



TRANSPORTATION RESEARCH SYNTHESIS

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Local Bridge Removal Policies and Programs

Prepared by CTC & Associates LLC

Many local agencies lack funding to construct and maintain all bridges in their roadway network. One way to lower costs is to reduce the number of bridges. In Minnesota, some township bridges are on very low-use roads that have alternative access for nearby residents, but local officials are reluctant to remove these bridges. To inform potential changes to its practices, the Local Road Research Board (LRRB) is interested in learning about the bridge removal programs and policies in other states.

This Transportation Research Synthesis provides the results of a survey of state departments of transportation about bridge removal practices, criteria and funding programs. A literature review of bridge design manuals, inspection manuals, and state and local bridge programs supplement the survey findings.



the survey findings.

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The purpose of this Transportation Research Synthesis (TRS) is to serve as a synthesis of pertinent completed research to be used for further study and evaluation by MnDOT and the Local Road Research Board (LRRB). This TRS does not represent the conclusions of the authors, MnDOT or LRRB.

Local Bridge Removal Policies and Programs

Introduction

Given budgetary pressures, many local agencies lack the funding to maintain all bridges in their roadway networks. Reducing the number of bridges is one way that local agencies can reduce their maintenance costs.

In Minnesota, some township bridges on very low-use roads have alternative access for nearby residents. Removing these bridges might reduce costs for their owners without significantly impacting local residents. However, bridge removal projects can be controversial, and local officials are often reluctant to choose this option.

The Local Road Research Board (LRRB) is interested in finding methods of identifying redundant and low-use bridge structures and, if appropriate, removing them to reduce maintenance and inspection costs. Of particular interest are bridge removal programs and policies in other states that established criteria for bridges that could be considered for removal, states that maintained lists of bridges that are candidates for removals, and state programs that offer funding or other incentives for projects that remove a bridge from the National Bridge Inventory (NBI).

Representatives of selected state department of transportation (DOT) bridge offices participated in an online survey about their bridge removal programs and policies. Specifically, researchers sought information about funding or incentives that the DOT bridge offices offer to local agencies for bridge removal as well as criteria that they use to consider bridges for removal. Following the survey, representatives from selected state DOT local programs offices were interviewed about their bridge removal programs. To supplement the findings from the survey and interviews, a literature search of bridge design manuals, inspection manuals and bridge programs was conducted to identify related policies and programs.

Summary of Findings

This Transportation Research Synthesis is divided into four sections:

- Survey of Practice
- Review of State Policies and Programs
- Interviews with Local Programs Offices
- Related Research

Survey of Practice

An online survey was distributed to representatives of 23 state DOTs to gather information about their processes for selecting and prioritizing bridge removal. Fifteen state DOTs responded to the survey. Highlighted below are key findings in six topic areas:

- State DOT oversight
- Removal policies and criteria
- Inventories of candidate bridges for removal
- Methods for removing bridges from the NBI

- State funding or incentives for bridge removal
- Tools for addressing political opposition to bridge removal

State DOT Oversight

Only three of the respondents (Maine, Pennsylvania and West Virginia) reported that the state DOT has responsibility for final local bridge removal decisions. In North Dakota, state bridge inspectors have the authority to recommend bridge closure, and bridges that have not been programmed for improvement after five years are recommended for removal from inventory. Rhode Island provides funding for bridge repairs and replacement, but local agencies request removal of local bridges, with some restrictions.

Six states provide services such as inspection of local bridges but do not have oversight over removal decisions. Three states claimed no responsibility over local bridges.

Removal Policies and Criteria

Pennsylvania has a clear policy in place with processes for bridge closure and removal. The process uses Geographic Information System (GIS)-based screening in combination with coordination with transportation stakeholders. Criteria for bridge closure include an average annual daily traffic (AADT) level less than 200 with a detour length less than 5 miles, or an AADT from 200 to 500 and a detour length less than 2 miles.

Maine DOT is developing a guide to bridge removal practices and policies. It includes a six-part process for identifying candidate bridges for removal or closure, communicating the decision to municipalities and the public, and evaluating additional information.

North Dakota, Rhode Island and West Virginia all described limited guidance they use in removal decisions. In all three states, closure decisions are based on safety. North Dakota typically removes bridges if they have not been programmed for improvement within five years after closure.

Inventories of Candidate Bridges for Removal

Among survey respondents, only Maine reported that it keeps an inventory of low-volume bridges that are candidates for removal, although Pennsylvania's respondent noted that districts or local agencies may maintain lists within their jurisdictions.

Methods for Removing Bridges from the National Bridge Inventory

Several states provided methods for removing bridges, although the phrasing of this question may have been ambiguous. Some respondents described procedures for making changes to the NBI database, some described procedures for working with local agencies, and others described what nonbridge structures they might use to replace bridges that have been removed.

State Funding or Incentives for Bridge Removal

Only four respondents—Maine, Minnesota, Pennsylvania and Rhode Island—reported providing funding for the removal of local bridges. Maine may fund the entire cost of bridge removal, while Rhode Island's funding is based on what the budget allows.

Tools for Addressing Political Opposition to Bridge Removal

None of the respondents reported formal tools or practices to help minimize public or political opposition to a local bridge removal project. The limited advice offered included adequate lead time to communicate with the municipality and the use of Federal Highway Administration's (FHWA's) Highway Bridge Program criteria.

Review of State Policies and Programs

A search of state DOT bridge office and local program office websites found grant programs in Connecticut and Nebraska that provide funding for local bridge projects. These programs are generally focused on bridge repair and replacement, but bridge removals are eligible for both programs.

Connecticut's Local Bridge Program provides grants for 15 to 50 percent of eligible project costs for municipally owned bridges that are structurally deficient and carry a certified public road. Funding levels are determined based on the town's ability to pay, which is calculated using its property tax base per person and income per person.

The County Bridge Match Program in Nebraska offers up to \$40 million through 2023 to repair and replace deficient bridges on county road systems. Removal of structurally deficient bridges on minimum maintenance roads is also eligible for the program. Grants provide up to 55 percent of costs and are awarded based on seven criteria: innovation; cost or time savings; sustainability or transferability of innovation; long-term maintenance savings; project significance; and risk, need and equity.

Kansas has a similar program, the Kansas Local Bridge Improvement Program. However, it was only funded in 2014, and no further funding is currently planned. The program reimbursed 90 percent of construction and engineering costs, up to a maximum reimbursement of \$120,000 for a single bridge project. But if the project included the removal of an additional deficient structure, agencies could be reimbursed up to \$160,000.

Several states also provided information about the federal Bridge Soft Match Credit Program, which reimburses 80 percent of costs of completed bridge improvement projects. Projects that remove a bridge and replace it with something other than a new bridge, or with a bridge less than 20 feet long, may be eligible for the credit.

Interviews with Local Programs Offices

Representatives of three state DOT local programs offices—Iowa, Ohio and Washington—were contacted because these states are known to have well-established and active local programs offices. However, none of them reported that they have any involvement in local bridge removal decisions or provide any funding or incentives for bridge removal.

Related Research

The literature review uncovered limited research that is applicable to bridge removal decisions. Two publications and one research project in process address the factors that justify bridge closure or removal:

- A 2014 report for Kansas DOT investigated the economic impacts of closing bridges on low-volume roads. Researchers identified 648 structurally deficient state bridges whose closure would result in detours of 2 miles or less. Based solely on driver costs and bridge replacement costs, researchers found that bridge removal is only justified if average traffic levels are very low (less than 10 vehicles per day) and detours are short. However, maintenance and inspection costs were not considered in the analysis.
- A 2015 journal article proposed a method of measuring the socio-economic value provided by rural bridges for use in asset management decisions.

- A Transportation Research Board project currently in progress is working to characterize the attributes of bridges in their last years before being removed from the NBI.

