

# Minnesota Department of Transportation (Mn/DOT)

## Historic Bridge Management Plan

Bridge Number: 3355

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### Executive Summary

Bridge 3355 was built in 1921 to carry vehicular traffic over White Fish Creek on an early trunk highway around Lake Mille Lacs in Kathio Township, Mille Lacs County. The overall structure length is 20 feet. In 1939 the original 21.5-foot-wide, reinforced-concrete, standard plan, slab span was widened to 72 feet during an extensive improvement of TH 169. The 1939 plans, prepared by the National Park Service for the Minnesota Highway Department, included stone headwalls and sidewalks in an Art Deco style.

Overall, the concrete elements of the bridge are in fair condition. The granite stone masonry has mortar joints in poor condition and localized deterioration at the lintels. The bridge has a generous roadway width of 60 feet and a low inventory load rating of HS12. It has not been load posted due to a Physical Inspection Rating performed in 1975. At that time, the bridge showed no signs of distress while carrying legal loads.

The recommended future use of the bridge is rehabilitation for continued vehicular use on-site. The bridge should be rehabilitated based on the Secretary of the Interior's Standards for Rehabilitation (Standards) [36 CFR Part 67] and Guidelines for Bridge Maintenance and Rehabilitation Based on the Secretary of the Interior's Standards (Guidelines).

Until the Federal Highway Administration (FHWA), State Historic Preservation Office (SHPO) and Minnesota Department of Transportation (Mn/DOT) have signed a historic bridge Programmatic Agreement, all proposed work on this bridge (including maintenance, preservation and stabilization activities) needs to be sent to the Mn/DOT Cultural Resources Unit (CRU) for formal review.

Due to concerns for archaeological sites, Mn/DOT CRU will consult with the Mille Lacs THPO regarding any proposed work on Bridge 3355.



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### I - Project Introduction

**Bridge Number: 3355**

The Minnesota Department of Transportation (Mn/DOT), in cooperation with the Minnesota State Historic Preservation Office (SHPO) and Federal Highway Administration (FHWA), has committed to preserve selected historic bridges in Minnesota that are owned by the state and managed by Mn/DOT. In consultation with SHPO and FHWA, Mn/DOT selected 24 bridges as candidates for long-term preservation. Mn/DOT's objective was to preserve the structural and historic integrity and serviceability of these bridges following the Secretary of the Interior's Standards for the Treatment of Historic Properties (Standards) [36 CFR Part 68], and their adaptation for historic bridges by the Virginia Transportation Research Council as Guidelines for Bridge Maintenance and Rehabilitation Based on the Secretary of the Interior's Standards (Guidelines). The character-defining features of each bridge received special attention. Mn/DOT also hopes to encourage other owners of historic bridges to follow its model for preservation.

The Glossary in the Appendix explains historic preservation terms used in this plan, such as historic integrity and character-defining features, and engineering terms, such as serviceability and deficiency.

Mn/DOT's ongoing efforts to manage historic bridges are intended to comply with Section 106 of the National Historic Preservation Act of 1966, as amended, and Section 4(f) of the U.S. Department of Transportation Act of 1966. This effort began with Robert M. Frame's 1985 study and list of significant and endangered bridges in Minnesota and incorporates Jeffrey A. Hess's 1995 survey and inventory of historic bridges in Minnesota that were built before 1956. That inventory identified the subject bridge as eligible for listing in the National Register of Historic Places. Using the results of the 1995 study, Mn/DOT selected individual historic bridges for long-term preservation.

To achieve its preservation objectives, Mn/DOT retained the consultant team of Mead & Hunt and HNTB to develop management plans for 22 of the 24 selected bridges. The remaining two bridges have been addressed through separate projects.

Mn/DOT requested that the team consider a full range of options for each bridge and present the option that the team judged to be best for long-term preservation with due consideration given to transportation needs and reasonable costs. For example, if two options are explored that both result in an equivalent level of preservation for the bridge (e.g., retention of historically significant features and projected life span), but one option costs significantly more than the other, the less costly option will be recommended. In cases where one option results in a significantly better level of preservation than any other reasonable options but costs more, it will be the recommended action.

Preservation objectives call for conservation of as much of the existing historic fabric of the bridge as possible. However, safety, performance and practical considerations may have dictated replacement of historic fabric, especially of a minor feature, if such action improved the overall life expectancy of a bridge.

Options that were considered for the 22 historic bridges, listed from most to least preferred, are:

1. Rehabilitation for continued vehicular use on-site
2. Rehabilitation for less-demanding use on-site, such as one-way vehicular or pedestrian/bicycle traffic
3. Relocation and rehabilitation for less-demanding use
4. Closure and stabilization following construction of bypass structure
5. Partial reconstruction while preserving substantial historic fabric

A recommended option was selected for each bridge through consultation among the consultant team, Mn/DOT and SHPO. Within the recommended option, the plan identifies stabilization, preservation and maintenance activities. Stabilization activities address immediate needs in order to maintain a bridge's structural and historic integrity and serviceability. Preservation activities are near-term or long-term steps that need to be taken to maintain a bridge's structural and historic integrity and serviceability for the foreseeable future. Preservation activities may include rehabilitation and replacement of components, as

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needed, and remedial activities to address a deficiency. Maintenance activities, along with regular structural inspections and anticipated bridge component replacement activities, are routine practices directed toward continued serviceability. Mn/DOT is responsible for final decisions concerning activities recommended in the plan.

