



Trunk Highway Bridge Statewide Transportation Planning Report

June 2014



Prepared by

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Legislative request

This report is issued to comply with Minn. Stat. 165.14, subd. 5.

Subdivision 1. **Definition.** For purposes of this section, "program" means the trunk highway bridge improvement program established under this section.

Subd. 2. **Program created.** The commissioner shall develop a trunk highway bridge improvement program for accelerating repair and replacement of trunk highway bridges throughout the state. The program receives funding for bridge projects as specified by law.

Subd. 3. **Program requirements.**

(a) The commissioner shall develop an inventory of bridges included in the program. The inventory must include all bridges on the trunk highway system in Minnesota that are classified as fracture-critical or structurally deficient, or constitute a priority project, as identified by the commissioner. In determining whether a bridge is a priority project, the commissioner may consider national bridge inventory (NBI) condition codes, bridge classification as functionally obsolete, the year in which the bridge was built, the history of bridge maintenance and inspection report findings, the average daily traffic count, engineering judgments with respect to the safety or condition of the bridge, and any other factors specifically identified by the commissioner.

(b) For each bridge included in the inventory, the commissioner must provide the following information: a summary of the bridge, including but not limited to, county and department district, route number, feature crossed, the year in which the bridge was built, average daily traffic count, load rating, bridge length and deck area, and main span type; the condition ratings for the deck, superstructure, and substructure; identification of whether the bridge is structurally deficient, functionally obsolete, or fracture-critical; the sufficiency rating; a brief description of the work planned for the bridge, including work type needed; an estimate of total costs related to the bridge, which may include general and planning cost estimates; and, the year or range of years in which the work is planned.

Subd. 4. **Prioritization of bridge projects.**

(a) The commissioner shall classify all bridges in the program into tier 1, 2, or 3 bridges, where tier 1 is the highest tier. Unless the commissioner identifies a reason for proceeding otherwise, before commencing bridge projects in a lower tier, all bridge projects within a higher tier must to the extent feasible be selected and funded in the approved state transportation improvement program, at any stage in

the project development process, solicited for bids, in contract negotiation, under construction, or completed.

(b) The classification of each tier is as follows:

(1) tier 1 consists of any bridge in the program that (i) has an average daily traffic count that is above 1,000 and has a sufficiency rating that is at or below 50, or (ii) is identified by the commissioner as a priority project;

(2) tier 2 consists of any bridge that is not a tier 1 bridge, and (i) is classified as fracture-critical, or (ii) has a sufficiency rating that is at or below 80; and

(3) tier 3 consists of any other bridge in the program that is not a tier 1 or tier 2 bridge.

(c) By June 30, 2018, all tier 1 and tier 2 bridges originally included in the program must be under contract for repair or replacement with a new bridge that contains a load-path-redundant design, except that a specific bridge may remain in continued service if the reasons are documented in the report required under subdivision 5. Bridges that are not originally included in the program and additional bridges identified for contract after the trunk highway bridge improvement program concludes on June 30, 2018, must be prioritized according to subdivision 7.

(d) All bridge projects funded under this section in fiscal year 2012 or later must include bicycle and pedestrian accommodations if both sides of the bridge are located in a city or the bridge links a pedestrian way, shared-use path, trail, or scenic bikeway.

Bicycle and pedestrian accommodations would not be required if:

(1) a comprehensive assessment demonstrates that there is an absence of need for bicycle and pedestrian accommodations for the life of the bridge;
or

(2) there is a reasonable alternative bicycle and pedestrian crossing within one-quarter mile of the bridge project.

All bicycle and pedestrian accommodations should enable a connection to any existing bicycle and pedestrian infrastructure in close proximity to the bridge. All pedestrian facilities must meet or exceed federal accessibility requirements as outlined in Title II of the Americans with Disabilities Act, codified in United States Code, title 42, chapter 126, subchapter II, and Section 504 of the Rehabilitation Act of 1973, codified in United States Code, title 29, section 794.

(e) The commissioner shall establish criteria for determining the priority of bridge projects within each tier, and must include safety considerations as a criterion.

