertain the approach surface driving width in cases where it is unknown.

This recommendation for all roadways is based on safety considerations.

This change would increase our number of deficient bridges by 787, with an estimated improvement cost of $84.1 million.

Replacement Cost Estimates

REC. 1. Update bridge cost estimates annually to more accurately portray costs.

The Task Force compared actual bridge replacement costs to computer estimated bridge replacement costs and found that, while actual total bridge costs after letting were 13 per cent lower than estimated computer costs for trunk highway bridges, actual total bridge costs were 16 per cent higher than estimated computer costs for local road bridges. Although the figures tend to balance each other, the Task Force recommends updating bridge cost estimates now, and on a more frequent basis in the future, to more accurately portray bridge costs. In the process of gathering other data from the districts, the Task Force collected updated trunk highway bridge replacement costs for high priority deficient bridges. Bridge cost estimates are presently updated only when a substantial deviation from actual costs is noted.

REC. 2. Use the following formula to determine culvert deck area:

Culvert Deck Area =
Length along roadway center line x barrel length

The width of the roadway from shoulder edge to shoulder edge, not the barrel length, is the measurement presently used.

Appropriate Bridge Replacement Level

REC. 1. Plan for a 60-year bridge life cycle replacement rate.

Since the beginning of Minnesota's bridge replacement program, the average age of deficient bridges that have been replaced is 59 years. Nationwide, the average age of replacement is 68 years. Based on a current system of 19,492 bridges, 325 bridges would be replaced annually in a 60-year bridge life cycle replacement program. This is expected to occur in the future as Minnesota's bridge system ages.

60-YEAR BRIDGE REPLACEMENT CYCLE
BRIDGE REPLACEMENT NEEDS

	# Bridges	Est. Needs $ Millions
All Systems	325	146.1
Trunk Highway	75	109.7
Local Road	250	36.7

REC. 2. Allow non-critical deficient bridges to remain on the system.

The Task Force agrees that it is impractical to eliminate all deficient bridges from the system. A residual number of deficient bridges is expected to always be on the system. One reason for this is that bridges are continually becoming deficient and entering the replacement preparation process. Before a new bridge can be constructed, 3 - 8 years are needed for project development. In other words, deficient bridges can not immediately be replaced.

Secondly, some bridges, defined as deficient according to federal criteria, are not necessarily considered critical and in need of replacement. Mn/DOT may decide to rehabilitate rather than replace a structure if this is more cost-effective and eliminates critical deficiencies.

In other words, not all of the 27 per cent (5,281) of Minnesota's bridges (19,492) currently defined by federal criteria as deficient, will be replaced. Of the deficiencies (5,281), a non-critical residual of 47 per cent deficient bridges is expected to remain on the system. This does not include bridge replacement projects under development.

REC. 3. Replace the backlog of 1,790 deficient Minnesota bridges in the next twenty years.

As discussed in the previous recommendation, not all bridges currently deficient by federal criteria will be replaced. At the present time, however, Minnesota has 1,790 bridges in need of replacement. The Task Force recommends replacing this project backlog in the next twenty years.

Funding - Trunk Highway System

REC. 1. Continue federal funding for bridge approach work.

Bridge replacements on the trunk highway system usually require a considerable amount of approach grading. This is attributable to a number of factors. Many bridges are built on new alignments to correct substandard approach geometrics as well as to allow traffic to remain on the old bridge until the new one is completed. Other bridges may be raised considerably to meet new standards for underclearance or waterway adequacy. Higher standards on roadway widths, shoulders, and clear zones also tend to increase the need for, and cost of, bridge approaches.

Over the years, bridge approach work has increased the total cost of bridge replacements by an average of 50 per cent. As a rule of thumb for estimating total costs for programming, Mn/DOT previously increased the "bridge only" cost by 25 per cent. To compensate for this apparent doubling of approach costs, Mn/DOT now closely monitors preliminary plans to be sure that appropriate funding is established and that federal bridge replacement dollars are only used to construct approach work to a logical touchdown point.

Managing Minnesota's highway construction program means working with numerous types of construction categories and funding resources. Utilizing federal funds as they are available helps Minnesota leverage other federal discretionary funding and protects from losing federal aid. Spending federal bridge funds on approach work helps manage the account in an effective manner and cuts red tape. Once the expenditure of these federal funds is complete, additional bridge replacements are funded with state funds or other federal system funds.

Based on these considerations the Task Force agrees there is no benefit to limiting federal bridge replacement dollars to the bridge only.

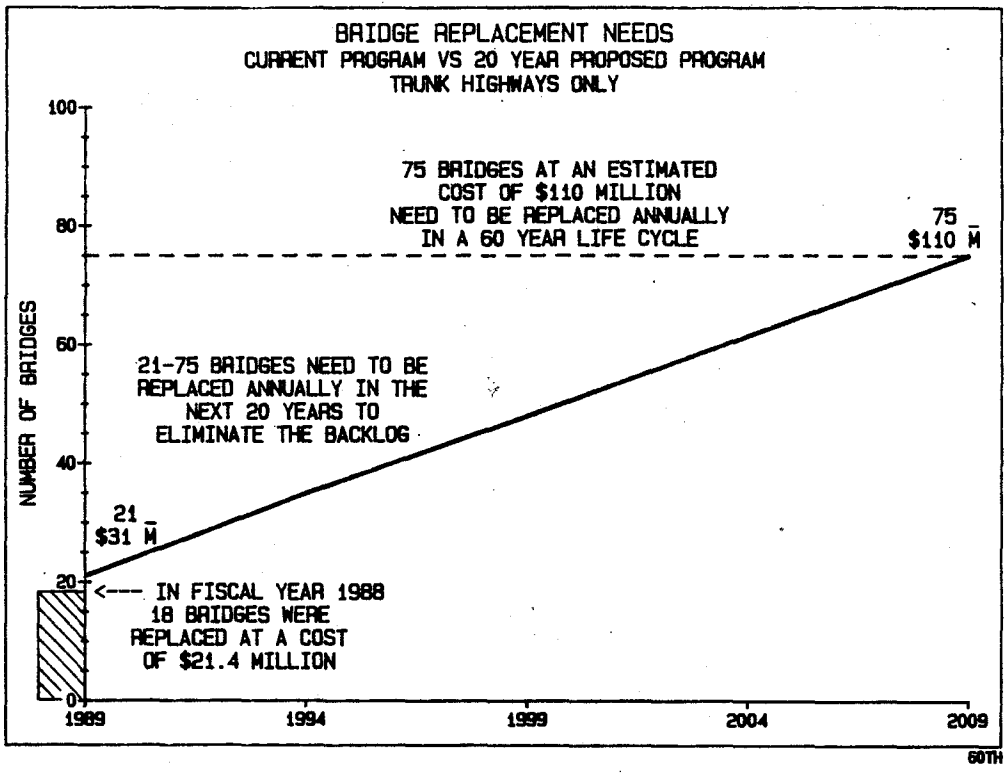
REC. 2. Acquire special funding for major bridge projects and other bridge replacement projects programmed for the next five years.

Minnesota will continue to aggressively pursue discretionary funding for major bridge projects even though it is not likely that Minnesota will receive the discretionary funds necessary to cover all critical replacements. In that case, other funding for major bridge projects will be needed.

Major bridge projects that are candidates for discretionary funding and the five year Trunk Highway Bridge Replacement Program Summary are found on page 14. Anticipated federal funding receipts are expected to support only a $75 million five year program ($15 million per year.) This federal funding shortfall leaves $88 million in bridge replacement, and $59 million in discretionary projects to be funded by other means.

REC. 3. Increase state trunk highway bridge replacement funding levels to account for anticipated future replacement needs.

The Task Force has recommended a sixty year replacement rate for all bridges, and a twenty year program to remove the current backlog of bridges in need of replacement. Although current programming appears appropriate, future funding must be increased to support an annual replacement of seventy five Trunk Highway bridges with an estimated cost of $110 million.



Funding - Local Road System

REC. 1. Do not alter the present methods for administering local bridge replacement funding.

The local unit of government should remain responsible for engineering fees, deficient structure removal expenses, right of way costs, and approach roadway costs. The Task Force believes that the current method ensures unbiased priority-setting in local bridge replacement programs.

REC. 2. Change the federal (HBRRP) participation factor from 80 per cent to 50 per cent.

This would require approval by the FHWA and would require additional state funds of $6.0 million annually to offset the reduced federal participation. Approximately forty additional projects could be authorized each year.

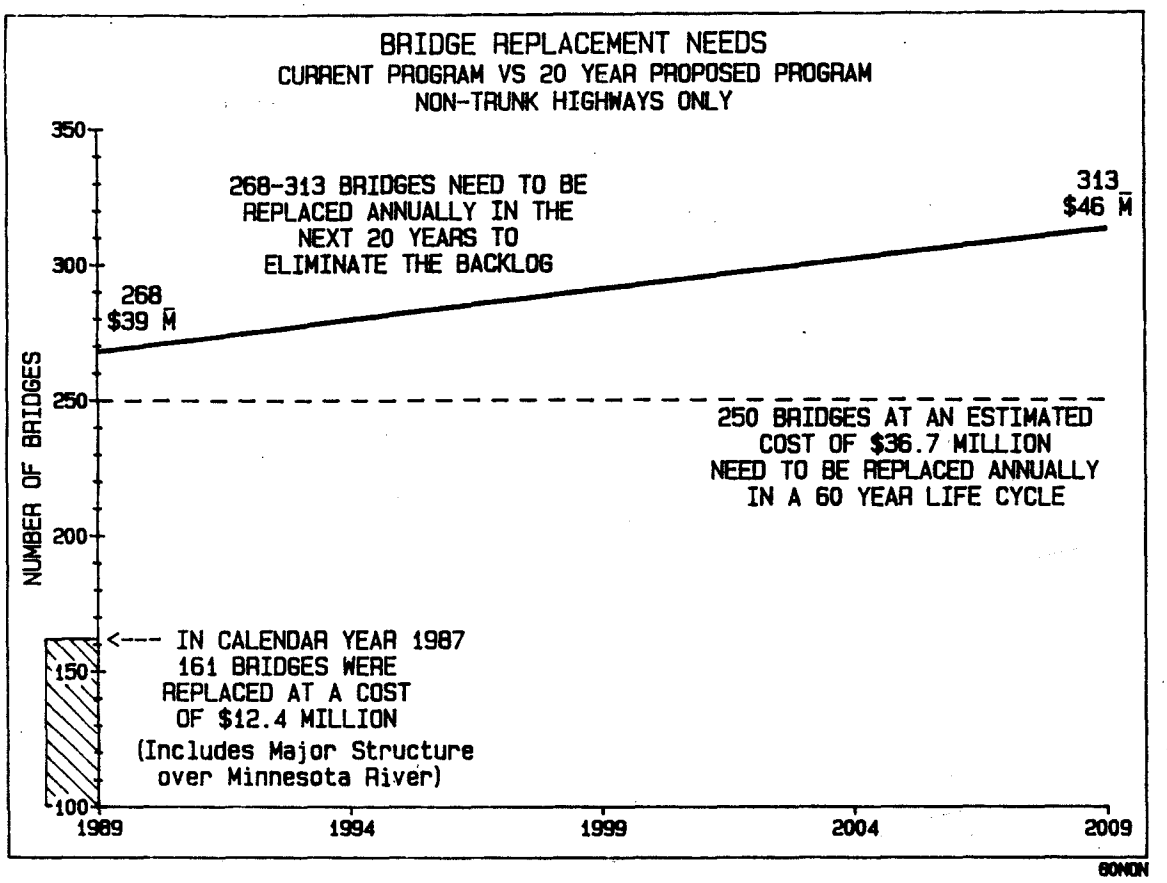
REC. 3. Acquire special funding for those structures less than 20 feet in length and railroad bridges over highways.

These bridge categories are not currently eligible for federal funding. Present deficient bridge needs in these categories are estimated at $105 million.

REC. 4. Increase local road bridge replacement funds to account for increased materials costs, larger structures, and anticipated future replacement needs.

The Task Force has recommended a sixty year replacement rate for all bridges, and a twenty year program to remove the backlog of bridges in need of replacement. Funding must be increased to support both of these actions. Under these recommendations, 268 local road bridges should initially be replaced at an estimated cost of $39 million. During the following nineteen years the bridge replacement rate should be increased so that by the year 2009, 313 local road bridges would be replaced at an estimated annual cost of $46 million.

By the year 2009, Minnesota will have eliminated the current backlog of bridges in need of replacement on the local bridge system. At that time, only bridges that become deficient annually will need to be considered. An annual replacement of 250 local road bridges, with an estimated cost of $45.9 million is expected.