Next Steps

MnDOT Bridge State Aid queried the database of all locally owned Minnesota bridges that are either closed or have a very low load posting. As of February 28, 61 bridges are currently closed and still exist on the bridge inventory. Moving forward, MnDOT could consider:

- Developing a bridge closure and removal database similar to the one in Pennsylvania to identify bridge structures that owners could be targeting as potential removal candidates. MnDOT could develop its own criteria in regards to average daily traffic, detour distance and other factors.
- Creating a guide for local agencies and State Aid staff to assist in identifying and implementing key steps in the bridge removal process. This guide could provide tools for overcoming the political ramifications of bridge removal or factors that should be considered before a new bridge is constructed.
- Developing a bridge closure/removal assessment tool that addresses a variety of impacts related to the bridge. This tool could evaluate numerous factors, including agency and user concerns, economic impacts, land use, recreational use, agricultural use, historical requirements and cost-benefit analysis. A removal assessment of bridges could be incorporated as part of the current bridge application process for bridges that are potential candidates for removal.
- Establishing a state policy similar to North Dakota's policy to clear bridges for removal if they have been closed for over five years.

Detailed Findings

Survey of Practice

Survey Approach

An online survey was distributed to 23 state department of transportation (DOT) members of the American Association of State Highway and Transportation Officials (AASHTO) Subcommittee on Bridges and Structures. These representatives were thought to have experience with bridge closure and removal, or documentation about bridge closure criteria and procedures. The survey consisted of the following questions:

1. What level of responsibility does your state DOT have over local bridges? What oversight does the state DOT have regarding the removal of bridges on local roads?
2. Does your agency have any criteria for selecting low-volume bridges that can be removed from the National Bridge Inventory (NBI)? If so, what are these criteria? Please provide links to any policies or other documentation.
3. Does your state have an inventory or list of priority low-volume bridges that have the potential to be permanently removed from the NBI and not replaced?
4. What methods does your state use to permanently remove low-volume bridges from the NBI?
5. Does your state provide any funding or incentives for low-volume bridge removal projects? If so, can you please describe these funding or incentive programs?
6. What role do local agencies play in the process of selecting bridges for removal? How are responsibilities divided between the state and local agencies?
7. Does your agency have any tools that can help to remove the political aspects of bridge removal decisions, such as defined criteria for bridge removal, established best practices or incentives for removing bridges? Please provide links to these tools or documentation for them.

Fifteen state DOTs responded to the survey:

- Illinois
- Iowa
- Kansas
- Maine
- Minnesota
- Mississippi
- Missouri
- New Hampshire
- North Dakota
- Oklahoma
- Pennsylvania
- Rhode Island
- Texas
- Utah
- West Virginia

Summary of Survey Results

Survey findings are summarized according to the following topic areas:

- State DOT oversight
- Removal policies and criteria
- Inventories of candidate bridges for removal
- Methods for removing bridges from the NBI
- State funding or incentives for bridge removal
- Tools for addressing political opposition to bridge removal

The full text of survey responses is provided in [Appendix A](#) of this report.

State DOT Oversight

Survey respondents were asked to describe the state DOT’s level of responsibility over local bridges. The table below summarizes survey responses.

State Responsibility Over Local Bridges		
Level of Oversight	State	Details
Significant	Maine	Recommends bridge candidates for removal through its Bridge Committee. Municipalities may request enhanced scoping to determine options. Maine DOT makes the final removal decisions, although coordination with the local agency is an important part of the decision process.
	Pennsylvania	Depends on funding source. Pennsylvania DOT has oversight and a policy for removal if the bridge is funded using state funds. If the bridge is entirely locally funded, oversight is also local.
	West Virginia	Controls almost all state bridges.
Limited	North Dakota	Inspects all local bridges; inspectors can recommend closing bridges that are unsafe. Removal from inventory is recommended if bridge improvement or replacement has not been programmed within five years.
	Rhode Island	Inspects local bridges and aids in funding repairs or replacement. Local agencies may request local bridges be removed or convert them from vehicular to pedestrian use with some restriction.
Minimal	Illinois	Reviews preliminary plans for state and federally funded structures, and many locally funded structures.
	Minnesota	Prescribes inspection and inventory procedures and administers bridge inspection program.
	Missouri	Provides load posting analysis and inspections on most local bridges.
	New Hampshire	Inspects and funds only.
	Oklahoma	Provides design standards and oversees inspections.
	Texas	Inspects local bridges.
	Utah	Inspects local bridges but does not remove local bridges
None	Iowa	N/A

State Responsibility Over Local Bridges		
Level of Oversight	State	Details
	Kansas	N/A
	Mississippi	N/A

Five respondents (Maine, North Dakota, Pennsylvania, Rhode Island and West Virginia) reported having some oversight or input on bridge removal decisions.

In Maine, the Bridge Committee recommends bridges for removal. While Maine DOT makes the final decision about bridge removal, it coordinates closely with the local agency that owns the bridge. If Maine DOT approves, the municipality may take responsibility for the process. When a bridge is assessed to determine whether it should be removed, the result may be that the bridge is removed, Maine DOT retains responsibility for improving the bridge, enhanced scoping is conducted to determine options, or responsibility for the bridge reverts to the municipality.

In Pennsylvania, responsibility for the bridge removal decision is based on the funding source. The transportation agency has oversight and a policy regarding bridge removal, but if the bridge is constructed using entirely local funds, the local owner has sole responsibility for any removal decisions. The local owner, county or planning partner can initiate studies to evaluate whether a structure is operationally redundant and can be removed. Pennsylvania DOT, localities and planning partners must abide by the findings.

West Virginia DOT controls almost all bridges in the state.

North Dakota and Rhode Island have limited oversight. Both states inspect bridges and may recommend closure if a bridge is not safe. In North Dakota, the Local Government Division works with local agencies to program repair or replacement projects. If a structure is not programmed within five years of closure, the transportation agency and the Local Government Division contact the owner and recommend removal from inventory.

Six survey respondents (Illinois, Missouri, New Hampshire, Oklahoma, Texas and Utah) reported that their states have only minimal oversight over local bridges. These states provide some services for local bridges—primarily inspections, but also design standards, construction funding, plan review or load posting analysis. In all of these states, however, local agencies make the final decisions about bridge removal.

Three states (Iowa, Kansas and Mississippi) claimed no responsibility over local bridges.

A review of state bridge design manuals and bridge office websites found no states where the state DOT explicitly retains control over bridge removal decisions. Connecticut and Nebraska both administer local bridge grant programs (see **State Grant Programs** in this report) that provide funding for bridge removals as well as bridge repairs, replacement or improvements, but local agencies decide whether to apply for the grant and whether removal is the appropriate project.

Removal Policies and Criteria

State Policies

Only one respondent (Pennsylvania) has a policy in place that establishes criteria for removing bridges. Maine DOT has drafted a policy that is being finalized.

Maine

Bridge Closure/Removal Guidance, Draft Guidelines, Maine Department of Transportation, unpublished. In 2007, Maine DOT released Keeping Our Bridges Safe, a report about the safety of Maine's bridges. In 2014, the agency issued an update to the report (<http://maine.gov/mdot/pdf/kobs2014.pdf>) that included the recommendation to implement enhanced procedures for town bridges to ensure that towns receive and understand notifications recommending needed repairs, postings or closure. In response to this recommendation, Maine DOT has drafted guidance regarding when and if low-use, structurally deficient and unsafe bridges should be closed or removed.

The draft guidelines include a six-step process for identifying candidate bridges for removal or closure, communicating the reasons to municipalities and the public, and evaluating additional information that may arise during the assessment, all of which inform the ultimate removal decision. A flowchart illustrates the six-step process.

The draft guidelines also describe the procedures that Maine DOT should follow once a final decision is made, whether that decision is to close or remove the bridge; keep the bridge open and allow Maine DOT to retain responsibility for repair, rehabilitation or replacement; conduct an enhanced scoping effort to determine further options; or give ownership and responsibility for the bridge to the municipality.

Since these documents are still in draft form, Maine DOT has requested that they not be published. The guidelines have been provided to MnDOT for its own use in a separate document.