Subd. 5. **Statewide transportation planning report.** In conjunction with each update to the Minnesota statewide transportation plan, or at least every six years, the commissioner shall submit a report to the chairs and ranking minority members of the House of Representatives and senate committees with jurisdiction over transportation finance. The report must include:

- (1) an explanation of the criteria and decision-making processes used to prioritize bridge projects;
- (2) a historical and projected analysis of the extent to which all trunk highway bridges meet bridge performance targets;
- (3) a summary of bridge projects (i) completed in the previous six years or since the last update to the Minnesota statewide transportation plan, and (ii) currently in progress under the program;
- (4) a summary of bridge projects scheduled in the next four fiscal years and included in the state transportation improvement program;
- (5) a projection of annual needs over the next 20 years;
- (6) a calculation funding necessary to meet the completion date under subdivision 4, paragraph (c), compared to the total amount of bridge-related funding available; and
- (7) for any tier 1 fracture-critical bridge that is repaired but not replaced, an explanation of the reasons for repair instead of replacement.

Subd. 6. **Annual report.** Annually by January 15, the commissioner shall submit a report on the program to the chairs and ranking minority members of the House of Representatives and senate committees with jurisdiction over transportation finance. The report must include the inventory information required under subdivision 3, and an analysis, including any recommendations for changes, of the adequacy and efficacy of

- (1) the program requirements under subdivision 3, and
- (2) the prioritization requirements under subdivision 4.

Subd. 7. **Prioritization of subsequent trunk highway bridge projects.** The trunk highway bridge improvement program described in subdivisions 1 through 6 concludes on June 30, 2018, and applies to bridge projects identified at the inception of the program. Additional bridges that did not qualify for the initial trunk highway bridge improvement program under the tiered classification system that may subsequently need repair or replacement must be prioritized as follows:

- (1) the commissioner shall develop a prioritization method for scheduling bridge repairs and replacements that will include consideration of the risk of service interruption resulting in temporary road closures or restrictions of existing bridges;
- (2) the prioritization system must consider factors including but not limited to bridge condition, age, load capacity, type of bridge, susceptibility to flood damage, fracture-critical design features, traffic volume, detour length, and functional classification of highway route;
- (3) the prioritization system must be utilized in conjunction with department knowledge of the bridge infrastructure to establish the repair and replacement program; and
- (4) the commissioner shall establish a risk-based prioritization system no later than February 1, 2011.

The cost of preparing this report is under \$5,000.

Introduction

This Trunk Highway Bridge Statewide Transportation Planning Report, the second since 2009, is submitted in accordance with the requirements of Minn. Stat. 165.14, subd. 5. The information in this report is current as of October 2013. The report includes:

- an explanation of the criteria and decision-making processes used to prioritize bridge projects
- a historical and projected analysis of the extent to which all trunk highway bridges meet bridge performance targets
- a summary of bridges completed in the previous six years, or since the last update to the Minnesota statewide transportation plan, and currently in progress under the program
- a summary of bridge projects scheduled in the next four fiscal years and included in the state transportation improvement program
- a projection of annual needs over the next 20 years
- a calculation of funding necessary to meet the June 30, 2018 completion date for all tier 1 and tier 2 bridges originally included in the Chapter 152 bridge program compared to the total amount of bridge-related funding available
- for any tier 1 fracture critical bridge that is repaired but not replaced, an explanation of the reasons for repair instead of replacement

Since the legislation requiring this report was approved, MnDOT expanded the transportation planning process to include a fiscally constrained 20-year investment plan. This plan, [MnSHIP](#), was completed in late 2013. It addresses projects in 10 investment categories, including bridges, and identifies planned projects for three years beyond the commitments in the four-year State Transportation Improvement Program. Bridge planning was integral to the development of MnSHIP. The full plan should be consulted for a complete picture of MnDOT planning process.

Criteria and Decision-making Process

The MnDOT Bridge Office works collaboratively with MnDOT Districts to identify both near-term and long-range bridge repair and replacement needs to preserve all the bridges on the state trunk highway system.

Every four to six years, MnDOT updates long-range bridge plans as part of the statewide long-range transportation plan update, projecting projects for the next 25 years. Bridge needs are identified for three planning periods: years five through 10, also referred to as the Highway Improvement Plan, years 11-20, and years 21-25. Repair and replacement projects are identified for each planning period.

The State Highway Improvement Program describes projects programmed for the upcoming four years. As the STIP is updated each year, bridge projects identified in the previous Highway Improvement Plan are moved into the STIP.

As described in this document, MnDOT periodically reviews and revises the bridge construction program. The goal is to schedule projects in the appropriate time frame to maximize the service life of bridges, but also to replace or repair them in time to minimize the risk of interruptions in service. An aging bridge kept in service too long may require traffic detours or lane restrictions in order to make repairs. Repairs related to concrete or bridge joint deterioration can develop in aging bridges with little warning and are costly to perform.