EMERGING ISSUES

EMERGING ISSUES

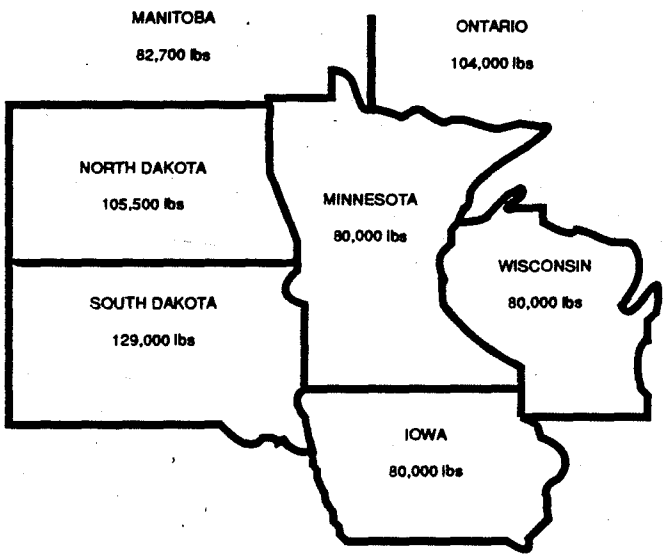
Many factors affect future bridge needs in Minnesota. The Bridge Replacement Program Task Force has dealt intensively with a number of these factors. Others, tangential to the initial charge, were raised by the Task Force but not discussed at length. They include: Truck Growth and Size; Revised Inspection and Rating Standards; Bridge Management System; Posting Enforcement; Local Participation in Bridge Replacement; and Historic and Architectural Aesthetic Considerations. These emerging issues may affect funding, safety, and vehicle movement, and therefore, merit additional consideration.

(1) Truck Growth/Size

The increase in truck size and weight has important implications for Mn/DOT's bridge replacement program. Bridges built fifty years ago were designed for smaller, lighter-weight (28,000 pound limit) trucks. Today, the legal limit is 80,000 pounds. Moreover, the trend is toward double bottom trucks and still higher gross weight limits. Fourteen states, including North and South Dakota and all of Canada, have higher legal weight limits than Minnesota.

Should the legal load limits be raised to 105,000 pounds an estimated additional 250 bridges would be deficient. Similarly, should the legal load limit be raised to 129,000 pounds, and estimated additional 960 bridges would be classified as deficient.

LEGAL WEIGHT LIMITS
July 1988



(2) Revised Inspection and Rating Standards

Inspection and rating standards can be expected to continue changing as condition measurement technology advances, additional design/construction experience is accumulated, and bridge replacement history is gained. Three areas in particular that may be impacted include fatigue, scouring, and non-redundancy.

A new methodology exists for assessing fatigue damage in steel member bridges. Fatigue is caused by the loading and unloading stress a structure has been subjected to over time. Mn/DOT has begun to incorporate this methodology into its inspection and rating process. Inclusion of fatigue analysis in the bridge condition rating system will increase the number of deficient bridges and load postings over current levels.

Fatigue considerations are especially important for non-redundant bridges. Redundancy in bridge design and construction provides a secondary means of deck support should a structural member fail. Many bridge structures were not designed for this specification. Although non-redundancy is not presently defined as a deficient condition, redundancy enhances safety by reducing the possibility of catastrophic failure. If non-redundancy were made a deficiency criteria, 117 structures (46 state and 71 local) would be added to the deficiency list, representing a replacement cost estimated at $46.9 million.

The Office of Bridges and Structures recently initiated a Minnesota Bridge Scour Study to identify scour-critical bridges and prepare action plans for bridges determined to be scour-critical. This effort was prompted by the New York Schoharie Creek bridge disaster in April 1987 and subsequent Federal Highway Administration (FHWA) draft technical advisories pertaining to bridge scour.

Bridges with spread footing construction offer the greatest potential for the scour-critical condition. Scour is affected by bridge geometry, river channel geometry, river bed material, water velocity, and debris.

One hundred sixteen river- and stream-crossing bridges, not classified deficient, have spread footings on soil with a potential for scour problems. In addition, 212 river- and stream-crossing bridges have unknown footings on soil with a potential for scour problems.

Mn/DOT has used the FHWA draft technical advisories as the primary source of information for developing and refining a process to evaluate bridge scour. Most research on the subject has been done in the laboratory; little testing has been done in actual field conditions. Other states' action plans for scour protection for river and stream crossing bridges with spread footings were collected at the 1988 Mississippi Valley Conference. Responses indicate that everyone is still in a learning phase with this issue.

Mn/DOT procedures currently include a screening process; a data collection phase; a preliminary analysis; a field review; and an interdisciplinary meeting with district, hydraulics, bridge, and foundations representatives; leading to development of a bridge scour action plan for each scour-critical bridge.

At this time, only trunk highway bridges are being analyzed. On about 50 per cent of these, initial data collection is complete. With assistance, the Mn/DOT Hydraulic Engineering Section may be able to complete a thorough analysis before the spring floods of 1989.

If a trunk highway bridge is determined to be scour-critical, recommended scour mitigation measures may include scour monitoring during floods; bridge closure if critical scour is occuring, or countermeasures such as riprap, structural modifications, piling, and channel training. Rarely is a bridge recommended for replacement on the basis of the scour-critical condition alone. If no deficient condition exists, but a bridge is judged to be scour-critical, monitoring and riprap actions are, in most cases, recommended. When a bridge is eventually replaced, spread footings are not included in the design unless the bridge will be founded on bedrock.

Action is planned to train county and city personnel to analyze non-trunk highway river and stream crossing bridges with spread footings, after the FHWA technical advisories are published. Mn/DOT staff is not currently available to analyze these bridges.

On August 24, 1988, the FHWA announced tighter bridge inspection requirements in the areas of fatigue and scouring. Additional changes in inspection and rating standards in these and other areas are anticipated. These changes need to be monitored very closely for their impact on bridge funding and replacement schedules.

(3) Bridge Management System

A Bridge Management System prioritizing and merging bridge replacement needs with bridge maintenance and rehabilitation needs would greatly affect the Bridge Replacement Program. Planning, inspection, load rating, maintenance, rehabilitation, replacement financing, and record-keeping would be part of one system.

A Bridge Management System (BMS) is a systematic approach to providing timely repair, rehabilitation, and replacement program alternatives for all bridges which are so vital to the transportation infrastructure. This includes predicting bridge needs; identifying, prioritizing, and allocating funds for bridge construction, replacement, rehabilitation, and maintenance; and finding cost-effective alternatives for each bridge. A BMS can provide either project or network level information.

Mn/DOT's primary objective for developing a BMS is to assist managers in using available resources in the most efficient and cost-effective manner to address current and future bridge needs. The BMS would be similar to Mn/DOT's Pavement Management System (PMS) now under development to manage pavements.

A BMS will make it possible to compare long- and short-term needs and identify shifts and trends in relative replacement and rehabilitation needs for the entire system or for a network. It will be possible to determine trade-offs (i.e., what the effect will be on future replacement needs and costs if more money is spent on preventative maintenance now). The ability to rapidly and systematically compare life-cycle costs of many projects will make it possible to identify project packages that will make the best use of available funds.

Another valuable application of a BMS will be to analyze policies, such as the cost implication of different capacities, roadway widths, clearance standards, and system needs; or the implications of changes in funding types and levels and in truck policies.

To accomplish all of this, a BMS must include: sufficient and reliable data for describing the condition of each bridge; criteria and functions for developing current needs estimates based upon a bridge's geometry, condition, traffic volume, functional class, etc.; analytical models for predicting the change in bridge condition due to future deterioration and bridge improvement work; and a means of expressing needs in terms of the amount of work required or the cost of meeting the needs.

A comprehensive data base including information on bridge conditions; maintenance, rehabilitation, and replacement costs; and desired levels of service is necessary for success of a BMS. Mn/DOT has inplace a bridge inventory system containing information on repair costs, condition, and physical characteristics for existing bridges. This data base could be expanded to meet the needs of a BMS.

The primary shortfalls of Mn/DOT's current system of allocating maintenance, rehabilitation, and repair funds is that it is unable to examine, in a systematic and comprehensive approach, the long-term cost effectiveness of replacement, rehabilitation and repair alternatives. Mn/DOT currently prioritizes bridge replacements using a formula to establish ranking. The system does not compare rehabilitation and replacement options. A BMS will assist in determining when it is best to repair or rehabilitate a structure rather than replace it.

Because of the benefits a Bridge Management System offers, Mn/DOT has taken an active role in the development of a comprehensive Bridge Management System. The California Department of Transportation, in cooperation with the FHWA and a Technical Advisory Committee, is in the process of developing a model Bridge Management System that could be used nationwide. The tentative completion date is January, 1991. The development of a Bridge Management System for use in Minnesota will be expedited by the development of the model system.

(4) Posting Enforcement

Bridges are designed for strength and serviceability based partly on predictions of vehicular loads. The validity of predictions depends to some degree on accurate knowledge of the past and present. Although maximum allowable weights per vehicle are posted at bridges, the magnitude of load-posting violations is unknown. Enforcement is difficult at best. Weigh stations, when open, catch some illegal trucks, but weigh stations are often closed. Even when they are open, they are readily avoided by heavy trucks. In most cases, enforcement by local authorities is minimal.

Weigh-in-motion technology, where in use, is an effective method of determining vehicular axle loads and of ascertaining the extent of load-posting violations. Mn/DOT's mobile weigh-in-motion unit has been used at a few bridges in the state, and has shown a high incidence of overweight trucks.

Monitoring and enforcing load-postings is costly. Allowing violations, which add to bridge fatigue and shorten bridge life, is also costly. Public and trucking industry education and awareness are necessary to gain voluntary compliance with load postings.

(5) Local Participation in Interstate Bridge Replacement

Local road authorities have been given additional responsibility for funding bridge replacement over Interstate Highways when these bridges become deficient. Although the original construction met local needs, many of these bridges have become inadequate as traffic volumes have increased. The deficiency is often due to the need for additional lanes, particularly in developing areas. The federal government is not participating at original levels in funding these replacement costs. At issue is the funding challenge this situation presents to local road authorities.

(6) Historical and Architectural Aesthetic Considerations

In the area of bridge replacement, as in all areas of governmental decisions and actions, public awareness, community concerns, and sensitivity to constituent demands are having a growing impact on outcomes. When a bridge is programmed for replacement, an early and ongoing concern of interested segments of the public is focused on aesthetic considerations. It is no longer sufficient, in many cases, to design a safe, functional bridge. The bridge must also be designed to complement its environment, replicate the bridge it replaces, and/or add grace and beauty to its surroundings.

The effect of this trend is to increase both design and materials costs, thereby adding to the overall cost of the replacement bridge. Just as labor and materials costs can be expected to rise with inflation, so can the percentage of increase due to meeting aesthetic demand be expected to increase. The challenge Mn/DOT faces is to meet aesthetic concerns with limited funds.