Pennsylvania

Design Manual Part 1X, Publication 10X, Pennsylvania Department of Transportation, November 2015. https://www.dot.state.pa.us/public/PubsForms/publications/pub_10/Pub10X_Cover.pdf

Appendix AD establishes a process for evaluating bridge closure and removal, focusing on identifying bridges that are operationally redundant. The manual describes the process as follows:

The MPOs [metropolitan planning organizations] and RPOs [rural planning organizations] should work with PennDOT Districts and local municipalities to develop a list of bridges that are operationally redundant. Those bridges will be prioritized and systematically added to the TIP for removal. The MPOs and RPOs will be the lead for the study. This process can be used to evaluate bridges at a regional, county, or corridor level, or be used to evaluate single or multiple bridge locations for a specific project.

The process below provides a methodology for identifying bridges that are candidates for removal. The methodology uses GIS-based screening, combined with additional study and coordination with transportation stakeholders. The results of this process will be incorporated into the Linking Planning and NEPA screening forms for proposed bridge removal projects as part of the process for selecting and prioritizing TIP projects.

Bridges being evaluated for the program shall not be currently on the TIP for major rehabilitation or replacement.

Steps in the process follow:

1. Acquire bridge data from the state's Bridge Management System.
2. Generate a map using that data.
3. Determine the area where the process for identifying operationally redundant bridges will be implemented (throughout a county or localized within a county or specific region).
4. Develop and prioritize a list of operationally redundant structures. Criteria include:
 - AADT [annual average daily traffic] less than 200 and detour length less than 5 miles
 - AADT from 200 to 500, and detour length less than 2 miles
 - Structure rated structurally deficient or functionally obsolete
 - Structure already posted
 - Year built
 - Length of dead-end road after closure, measured from both sides of the bridge
 - Structure not utilized by the EMS network
 - Programmed future maintenance
5. Update the map, indicating bridges that are still candidates for closure and will require additional data collection.
6. Export bridge layers from GIS into an Excel spreadsheet, and add the following data items to the spreadsheet:
 - AADT
 - Length of dead-end streets
 - Length of new roadway relocation
 - Subdivision and land development ordinance requirement
 - Residential dwelling units on each side of the bridge
 - Future development indicated in local and county comprehensive plans and zoning ordinances
 - Business access points
 - Historic status
 - Lane count of bridge
 - Roadway width
 - Normal travel time and detour travel time along designated detour route
 - Percent change in travel time due to detour
 - Presence of sidewalks
 - Utility impact (whether utilities are carried or crossed by the bridge)
 - Railroad presence (whether the bridge crosses a railroad)
 - Function of the road (regional or local, based on access points and AADT)
 - Flooding/road closure (whether the road typically closes due to flooding)

- Scour-critical bridge indicator
 - Bridge risk assessment
 - Cost of replacing bridge
 - Replacement cost per vehicle
7. Evaluate data and generate a list of recommended bridges to consider for closure.
 8. Perform field views and studies to verify the impacts as evaluated above.
 9. Re-evaluate structures based on field view findings, and develop a final list of operationally redundant bridges and mitigation strategies based on planning partner recommendations.
 10. Perform implementation and mitigation strategies.

Related Resources

Below are examples of two Pennsylvania bridge closure studies:

Bridge Closure and Removal Study, Mercer County, Pennsylvania, Mercer County Engineer’s Office, January 2015.

[https://www.mcc.co.mercer.pa.us/engr/Mercer County Bridge Closure and Removal Study FINAL 1-15.pdf](https://www.mcc.co.mercer.pa.us/engr/Mercer%20County%20Bridge%20Closure%20and%20Removal%20Study%20FINAL%201-15.pdf)
 Study website: <https://www.mcc.co.mercer.pa.us/engr/closure.HTM>

This study evaluated 266 locally owned bridges in Mercer County, Pennsylvania, to identify redundant bridges for closure and removal. The report includes the bridge redundancy elimination process, preliminary and in-depth screening methods, implementation and mitigation strategies, results of public meetings and first responder feedback, and a priority list of bridges recommended for closure.

Northwest Rural Planning Organization County and Municipal Redundant Bridge Inventory, Final Report, Northwest Pennsylvania Regional Planning & Development, February 2016.

<http://www.northwestpa.org/wp-content/uploads/2016/02/Bridge-Inventory-Project-Final-Report-02-15-16.pdf>

This study identified operationally redundant local bridges in northwest Pennsylvania that were candidates for closure and removal. The report describes data collection efforts, the study area selection process, mitigation strategies and feedback from community meetings.

Note: In a follow-up message, the Pennsylvania respondent said the DOT’s involvement with the study process varies throughout the state. Some district-level bridge units are highly active and may approach localities about removing bridges, while other districts typically only assist in the process after county or local staff approach the district for assistance.

States with Limited Bridge Removal Guidance

Four states—Minnesota, North Dakota, Rhode Island and West Virginia—offered limited information about conditions under which a local bridge might be removed.

Minnesota

The Minnesota respondent reported that bridges are recommended for closure if their load posting falls below 3 tons.

North Dakota

North Dakota DOT is responsible for inspecting all local bridges, and inspectors have the power to recommend closure of any structure considered unsafe. When that occurs, the North Dakota DOT Local Government Division works with local agencies to program repair or replacement projects. If a structure is not programmed within five years of closure, North Dakota DOT's Bridge and Local Government divisions contact the owner and recommend removing the bridge from the NBI.

Local agencies often replace low-volume bridges with non-National Bridge Inspection Standards (NBIS) length culverts or low-water crossings using local funds. However, sometimes North Dakota DOT's recommendation of removal is necessary for the local agency to take any action.

Rhode Island

Rhode Island DOT conducts all local bridge inspections and may request removal of local bridges, particularly when safety is an issue. Local agencies may request removal of a local bridge, or switch the use of a bridge from a vehicular to pedestrian bridge, with some restrictions. The state may help in funding bridge removal projects if the budget allows.

West Virginia

West Virginia DOT is responsible for nearly all bridges in the state. When bridges need to be closed, they are not replaced if a feasible detour is available.

Inventories of Candidate Bridges for Removal

Only one survey respondent (Maine) reported that the state maintains an inventory of low-volume bridges that are candidates for removal. Pennsylvania's respondent noted that the state does not maintain an inventory, but that local districts or local agencies may maintain lists for their jurisdiction. Minnesota's respondent said that as bridges are recommended for closure if their load posting falls below 3 tons, the state's bridge inventory database could be used to generate an inventory.

Methods for Removing Bridges from the National Bridge Inventory

States described several methods for removing bridges from the NBI:

State	Details
Illinois	Structure is removed and replaced with pipe culverts when flow can be accommodated. The decision to take this option is made by the local public agency.
Iowa	When the load posting limit is less than 3 tons, the bridge is closed and Item 41 in the NBI is changed to K (closed). After 10 years, Item 112 is changed to N. Collapsed bridges can be handled in the same manner if the local agency does not want to replace it.
Kansas	Only bridges that are physically removed or permanently closed to traffic are removed from the NBI.
Maine	The proposed policy requires recommendation by the Bridge Committee; a Bridge Closure Impact Assessment with input from the municipality and affected users; and a decision to either remove the bridge, keep responsibility for improving the bridge with Maine DOT, conduct enhanced

State	Details
	scoping to further evaluate options, or revert responsibility for the bridge to the municipality.
Minnesota	Encouragement and funding approval authority are methods used for removing bridges from the NBI.
Mississippi	None.
Missouri	N/A
New Hampshire	Planning to not correct their deficiency.
North Dakota	Local Government and Bridge divisions send letters to the owners recommending removal of the bridge if there is no programming to repair or replace a bridge that has been closed for five years.
Oklahoma	Individual owners decide.
Pennsylvania	Small structures may be filled or replaced with non-NBI pipes. Large structures may be removed, and the approach road barricaded or turned into a cul-de-sac.
Rhode Island	N/A
Texas	N/A
Utah	N/A
West Virginia	Bridges that have feasible detours will not be replaced.