Planning for Bridge Improvement and Replacement

Good planning for bridge improvement and replacement involves evaluating current bridge conditions and applying deterioration rates to understand when repair or replacement is necessary. This helps prevent an interruption of service due to a reduction in bridge weight limit, traffic restrictions for increased maintenance and monitoring schedules, reactive maintenance or re-construction, or in the extreme instance, unplanned bridge closure. The anticipated deterioration of the bridge deck, substructure and superstructure due to age and weathering can be predicted by analyzing information on current conditions provided by routine bridge inspection data and applying deterioration rates. Good planning minimizes disruptions by properly selecting and timing bridge improvement and replacement work.

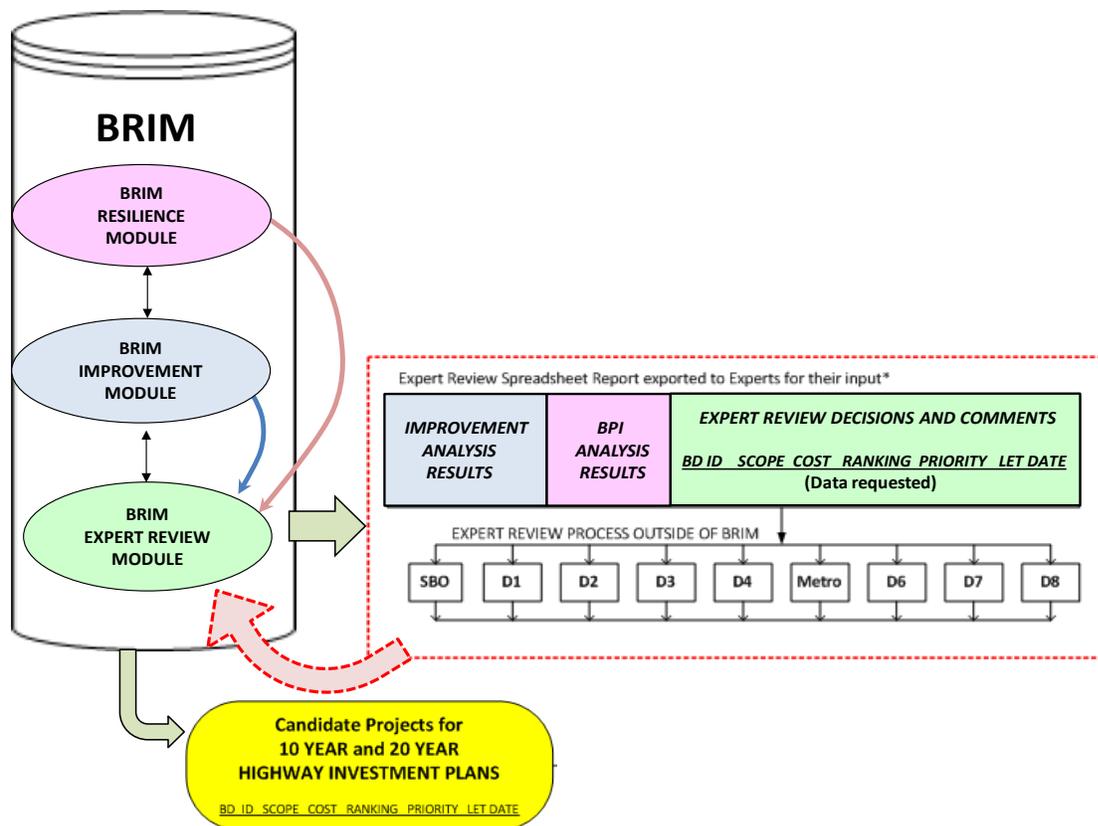
Better planning for bridge improvement and replacement includes consideration of extreme events that could cause a premature interruption of service. Extreme events, such as collisions by over-height trucks, foundations undermined by scour, fatigue and fracture concerns, and overweight trucks can cause unexpected changes in bridge conditions that may result in an interruption in service. Enhanced evaluation of the

potential for interruption includes an in-depth examination of the most critical bridges. This review may result in a change in the ranking of a bridge based on additional factors, such as documented mitigation strategies, that have been or will be implemented to manage an individual bridge.

The best planning for bridge improvement and replacement also considers the consequences of interrupted service to motorists and commerce in terms of traffic volume, roadway network, detour length and bridge length. MnDOT developed a Bridge Planning Index that includes these factors. This assessment considers the probability of a service interruption and its consequences for users.