APPENDIX A

Bridge Inspection Report

Mn/DOT TP-17108-02 (8/85)

Minnesota Department of Transportation
Office of Bridges and Structures
BRIDGE INSPECTION REPORT

☐ ☐ ☐ *Original to Area Maintenance Engineer*
First copy to Bridge Maint. Supervisor
Second copy to Bridge Inventory Group

Bridge No.	T.H. No.	Mile Post	Location	Maintenance Area
Type	☐ Over ☐ Under		Posted Limit in Tons	☐ Annual Inspection ☐ Special Inspection

I	ITEM	RATING				COMMENTS AND SKETCHES *Refer to item number in comments and sketches Use additional sheets if necessary*
	SUBSTRUCTURE					
1	Abutments					
2	Piers					
	SUPERSTRUCTURE					
3	Trusses					
4	Girders					
5	Floor Beams					
6	Stringers or Beams					
7	Bearing Devices					
	DECKS (See Note 2)					
8	Expansion Joints					
9	Railing					
10	Structural Slab					
11	Wearing Surface					
12	Curb & Walk					
13	Bridge Deck Drains					
	AREA UNDER BRIDGE					
14	Channel & Protection					
15	Roadway, Railway, Other					
16	Slopes & Berms					
	CULVERTS					
17	Barrel & Floor					
18	Apron & Wings					
	OTHER					
19	Retaining Wall					
20	Approaches					
21	Signing					
22	Paint (year painted)					
23	Drainage					
24	Guard Rail					
25	Dolphins, Shear Fence, Etc.					
26						

Inspected by Date

Date

Date

Date

ITEM No.	ESTIMATED COST OF REPAIR Labor	Material	Equipment	Total	REVIEWED By Engineer

INDICATE A CONDITION RATING FROM 9 (VERY GOOD) TO 0 (VERY POOR) FOR CONDITIONS NOTED

CONDITION RATING CODES

CODE	DESCRIPTION
N	Not applicable
9	New condition
8	Good condition - no repairs needed
7	Generally good condition - potential exists for minor maintenance
6	Fair condition - potential exists for major maintenance
5	Generally fair condition - potential exists for minor rehabilitation
4	Marginal condition - potential exists for major rehabilitation
3	Poor condition - repair or rehabilitation required immediately
2	Critical condition - the need for repair or rehabilitation is urgent. Facility should be closed until the indicated repair is complete
1	Critical condition - facility is closed. Study should determine the feasibility for repair
0	Critical condition - facility is closed and is beyond repair

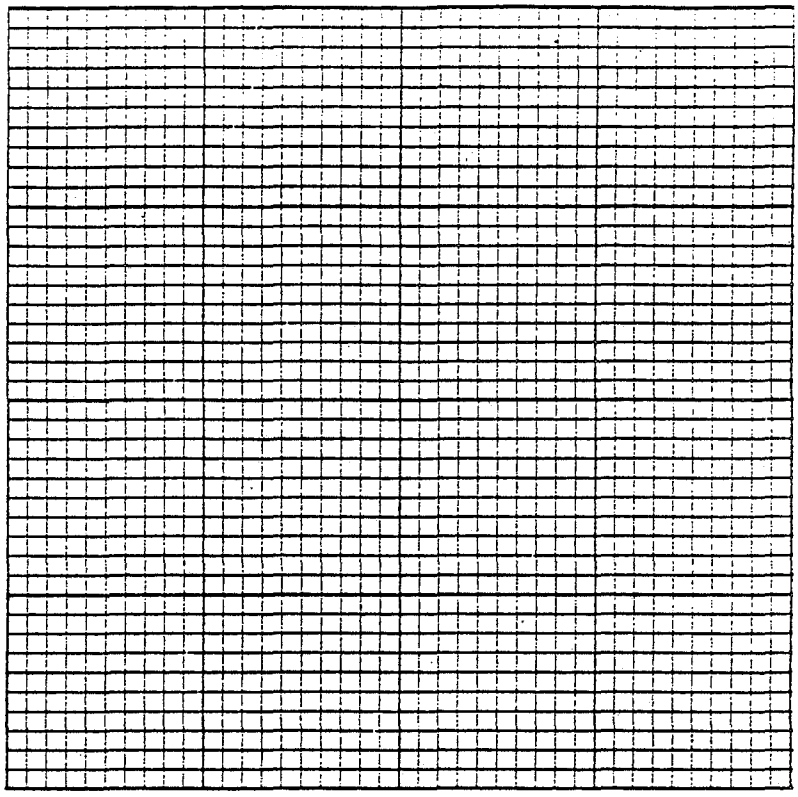
PAINT CONDITION CODES

CODE	DESCRIPTION
9	For like new condition
8	For 0-5% area rusting or paint failure
7	For 6-20% area rusting or paint failure
5	For 21-40% area rusting or paint failure
3	For greater than 40% area rusting or paint failure

NOTES

1. Place dash where item is not rated
2. The rating of the structural slab should be the controlling element

SKETCHES



REPAIR WORK DONE SINCE LAST INSPECTION

APPENDIX B

Bridge Deficiency Category Descriptions

Sufficiency Rating Factors

BRIDGE DEFICIENCY CATEGORY DESCRIPTIONS

A bridge is deficient if:

the load-carrying capacity is below current allowable legal loads;

the width is below current standards, causing a restrictive traffic flow, or safety factor over the bridge deck;

the condition has deteriorated to a point of major concern for public safety;

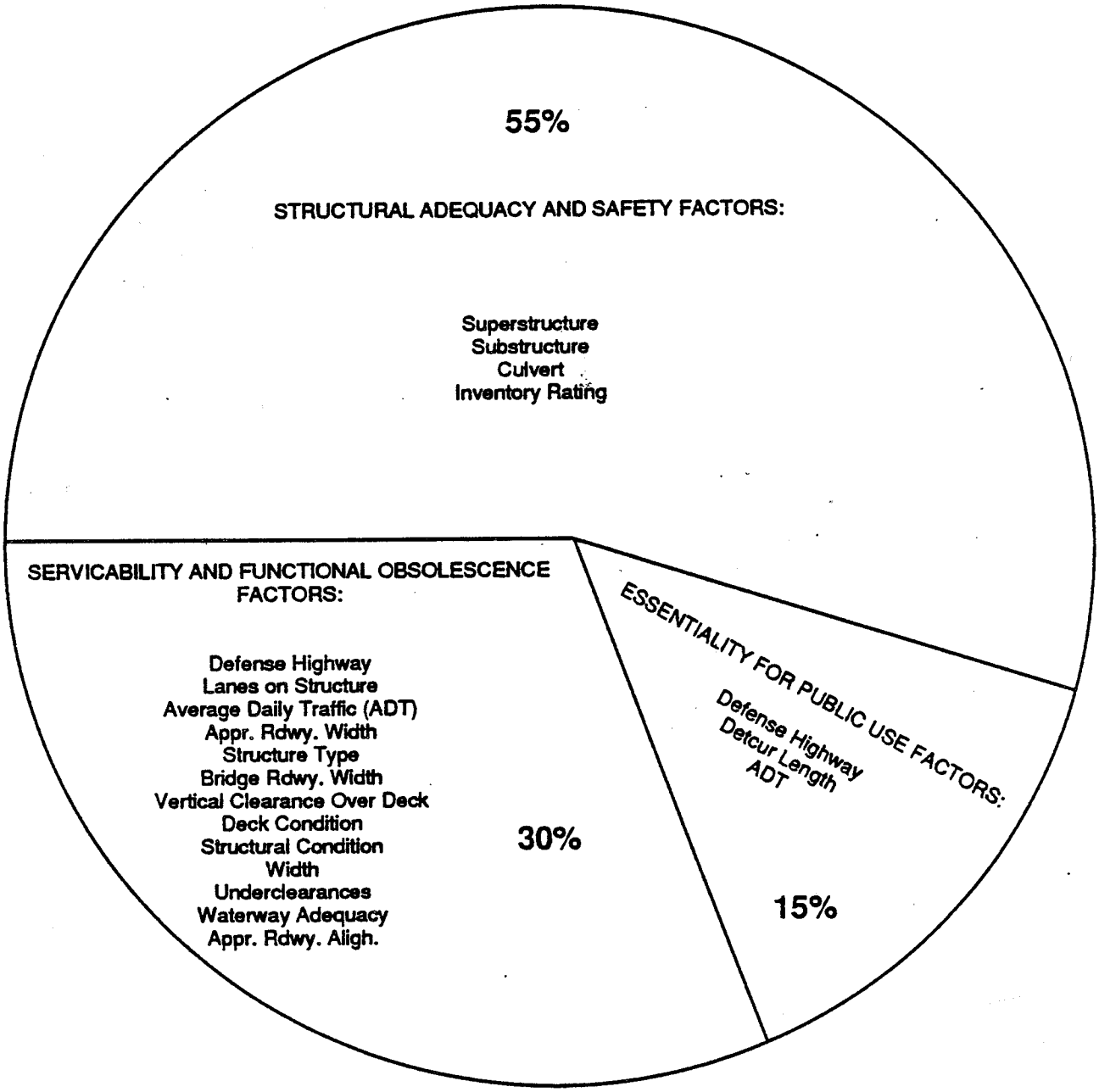
the underclearance (lateral and/or vertical clearance) is below current standards causing a restrictive traffic flow or safety factor under the bridge;

the waterway adequacy is not sufficient, causing occasional to frequent overtopping of the roadway;

the approach roadway does not function properly or safely due to alignment.

APPENDIX B

SUFFICIENCY RATING FACTORS



APPENDIX C

Responses for non-replacement of high priority deficient bridges in the trunk highway and local road systems

July 1988

LOCAL ROAD RESPONSES

RESPONSES FOR NON-REPLACEMENT OF HIGH PRIORITY DEFICIENT BRIDGES IN THE LOCAL ROAD SYSTEM

MN/DOT BRIDGE INVENTORY
LOCAL ROAD BRIDGE REPLACEMENT PROGRAM
LISTING OF TOP 100 DEFICIENT BRIDGES
BY ORDER NUMBER

ORDER #	CO NO	CITY	BRIDGE NUMBER	ROAD DESG	ROAD NUMB	FEATURE CROSSED	CUSTODIAN	OWNER	REMARKS
1	27	MINNEAPOLS	92340	MSAS	0218	5TH ST N/BN INC & C&NW RR 0.3 MI NW OF HENN AVE	CITY	RAILROAD	Construction in 10/90.
2	62	ST PAUL	62501	MSAS	0191	SELBY / PASCAL-SHORT L&RR AT THE JCT SHORT LINE RD	CITY	CITY	Construction in '89 or '90. Possible tie to I94 & Ayd Mill Rd
3	27	MINNEAPOLS	90589	CSAH	0052	HENN. AVE / MISSISSIPPI R 0.4 MI W OF JCT CSAH 23	COUNTY	COUNTY	Let 2/9/88.
4	27	MINNEAPOLS	4016	CITY	1621	BURNHAM RD OVER C&NW RR 0.9 MI NE OF JCT CSAH 17	RAILROAD	RAILROAD	Let 4/18/88.
5	27	MINNEAPOLS	5860	CSAH	0052	HENN AVE / BN INC & CNW 0.2 MI N OF JCT TH 52	COUNTY	RAILROAD	Let 2/9/88.
6	27	MINNEAPOLS	92353	MSAS	0230	14TH AVE SE / BN INC 0.1 MI N OF UNIV AVE	CITY	RAILROAD	Construction by Mn/DOT in '90.
7	27	BLOOMNGTON	1698	CSAH	0018	MINNESOTA RIVER AT SOUTH COUNTY LINE	COUNTY	COUNTY	Bid opening scheduled for Fall, '90.
8	27	MINNEAPOLS	92339	MSAS	0291	ROYALSTON / BN INC & C&NW 0.1 MI N OF GLENWOOD AVE	CITY	RAILROAD	Construction start in '90. Tied to I394 RR bridge removal & Glenwood Ave. br.reconst.by Henn County.
9	14		90817	CSAH	0001	RED RIVER OF THE NORTH AT ND ST LINE	COUNTY & City of Fargo.	COUNTY	Hearings being held. Will design new bridge or repair old one within one year.
10	27	MINNEAPOLS	L8925	MSAS	0197	5TH ST NE / BN INC 0.3 MI N OF HENN&CENTRAL	RAILROAD	RAILROAD	Could start construction in '88 if letting date set ASAP.

ORDER # #	CO NO	CITY	BRIDGE NUMBER	ROAD DESG	ROAD NUMB	FEATURE CROSSED	CUSTODIAN	OWNER	REMARKS
11	62	ST PAUL	6524	MSAS	0235	WABASHA ST / MISS R,RR,ST 0.1 MI S OF JCT TH 5	CITY	CITY	Construction in '91 or '92. Replace bridge using federal discretionary $.
12	27	MINNEAPOLS	90499	CSAH	0040	GLENWOOD / BN INC & HCRRA 0.3 MI W OF JCT TH 55	COUNTY	RAILROAD	Letting 7/27/88.
13	27	MINNEAPOLS	92348	MSAS	0211	4TH AVE/SOO LINE RR&29TH 0.1 MI N OF LAKE ST	RAILROAD	RAILROAD	Earliest start '90. Problems with Honeywell land devel. in vicinity.
14	27	MINNEAPOLS	L8899	MSAS	0205	1ST ST N OVER BN INC 0.3 MI NW OF HENN AVE	CITY	CITY	Proposed '89 construction.
15	82	ST PAUL PK	5600	CSAH	0038	MISSISSIPPI RIVER 0.1 MI W OF JCT CSAH 22	PRIVATE	PRIVATE	Preliminary studies indicate bridge not necessary to replace at this time.
16	55		L6322	CR	0121	S BR ZUMBRO RIVER 1.4 MI E OF JCT CR 112	COUNTY	COUNTY	Closed as of 12/18/80 and will not be replaced.
17	27	GOLDEN VAL	6343	CR	0070	MEDICINE LK RD/SOO LINE R 0.7 MI W OF JCT CSAH 102	COUNTY	COUNTY	At-grade crossing rec. Project not in current five year plan.
18	27	2612	90651	CITY	0017	WOODRIDGE/DAK RR & ARCOLA 0.3 MI W OF JCT CSAH 15	CITY	CITY	Removed in 2/88 and not sched. for replacement.
19	27	MINNEAPOLS	L8898	CITY	0601	4TH AVE N OVER BN INC BTWN 1ST ST & 2ND ST N	RAILROAD	RAILROAD	Bridge need not be replaced.
20	62	MAPLEWOOD	90413	CSAH	0060	ARCADE ST / KELLER CANAL 0.1 MI SW OF JCT CSAH 22	COUNTY	COUNTY	Approved by County Board as high priority for replacement.