State Funding or Incentives for Bridge Removal

Only four survey respondents reported providing funding for local bridge removal:

- Maine DOT shares the cost of removing town-owned bridges and may fund 100 percent of the removal cost for local bridges with 20-foot spans and longer.
- MnDOT’s Local Bridge Replacement Program provides funding for reconstruction, rehabilitation or removal of bridges on local road systems.
- Pennsylvania DOT participates in funding of bridge removal contracts. Removals may be “bundled” with nearby state projects to reduce costs to the local owner.
- Rhode Island DOT provides some assistance and funding when the bridges in question are unsafe and need to be removed.

Tools for Addressing Political Opposition to Bridge Removal

None of the survey respondents reported having any formal tools or practices that could help to minimize public or political opposition to a local bridge removal project. A few offered lessons learned:

- Illinois DOT follows the Federal Highway Administration’s (FHWA’s) Highway Bridge Program criteria for structures, using a portion of the state’s federal Surface Transportation Program funds.

- Maine DOT provides adequate lead time (three to four years, if possible) to allow proper notification and outreach with the municipality.
- North Dakota DOT promotes the financial incentive associated with not inspecting a bridge that is closed to traffic.
- Pennsylvania DOT recommends conducting a town meeting with elected officials after all the removal studies and planning are completed.

Review of State Policies and Programs

In addition to the policies revealed by the survey, a search of state DOT bridge office and local program office websites found grant programs in Connecticut and Nebraska that provide funding for local bridge projects. While these programs are generally focused on bridge repair and replacement, bridge removals are eligible for both programs. Kansas has a similar program in effect, but it was only funded once. While the program remains in effect, no further funding is currently planned.

Several states also provided information about the federal Bridge Soft Match Credit Program, which provides reimbursements to local agencies for bridge replacement and repair. Projects that remove bridges and replace them with nonbridge structures are eligible for the credit.

Details of these policies and programs follow.

State Grant Programs

Connecticut and Nebraska both offer grant programs for local bridge projects that provide funding for bridge repair, replacement and removal.

Connecticut

Local Bridge Program, Connecticut Department of Transportation, 2017.

<http://www.ct.gov/dot/cwp/view.asp?A=2094&Q=300022>

This website describes Connecticut’s Local Bridge Program, which provides state grants for projects that remove, replace, repair or improve an existing local bridge. The website includes a link to the Fiscal Year 2017 Local Bridge Program Manual (http://www.ct.gov/dot/lib/dot/FY_2017_Local_Bridge_Program_Manual.pdf), which guides municipalities through the process of developing bridge projects and applying for grants under the program. This year, the program has \$17 million available to fund new projects (page 1 of the report, page 8 of the PDF).

To be eligible for the State Local Bridge Program Grant, bridges “must carry a certified public road, be municipally owned and/or maintained, be structurally deficient according to criteria developed by the Federal Highway Administration in the Coding Guide, and must not have a prior commitment from the state—not withdrawn or expired—to fund the project” (page 12 of the report, page 19 of the PDF).

Municipalities can qualify for grants that cover 15 percent to 50 percent of eligible project costs. The specific funding level is calculated using the Connecticut Department of Education’s Adjusted Equalized Net Grand List Per Capita method, which is explained on page 13 of the report (page 20 of the PDF). Funding levels are based on the town’s ability to pay, which is calculated using its property tax base per person and income per person.

The program website also includes a list of bridges eligible for the program (http://www.ct.gov/dot/lib/dot/FY_2017_Eligible_Bridge_List_-_20160405.xlsx). However, municipalities choose whether to apply for funding for any given bridge. Applications are prioritized based on their sufficiency rating, a measure of the bridge's ability to meet the demands placed on it. The sufficiency rating is made up of three factors: 55 percent is based on structural adequacy and safety, 30 percent on serviceability and functional obsolescence, and 15 percent on necessity for public use (page 7 of the report, page 14 of the PDF).

In a follow-up email, a State Local Bridge Program representative said that while the state administers the grant program, the bridges on municipal roadways are owned and maintained by the municipalities. The municipalities are solely responsible for deciding what happens to their bridges. According to the representative, bridge removals are rare and usually noncontroversial if the disruption to traffic is minimal.

Kansas

Program Guidelines: Kansas Local Bridge Improvement Program, Kansas Department of Transportation, undated.

http://www.ksdot.org/Assets/wwwksdotorg/bureaus/burlocalproj/Bridge/KLBI_Prog_Guide.pdf

The Kansas Local Bridge Improvement Program "is a state-funded program that provides funds to local public authorities to replace or rehabilitate locally owned, deficient bridges in order to improve the overall system throughout the State of Kansas." The program was only funded one time, in 2014. The program does still exist and could be funded in the future, but no funding plans have been made.

The program targets bridges with spans up to 50 feet long on very low-volume roads (100 vehicles per day or less). Bridges must be classified as structurally deficient or functionally obsolete. Under the program, Kansas DOT reimburses 90 percent of construction and engineering costs, with a maximum award of \$120,000 for single-bridge projects. Projects that also remove a second deficient bridge can receive up to \$160,000.

According to the Kansas DOT survey respondent, the program was quite popular, with 77 projects selected for it. More than 30 of those projects included a second bridge and were eligible for the larger reimbursement.

Minnesota

Local Bridge Replacement Program—State Transportation Funds, Fact Sheet, State Aid for Local Transportation, Minnesota Department of Transportation, February 2016.

<http://dot.state.mn.us/stateaid/admin/info/lbrp.pdf>

This program, created in 1976 by Minnesota Statute [174.50](#), provides funding for the reconstruction, rehabilitation or removal of bridges or structures on local road systems. Local agencies identify and submit bridge projects to a Master Bridge Priority List, and the District State Aid Engineer reviews applications and makes the recommendation to replace or defer. To be eligible, the structure must be 10 feet or longer, have a sufficiency rating of 80 or less, or be classified as structurally deficient or functionally obsolete; or a roadway is being constructed that eliminates a bridge meeting the first three criteria; or a structure meeting the first three criteria is being removed or abandoned.

Projects are chosen based on six criteria: effectiveness of the project in eliminating a deficiency in the transportation system, number of people affected by the deficiency, economic feasibility, effect on optimum land use, availability of other financing, and adequacy of provision for proper operation and maintenance after construction.

Nebraska

County Bridge Match Program, Transportation Innovation Act, Nebraska Department of Roads, undated.

<http://www.roads.nebraska.gov/projects/grow-ne/bridge/>
<http://www.roads.nebraska.gov/media/5777/county-bridge-match-criteria.pdf>

In April 2016 Nebraska passed the Transportation Innovation Act, which included a provision authorizing the creation of the County Bridge Match Program. Through June 30, 2023, the County Bridge Match Program will provide up to \$40 million for repair and replacement of deficient bridges on county road systems. To be eligible for the program, bridges must meet four criteria:

- Structurally deficient in the Nebraska Bridge Inventory Data as of August 26, 2016.
- Bridge-sized structures (at least 20 feet in length).
- Located on roadways classified as local roads or above in the State Functional Classification. Additionally, bridges on minimum maintenance roads are eligible for removal only.
- Not previously advertised for bids for construction.

Structurally deficient bridges on minimum maintenance roads are also eligible for removal through the program.

Counties submit proposals for the program voluntarily. A committee then scores the proposals on a 100-point scale based on seven criteria:

- **Innovation** (defined as ideas and solutions that can positively impact the design, construction and maintenance of proposed bridge replacement and repair projects. Examples include bundling of projects, structure removal from inventory, time and cost savings during construction, long-term cost savings over the bridge life and repeatable by other bridge owners). (0-20 points)
- **Cost or time savings.** (0-10 points)
- **Sustainability or transferability of innovation.** (0-10 points)
- **Long-term maintenance savings.** (0-10 points)
- **Project significance/risk.** (0-20 points)
- **Needs** (by percent in Nebraska Association of County Officials District. Each county's percentage of structurally deficient bridges is compared to other counties in the same district. Proposals from counties with higher percentages of structurally deficient bridges will receive higher scores in this category.). (0-20 points)
- **Equity** (counties with fewer proposals selected over the entire life of the County Bridge Match Program receive higher scores in this category). (0-10 points)

Program grants are up to 55 percent of the construction cost, "within the agreed upon scope of the project up to \$150,000 for any individual bridge." Counties are responsible for a 45 percent match.