Using BRIM for the Best Bridge Planning

MnDOT developed the Bridge Replacement and Improvement Management process in order to provide the best bridge planning. The process consists of identifying improvement needs, ranking each bridge based on the Bridge Planning Index and conducting an expert review.



BRIM uses risk assessment methods to determine the probability and consequences of a service interruption based on the number of users, length of detour and potential time to mitigate the service interruption. BRIM assigns a score (the Bridge Planning Index) to

represent the relative priority of each bridge for replacement or improvement. BPI ranges from 0 (highest priority) to 100 (lowest priority).

BRIM also analyzes bridge inspection and inventory data to predict the replacement or improvement needs for each individual bridge and on a statewide basis. It is based on expected deterioration for each bridge as represented on a decision matrix. The Decision Matrix for Bridge Replacement and Repair shown below is a conceptual matrix, a simplified version of a more complex matrix used by the MnDOT Bridge Office. The matrix considers both the risks and consequences of service interruptions to prioritize projects. The matrix groups bridges into three time frames, with the highest priority projects in the earlier years. This analysis results in a draft list of needed bridge projects, including anticipated costs and schedules.

2008 Decision Matrix for Bridge Replacement and Repair (Simplified Version of the Actual Decision Matrix - 03/25/08)

		CONDITION						
		WORSE	←	→	BETTER			
		Bridge is Structurally Deficient	Deck Cond ≤ 5	Deck Cond = 6	Deck Cond = 7	Deck Cond ≥ 8		
PROBABILITY OF SERVICE INTERRUPTION	LOW	Bridge Built 1995 or after	Any Deck Type	Not Applicable	Overlay within 20 years	Overlay within 25 years	Only Preventative Maintenance Planned	Only Preventative Maintenance Planned
	Bridge Built 1977 through 1994	Has Conc Overlay	Replace within 10 years	Rehab within 20 years	Overlay within 10 years	Only Preventative Maintenance Planned	Only Preventative Maintenance Planned	
		No Conc Overlay	Replace within 10 years	Rehab within 20 years	Overlay within 10 years	Only Preventative Maintenance Planned	Only Preventative Maintenance Planned	
	Bridge Built 1960-1976	Deck has Epoxy Bars	Replace within 10 years	Rehab within 10 years	Only Preventative Maintenance Planned	Only Preventative Maintenance Planned	Only Preventative Maintenance Planned	
		Orig Deck - with Conc Overlay (no epoxy bars)	Replace within 10 years	Rehab within 10 years	Rehab within 20 years	Rehab within 25 years	Only Preventative Maintenance Planned	
		Orig Deck - No Conc Overlay	Replace within 10 years	Rehab within 10 years	Rehab within 10 years	Rehab within 25 years	Overlay within 20 years	
	Bridge Built Before 1960	Remodeled 1977 or after	Replace within 10 years	Rehab within 10 years	Replace within 20 years	Only Preventative Maintenance Planned	Only Preventative Maintenance Planned	
		Deck Built Prior to 1977 regardless of overlay	Replace within 10 years	Replace within 10 years	Replace within 10 years	Replace within 25 years	Only Preventative Maintenance Planned	

CONSEQUENCE
← HIGH Traffic Volume is Considered For Each Condition → LOW

04/14/09

The last step in the BRIM process is the expert review with MnDOT district offices. This provides an opportunity for local experts with more intimate knowledge of their bridges to add to the information provided by inspections, repair history, load posting,

maintenance issues, and local transportation needs to adjust the a project's priority or modify the scope or schedule. These updated bridge improvement needs will be used as a basis for planning investments in state trunk highway bridges.

Chapter 152 Bridge Program

Laws of Minnesota 2008, Chapter 152 established a program to accelerate the repair and replacement of fracture-critical or structurally deficient state trunk highway bridges. Under the law, a tier system was used to prioritize 172 bridges for repair or replacement. Implementation of this program is under way. More details regarding this program is provided in a separate report to the legislature under the title [Chapter 152 Trunk Highway Bridge Improvement Program](#).

Bridge Planning and MnSHIP

This report is updated in conjunction with the update to the Minnesota State Highway Investment Plan, MnDOT's statewide long-range transportation plan. . Bridge investments are planned in conjunction with this overall transportation investment plan. MnDOT will face many difficult decisions to implement MnSHIP, given available funding and the investment priorities. MnDOT will pursue targeted actions and strategies in a cost effective manner and will seek to leverage available revenues to achieve multiple purposes. These strategies will help MnDOT manage investment risks and ensure projects provide a high return on investment. A few examples of these strategies are described below.