ORDER #	CO NO	CITY	BRIDGE NUMBER	ROAD DESG	ROAD NUMB	FEATURE CROSSED	CUSTODIAN	OWNER	REMARKS
21	27	1655	92366	CITY	0001	BRIDGE ST OVER CROW RIVER 0.1 MI N OF JCT CSAH 19	CITY	CITY	Closed to vehicular traffic and not sched. for replacement.
22	27	MINNEAPOLS	L5761	CITY	0513	E RV RD/BRIDAL VEIL FALLS 0.1 MI N OF FRANKLIN AVE	CITY	CITY	Should have future programming by Mpls. Park Board.
23	69	HIBBING	L8533	CITY	0012	4TH AVE W OVER B N INC 0.3 MI N OF JCT CSAH63	RAILROAD	RAILROAD	City Council motion - not priority project & BN should cont. to own & maintain bridge.
24	27	MINNEAPOLS	L8924	CITY	0868	NICOLLET ST / BN INC 0.3 MI N OF HENN AVE	RAILROAD	RAILROAD	To be programmed in near future. Tied to Mpls. Park Board devel. of Nicollet Island.
25	55	ROCHESTER	L6228	CITY	0	48TH ST OVER WILLOW CREEK 0.1 MI E OF JCT CR 147	CITY	CITY	Completion by 8/15/88 with 100% City funds.
26	62	MAPLEWOOD	6629	CSAH	0026	ROSELAWN AVE / SOO LINE 0.2 MI E OF JCT TH 49	COUNTY	COUNTY	Obtaining a consultant for br. replacement & ready for funding soon.
27	27	MINNEAPOLS	L8905	CITY	2013	GARFIELD S / SOO LINE RR 0.1 MI N OF LAKE ST	RAILROAD	RAILROAD	Construction start in '89.
28	32	1930	L4641	CITY	0052	DES MOINES RIVER IN JACKSON	CITY	CITY	Abandoned, closed & used as a walkway. No plans to replace it.
29	55	ROCHESTER	L6291	CR	0133	STREAM 1.6 MI N OF JCT CSAH 22	COUNTY	COUNTY	Construction proposed for '88.
30	33		1632	CSAH	0011	SNAKE RIVER 0.4 MI S OF JCT CSAH 17	COUNTY	COUNTY	Let 6/8/88.

ORDER #	CO NO	CITY	BRIDGE NUMBER	ROAD DESG	ROAD NUMB	FEATURE CROSSED	CUSTODIAN	OWNER	REMARKS
31	60	CROOKSTON	L8471	MSAS	0143	W 8TH ST OVER BN INC 0.1 MI NW OF BROADWAY	RAILROAD	RAILROAD	Considering new crossing on 4th Ave. N.W.
32	69	HIBBING	7640	CSAH	0005	OVER DM&IR RY 0.3 MI N OF JCT CSAH92	COUNTY	COUNTY	Will hire a consultant for design & drawing of replacement bridge.
33	08	3605	5755	CSAH	0005	BIG COTTONWOOD RIVER 0.1 MI S OF JCT CSAH 3	COUNTY	COUNTY	Will be replaced by new bridge on new alignment next yr. with with State Aid & MSA $.
34	27	MINNEAPOLS	L8900	CITY	0605	1ST ST S OVER C&NW RY 0.1 MI SE OF 3RD AVE S	CITY	CITY	City will replace or rehab in '89 using City $.
35	62	ST PAUL	90428	MSAS	0113	BURR ST / BUSH AVE & CNW 0.8 MI S OF JCT CSAH 31	CITY	RAILROAD	Under study - City will decide by late '88 whether or not to eliminate this bridge.
36	33		4541	CSAH	0011	GROUNDHOUSE RIVER 0.6 MI S OF JCT CSAH 17	COUNTY	COUNTY	Let 6/8/88.
37	27	ST LOUS PK	92686	MSAS	0280	YOSEMITE AVE-MINNEHAHA CR 0.5 MI S OF JCT CSAH 3	CITY	CITY	Bridge replacement in '90, using State Aid funds.
38	09	CLOQUET	6091	MSAS	0105	MAIN ST OVER ST.LOUIS R. 0.1 MI S OF JCT TH 33	CITY	CITY	Programmed for '90.
39	70		L3048	CR	0065	SAND CREEK 0.3 MI W OF JCT TH169	COUNTY	COUNTY	Project will be let in late '88 or early '89.
40	86		4386	CSAH	0012	N FK CROW RIVER 2.0 MI SW OF JCT CR108	COUNTY	COUNTY	To be replaced in '90.

ORDER # #	CO NO	CITY	BRIDGE NUMBER	ROAD DESG	ROAD NUMB	FEATURE CROSSED	CUSTODIAN	OWNER	REMARKS
41	07		L5665	TWP	0167	LE SUEUR RIVER 1.5 MI SE OF JCT TH 22	COUNTY	COUNTY	Needs replacement but delayed by State Historical Society.
42	14		4786	CSAH	0026	BUFFALO RIVER 2.1 MI W OF JCT CSAH 11	COUNTY	COUNTY	To be replaced - construction start in '88.
43	58		4116	CSAH	0011	MUD CREEK 0.6 MI W OF JCT TH 107	COUNTY	COUNTY	To be constructed in '89.
44	22	0390	9996	CITY	0088	E FK BLUE EARTH RIVER 0.5 MI N OF JCT TH 16	CITY	CITY	Closed to all vehicular traffic in '87 by Faribault Co. Engr.
45	72	4155	5165	CSAH	0033	OVER MINN VALLEY RL AUTH 0.3 MI S OF JCT TH 19	COUNTY	COUNTY	Turnback - bridge to be removed within five years.
46	86		4718	CSAH	0004	N FK CROW RIVER 1.9 MI S OF JCT CSAH35	COUNTY	COUNTY	Will be let in Fall, '88.
47	27	1225	L8867	CITY	0015	COURTLAND ST / HCRRA 0.2 MI N OF JCT CSAH 19	CITY	CITY	Closed to all traffic and removal or replacement is being studied.
48	06	2950	3398	CITY	0074	MINNESOTA RIVER 0.4 MI S OF JCT TH 12	CITY	CITY	City will not be replacing bridge due to funding.
49	71		1522	CR	0064	ST FRANCIS RIVER 0.1 MI S OF JCT CSAH3	COUNTY	COUNTY	Currently posted three ton - to be removed in future.
50	07		L5669	TWP	0190	LE SUEUR RIVER 0.3 MI E OF JCT TH 66	COUNTY	COUNTY	Two townships involved. Will maintain as is for present & consider future site without river crossing.

ORDER #	CO NO	CITY	BRIDGE NUMBER	ROAD DESG	ROAD NUMB	FEATURE CROSSED	CUSTODIAN	OWNER	REMARKS
51	62	ST PAUL	90402	CSAH	0046	RAYMOND / BN & MT RR YARD 0.1 MI S OF JCT MSAS 157	CITY	CITY	Reconstruction - start in 8/88 & complete by 7/89.
52	27	MINNEAPOLS	90590	CITY	1942	NICOLLET / SOO LINE RR 0.1 MI N OF LAKE ST	CITY	CITY	Bridge no longer needed, to be removed.
53	66		L2733	TWP	0045	STRAIGHT RIVER 0.8 MI E OF JCT CSAH 19	COUNTY	COUNTY	Replacement low priority. Will be closed to vehicular traffic if bridge loading is reduced.
54	10		4876	CSAH	0040	CARVER CREEK 0.5 MI NE OF JCT CSAH 45	COUNTY	COUNTY	Proposed construction in '91. Need federal or state $ for replacement.
55	23		6263	CR	0118	S BR ROOT RIVER 0.1 MI N OF JCT CSAH 12	COUNTY	COUNTY	Closed - Forestville Co. wants to rehab to 7 T.
56	23	3115	4435	CSAH	0012	S BR ROOT RIVER 0.3 MI E OF JCT CSAH 17	COUNTY	COUNTY	R/W problems.
57	27	ORONO	90480	CSAH	0019	N SHORE DR/W ARM CHANNEL 0.4 MI W OF JCT CSAH 151	COUNTY	COUNTY	Not in current five year improvement plan.
58	27		6273	CSAH	0116	CROW RIVER 4.3 MI NW OF JCT CSAH 150	COUNTY	COUNTY	Not in current five year improvement plan.
59	50		5065	CSAH	0046	STREAM 0.1 MI W OF JCT CSAH 24	COUNTY	COUNTY	Not a high priority for replacement. Rated as near legal load requiring no posting.
60	27	GOLDEN VAL	90604	CSAH	0066	GOLDEN VALLEY RD / BN INC 0.8 MI W OF JCT CSAH 2	COUNTY	COUNTY	Not in current five year improvement plan.

ORDER # #	CO NO	CITY	BRIDGE NUMBER	ROAD DESG	ROAD NUMB	FEATURE CROSSED	CUSTODIAN	OWNER	REMARKS
61	69	DULUTH	L8519	CITY	1038	ABBOTSFORD AVE-TISCHERS C 0.2 MI W OF JCT CSAH9	CITY	CITY	Would be replaced immediately if $ available.
62	79	4225	L1098	CR	0089	ZUMBRO RIVER 0.1 MI S OF JCT TH60	COUNTY	COUNTY	County does not plan to replace because of high $ and low traffic volume.
63	12	1550	90149	CSAH	0005	OVER SOO LINE RR IN GRANITE FALLS	COUNTY	COUNTY	Replacement hinges on redesign of CSAH 5 in new location & ruling on at-grade crossing from SooLine.
64	03	DETROIT LK	4159	CSAH	0022	PELICAN RIVER 0.4 MI NW OF JCT CSAH 24	COUNTY	COUNTY	#2 priority by County Comm. Major shortcomings are deck width & geometry, acc. to Co. Engr.
65	30		L2528	CSAH	0006	LOWER STANCHFIELD BROOK 0.2 MI W OF JCT CR 33	COUNTY	COUNTY	To be replaced with two 138" span RC arch pipe, but still needs permits from Corps of Engrs.,DNR & MN. Historical Society.
66	07		1461	CR	0147	BLUE EARTH RIVER 0.7 MI NE OF JCT CSAH 40	COUNTY	COUNTY	Replacement on hold due to high cost & political implications.
67	58	0980	L3061	CSAH	0040	BIRCH CREEK 0.2 MI S OF JCT CSAH 52	COUNTY	COUNTY	Will have late '88 or early '89 letting date.
68	62	ST PAUL	90412	CSAH	0058	EDGERTON / BUSH & CNW RR 0.6 MI NE OF JCT TH 212	CITY	CITY	Under study - City will decide by late '88 whether to eliminate this bridge.
69	14		1078	CSAH	0001	COULEE 0.1 MI S OF JCT CSAH 26	COUNTY	COUNTY	To be replaced in 5 to 10 years.
70	19		L3275	TWP	0166	CANNON RIVER 0.1 MI SE OF JCT CSAH 47	TOWNSHIP	TOWNSHIP	To be replaced - Twsp. Board wants info. on funding & replacement process.

ORDER #	CO NO	CITY	BRIDGE NUMBER	ROAD DESG	ROAD NUMB	FEATURE CROSSED	CUSTODIAN	OWNER	REMARKS
71	62	ST PAUL	92236	MSAS	0214	WESTERN AVE OVER BN INC AT THE JCT COMO AVE	CITY	CITY	Scheduled for replacement in '93. May be speeded up due to recent fire.
72	85		L1389	CR	0112	WHITEWATER RIVER 0.3 MI SE OF JCT CSAH37	COUNTY	COUNTY	Closed to public & will eventually be removed.
73	79	1130	L1175	CITY	0009	N FK WHITEWATER RIVER 0.1 MI E OF JCT TH 42	CITY	CITY	To be replaced in '88.
74	55		L8565	CR	0143	BEAR CREEK 0.9 MI E OF JCT CSAH 36	COUNTY	COUNTY	Construction in '89. Working with DNR to obtain permit.
75	53		2462	CSAH	0035	DITCH 0.7 MI W OF JCT CSAH 9	COUNTY	COUNTY	To be replaced in '90 under Combined Road Plan.
76	55		L6265	TWP	0228	SILVER CREEK 2.1 MI W OF JCT CSAH 11	COUNTY	TOWNSHIP	Twsp. completed bridge survey & preliminary bridge plan.
77	54		89749	CR	0122	JUD DITCH # 56 1.1 MI S OF JCT CSAH 39	COUNTY	COUNTY	Let 6/2/88.
78	66		7329	CR	0093	CROCKERS CREEK 0.7 MI N OF JCT CSAH 39	COUNTY	COUNTY	Letting 6/23/88.
79	82	0020	4611	CSAH	0021	TROUT BROOK 1.0 MI N OF JCT CSAH20	COUNTY	COUNTY	To be replaced. Letting in late fall, '88.
80	20	1980	4974	CSAH	0034	MASTEN CREEK 0.5 MI E OF KASSON	COUNTY	COUNTY	Partially rehabbed in '87 by blasting & painting all steel.