Of the 68 bridges selected in the first round of the grant program (listed at <http://www.roads.nebraska.gov/media/6964/cbmp-selected-bridge-sites.pdf>), only three are slated for removal. However, many of the other bridges are scheduled for replacement with nonbridge structures like concrete box culverts or culvert pipes.

Nebraska Department of Roads maintains a map of county bridges eligible for the program at <http://prodmaps2.ne.gov/Html5NDOR/index.html?viewer=BridgeMatch>. This map is generated by a Web-based GIS mapping application and based on state bridge inventory data.

Bridge Soft Match Credit Program

Several state DOT websites provide information about the Bridge Soft Match Credit Program, a federal program established by the 1987 Surface Transportation and Uniform Relocation Assistance Act. Information about the program is provided in [23 USC §144\(m\)](#):

Program for Bridges Not on Federal-Aid Highways—Notwithstanding any other provision of law, with respect to any project not on a Federal-aid highway for the replacement of a bridge or rehabilitation of a bridge which is wholly funded from State and local sources, is eligible for Federal funds under this section, is noncontroversial, is certified by the State to have been carried out in accordance with all standards applicable to such projects under this section, and is determined by the Secretary upon completion to be no longer a deficient bridge, any amount expended after the date of the enactment of this subsection from State and local sources for such project in excess of 20 percent of the cost of construction thereof may be credited to the non-Federal share of the cost of the projects in such State which are eligible for Federal funds under this section. Such crediting shall be in accordance with such procedures as the Secretary may establish.

Related Resources

Because the Bridge Soft Match Credit Program is a federal program, information about state programs is generally quite similar. Below are examples of documentation from Missouri, Illinois, South Carolina and Utah:

Bridge Soft Match Credit, Section 136.3.10, Engineering Policy Guide, Missouri Department of Transportation, 2016.

http://epg.modot.org/index.php?title=136.3_Federal_Aid_Basics#136.3.10_Bridge_Soft_Match_Credit

This section of the guide states that while projects funded often replace or rehabilitate a bridge, projects that remove a bridge and replace it with something other than a new bridge or a bridge less than 20 feet long may be eligible for the credit.

The program reimburses up to 80 percent of eligible costs for completed projects that have been opened to traffic. These costs include preliminary engineering services, surveys, environmental and cultural documentation, subsurface investigations, right of way services, bridge construction, construction engineering for inspection and utility relocation costs. Minimal road construction costs are also eligible, such as an approach road that is necessary to connect to the existing road and to return the new grade to normal ground.

To be eligible for reimbursement, a bridge must have been on Missouri DOT's list of structures that were eligible for federal bridge funds in the year the bridge was built, and the bridge must be on a route with a functional classification of rural local, urban local or rural minor collector. Projects must also be "noncontroversial," meaning that they have no history of litigation, disputes, negative media reports or other controversies.

Highway Bridge Replacement & Rehabilitation Program Soft Match Credit Program, Illinois Department of Transportation, November 3, 2003.

<http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Bulletins-&-Circulars/Bureau-of-Local-Roads-and-Streets/Circular-Letters/Informational/CL2003-16.pdf>

Memorandum of Understanding: Bridge Replacement Match Program, South Carolina Department of Transportation, November 2011.

http://www.scdot.org/doing/doingPDFs/MOU_Bridge_Replacement_Match_Program.pdf

Guidance Document: Off-System Bridge Soft Match Credit Program, Utah Department of Transportation, July 7, 2009.

<http://www.udot.utah.gov/main/uconowner.gf?n=16404224072274421>

Interviews with Local Programs Offices

Representatives of three state DOT local programs offices—Iowa, Ohio and Washington—were contacted because these states are known to have well-established and active local programs offices. However, none of the three states have programs related to local bridge removal. Results of the interviews follow.

Iowa

Contact: John Dostart, Urban Engineer, Office of Local Systems, Iowa Department of Transportation, 515-239-1291, John.Dostart@iowadot.us.

Local bridge closure decisions are made by the local agency. The state has no criteria for bridges to be considered for closure. The Office of Local Systems does provide bridge funding through one federal-aid program and two state programs (see **Related Resource** below) for bridge construction, reconstruction or replacement. To be eligible for these programs, the bridge must be classified as structurally deficient or functionally obsolete, have a sufficiency rating of 80 or less, and have an ADT of at least 25.

Dostart said that the Office of Local Systems has never funded a bridge removal. In 2000 several bridges were removed in Sioux City as a flood mitigation method, but that project was funded through the Army Corps of Engineers.

Related Resource

Federal and State Bridge Programs, Instructional Memorandums to Local Public Agencies, Office of Local Systems, Iowa Department of Transportation, November 8, 2016.

http://www.iowadot.gov/local_systems/publications/im/2020.pdf

This instructional memorandum provides guidelines and procedures for local public agency federal and state bridge programs.

Ohio

Contacts: Jeff Peyton, Project Manager, Local Programs, Division of Planning, Ohio Department of Transportation, 614-466-2032, Jeff.Peyton@dot.ohio.gov.

Nichole Wade, Program Manager, Local Programs, Division of Planning, Ohio Department of Transportation, 614-752-6581, Nichole.Wade@dot.ohio.gov.

Ohio DOT has three programs that fund replacement or rehabilitation of local bridges: the Municipal Bridge Program, which provides up to \$2.5 million per project for construction; the Local Major Bridge Program, which provides up to 80 percent of construction costs for movable bridges or bridges with a deck area greater than 35,000 square feet; and the Credit Bridge Program, which is administered by the County Engineers Association of Ohio and disburses \$35 million in federal-aid funds to county bridges. (See **Related Resources** below.) None of these programs fund bridge removals, however, except when the bridge is removed as part of a replacement project. Peyton and Wade added that any decisions to remove bridges would be driven by the local agency.

Related Resources

Municipal Bridge Program Guidelines, Local Programs, Planning Division, Ohio Department of Transportation, June 2016.

<http://www.dot.state.oh.us/Divisions/Planning/LocalPrograms/Municipal%20Bridge%20Program%20Documents/Municipal%20Bridge%20Program%20Guidelines.pdf>

Local Major Bridge Program, Local Programs, Planning Division, Ohio Department of Transportation, undated.

<http://www.dot.state.oh.us/Divisions/Planning/LocalPrograms/Local%20Major%20Bridge%20Documents/Local%20Major%20Bridge%20Program%20Guidelines.pdf>

Credit Bridge Program Guidelines, Local Programs, Planning Division, Ohio Department of Transportation, undated.

<http://www.dot.state.oh.us/Divisions/Planning/LocalPrograms/Credit%20Bridge%20Resources/Credit%20Bridge%20Program%20Guidelines.pdf>

Washington

Contact: Kyle McKeon, Manager, Engineering Services Office, Local Programs Division, Washington State Department of Transportation, 360-705-7375, McKeonK@wsdot.wa.gov.

In Washington, local agencies make all decisions related to local bridges. The state DOT's only role is to funnel federal money to the local agencies. Washington State DOT does have a Bridge Replacement Advisory Committee that makes funding decisions, but as its name implies, the committee focuses on bridge replacement. McKeon said that bridge removals are extremely rare. He recalled only one removal project, in Seattle, where a surface street replaced a bridge. The project was relatively noncontroversial because a replacement bridge would have been expensive and unnecessary, but all decisions were made on the local level.

Related Research

The literature review produced a limited amount of research that has been published about the factors that justify bridge closure or removal.

Published Research

Economic Impact of Closing Structurally Deficient or Functionally Obsolete Bridges on Very Low-Volume Roads, Eric J. Fitzsimmons, Thomas E. Mulinazzi, Stephen D. Schrock, *Transportation Research Record 2433*, pages 116-120, 2014.

Citation at <http://trrjournalonline.trb.org/doi/10.3141/2433-13>
<http://www2.ku.edu/~kutc/pdffiles/EconImpactClosingBridge.pdf>.