Statewide Performance and District Risk Management Programs

For many years, MnDOT has allocated most revenue to its eight districts to make progress towards performance targets and key objectives, and to address district-specific risks. With the passage of MAP-21, federal policy and performance requirements direct the majority of federal funds to the National Highway System. Continuing to allocate all revenue to the districts might make it difficult to meet NHS targets. Further, MnDOT must carefully manage the risk that the condition of state highways might negatively affect Minnesota's bond rating. MnDOT developed the Statewide Performance Program and District Risk Management Program to respond to these challenges.

Project selection in both the Statewide Performance Program and District Risk Management Program will continue to require coordination with local and regional units of government, the eight Area Transportation Partnerships, and other stakeholders and the general public.

The Statewide Performance Program will focus on federal performance requirements identified in MAP-21. These require MnDOT to make progress towards pavement, bridge, safety and congestion performance targets. Failure to do so results in the loss of some federal funding flexibility. MnDOT's functional and district offices will work

collaboratively to select projects that meet these criteria. Selected projects will focus on existing pavement, bridges and roadside infrastructure rehabilitation and replacement, and include some lower cost, high-benefit projects that improve safety and mobility.

The District Risk Management Program will focus on non-National Highway System highways and address unique conditions at the district level. Revenue will be allocated to the districts to identify and prioritize projects in this program; however, project selections will be evaluated across districts in a collaborative process to ensure each district is balancing district-level risks while also making progress towards statewide goals. Projects will focus on pavement, bridge, roadside infrastructure, safety, and mobility

Bridge Condition, Project Selection and Optimization Strategies

Bridge condition investments include replacement, rehabilitation and preservation investments such as painting.

Project Selection

As is the case with investments in pavement condition, MnDOT's 10-year planned bridge condition investments are prioritized to provide greater attention to bridges on high-volume NHS roads. MnDOT's Bridge Office uses the Bridge Replacement and Improvement Management process and statewide goals to recommend future bridge improvements based on condition and risk factors, including length of detour and traffic volume. The Bridge Office and district offices generated a list of bridge projects for both NHS and non-NHS bridges based on the results of the BRIM process. In modifying the BRIM results, districts considered stakeholder input and the timing of other planned projects in the region. Districts primarily chose projects with long-term fixes for NHS bridges and focused its investment in non-NHS bridges on those in the greatest need of repair.

Optimization strategies

MnDOT will apply the following strategies to ensure its bridges are structurally sound and safe for the traveling public:

- Conduct frequent and regular inspections
- Invest in preventive maintenance
- Invest in rehabilitation projects at appropriate times of a bridge's lifecycle
- Refine BRIM to help identify improvements that minimize life-cycle costs, meet performance targets and address the highest-risk bridges
- Defer some long-term fixes and impose occasional weight restrictions to avoid hazardous conditions in Years 11-20, as needed

Bridge Performance Targets

Current Condition

Minnesota has 3,626 trunk highway bridges, defined as bridges and culverts more than 20 feet in length.

The physical condition of Minnesota's bridges is determined through inspection. Most bridges are inspected on a two-year cycle, with the remaining bridges inspected annually due to their condition. The National Bridge Inventory condition rating codes are used for rating the physical condition of Minnesota's bridges. The codes measure the integrity or structural sufficiency of major bridge components on a scale of 0-9. Based on a combination of condition ratings, each bridge is placed in one of the following categories: good (scores of 7 to 9), satisfactory (6), fair (5) or poor (4 or lower).

While not meeting targets, the structural condition of trunk highway principal arterial bridges has steadily improved in recent years: 48.6 percent of bridges are in good condition (below the target of 55 percent) and 3.3 percent are classified as poor (above the target of 2 percent).

The structural condition of trunk highway non-principal arterial bridges has also improved, with 58.3 percent of these bridges in good condition (above the target of 50 percent), 3.1 percent in poor condition (below the target 8 percent).

Projected Condition

Due to recent investments in bridges through the Chapter 152 bridge program and MnDOT's regular construction program, MnDOT is expected to meet or exceed many of its statewide bridge condition targets over the near term. However, MnSHIP is a fiscally constrained plan, meaning it must set investment priorities for \$18 billion in projected funding when transportation needs total \$30 billion. MnDOT must consider many factors when setting priorities, including federal and state law, technical analysis of system condition and public input.