ORDER # #	CO NO	CITY	BRIDGE NUMBER	ROAD DESG	ROAD NUMB	FEATURE CROSSED	CUSTODIAN	OWNER	REMARKS
81	79		L1050	CSAH	0030	TROUT BROOK 0.3 MI N OF JCT TH60	COUNTY	COUNTY	Closed to all traffic. To be replaced in '89.
82	07		L5659	TWP	0096	COBB RIVER 2.2 MI SW OF JCT CSAH 16	COUNTY	COUNTY	Township is processing this for replacement.
83	55		L6158	CR	0104	S FK ZUMBRO RIVER 0.5 MI S OF JCT CSAH 25	COUNTY	COUNTY	Project scheduled for '90.
84	58	3237	4141	CR	0107	ROCK CREEK 0.1 MI N OF JCT CSAH 2	COUNTY	COUNTY	Bridge is currently closed. Future plans uncertain.
85	08		3279	TWP	0073	BIG COTTONWOOD RIVER 0.3 MI NW OF JCT CSAH 24	COUNTY	COUNTY	Programmed for replacement after Br. # 700 in Leavenworth Twsp. is replaced. Start design work late'88.
86	14		90831	CSAH	0011	DITCH # 39 0.9 MI N OF JCT CSAH 26	COUNTY	COUNTY	To be replaced in '89. Presently writing Location & Design Report.
87	83	2380	6527	CR	0116	WATONWAN RIVER 0.4 MI S OF JCT CSAH3	COUNTY	COUNTY	County wants bridge replaced. Delayed due to Historical Society.
88	29		90793	CSAH	0007	STREAM AT JCT CR 87	COUNTY	COUNTY	Should be replaced, acc. to Co.Engr. 3rd Priority, after 2 other bridges in Hubbard County.
89	74		5104	CSAH	0012	MEDFORD CREEK 0.1 E OF JCT CSAH1	COUNTY	COUNTY	High priority for replacement, but delays due to new alignment and DNR concerns.
90	35		L4466	CSAH	0024	ROSEAU RIVER 0.1 MI N OF JCT CSAH 4	COUNTY	COUNTY	To be removed after Bridge #1591 is replaced.

ORDER # #	CO NO	CITY	BRIDGE NUMBER	ROAD DESG	ROAD NUMB	FEATURE CROSSED	CUSTODIAN	OWNER	REMARKS
91	57		L0238	CR	0063	THIEF RIVER 0.2 MI E OF JCT CSAH 18	COUNTY	COUNTY	Eligible for replacement, but alignment is antiquated. Will be eventually removed, acc. to Engr.
92	27	MINNEAPOLS	5756	CITY	1612	SOLDIER'S RD / M'HAHA CRK 0.1 MI E OF JCT M'HAHA AV	OTH STATE	OTH STATE	Owned by Mn. Dept. of Admin. Needs inter-agency cooperation.
93	02	E BETHEL	90720	CR	0074	CEDAR CREEK 0.5 MI W OF JCT TH 65	COUNTY	COUNTY	To be replaced in 2 years, depending on funding.
94	55	ROCHESTER	L6283	CITY	0286	E RIVER RD OVER ROCKY CRK 0.4 MI S OF JCT CSAH 22	CITY	CITY	Replacement in '92, with State Aid and City $.
95	27	ORONO	90653	MSAS	0102	CRYSTAL BAY RD / BN INC 0.2 MI S OF JCT TH 12	CITY	CITY	Will be replaced in 2 years, if funding available.
96	27	MINNEAPOLS	L8901	CITY	1030	FREMONT AVE / SOO LINE RR 0.1 MI N OF LAKE ST	RAILROAD	RAILROAD	City will program this bridge soon.
97	83		90364	CR	0128	S FK WATONWAN RIVER 0.2 MI N OF JCT CSAH7	COUNTY	COUNTY	County would reschedule project for '89 if bridge replacement project is granted for '89.
98	28	1805	7539	CSAH	0007	THOMPSON CREEK 0.1 MI E OF JCT TH 44	COUNTY	COUNTY	Will be replaced, but on hold for now. Might become State project.
99	69		3692	CSAH	0033	TALMADGE RIVER 0.1 MI N OF JCT CR693	COUNTY	COUNTY	Scheduled for replacement in '91, or sooner if possible.
100	81		L4123	TWP	0200	LE SUEUR RIVER 0.8 MI NE OF JCT CSAH14	COUNTY	COUNTY	County Engr. rec. closing bridge, but Town Board disagreed.

TRUNK HIGHWAY SYSTEM RESPONSES

RESPONSES FOR NON-REPLACEMENT OF HIGH PRIORITY DEFICIENT BRIDGES IN THE TRUNK HIGHWAY SYSTEM

Priority 1 Br. No. 6520 TH 912C Marshall Ave. over Miss. R. At Ramsey-Henn. Co. Line

This bridge has not been replaced because necessary State and/or Federal funds have not been available. Bridge and road plans will be complete by August of 1988. The project is currently scheduled for a November 1988 letting, contingent of Federal discretionary funds. If let in November 1988, the new bridge will be completed by late 1991.

Priority 2 Br. No. 6992 TH 952A Washington Ave/BN Inc. 0.4 Mi. NW of Jct. Henn. Ave.

S.P. 2720-25 which includes the replacement of this bridge is scheduled for letting 3/23/90 for $1,320,000. Project development work continues. Schedule assumes no R/W required.

Priority 3 Br. No. 1947 TH 101 Over BN Inc. 0.4 Mi. S of Jct. TH 12

Replacement project was previously scheduled; however, municipal approval could not be obtained due to project impacts. Recent attempts to revive the project have met with local opposition again. Replacement of this bridge is no longer scheduled. Estimated replacement cost with roadway improvements is about $3,000,000. Earliest letting would be about 4 years from project development start. Project is currently inactive.

Priority 4 Br. No. 3334 TH 101 Over Grays Bay Channel 2.8 Mi. N of Jct. TH 7

Project has been controversial in the past and that has resulted in some delay. Project is currently scheduled for replacement and roadway improvements on 12/18/92. Consultant to do preliminary enginering has been selected. Estimated construction cost is $2,500,000.

Priority 5 Br. No. 4588 TH 60 Over Mississippi R & Str. At Wisc. State Line (Wabasha, Mn.)

Replacement of this bridge began in 1986 and may be completed by the end of this year. Bridge #4588 is scheduled for removal in 1989.

Priority 6 Br. No. 6009 TH 10 Over St. Croix River At Wisc. State Line (Prescott, Wi.)

A Draft EIS was prepared in November 1979 and a Final EIS in April 1987 by Wisconsin DOT. Preparation of bridge and road plans is underway with a scheduled letting date for the bridge of December 1988. Open to traffic fall of 1990.

Priority 7 Br. No. 90667 TH 100 W. Fr. Rd. over C&NW RR
0.1 Mi. W. of Jct. TH 100

Project is currently programmed for replacement and roadway improvements on 1/25/91. Estimated construction cost is $2,900,000.

Priority 8 Br. No. 1822 TH 101 Over Bluff Creek
4.2 Mi. S. of Chanhassen

Was programmed several years ago; however, was dropped due to need to realign TH 101, resultant cost, and other priorities. Currently not scheduled.

Priority 9 Br. No. 4390 TH 25 Over Mississippi River
0.7 Mi. N. of Jct. TH 94

Under contract (new bridge 71012)

Priority 10 Br.No. 6540 TH 39 Over BN Inc. (ABAN)
0.5 Mi. E. of Jct. TH 23

This is a low volume road leading to the Oliver Bridge which connects Mn. and Wi. We once thought the bridge could be removed upon abandonment of the BN railroad but the City of Duluth has put a recreational trail under the bridge. We have requested programming for FY 92 and it appears that it will in fact be programmed.

Priority 11 Br. No. 4516 TH 200 Over Mississippi River
0.1 Mi. W. of Jacobson

The bridge replacement has had many environmental hurdles, including Sec. 4(f) property, 6(f) property, historic concerns, floodplains, wetlands, etc. The District is proceeding with the necessary project documentation. Presently scheduled for 4/26/91 letting. Will probably have to be delayed to 4/92 letting depending on length of time it takes to get necessary approvals.

Priority 12 Br. No. 4937 TH 969B Over Rum River
0.7 Mi. S. of Jct. TH 23

Under contract (new bridge 48002)

Priority 13 Br. No. 5119 TH 212 Over Stream
0.1 Mi. E. of W. Jct. TH 67

This bridge is programmed for letting 12/15/89 and has been in and out of the program for the last 3 or 4 years. It is perceived that funding problems have caused the delay since the program is periodically reshuffled and some of the smaller bridges are delayed because of larger, higher priority projects. It is hoped that the scheduled letting for this project will be as planned.

Priority 14 Br. No. 4666 TH 19 Over Minnesota River
0.5 Mi. S. of Morton

This bridge is programmed for letting 1/1/90. Traffic will be maintained on this structure until approximately November of 1991. The project has been under consideration for some 6 or 7 years and various alignment and right of way problems have caused numerous delays in the lettings. The bridge is being inspected thoroughly at approximately 6 month intervals with spot inspections in between. It appears that we can carry the 24 tons per vehicle or 40 tons per tractor semi-trailer loads until it is replaced in 1991.

Priority 15 Br. No. 4178 TH 55 Over N. Fk. Crow River
6.0 Mi. W. of Eden Valley

This bridge is under contract for replacement.

Priority 16 Br. No. 1885 TH 70 Over Snake River
1.4 Mi. SW of Grasston

New alignment anticipated. Right of way problems encountered. Low district priority. Proposed letting 2-23-90.

Priority 17 Br. No. 5155 TH 59 Over Sand Hill River
4.4 Mi. N. of Bejou

Is scheduled in PMSS for replacement for 10-15-89. This is part of a dam project, where we are offering our bridge costs towards the cost of the dam project. The watershed is the lead agency on this and the letting date is independent on their action.

Priority 18 Br. No. 5019 TH 65 Over Snake River
2.4 Mi. N. of Jct. TH 18

This bridge is immediately adjacent to Bridge 5766 (Soo Line RR over TH 65). Both bridges must be replaced at the same time on new location. Cost of replacing Br. 5766 is approx. $1,800,000 and is not eligible for Federal BR funds. We have requested programming for FY 92 and it appears that both bridges will in fact be programmed.

Priority 19 Br. No. 5046 TH 212 Over Hawk Creek
1.6 Mi. E. of E. Jct. TH 23

This bridge replacement is tied to S.P. 1211-12, TH 212, East of Granite Falls. The construction project programming met with the usual delays associated with reconstruction projects and consequently work on this structure has also been delayed. The plan is to detour TH 212 only once during the reconstruction of TH 212 and replacement of Bridge #5046.

Priority 20 Br. No. 5001 TH 969B Over O'Neill Brook
1.5 Mi. N. of Jct. TH 23

Will be in turnback in November 1989.

Priority 21 Br. No. 5008 TH 169 Over Rum River
2.0 Mi. S. of S. Jct. TH 27

Delayed until TH 169 bypass was completed. Now planned for 1991.

Priority 22 Br. No. 1828 TH 70 Over Rice Creek
3.5 Mi. W. of Grasston

New alignment anticipated. Right of way problems encountered. Low district priority. Proposed letting 11-17-89.

Priority 23 Br. No. 1766 TH 95 Over Elk River
0.8 Mi. E. of Jct. TH 23

New alignment. Unable to program. Finally programmed but deferred. Now in program again. Proposed letting 4-27-90.

Priority 24 Br. No. 2158 TH 232 Over Chan between Two Lakes
0.3 Mi. W. of Jct. TH 65

This is a low volume stub route. It will be necessary for a new bridge to be constructed on a new location because of the curvilinear approaches to the present bridge. The deck is in good shape and the narrowness (single lane) is the main reason for replacement. Because of the low volume and the fact that the bridge is not posted, the funding for the extensive approach work appears questionable at this time. The District 20 Year Plan indicates the replacement of this structure in the 1991-94 time frame.

Priority 25 Br. No. 5416 TH 1 Over Baptism River
3.0 Mi. SE of Finland

This bridge replacement is presently scheduled for a 11/16/90 letting. We have replaced other higher priority bridges on TH 1 in the adjacent area, such as Br. 6443 in Finland.

Priority 26 Br. No. 4813 TH 70 Over St. Croix River
At Wisc. St. Line
(Grantsberg, Wi.)