From the abstract:

The state of Kansas has approximately 25,464 bridges located on state, county, and city roadway networks. As of May 2012 approximately 1,229 bridges on very low-volume roads were determined to be structurally deficient and candidate structures to be potentially closed, replaced, or repaired. This study was designed to provide such critical information for county commissioners or practicing engineers as (a) where structurally deficient or functionally obsolete bridges on low-volume roads were located, (b) what distance was the shortest drivable detour if these bridges were to be closed, and (c) whether to recommend closing or to repair or replace the structurally deficient bridges on the basis of both potential detour length and average

daily traffic (ADT). The results of the study indicated that many of the structurally deficient bridges on very low-volume roadways had detours of 2 mi or less, were steel bridges, and had ADT values of fewer than eight vehicles. On the basis of the analysis, bridge closure was recommended for a low-volume roadway with an ADT value less than eight and a detour length of less than 9 mi.

Applying Social Return on Investment to Risk-Based Transportation Asset Management Plans in Low-Volume Bridges, Maria Catalina Miller, Jorge A. Rueda, Douglas D. Gransberg, *Transportation Research Record* 2473, pages 75-82, 2015.

Citation at <http://trrjournalonline.trb.org/doi/pdf/10.3141/2473-09>

From the abstract:

State departments of transportation implement risk-based transportation asset management systems to standardize risk-oriented procedures and to help decision makers allocate available funds. These procedures can help agencies effectively allocate funding to repair, replace, or maintain their assets in a way that provides the highest overall value to all stakeholders. Because reliable tools with which to measure and compare the socioeconomic impact of distribution of bridge maintenance funds are lacking, decisions are driven by annual average daily traffic (AADT) and the experience of decision makers. Although AADT measures the number of users that would benefit if funding were allocated for a given bridge project, it fails to account for the impact that a given bridge has on the state's or region's economic growth. A reliance on AADT puts low-volume bridges on farm-to-market roads at a disadvantage in competition for scarce funding, as shown by the many structurally deficient low-volume bridges located in croplands of Iowa, a state whose economy is based on agriculture. This paper proposes a method for integrating the socioeconomic impact of funds allocated to maintenance and repair with AADT and for considering the consequences of this decision. The paper demonstrates a stochastic two-way sensitivity analysis social return on investment as the primary metric on two typical Iowa bridges and finds that adding social return on investment to the decision-making process provides a mechanism for more efficiently allocating available resources.

Research in Progress

Characteristics of Decommissioned Bridges, Research Needs Statement, Transportation Research Board, posted May 10, 2016; anticipated duration: 24-36 months.

<https://rns.trb.org/dproject.asp?n=40831>

From the Research Needs Statement:

The initial research activity will mine many years of National Bridge Inventory (NBI) data to characterize various attributes of bridges in their last year of NBI reporting prior to being decommissioned.

The study seeks indicators of causes of decommissioning. The causes can include:

- Deterioration, indicated by general condition ratings.
- Constraint to mobility, indicated by number of lanes on/under structure, and load ratings.
- Vulnerability, indicated by ratings for scour critical bridge item, and critical feature items.
- Geometric constraints, indicated by deck width, and vertical clearances.

Decisions to replace/retain bridges may be found to depend on relations of NBI items to route functional class, ADT, and ADTT. For decommissioned bridges, the study will examine the importance of individual NBI items and cross-correlations among NBI items. Quantification of the average life span of bridges by material, design type, geographic area and environment will be determined. Armed with the results of the national analysis, the research will evaluate more definitively the cause of replacements for three or four selected States using Department of Transportation project information.

Appendix A

Local Bridge Removal Policies and Programs: Survey Results

The full text of survey responses is provided below. For reference, an abbreviated version of each question is included before the response. The full question text appears on page 5 of this report.

Illinois

Contact: James Klein, Acting Bureau Chief, Bureau of Local Roads and Streets, Illinois Department of Transportation, 217-782-5928, James.Klein@illinois.gov.

1. **State responsibility over local bridges:** Review of preliminary plans for state and federally funded structures, as well as many structures funded with local funds. Decision to remove is the owner's. Final plans are generally approved by the Department based on the design Structural Engineer's seal and certification.
2. **Criteria for selecting candidates for removal:** The Department does not select them and there is no policy. Generally the Local Public Agency selects them when [they] become structurally deficient or functionally obsolete, dependent on available funding.
3. **Inventory of priority low-volume bridges:** No.
4. **Methods for removing bridges from NBI:** One method that is implemented is removing the structure and replacing with pipe culverts, when flow can be accommodated and debris is not an issue. Decision is by local public agency.
5. **Funding or incentives for bridge removal:** No.
6. **Role of local agencies:** Local public agencies make the decision; the Department approves preliminary designs and reviews eligibility for chosen funding.
7. **Tools for political aspects:** Generally no, but we still follow FHWA's old Highway Bridge Program criteria for structures using a portion of the State's Federal STP [Surface Transportation Program] funds.

Iowa

Contact: Scott Neubauer, Bridge Maintenance Engineer, Office of Bridges and Structures, Iowa Department of Transportation, 515-239-1165, Scott.Neubauer@iowadot.us.

1. **State responsibility over local bridges:** Local bridges are under the jurisdiction of the local agency. We do not have any oversight of bridge removals on the local system.
2. **Criteria for selecting candidates for removal:** No.
3. **Inventory of priority low-volume bridges:** No.
4. **Methods for removing bridges from NBI:** When the load posting limit is less than 3 tons, the bridge is closed and Item 41 in the NBI is changed to K (closed). The bridge stays in the NBI for 10 years and Item 112 is changed to N after 10 years. A collapsed bridge can be handled in the same manner if the local agency doesn't want to replace it because of the low volume of traffic.
5. **Funding or incentives for bridge removal:** No.

6. **Role of local agencies:** Local public agencies are 100% responsible for making the decision to remove a bridge under their jurisdiction. If a state-owned bridge is on a local road that is crossing a state highway, the local agency is included in any discussion of closing the bridge.
7. **Tools for political aspects:** No.

Kansas

Contact: Kent Anschutz, Associate Bridge Engineer, Bureau of Local Projects, Kansas Department of Transportation, 785-296-0263, Kent.Anschutz@ks.gov.

1. **State responsibility over local bridges:** None.
2. **Criteria for selecting candidates for removal:** No.
3. **Inventory of priority low-volume bridges:** No.
4. **Methods for removing bridges from NBI:** KDOT will only remove a bridge from the NBI if the bridge is physically removed or permanently closed to vehicular traffic.
5. **Funding or incentives for bridge removal:** Not at this time.
6. **Role of local agencies:** Local public agencies are completely responsible for selecting bridges for removal.
7. **Tools for political aspects:** Not at this time.

Maine

Contact: James Foster, Bridge Management Engineer, Maine Department of Transportation, 207-624-3267, James.Foster@maine.gov.

1. **State responsibility over local bridges:** Performs NBI inspections on local minor spans and bridges. May cost-share improvements on high priority town-owned bridges. Will cost-share for removal of town-owned bridges.
2. **Criteria for selecting candidates for removal:** Less than or equal to 300 AADT [average annual daily traffic] and abut/abut detour less than or equal to 6 miles, on Highway Corridor Priority (HCP) 5 or 6 highways. The state has drafted a policy which is currently under consideration.
3. **Inventory of priority low-volume bridges:** Yes, there are currently approximately 100 bridges and minor spans that meet this criteri[on].
4. **Methods for removing bridges from NBI:** The currently proposed policy requires:
 - 1) Recommendation by Bridge Committee.
 - 2) Chief Engineer will authorize Bureau of Planning to develop a Bridge Closure Impact Assessment with outreach to the municipality and affected users.
 - 3) Results of the assessment will lead to either removal of the bridge, MaineDOT retaining responsibility and improving the bridge, conducting of Enhanced Scoping to further determine options, or the municipality will take over responsibility for the bridge.
5. **Funding or incentives for bridge removal:** MaineDOT may offer to fund 100% of removal cost for local bridges of 20 foot spans and longer.
6. **Role of local agencies:** The bridge committee recommends candidates for removal. The municipality may request an enhanced scoping effort to further determine options. While

MaineDOT makes the ultimate decision, coordination with the municipality is an important component and factor in the decision process. With MaineDOT approval, the municipality may elect to take over ownership/responsibility.