The result is investment priorities that vary over the next 20 years. For the first 10 years, the plan balances preservation of existing infrastructure with investments in safety, new connections for multiple modes, and some projects that advance economic development and quality of life objectives. However, investments in the second 10 years focus almost exclusively on preserving existing infrastructure.

Despite this focus, the number of roads and bridges in poor condition will more than double, and perhaps even triple, within 20 years. Given the projected \$12 billion funding

gap, there will be many unfunded priorities within the 20-year horizon. MnDOT will need to reduce investment in bridge condition as the Chapter 152 bridge program ends, but continue to invest at a level sufficient to meet MAP 21 and GASB 34 requirements.

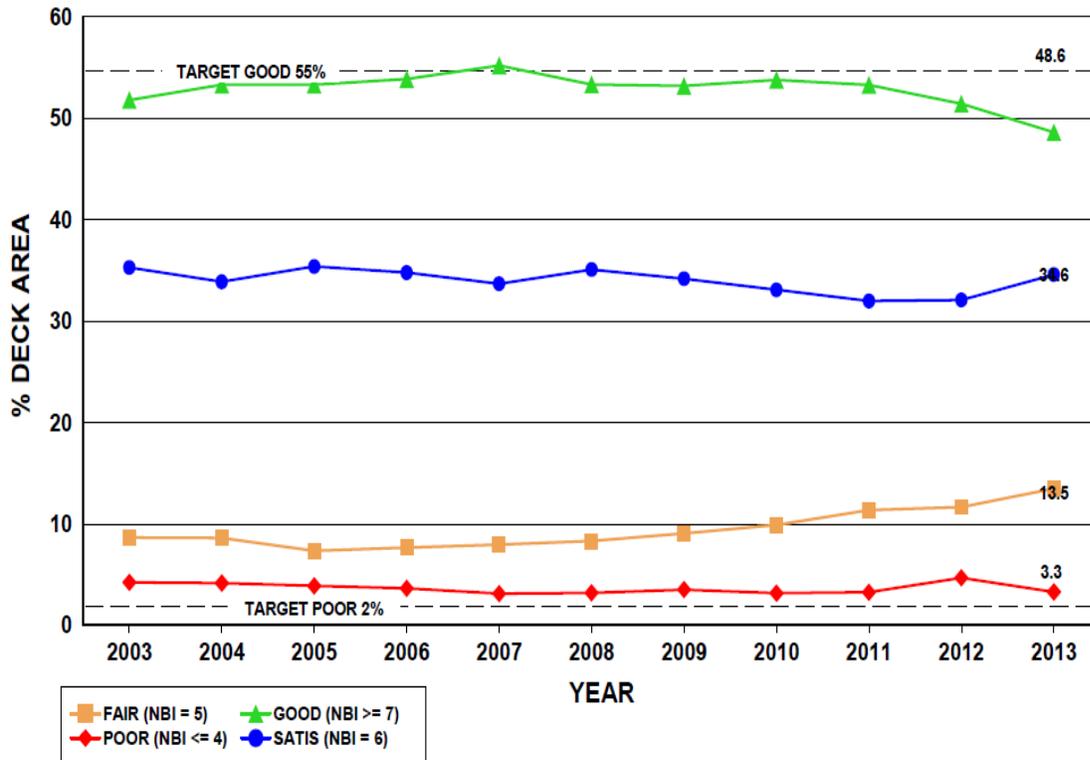
If MnDOT could invest in all state highway bridges at the optimal point to meet performance targets, the 20-year need would be \$5.11 billion.

MnSHIP plans for the following investments over the 20-year planning period:

- Years 1-10 (2014-2023 Investment) = \$1.8-2.0 billion
- Years 11-20 (2024-2033 Investment) = \$1.8-2.0 billion.

At the end of the 20-year planning period, the condition of all bridges is likely to be 6-12 percent poor, three to four times worse than today, although bridges will remain safe. Some weight restrictions will impact freight and more frequent short-term repairs will impact the traveling public.

STATEWIDE BRIDGE CONDITION HISTORY TRUNK HIGHWAY PRINCIPAL ARTERIALS ALL STRUCTURES OVER 20 FT 2013



Projection of Annual Needs over the Next 20 Years

Information contained in this section of the report is taken directly from Chapter 3 of the [Minnesota 20-Year State Highway Investment Plan 2014-2033](#).