This bridge is over St. Croix and connects MN. and WI. The Wisc. DOT is the lead agency for the project and we are following their schedule which calls for a 1/25/95 letting.

Priority 27 Br. No. 56506 TH 59 Union Ave./Ottertail R.
In Fergus Falls

In City of Fergus Falls over Ottertail River, "Trucks must not meet on Bridge" signs are inplace. We have delayed replacement or rehab for 2 reasons:

1. Fergus Falls "Bypass" of TH 210 & TH 59 projected for future would mean this structure would be a turnback. Details still not worked out on bypass.

2. Loading problem is in abutment approach spans. We have observed loads passing over abutment spans & can see no problems with stress, deflection etc.

When bypass question is settled we would probably look at some kind of rehab. to "beef up" abut. spans. (5-6 years off). Arch section in good condition.

Priority 28 Br. No. 5858 TH 25 Over Skunk River
1.7 Mi. S. of Genola

New alignment. Unable to program. Finally programmed but deferred. Now in program again. Proposed letting fall of 1989.

Priority 29 Br. No. 6544 TH 39 Over St. Louis R. under RR
0.9 Mi. E. of Jct. TH 23

This is the Oliver Bridge which connects Mn. and Wi. via TH 39. It is owned by the DM&IR railroad who accomplished a major rehabilitation of the bridge 4 years ago. This was a ten year fix and will be re-evaluated in another 6 years.

Priority 30 Br. No. 5025 TH 59 Over Pelican River
In Pelican Rapids

Programmed for rehab. in 1990 Br. Improvement & Repair Program. Rehab will be replacement of Superstructure.

Priority 31 Br. No. 5396 TH 61 Over DM&IR Ry
0.1 Mi. NE of 26th Ave. E.

This bridge is tied to the completion on I-35 from 10th to 26th Ave. E. in Duluth. Under a contract to be let in 4/28/89 this bridge carrying TH 61 (London Road) over the DM & IR Ry., will be removed and replaced.

Priority 32 Br. No. 5312 TH 2 Over Red Lake River
In Crookston

Is scheduled for letting for 12-15-89.

Priority 33 Br. No. 5610 TH 1 Over Kawishiwi River
12.2 Mi. SE of Ely

This bridge is on a low volume road (600-800 ADT) and is in good condition. The bridge is load posted due to a deficiency in the design of the truss. Our 20 Year Plan indicates the replacement of this structure in the 1991-94 time frame.

Priority 34 Br. No. 4380 TH 169 Over Mississippi River
At North County Line

Project is currently programmed for replacement and minor roadway improvements on 1/25/91. Bridge is posted for 5 tons. Negotiating with consultant to do preliminary engineering. Both communities support replacement.

Priority 35 Br. No. 90249 TH 53 SB over Rainy River
0.3 Mi. N. of Jct. TH 11

This bridge is privately owned by Boise Cascade Co. who has the exclusive franchise for bridges between the United States and Canada in this area.

Priority 36 Br. No. 4654 TH 36 Over St. Croix R. & City St.
At Wisc State Line

The Stillwater-Houlton River Crossing Study is currently underway. A Draft Study Outline/Scoping Document was published in October of 1985. A Final Study Outline/Scoping Decision Document was published in January 1987. The projected date for a Draft EIS is late 1988 with a Location Public Hearing in early 1989. A Final EIS is planned for late 1989. If a build conclusion is reached, construction could begin in 1993.

The study has identified 14 potential alignments within 3 basic corridors. There are also 3 no-build options under study (no action, transportation system management replace on site)

The study presents a complex public policy conflict that involves providing responsible transportation services, preserving environmental resources and cost. The major concerns identified through written comments received after the series of public meetings held early in 1987 are: aesthetics, access, traffic congestion, disruption, rural lifestyle, business, cost, wildlife and wild/scenic river protection.

Additional issues include local and regional planning concerns, conversion of residential and agricultural land uses, and the disposition of the existing bridge, which is eligible for listing on the National Register of Historic Sites.

Priority 37 Br. No. 4902 TH 16 Over Ditch
0.1 Mi. N. of S. Jct. TH 43

The Rushford Bridge over Root River was originally programmed for March 1986 but was deferred in 1986 due to the state funding shortage. Since a short time ago, we have reprogrammed this project for a

January 25, 1991 letting. This bridge is our District's "Priority One" Bridge Replacement.

Priority 38 Br. No. 5781 TH 48 Over Kettle River
4.5 Mi. E. of Jct. TH 35

This bridge replacement has had many environmental concerns which have surfaced because of the new alignment proposed for the project. In addition to the Kettle River having a Wild and Scenic River designation, the DNR has a boat landing and a Scenic and Natural Area adjacent to the bridge. We have been working with the DNR on all these concerns and have recently obtained approval of our proposed concept plan. The project is presently scheduled for a 4/26/91 letting.

Priority 39 Br. No. 5043 TH 57 Over S. Br. Mid Fk. Zumbro
River 2.7 Mi. N. of Jct. TH 14

The Mantorville Bridge over Zumbro River was originally programmed for October 1984 but has been delayed because of its proximity to a Historical District.

Priority 40 Br. No. 3954 TH 16 Over Root River
0.2 Mi. N. of Jct. TH 44

Both Bridges #3954 and #4437 were originally programmed together for January 1984. Since that time the Village of Hokah has requested that we tie this construction with the replacement of Bridge #5362 (TH 26) which would be the only crossing of the Root River to the north. Since TH 26 and Bridge #5362 flood regularly, they were afraid that when we would close TH 16 to replace the two bridges that a flood would land lock them on the south side of the Root River.

We are now studying a new alignment that would realign Highways 16 and 26 and build one bridge instead of replacing 6 deficient bridges in the immediate area, including the two mentioned top 50 bridges.

Bridges #3954 and #4437 are presently programmed for November 1990.

Priority 41 Br. No. 3443 TH 38 Over Big Fork River
In Big Fork

The District has attempted to program this project since 1985. Because of poor horizontal alignment the bridge must be replaced on new location with the associated grading costs of $930,000 in addition to $1,400,000 for the bridge. Because of the low traffic volumes and the fact that the bridge is not posted, funding for the approach work has not been approved. The $930,000 has had to compete statewide in the Major Construction Program has a low technical ranking because of the traffic volumes.

Priority 42 Br. No. 1946 TH 101 Under C&NW Ry
4.1 Mi. S. of Chanhassen

This project was programmed several years ago, however, it was dropped due to need to realign TH 101, resultant cost, and other priorities. Currently it is not scheduled.

Priority 43 Br. No. 2248 TH 1 Over Sturgeon River
17.4 Mi. W. of Cook

A contract for the replacement of this bridge was let in September, 1983. Shortly after construction began on the embankment fills, a large slope failure occurred and the project was halted and the contract cancelled. Since 1984 studies have been conducted on how to correct the slide problems. It now appears that a workable solution has been formulated and the District has begun the re-design of the project for a 12/15/89 letting.

Priority 44 Br. No. 4235 TH 907A Lake St./CNW-Soo Line RR
0.1 Mi. E. of W. Corp Limits

The project is currently programmed for letting replacement and roadway improvements on 9/22/89. Estimated cost is $4,000,000. A project has been delayed recently due to other priorities.

Priority 45 Br. No. 4880 TH 47 Over Rum River
2.0 Mi. S. of Jct. TH 95

New alignment involves wetland, floodplain, etc. Low district priority. Proposed letting 11-17-89

Priority 46 Br. No. 4800 TH 4 Over Minnesota River
8.0 Mi. S. of Fairfax

Bridge 4800 is presently the Number 1 District Priority for the 1992/93 Bridge Replacement Program and is tentatively scheduled for replacement in Fiscal Year 1992.

This bridge was scheduled for replacement in the 1980/81 program, but was eliminated due to lack of funds. At that time it was the district number 11th priority and was nubmer 83 in state priority. It was submitted in 1984 for the F.Y. 1990 replacement program but was 317th in statewide priority at that time.

Bridge 4800 received contract repair in 1974 which included replacing the deck and other miscellaneous repairs. The major deficiencies were the deck width and lack of an adequate water way opening. The structural condition has been adequate until recently, but has now deteriorated to where it warrants replacement.

Priority 47 Br. No. 5490 TH 9 Over Rabbit River
1.0 Mi. SE of Campbell

Programmed for replacement, 1-26-90 letting.

Priority 48 Br. No. 4855 TH 16 Over Root River
3.3 Mi. W. of S. Jct. TH 43

Bridge #4855; 3 miles W. of Rushford over Root River was originally programmed for January 1985 but because of complement restraints and workload, was delayed until May of this year. Now, the plans are completed; the archaeologists have spent a summer (1987) digging at the bridge site; but we are still waiting for written approval from the State Historical Preservation Officer to proceed. It is still anticipted that this project will be let this summer.

Priority 49 Br. No. 4437 TH 16 Over Stream
0.5 Mi. N. of Jct. TH 44

See Bridge #3954 for notation. (Priority 40)

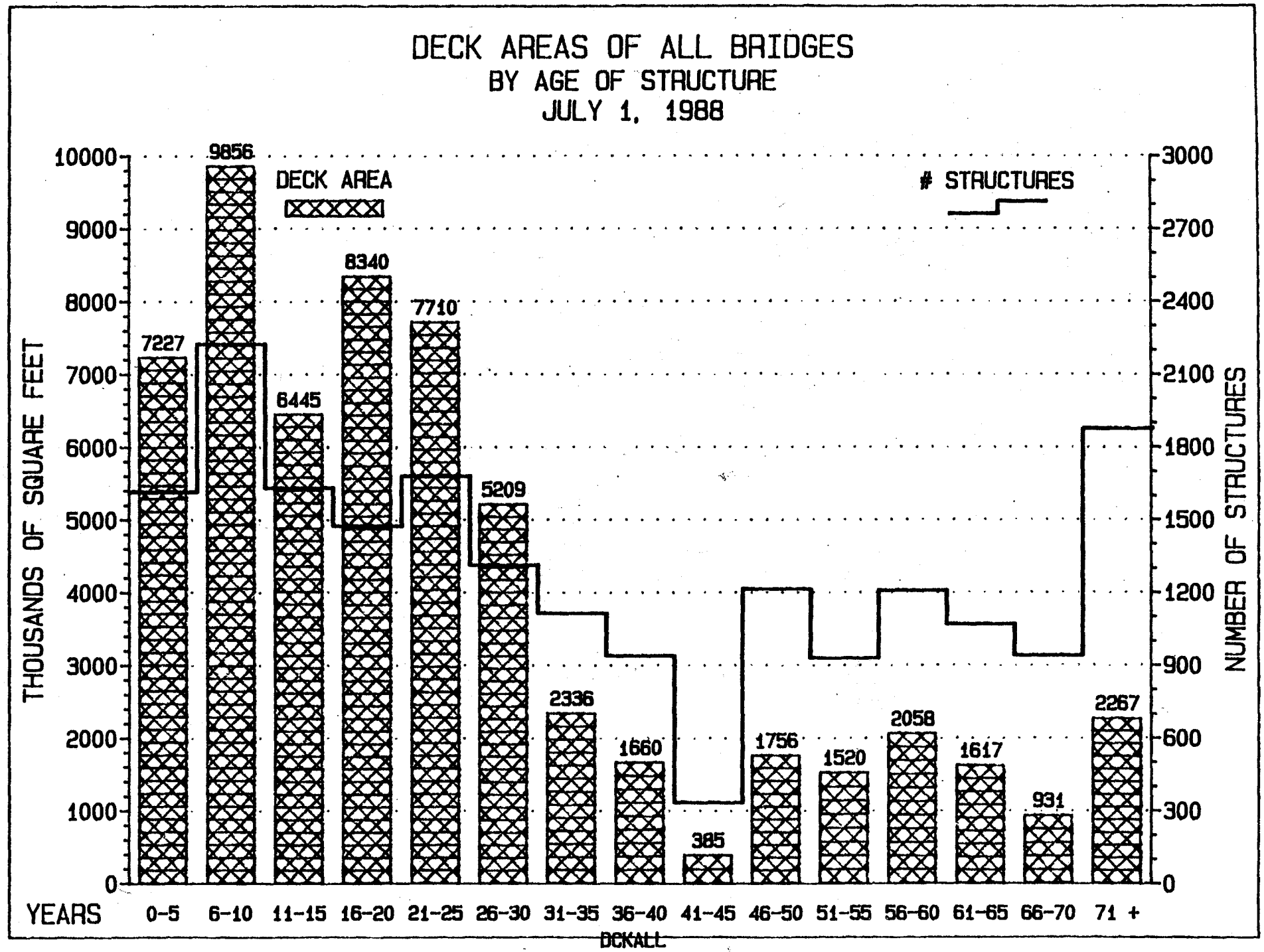
Priority 50 Br. No. 5110 TH 53 Over Rice River
6.0 Mi. S. of Cook