7. **Tools for political aspects:** Provide adequate lead time (3-4 years if possible) to allow proper notification and outreach with the municipality.

Minnesota

Contact: Patti Loken, State Aid Programs Engineer, Minnesota Department of Transportation, 651-366-3803, Patti.Loken@state.mn.us.

1. **State responsibility over local bridges:** The DOT does not have any responsibility for the removal of bridges that are not on the state's Trunk Highway system and jurisdiction. Most of the state's oversight of local bridges falls under the closing and inspection of bridges in order to be in compliance with state and federal rules and mandates.

[165.12\(e\)](#) gives the county the authority to close a town bridge.

[160.27 Subd. 8\(a\)](#) gives the commissioner power to close a trunk highway.

[160.16 Subd. 3](#) gives the power to road authorities to construct barricades to prevent traffic from entering closed roads.

[165.02](#) provides road authorities [with the] ability to construct, reconstruct, improve, and maintain bridges whenever they deem bridges to be necessary.

[165.03](#) addresses the strength of bridges and inspection. Subd. 1 talks about standards for each bridge must conform to the strength, width, clearance, and safety standards imposed by the commissioner for the connecting highway or street. The bridge must have sufficient strength to support with safety the maximum vehicle weights allowed under sections [169.822](#) to [169.829](#) and must have the minimum width specified in section [165.04, Subdivision 3](#). Selected sections include:

Subd. 1a. Inspection. (a). Each bridge must be inspected annually, unless a longer interval not to exceed 24 months for bridges or 48 months for bridges classified as culverts is authorized by the commissioner. The commissioner's authorization must be based on factors including, but not limited to, the age and condition of the bridge, the rate of deterioration of the bridge, the type of structure, the susceptibility of the bridge to failure, and the characteristics of traffic on the bridge. The commissioner may require interim inspections at intervals of less than one year on bridges that are posted, bridges subjected to extreme scour conditions, bridges subject to significant substructure movement or settlement, and for other reasons as specified or inferred in the AASHTO manual.

(b) Additional requirements apply to structures meeting the NBIS definition of a bridge:

(3) The commissioner may establish criteria to determine the level and frequency of these inspections. If warranted by special circumstances, the commissioner retains the authority to determine the inspection type and required inspection frequency for any bridge on the state inventory.

(c) The thoroughness of each inspection depends on such factors as age, traffic characteristics, state of maintenance, and known deficiencies. The evaluation of these factors is the responsibility of the engineer assigned the responsibility for inspection as defined by the commissioner of transportation.

Subd. 2. Inspection and inventory responsibilities; rules; forms. (a) The commissioner of transportation will adopt the National Bridge Inspection Standards (NBIS) established by the Federal Highway Administration in Code of Federal Regulations, title 23, part 650, subpart C, or its successor documents, for structures meeting the NBIS definition of a bridge. The commissioner shall establish inspection and inventory standards for structures defined as bridges by section [165.01, subdivision 3](#).

(b) The commissioner of transportation shall adopt official inventory and bridge inspection report forms for use in making bridge inspections by the owners or highway authorities specified by this subdivision. Inspections must be made at regular intervals, not to exceed the intervals outlined in subdivision 1a, by the following owner or official:

(1) The commissioner of transportation for all bridges located wholly or partially within or over the right-of-way of a state trunk highway;

(2) The county highway engineer for all bridges located wholly or partially within or over the right-of-way of any county or town road, or any street within a municipality that does not have a city engineer regularly employed;

(3) The city engineer for all bridges located wholly or partially within or over the right-of-way of any street located within or along municipal limits;

(c) The commissioner of transportation shall prescribe the inspection and inventory procedures required to administer the bridge inspection program in Minnesota and has the authority to establish and publish standards that describe the inspection and inventory requirements to ensure compliance with paragraph (a). The owner or highway authority shall inspect and inventory in accordance with these standards and furnish the commissioner with such data as may be necessary to maintain a central inventory.

Subd. 6a. Bridge load rating and posting. (c) If it is determined that the maximum legal load under state law exceeds the load permitted on the structure under the operating rating stress level assigned, the bridge must be posted. Posting signs adopted by the commissioner shall be used for the posting. The owner or highway authority shall post the bridge in accordance with the posted load assigned by the commissioner.

Subd. 8. Biennial report on bridge inspection quality assurance. This [is] prepared by the State DOT for all bridges. By February 1 of each odd-numbered year, the commissioner shall submit a report electronically to the members of the senate and House of Representatives committees with jurisdiction over transportation policy and finance concerning quality assurance for bridge inspections. At a minimum, the report must:

(1) Summarize the bridge inspection quality assurance and quality control procedures used in Minnesota;

(2) [I]dentify any substantive changes to quality assurance and quality control procedures made in the previous two years;

(3) Summarize and provide a briefing on findings from bridge inspection quality reviews performed in the previous two years;

(4) Identify actions taken and planned in response to findings from bridge inspection quality reviews performed in the previous two years;

(5) Summarize the results of any bridge inspection compliance review by the Federal Highway Administration; and

(6) Identify actions in response to the Federal Highway Administration compliance review taken by the department in order to reach full compliance.

[174.02](#) describes the powers and duties of the Commissioner of Transportation. Selected sections include:

Subd. 1a. Mission; efficiency; legislative report, recommendations. It is part of the department's mission that within the department's resources the commissioner shall endeavor to:

(1) *Prevent the waste or unnecessary spending of public money;*

(2) *Use innovative fiscal and human resource practices to manage the state's resources and operate the department as efficiently as possible;*

(3) [M]inimize the degradation of air, water quality, and the climate, including reduction in greenhouse gas emissions;

(4) [C]oordinate the department's activities wherever appropriate with the activities of other governmental agencies;

(5) [U]se technology where appropriate to increase agency productivity, improve customer service, increase public access to information about government, and increase public participation in the business of government;

(6) Utilize constructive and cooperative labor-management practices to the extent otherwise required by chapters 43A and 179A;

(7) [E]nsure that the safety, maintenance, and preservation of Minnesota's transportation infrastructure is a primary priority;

2. **Criteria for selecting candidates for removal:** Bridges are recommended to be closed if the posting falls below 3 tons. Local agencies have the ability under the local bridge replacement program to use state aid, Township Bridge, and local funds to remove bridges or build a road in lieu of a bridge. The Local Bridge Replacement Program is described at <http://dot.state.mn.us/stateaid/admin/info/lbrp.pdf>.
3. **Inventory of priority low-volume bridges:** It can be created from the bridge inventory data base managed by the MN DOT Bridge office.

4. **Methods for removing bridges from NBI:** Encouragement and funding approval authority.
5. **Funding or incentives for bridge removal:** The way the local bridge program was created and how the funds are managed provide a funding source to eliminate funding as a road block.
6. **Role of local agencies:** Local agencies are solely responsib[le] for bridge removals off the state's highway system.
7. **Tools for political aspects:** Refer to the local bridge program details on [the] website and [in the] state aid manual. It is up to the local [agency] to decide when to remove a bridge.

Mississippi

Contact: Justin Walker, Director of Structures, State Bridge Engineer, Bridge Design Division, Mississippi Department of Transportation, 601-359-7200, JMWalker@mdot.ms.gov.

1. **State responsibility over local bridges:** None.
2. **Criteria for selecting candidates for removal:** No.
3. **Inventory of priority low-volume bridges:** No.
4. **Methods for removing bridges from NBI:** None.
5. **Funding or incentives for bridge removal:** No.
6. **Role of local agencies:** Individual local governments manage all bridges.
7. **Tools for political aspects:** No.

Missouri

Contact: David Koenig, Structural Services Engineer, Missouri Department of Transportation, 573-526-0556, David.Koenig@modot.mo.gov.