Bridge Condition Needs

MnDOT measures its bridge performance based on structural condition, and has established aspirational targets for bridges on NHS and non-NHS highways:

- NHS bridges: 2 percent (or less) in Poor condition, 84 percent (or more) in Good or Satisfactory condition
- Non-NHS bridges: 8 percent (or less) in Poor condition; 80 percent (or more) in Good or Satisfactory condition

MnDOT uses the Bridge Replacement and Improvement Management prioritization tool to identify its bridge investments. The total need for bridge condition is based on investing in all state highway bridges at optimal points in their life-cycles over the next 20 years. BRIM also accounts for other factors in ranking priority for bridge projects, such as traffic volume, highway classification and special vulnerabilities. If MnDOT were to invest in the fixes suggested by BRIM, it would meet its aspirational targets in all years of the plan.

Transportation needs over the next 20 years by investment category (excerpted from MnSHIP)

Investment Category	Years 1-10 (2014-2023)	Years 11-20 (2024-2033)	20-year Outcomes Based on Aspirational Performance Targets
Bridge Condition	\$2.22 billion	\$2.89 billion	Invest in state highway bridges at optimal points in their life cycles; meet performance targets of ≤2% Poor condition and ≥84% Good or Satisfactory condition on NHS bridges, ≤8% Poor and ≥80% in Good or Satisfactory condition on non-NHS bridges.

The \$5.11 billion bridge condition need corresponds with performance level 4. At this level of investment in bridge condition, MnDOT would be able to:

- Invest at optimal points in bridges' life-cycles
- Meet 100 percent of performance-based bridge needs

Funding to Complete the Chapter 152 Bridge Program

Of the 172 bridges identified in the Chapter 152 program, 160 require work during the 10 year period (2009-2018), for a total of approximately \$2.3 billion in funding. These include projects programmed in the FY 2010 -2013 STIP, as well as projects planned for construction beyond FY 2013. Cost estimates for all projects are subject to change and are estimated in the mid-year of construction. Projects beyond FY 2013 are planning estimates; most of these projects have not been fully scoped and therefore costs will vary - in some case by a significant amount.

CHAPTER 152 BRIDGE FUNDING SUMMARY (by state fiscal year)^{F1} (in millions)

Fiscal Year	Programmed 2009-				Planned ^{F2}					
	2010	2011	2012	2013	2014	2015	2016	2017	2018	TOTAL
CHAPTER 152 BONDS ^(F3)	352	51	28	78	198	119	60	21	78	985
SBPF ^(F4)	37	134	0	79	176	87	0	0	123	636
DISTRICT FUNDS ^(F5)	<u>140.4</u>	<u>30</u>	<u>21.6</u>	<u>33.6</u>	<u>20.4</u>	<u>135.6</u>	<u>148.8</u>	<u>33.6</u>	<u>111.6</u>	<u>675.6</u>
GRAND TOTAL (Chapter 152)	529.4	215	49.6	190.6	394.4	341.6	208.8	54.6	312.6	2296.6

NOTES:

F1 Bridge program based on current bridge conditions as of 4/23/08 and estimates are based on current inflation rate table. Program is subject to change.

F2 Estimates are planning level estimates and are subject to change based on completion of scoping documents and scoping level cost estimates.

F3 Program Delivery is included in the estimate.

F4 "SBPF" is the Statewide Bridge Preservation Fund. The SBPF is Federal Funds that are centrally programmed.

F5 District cost for work on Chapter 152 bridges including approaches, program delivery and Right of Way.

Of the total \$2.3 billion needed to fund the program, approximately \$985 million is funded by Chapter 152 bonds, approximately \$636 million by federal statewide bridge preservation funds, and approximately \$675 million through district construction funds. An additional \$725 million is estimated to be funded through district construction funds to repair and replace bridges not included as a part of the Chapter 152 program. The total amount of funding currently estimated to be spent during this 10-year period on trunk highway bridges is slightly more than \$3 billion.

Costs associated with project risks have been limited on a project by project basis; therefore an uncommitted \$250 million in bonds has been set aside for the program. This uncommitted amount will first be made available for major bridges, where project costs exceed the current budget levels. A major bridge is defined as a bridge project for which the total project cost estimated exceeds 50 percent of a district's annual federal funding target. If the \$250 million is not required, MnDOT will use this money for other trunk highway projects.

Bridge Project Information

Appendix A and Appendix B summarize bridge projects by grouping them in two ways: Appendix A includes all bridge projects completed or in progress during the previous six years, while Appendix B includes those projects currently in progress and/or included in the STIP. These are capital improvement projects that typically address bridges in fair and poor condition or reaching poor condition. These projects help MnDOT achieve condition targets.