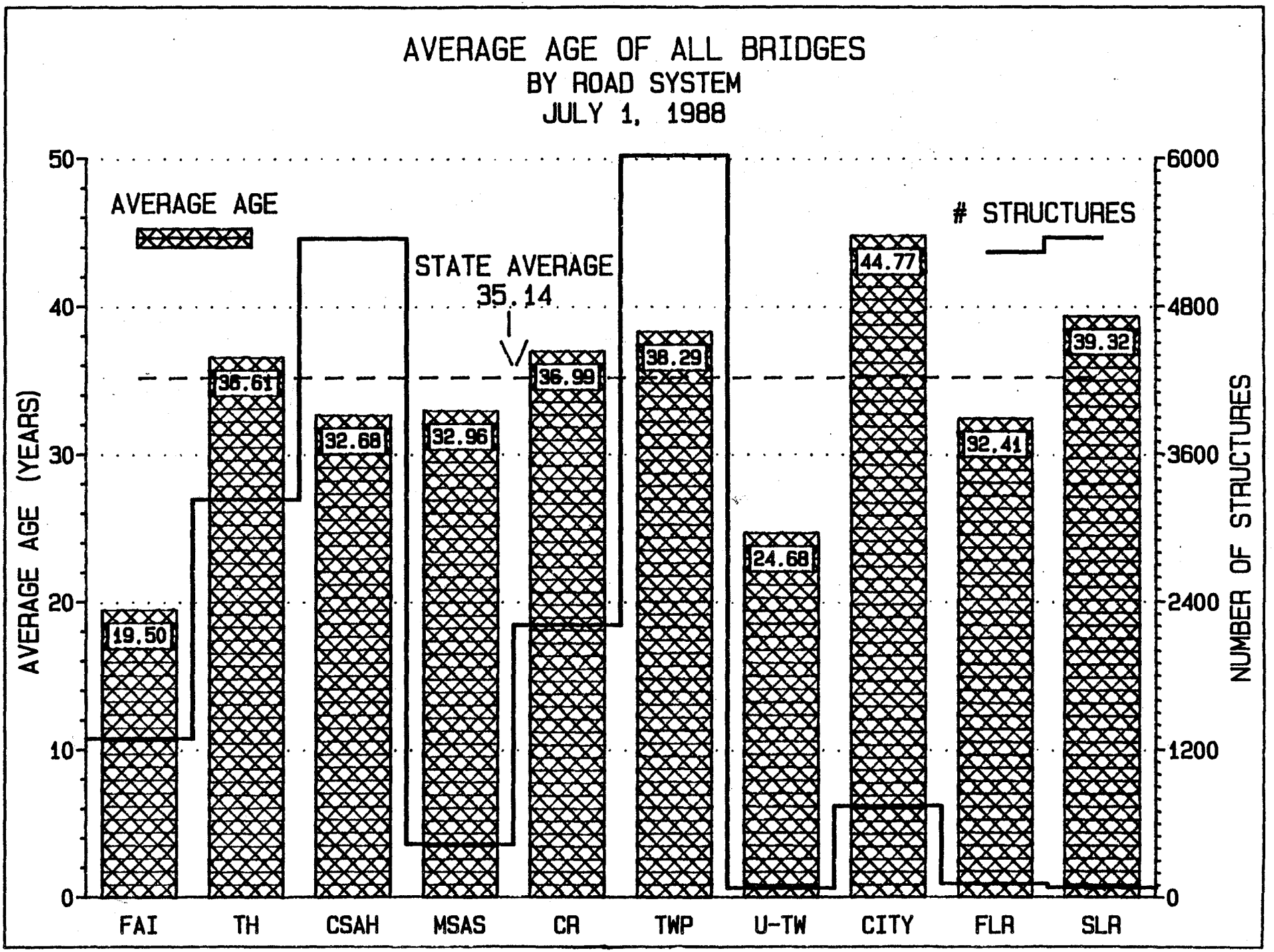
This is one of three bridges between Virginia and International Falls that is on the bridge replacement list. Bridge 5110 is deficient in width only. We have replaced other bridges on TH 53 that were of a higher priority and were load posted. The project is presently scheduled for a 2/23/90 letting.

APPENDIX D

Deck Areas of All Bridges by Age of Structure

Average Age of All Bridges by Road System


DECK AREAS OF ALL BRIDGES
BY AGE OF STRUCTURE
JULY 1, 1988
DECK AREA
STRUCTURES
THOUSANDS OF SQUARE FEET
NUMBER OF STRUCTURES
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
3000
2700
2400
2100
1800
1500
1200
900
600
300
0
7227
9856
6445
8340
7710
5209
2336
1660
385
1756
1520
2058
1617
931
2267
YEARS
0-5
6-10
11-15
16-20
21-25
26-30
31-35
36-40
41-45
46-50
51-55
56-60
61-65
66-70
71 +
DCKALL


AVERAGE AGE OF ALL BRIDGES
BY ROAD SYSTEM
JULY 1, 1988
AVERAGE AGE
STRUCTURES
STATE AVERAGE
35.14
AVERAGE AGE (YEARS)
NUMBER OF STRUCTURES
50
40
30
20
10
0
6000
4800
3600
2400
1200
0
19.50
36.61
32.68
32.96
36.99
38.29
24.68
44.77
32.41
39.32
FAI
TH
CSAH
MSAS
CR
TWP
U-TW
CITY
FLR
SLR

APPENDIX E

Trunk Highway Bridge Replacement Program
Fiscal Years 1989-1993

TRUNK HIGHWAY
BRIDGE REPLACEMENT PROGRAM
FOR FISCAL YEAR 89

DISTRICT	TRUNK HIGHWAY	LOCATION OF PROJECT	PROGRAM ESTIMATE
01	38	3.3 MI. S. OF BIGFORK, REPL BR. NO. 3639(BOX CULVERT)	$75,000
02	1	4.9 MI S OF N CLEARWATER CO LINE OVER RED LK R REPLACE BR 4613	$900,000
	11	CONTRACT FOR ARCHAEOLOGICAL RECOVERY ON LITTLE FORK BRIDGE JOB	$450,000
	75	REPLACE BR. 2606 1.2 MI. S OF WARREN	$130,000
		0.8 MI. S. OF STEPHEN OVER TAMARAC RIVER REPLACE BRIDGE 4812	$575,000
	92	1.4 MI. E. OF BROOKS JUST OFF TH 92, OVER HILL RIVER BR 91741	$204,000
03	25	1.7 MI. S. OF GENOLA OVER SKUNK RIVER REP. BR. 5858 & APPROACHE	$375,000
	47	5.2MI.N.OF TH95 ON TH47(REP.6157-NEW 96516)REMOVE BR.8221	$370,000
	65	2.5 MI. N. OF N. JCT. TH 23 OVER SNAKE RIVER REPLACE BR. 3293 A	$550,000
	238	1.3 MI.N. OF BOWLUS- REPL. BR. 4518	$300,000
04	29	FROM NORTH JCT TH 27 IN ALEX TO JACKSON ST. IN PARKERS PRAIRIE	$250,000
05	212	LAKE ST. OVER MISS.RIVER-REPL. BR. 6520 & APPROACH.+SIGS.&LIGHT	$17,500,000
	394	**T.H. 55** 7TH ST.N. OVER BN RR-BR.27732	$2,360,000
06	14	0.2 MI.E.OF STOCKTON OVER GARVIN BROOK-REP.BR. 5129/85020 & APP	$800,000
	16	2.7 MI. W. OF RUSHFORD OVER ROOT RIVER REPLACE BRIDGE 4855	$2,200,000
	249	9.7 MI. E. OF CALEDONIA OVER CROOKED CR BR 6939/28005 & APPROAC	$350,000
08	22	1.3 MI S OF HUTCHINSON - REPL BR 4913	$584,000
		5.9 MI S OF HUTCHINSON- REPL BR 4912	$402,000
	212	1.6 MI E OF CO LINE OVER HAWK CREEK REP BR 5046	$340,000
09	10	OVER ST CROIX AT PRESCOTT-BR 82010(REP BR 6009)-WISC LET	$7,400,000
		OVER ST CROIX RIVER AT PRESCOTT-BR 82010 APPROACH FILL	$228,809
	50	OVER S. BRANCH VERMILLION RIVER 4.5 MI. E. OF FARMINGTON-REPL B	$300,000
	51	SOO LINE RR/SNELL & MARSH-REPL BR 90379,90384 & APP;SIGNALS	$1,532,416
	52	TH 52(ROBERT ST) OVER MISSISSIPPI RIVER-REPLACE DECK, MISC BR 9	$5,500,000
*TOTAL FY			$43,676,225

TRUNK HIGHWAY
BRIDGE REPLACEMENT PROGRAM
FOR FISCAL YEAR 90

DISTRICT	TRUNK HIGHWAY	LOCATION OF PROJECT	PROGRAM ESTIMATE
01	1	OVER THE STURGEON RIVER, REPL. BR. 2248	$1,550,000
	53	OVER SAND RIVER, 8.0 MI. N. OF VIRGINIA, REPL. BR. 3556	$257,000
		3.5 MI. S. OF COOK OVER RICE RIVER REP. BR. 5109 & APPROACHES	$465,000
		6.0 MI. S. OF COOK OVER RICE RIVER REP. BR. 5110 & APPROACHES	$465,000
	194	OVER DWP RAILROAD, REPL. BR. 5205	$900,000
	210	OVER BN RR, 2MI. E. OF CROMWELL, REPL. BR. 4990	$2,000,000
02	2	IN CROOKSTON OVER RED LAKE RIVER REPLACE BR.5312	$2,150,000
	9	REPL OLD BR 4682 WITH NEW BR 54005, 7.5 M N OF MNTH 200 IN ADA	$280,000
		REPLACE BRIDGE 3021, 6 MI. NORTH OF ADA	$300,000
	11	7.1 MI. W. OF TH 71 OVER BIG FORK RIVER, BR.36021 (OLD #4693)	$2,090,000
	59	4.4 MI N OF BEJOU OVER SAND HILL RIVER, REPLACE BR.5155	$1,020,000
03	70	1.4 MI.SW OF GRASSTON OVER SNAKE R. REPL. BR.1885 & APPROACHES	$1,000,000
		3.5 MI. W. OF GRASSTON OVER RICE CREEK REP. BR. 1828 & APPROACH	$360,000
	95	0.8 MI. E. OF TH 23 OVER ELK RIVER REP. BR. 1766 & APPROACHES	$800,000
	169	2.9 MI.N.OF N.JCT.TH 210 OVER MISS. R. REP.BR.4817 & APPR.	$1,200,000
	210	0.1 MI. N. OF MOTLEY OVER CROW WING RIVER REP. BR. 5395 & APPRO	$1,250,000
	371	3.0 MI.S. OF WALKER OVER SHINGOBEE RIVER REPL. BR.5264 & APPROA	$500,000
04	9	REPLACE BR #5490 1 MILE SE. OF CAMPBELL OVER RABBIT RIVER	$520,000
		REPLACE BRIDGE #5489 1.3 MILES NORTH WEST OF CAMPBELL	$200,000
	10	JCT TH 10 & 59 IN DET LKS TO 0.2 MI E TH 10 & 59(REP BR 4767)	$430,000
	29	REPL BR #8123 (W 66 D TIMBER BOX CULVERT) 4.9 MI W OF WADENA	$130,000
	106	REPLACE BRIDGE #381 4.2 MILES SOUTH OF TH 10	$410,000
05	7	LAKE ST.OV.CNW-CMSTP&P R/R&EXCEL.TO FRANCE-REPL.BR.4235	$4,000,000
	169	OVER MINN.R.& INDIAN RD.IN SHAKOPEE - REPLACE BR.4175	$8,000,000
06	16	1.1 MI. S. OF LA CRESCENT OVER PINE CREEK-BR 28002-REPLACE BR 5	$1,150,000
	26	REPL BR 5362-OVER ROOT R-S OF LA CRESCENT-CSAH 7 TO TH 16	$1,100,000
	52	37TH ST. INTERCH. IN ROCHESTER- BR. AND INTERCH. MODIFICATION	$1,150,000
	60	REMOVE BR #4588 IN WABASHA OVER MISS. RIVER	$150,000
08	7	1 MI E OF COSMOS - REPL BR 5620	$500,000
		1.3 MI W OF TH 22 OVER S FORK OF CROW RIVER REP BR 5995	$475,000
	14	0.7 MI W OF WALNUT GROVE OVER PLUM CREEK REP BR 5034	$640,000
	15	0.2 MI N OF S MCLEOD CO LINE - REPL BR 91160	$130,000
		5.2 MI N OF WINTHROP - REPL BR 5702	$84,000
		5.9 MI S OF BROWNTON BR#4722	$100,000
	19	.5,1.1.2 AND 2.3 MI SW OF MORTON-REPL BR 4666,67,4468	$3,400,000
	71	REPLACE BRIDGE 5300 IN WILLMAR(INCLUD. "LM" STATE AID)	$7,345,000
	212	1.2 MI W OF CO LINE OVER OVERFLOW CHANNEL REP BR 5119	$864,000
09	3	1.1 MI S OF ROSEMOUNT UNDER SOO LINE-BR 19086(REP 6306) & APP	$2,500,000
	10	AT ST CROIX RIVER NEAR PRESCOTT-TEMP CONN TO INPL TH 10	$400,000
	95	UNDER SOO LINE RR 4.6 MI NE OF TH 96-BR 82013(REP BR 6267)	$850,000
*TOTAL FY			$51,115,000