1. **State responsibility over local bridges:** We don't legally really have any oversight from a state standpoint. We do oversee the federally funded replacement projects. As a state, we have chosen to perform the bridge inspections on most locally owned structures. We also provide load posting analysis and recommendations for local agencies that don't have engineering staff.
2. **Criteria for selecting candidates for removal:** No. We have talked about something for short bridges in terms of use of federal funds from time to time, but have never done anything with it. We have 14,000 local bridges, and probably 90% of them would be considered low-volume bridges.
3. **Inventory of priority low-volume bridges:** No.
4. **Methods for removing bridges from NBI:** [No response.]
5. **Funding or incentives for bridge removal:** No.
6. **Role of local agencies:** Local agencies are 100% responsible for the structures under their control.
7. **Tools for political aspects:** No.

New Hampshire

Contact: Bob Landry, Administrator, Bridge Design, New Hampshire Department of Transportation, 603-271-2731, Robert.Landry@dot.nh.gov.

1. **State responsibility over local bridges:** Inspection and funding only.
2. **Criteria for selecting candidates for removal:** None.
3. **Inventory of priority low-volume bridges:** No.
4. **Methods for removing bridges from NBI:** Planning to not correct their deficiency.
5. **Funding or incentives for bridge removal:** No.
6. **Role of local agencies:** None.
7. **Tools for political aspects:** None.

North Dakota

Contact: Gary Doerr, North Dakota Department of Transportation, 701-328-4844, GLDoerr@nd.gov.

1. **State responsibility over local bridges:** NDDOT inspects all local bridges. Our inspectors have the ability/power to recommend closure of any structure deemed unsafe. The Local Government Division works with local agencies to program repair/replacement projects. If a structure is not programmed within 5 years of closure, we (along with the Local Government Division) contact the owner and recommend removal from inventory.
2. **Criteria for selecting candidates for removal:** 5 years of closure is normally the criteria.
3. **Inventory of priority low-volume bridges:** No.
4. **Methods for removing bridges from NBI:** Local Government and Bridge Divisions will send letters to the owners recommending that the bridge be removed from the NBI if no activity to repair, replace, or program within 5 years of closure.
5. **Funding or incentives for bridge removal:** No special funding.
6. **Role of local agencies:** Many times local agencies replace low volume bridges with local money using non-NBIS [National Bridge Inspection Standards] length culverts or low water crossings. Other times NDDOT must suggest removal from inventory to create some action from the local agency.
7. **Tools for political aspects:** The only tool would be the financial incentive to not have a bridge continually inspected even though it is closed to traffic.

Oklahoma

Contact: Steven Jacobi, Bridge Engineer, Bridge Division, Oklahoma Department of Transportation, 405-521-2606, SJacobi@odot.org.

1. **State responsibility over local bridges:** Off-system bridges are owned and maintained by the counties and municipalities. ODOT provides design standards for construction of new bridges and oversees all required inspections.
2. **Criteria for selecting candidates for removal:** No.

3. **Inventory of priority low-volume bridges:** No.
4. **Methods for removing bridges from NBI:** This is the decision of the individual owners.
5. **Funding or incentives for bridge removal:** No.
6. **Role of local agencies:** Local public agencies are entirely responsible for decisions regarding removal.
7. **Tools for political aspects:** No.

Pennsylvania

Contact: Katherine Schopman, Senior Civil Engineer, Bridge Design and Technology Division, Pennsylvania Department of Transportation, 717-214-8916, KSchopman@pa.gov.

1. **State responsibility over local bridges:** The responsibility is based on the funding source. If local owners use 100% local funds, we have no responsibility or oversight. A study can be conducted by the local owner, county, or planning partner to evaluate if a structure is operationally redundant or not. Once this is completed, the PennDOT district, localities and planning partners must agree with the findings.
2. **Criteria for selecting candidates for removal:** Yes. Publication 10X Design Manual Part 1 describes these criteria in Appendix AD—Study Process to Evaluate Bridge Closure and Removal. http://www.dot.state.pa.us/public/PubsForms/Publications/PUB_10/Pub10X_Cover.pdf.
3. **Inventory of priority low-volume bridges:** Not on a state-wide level, although individual districts or local agencies may have these lists.
4. **Methods for removing bridges from NBI:** It depends on the structure being replaced. Smaller structures may be filled or replaced with non-NBI pipes, and larger structures may be removed and the road barricaded/cul de sac on each approach. The bridge is usually removed by a construction contract for bridge removal.
5. **Funding or incentives for bridge removal:** At PennDOT we do not offer any incentives to entice the local community to agree with the removal. We do participate in funding the construction contract for bridge removal. The removals may be “bundled” with a nearby state project for a reduced cost to the local owner. The removal also saves in biannual (if not more frequent) inspection costs.
6. **Role of local agencies:** Local agencies can initiate the bridge removal study or they can participate (if the study is initiated by the planning partners, DOT or another party). Whoever initiates the study has to do the majority of the work described in the criteria.
7. **Tools for political aspects:** No. After all studies and planning are done the removal still has to be presented to the elected officials, and a town meeting still needs to be conducted.

Rhode Island

Contact: Georgette Chahine, Supervising Civil Engineer, Rhode Island Department of Transportation, 401-222-2053, ext. 4022, Georgette.Chahine@dot.ri.gov.

1. **State responsibility over local bridges:** RIDOT conducts inspection activities of all local bridges and helps towns and cities funding their bridges’ repairs/replacement if needed, but

maintenance is the local agency's responsibility. The State may request the removal of local bridges, especially when it becomes a matter of safety.

2. **Criteria for selecting candidates for removal:** No.
3. **Inventory of priority low-volume bridges:** No.
4. **Methods for removing bridges from NBI:** N/A.
5. **Funding or incentives for bridge removal:** Yes, the State provides some assistance and funding when the bridges in question are unsafe and need to be removed.
6. **Role of local agencies:** Local agencies may request a removal of local bridges or switch the use of these bridges from vehicular to pedestrian bridges with some restriction. As noted earlier, the State may help funding those project[s] if the budget allows, but maintenance will be the town[s'] and cities' responsibility.
7. **Tools for political aspects:** No.

Texas

Contact: Tom Yarbrough, Bridge Division, Texas Department of Transportation, 512-416-2499, Tom.Yarbrough@txdot.gov.

1. **State responsibility over local bridges:** Responsible for inspections in accordance with NBIS.
2. **Criteria for selecting candidates for removal:** No, TxDOT has no program with removal of low-volume bridges as a goal.
3. **Inventory of priority low-volume bridges:** No.
4. **Methods for removing bridges from NBI:** TxDOT has no program with removal of low-volume bridges as a goal.
5. **Funding or incentives for bridge removal:** N/A.
6. **Role of local agencies:** N/A.
7. **Tools for political aspects:** N/A.

Utah

Contact: Carmen Swanwick, Chief Structural Engineer, Bridge Management, Utah Department of Transportation, 801-633-6216, CSwanwick@utah.gov.

1. **State responsibility over local bridges:** UDOT completes all bridge inspections for the state (state and locally owned). Every bridge 20 foot or greater is inspected per the CFR [Code of Federal Regulations]. UDOT does not remove bridges from inspection on local roads.
2. **Criteria for selecting candidates for removal:** No.
3. **Inventory of priority low-volume bridges:** No.
4. **Methods for removing bridges from NBI:** N/A.
5. **Funding or incentives for bridge removal:** No.
6. **Role of local agencies:** Described above.

7. **Tools for political aspects:** No.

West Virginia

Contact: Billy Varney, Asset Management Program Engineer, West Virginia Department of Transportation, 304-558-9490, William.H.Varney@wv.gov.

1. **State responsibility over local bridges:** We control almost all of the bridges in the state.
2. **Criteria for selecting candidates for removal:** If they are less than 20 feet they would not be included in the NBI.
3. **Inventory of priority low-volume bridges:** No.
4. **Methods for removing bridges from NBI:** If a bridge that needs to be closed has a feasible detour then we would not replace the bridge.
5. **Funding or incentives for bridge removal:** No.
6. **Role of local agencies:** The state DOT takes care of 99% of the bridges in West Virginia so we have little input from local agencies.
7. **Tools for political aspects:** No.