Appendix A and Appendix B summarize bridge projects by grouping them in two ways: Appendix A includes all bridge projects completed or in progress during the previous six years. Appendix B includes those projects currently in the STIP, some of which may be in progress. These are capital improvement projects that typically address bridges in fair and poor condition or reaching poor condition. These projects help MnDOT achieve condition targets.

Replacement of Tier 1 Fracture Critical Bridges

At this time, the only Tier 1 fracture critical bridge that will be repaired rather than replaced as part of the Chapter 152 bridge program is the TH 43 Mississippi River Bridge in Winona. This is a historic bridge and will be rehabilitated after a new parallel bridge is built alongside it. All other Tier 1 fracture critical bridges are planned for replacement.

The table below lists the Tier 1 fracture critical bridges and their replacement status.

Bridge No.	County	District	Facility/Feature	Repl. Status*
5721	Koochiching	1	TH 65 over the Little Fork River (Silverdale)	Replaced
6690	Kittson	2	TH 11 over RED River of the North (Robbin-Drayton)	Replaced
9412	Lake of the Woods	2	TH 72 over the Rainy River (Baudette)	Replacement Planned for FY 2018
6748	Stearns	3	TH 23 over the Mississippi River & Riverside Dr. (DeSoto, in St. Cloud)	Replaced
5900	Winona	6	TH 43 over the Mississippi River, RR, Streets (Winona)	New Bridge and Rehab Planned for FY 2015
9040	Goodhue	6	US 63 over the Mississippi River & CP Rail (Red Wing)	Replacement Planned for FY 2018
5388	Meeker	8	TH 24 over the N Fork of the Crow River	Replaced
4654	Washington	Metro	TH 36 over the St. Croix River (St. Croix River Crossing in Stillwater)	Replacement Underway
9800	Ramsey	Metro	U.S. 52 over the Mississippi River, RR & Streets (Lafayette)	Replacement Under way
5895	Dakota	Metro	US 61 Over the Mississippi River, RR, Streets (Hastings)	Replaced

*Replacement status as of October 2013.

Appendix A: Summary of Bridge Projects Completed or in Progress

See attached spreadsheet for Appendix A.

Definitions and Abbreviations for Appendix A

Column Heading	Definition
District	MnDOT Construction District
County (CO)	County
Route	Trunk Highway, U.S. Highway or Interstate on which the project is located
Low SP Number	Lowest state project number assigned to a specific bridge project
Bridge Let Date	Date on which project was let for construction (contractors' bids were opened)
Current Bridge Number	Unique bridge number assigned to a specific bridge
Old Bridge Number	Unique bridge number previously assigned to a specific bridge replaced or in the process of being replaced by the "Current Bridge Number" if in reference to a bridge replacement project
Work Type	Type of work performed on or planned for bridge

Frequently
abbreviated
descriptors

Describes the location of the project and type of work planned for
bridges

AC = Advanced Construction

BAP = Bond Accelerated Project

BP08 = Chapter 152 Bond Project, from 2008 Legislation

BR(S) = Bridge(s)

BSAPP = Bond Accelerated Project, Safety Advanced
CR = County Road

CSAH = County State Aid Highway

\$\$ES\$\$ = Economic Stimulus (American Recovery and
Reinvestment Act)

ELLA = Early Let, Late Award

NB = Northbound

SB = Southbound

EB = Eastbound

WB = Westbound

N = North

S = South

E = East

W = West

NE = Northeast

NW = Northwest

SE = Southeast

SW = Southwest

I = Interstate

JCT = Junction

Km = Kilometer(s)

LRT = Light Rail Transit

Mi = Mile(s)

MSAS = Municipal State Aid Street

MAP-21= Moving Ahead for Progress in the 21st Century Act,
from 2013 Federal Legislation

Ped = Pedestrian

RR = Railroad

SBPF = Statewide Bridge Preservation Funds

TH = (State) Trunk Highway

Appendix B: Summary of Bridge Projects Programmed in the STIP

See attached spreadsheet for Appendix B.

Definitions and Abbreviations

Column Heading	Definition
District	MnDOT Construction District, District "C" notes a centrally-funded project
Route System	Trunk Highway, U.S. Highway or Interstate on which project is located
Project Number	Lowest State Project (SP) number or other project number assigned to a specific bridge project
State Fiscal Year Funded	State Fiscal year in which project has funding programmed