TRUNK HIGHWAY
BRIDGE REPLACEMENT PROGRAM
FOR FISCAL YEAR 91

DISTRICT	TRUNK HIGHWAY	LOCATION OF PROJECT	PROGRAM ESTIMATE
01	1	3.0 MI. SE OF FINLAND OVER BAPTISM RIVER, REPL. BR. 5416	$630,000
	48	4.5 MI. E. OF I-35 OVER KETTLE RIVER, REPL. BR. 5781	$1,500,000
	53	16 MI. S. OF TH 37 OVER WHITEFACE RIVER (S.B.), REPL. BR. 6604	$740,000
	70	OVER ST. CROIX RIVER, REPL. BR. 4813 (WISC. LEAD AGNCY)	$1,700,000
02	11	0.5 MI. W. OF TH 71 OVER LITTLE FORK RIVER, BR.36022	$2,175,000
	75	REPLACE BR. 4602 OVER SNAKE RIVER IN WARREN	$230,000
	87	REPLACE BRIDGE 5726, 2.3 MILES EAST OF JCT TH 71	$660,000
03	10	AT KING'S INN (WB OVER LITTLE ROCK LK - BR. 05002)	$400,000
	47	2.0MI.S.OF TH 95 OVER RUM R.(REP.BR.4880-NEW30002& APPROACHES	$800,000
	169	BRADBURY BRK., 5.3MI.S. OF S.JCT.TH27(BR.5006)	$300,000
		RUM R., 0.9 MI.S. OF S.JCT. TH 27 (BR. 5009)	$275,000
		RUM R., 10.3 MI.S OF S.JCT.TH27(BR.5004)	$475,000
		RUM R., 2.0MI.S.OF S.JCT. TH 27(BR. 5008)	$275,000
		RUM R., 4.2 MI.S.OF S.JCT.TH27 (BR.5007)	$300,000
	210	4.4 MI.W. OF AITKIN (BR. 3620)	$250,000
04	29	REPLACE BRIDGE #3087 8.8 MILES SOUTH OF BENSON	$200,000
	59	REPLACE BRIDGE #3548 4.7 MI NW OF FERGUS FALLS (PELICAN RIVER)	$238,000
	200	REPL BR #5637 (W 105 D) 12.2 MILES EAST OF MAHNOMEN	$120,000
05	52	WASH.AVE.OVER BN RR-REPL.BR.6992 & APPRS.,LIGHTS,SIGNALS	$1,320,000
	100	UNDER CSAH 8 (BDWAY AVE.) BR.27170 - REPL.BR.5885	$1,100,000
	169	TH169 OVER MISS.R. IN ANOKA-REPLACE BR.4380,& SIGNALS	$6,000,000
06	16	GRADING,SURFACING AND REPL. 5 BRIDGES - NORTH OF HOKAH	$3,900,000
		0.2, 0.5 & 0.7 MI S OF RUSHFORD- REPL 3 BRIDGES	$2,700,000
		0.6 MI.E.OF SP. VALLEY-OVER SP. VALLEY CR.-REPL.BR.5142/23014	$430,000
	30	REPL BR 4027 AND APPR. IN PILOT MOUND	$150,000
	57	IN MANTORVILLE-S. BR. MID. FORK OF ZUMBRO R.-REPL. BR.#5043	$1,050,000
07	14	BR. NO. 5182 OVER SLEEPY EYE CRK. W. OF COBDEN	$200,000
	22	1.4 MI. S. OF ST. PETER OVER MINN. RIVER REPL. BR. 4770 & APPRO	$1,300,000
		1.6 MI. SE OF ST. PETER UNDER C.N.W.RY REP. BR. 3749 & APPROACH	$1,200,000
	169	NORTH STAR BRIDGE NO. 9098--IN MANKATO OVER MINN. RIVER	$10,500,000
08	9	0.7 MI S OF NEW LONDON REP BR 5447 WITH BR	$240,000
	14	1.0 MI E OF LAMBERTON OVER COTTONWOOD RIVER REP BR 5035	$710,000
	30	2 MI E OF LAKE WILSON - REPL BR 5167	$290,000
	75	2, 2.4 AND 3.2 MI S OF ODESSA-REPL BR 5174,5175,5181	$1,350,000
09	3	5.6 MI N OF ROSEMOUNT UNDER SOO LINE-BR 19080(REP 6307) & APPRO	$2,000,000
	52	AT TH 3,52,55 IN INVER GROVE-REP. BR. 5820,RECONST INTERCHANGE	$1,000,000
*TOTAL FY			$46,708,000

TRUNK HIGHWAY
BRIDGE REPLACEMENT PROGRAM
FOR FISCAL YEAR 92

DISTRICT	TRUNK HIGHWAY	LOCATION OF PROJECT	PROGRA ESTIMAT
01	33	JCT. TH 45 TO THE MORRIS THOMAS RD, GR., SURF., BR.	$5,600,00
	65	OVER SNAKE RIVER 2.4 MI N JCT TH 18, REPL. BR. 5019	$350,00
		UNDER SOO RR 2.4 MI N JCT TH 18, REPL. BR. 5766	$1,800,00
	2A	OLD TH 2 OVER BN RR (LESURE) ST, REPL. BR. 6940	$1,300,00
02	200	REPLACE OLD BR 5221 OVER RED RIVER AT MN/ND STATE LINE	$1,200,00
03	10	LONG PRAIRIE R. NEAR MOTLEY (BR. 4708)	$650,00
	12	CROW R. 0.1 MI.E. JCT. CSAH 30 (BR. 3622)	$1,000,00
	371	SO.FORK PINE R., 2MI.SE OF PINE RIVER(BR. 6507)	$450,00
04	59	REPLACE BRIDGE #5582 4.6 MI S OF MORRIS (POMME DE TERRE RIVER)	$508,00
	200	REPLACE BRIDGE #4370 4.3 MI W OF MAHNOMEN (MARSH RIVER)	$300,00
05	100	FR.RD.& MAINLINE OVER C.& N.W.R.R. 0.1MI.N.OF JCT.TH55	$2,900,00
06	43	2.0 MI. N. OF RUSHFORD OVER STREAM REPLACE BRIDGE 5257/23016	$700,00
	44	5.8 MI SW JCT TH 16-THOMPSON CREEK	$400,00
	56	BEAVER CREEK-5.7 MI E OF LEROY	$520,00
		LITTLE CEDAR RIVER-0.6 MI E OF ADAMS	$320,00
		OVER STREAM-1.9 MI E OF LEROY	$320,00
		UPPER IOWA RIVER - 0.7 MI E OF LEROY	$1,100,00
	61	BR 25017 TO 2 MI.N.(R P 99.3)IN RED WING-GRADE, SURF,BR. 4993	$800,00
		MISSISSIPPI RIVER-2 MI E LACRESCENT	$1,750,00
		8.2MI N OF N JCT I-90 -TROUT CREEK	$400,00
07	4	OVER MINN. RIVER 6.6 MI. S. OF FAIRFAX	$1,400,00
	14	OVER JUD. DITCH 30, 1.6 MI. S.W. OF SLEEPY EYE	$338,00
	263	OVER E. FORK DES MOINES RIVER 1.8 MI. N.E. OF CEYLON	$255,00
08	9	IN NEW LONDON	$300,00
	15	3.0 MI N OF BROWNTON OVER BUFFALO CREEK REP BR 5967	$266,00
	23	3.1 MI NE OF FLORENCE OVER C&NW RR	$298,00
	30	5.1 MI W OF PIPESTONE	$275,00
	67	8.9 MI N OF ECHO	$360,00
	71	1.6 MI N OF OLIVIA OVER C M ST P & P RR REP BR 4772	$502,00
09	55	OVER CMSTP&P RR & RELOCATED TH 13-BR 19087&19088(REP 19029 & 19	$1,100,00
		OVER MINN RIVER,RR,& ST-REDECK & WIDEN BR 4190(MENDOTA BR)	$12,000,00
*TOTAL FY			$39,462,00

TRUNK HIGHWAY
BRIDGE REPLACEMENT PROGRAM
FOR FISCAL YEAR 93

DISTRICT	TRUNK HIGHWAY	LOCATION OF PROJECT	PROGRAM ESTIMATE
01	39	OVER BN RR 0.5 MI E JCT TH 23, REPL. BR. 6540	$950,000
	200	0.1 MILES W. OF JACOBSON OVER MISSISSIPPI RIVER, REPLACE BR. 45	$380,000
	232	CHAN BTWN LAKES .3 MI W JCT TH 65, REPL. BR. 2158	$900,000
		OVER MISSISSIPPI RIVER .2 MI. S. JCT CSAH 10, REPL. BR. 6777	$900,000
02	371	REPL BR 5209 OVER KABEKONA BAY, 3.0 MI. N. OF TH 34 IN WALKER	$1,050,000
		REPLACE BR 5214, 1.5 MI. N. OF WILKINSON OVER STEAMBOAT RIVER	$525,000
		REPLACE BR. 5215 OVER SWAMP CREEK, 1.4 MI. SO. OF WILKINSON	$225,000
03	6	ROOSEVELT LK. 25 MI.N. OF CROSBY (BR. 4015)	$650,000
	28	1.4 MI.E. OF WARD SPRINGS (BR. 3483)	$275,000
	65	BRIDGE OVER BN RR IN CAMBRIDGE	$605,000
04	78	SO. OF S JCT TH 108(OTTERTAIL) REP BR 5390	$206,000
	210	2.2 MI. SE OF FERGUS FALLS OVER OTVR,REP BR 4997	$583,000
05	47	UNIV. AVE. OVER ST.ANTHONY REPLACE BRIDGE 5585 & APPROACHES	$1,000,000
		UNIV.AVE. OVER SOO LINE R/R REPLACE BRIDGE 5586 &APPROACHES	$1,500,000
		UNIV.AVE.N.E. OVER BN INC. REPLACE BRIDGE 5588 & APPROACHES	$3,000,000
	55	E.B. OVER SOO LINE R/R 0.3 MI. W. OF T.H.100 REPLACE BR. 6344	$250,000
		W.B. OVER T.H. 100 0.3 MI.W. OF T.H.100 REPLACE BR. 6747	$250,000
	101	AT GRAYS BAY 2.8 MI. N. TH 7-BR 27017 (REP BR 3334) & APPROACHE	$1,000,000
06	65	CRI & P RR-0.7 MI E OF JCT TH 13	$1,000,000
		SHELLROCK RIVER-0.5 MI E OF JCT TH 13	$700,000
	74	WHITEWATER RIVER-0.6 MI S OF JCT CSAH 26	$600,000
		WHITEWATER RIVER-1 MI S JCT CSAH 26	$500,000
	105	STREAM- 3.1 MI N OF IOWA LINE	$300,000
07	66	OVER LESUEUR RIVER 2.7 MI. S. OF MANKATO	$1,088,000
		UNDER ABANDONED R.R. 2.7 MI. S. OF MANKATO	$50,000
	68	OVER ABANDONED R.R. 4.2 MI. S.E. OF NEW ULM	$70,000
		OVER LITTLE COTTONWOOD RIVER 1.4 MI. NW OF CAMBRIA	$268,000
08	22	5.0 MI S OF EDEN VALLEY	$423,000
	59	2.2 MI N OF FULDA	$284,000
		6.5 MI SE OF MARSHALL OVER STREAM REP BR 5329	$200,000
	75	0.2 MI S OF CANBY OVER CANBY LAKE REP BR 5255	$250,000
		3.3 MI S OF CANBY OVER LAC QUI PARLE RIVER REP BR 5899	$259,000
09	36	OVER ST. CROIX RIVER AT STILLWATER-REP BR 4654 & APPROACHES	$20,000,000
		UNDER TH 5-REPLACE BR 9342 & APPROACHES	$1,000,000
*TOTAL FY			$41,241,000