Recommendations are intended to be consistent with the Standards. The Standards are ten basic principles created to help preserve the distinctive character of a historic property and its site, while allowing for reasonable change to meet new needs. They recommend repairing, rather than replacing, deteriorated features when possible. The Standards were developed to apply to historic properties of all periods, styles, types, materials, and sizes. They also encompass the property's site and environment as well as attached, adjacent, or related new construction.

Because the Standards cannot be easily applied to historic bridges, the Virginia Transportation Research Council prepared Guidelines, which adapted the Standards to address the special requirements of historic bridges. The Guidelines, published in the Council's 2001 Final Report: A Management Plan for Historic Bridges in Virginia, provide useful direction for undertaking historic bridge preservation and are included in the Appendix to this plan.

The individual bridge management plan draws from several existing data sources including: PONTIS, a bridge management system used by the Mn/DOT Bridge Office to manage its inventory of bridges statewide; the current Mn/DOT Structure Inventory Report and Mn/DOT Bridge Inspection Report for each bridge (the complete reports are included in the Appendix); database and inventory forms resulting from the 1995 statewide historic bridge inventory; past maintenance reports (if available, copy included in the Appendix); and other information provided by Mn/DOT. Because PONTIS uses System International (metric) units, data extracted from PONTIS are displayed in metric units.

The plan is based on information obtained from Mn/DOT in 2005, limited field examinations completed in 2005 for the purpose of making a qualitative assessment of the condition of the bridge, and current bridge design standards. Design exceptions are recommended where appropriate based on safety and traffic volume. The condition of a bridge and applicable design standards may change prior to plan implementation.

This plan includes a maintenance implementation summary at the end. This summary can be provided as a separate, stand-alone document for use by maintenance staff responsible for the bridge.

The plan for this individual bridge is part of a comprehensive effort led by Mn/DOT to manage the statewide population of historic bridges. The products of this management effort include:

1. Minnesota Historic Bridge Management Plan
2. Individual management plans for 22 bridges
3. National Register of Historic Places (NRHP) nomination forms for 2 bridges
4. Minnesota Historical Property Record (MHPR) documentation for 46 bridges

The first product, the Minnesota Historic Bridge Management Plan, is a general statewide management plan for historic bridges in Minnesota that are owned by the state, local governments or private parties. It is intended to be a single-source planning tool that will help bridge owners make management and preservation decisions relating to historic bridges. Approximately 240 historic bridges owned by parties other than Mn/DOT survive in the state as of 2005. Mn/DOT is developing this product to encourage owners of historic bridges to commit to their long-term preservation and offer guidance.

This individual plan represents the second product. The third and fourth products will be prepared as stand-alone documents.



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## Historic Bridge Management Plan

### II - Bridge Data

Bridge Number: 3355

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Date of Construction	1939
SHPO Inventory Number	ML-KAN-005
Common Name (if any)	Whitefish Creek Bridge

#### Location

Feature Carried:	US 169
Feature Crossed:	White Fish Creek
Descriptive Location:	2.2 Miles South of County Line
UTM Zone: 15	NAD: 1927
Easting: 438870	Northing: 5118070
USGS Quad Name:	Vineland
Town or City:	Kathio Township
County:	Mille Lacs

#### Structure Data

Main Span Type:	101	Concrete Slab	Total Length: 20
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#### Descriptive Information (or narrative as available)

Superstructure:	single-span concrete slab
Substructure:	concrete and masonry abutments
Floor/Deck:	bituminous-covered concrete deck
Other Features:	Granite railings

#### Narrative:

The granite used to construct the bridge was probably obtained from a quarry near Isle, a community located on the southeastern shore of Mille Lacs Lake. The Isle-Warman Creek granite region contains outcroppings of red, gray, and black granite that were quarried by various companies. The Cold Spring Granite Company, for example, operated a quarry about five miles south of Isle as early as 1935. Light gray granite from the site was called Isle Granite and was marketed under the name of Cold Spring Pearl White granite.

Roadway Function:	Mainline
Ownership:	State
Custodian/Maint. Agency:	State

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### III - Historical Data

Bridge Number: 3355

**Contractor** Civilian Conservation Corps

**Designer/Engineer** National Park Service

#### Significance Statement

Overlooking Mille Lacs Lake, Bridge No. 3355 carries Minnesota Trunk Highway 169 across White Fish Creek. The bridge originally was built in 1921, as a 16-foot, concrete-slab span with a 20-foot-wide roadway between solid-parapet concrete railings. In 1939, the bridge was widened on each side to accommodate a 60-foot-wide roadway with two granite sidewalks. The new deck portions were conventional concrete-slab work, and the abutment extensions, railings and headwalls were concrete. The exposed concrete surfaces were faced with random ashlar granite except the wall areas intended to be below grade, which were faced with round lake stones. Plans for Bridge No. 3355, prepared by the National Park Service in 1938, are on file with the Minnesota Department of Transportation (MNDOT). These drawings indicate that the bridge has not been significantly altered since its remodeling in 1939.

In 1938, The National Park Service completed drawings for remodeling Bridge No. 3355, a concrete-slab structure originally built in 1921 according to a standard plan prepared by the Minnesota Highway Department. The work on Bridge No. 3355 was part of a general improvement of Trunk Highway 169 along Mille Lacs Lake, which included an extensive roadside-beautification and wayside-development component built during 1935-1940, in the vicinity of Garrison, by the Civilian Conservation Corps (CCC). In its original design, Bridge No. 3355 was a 16-foot, concrete-slab span with a 20-foot-wide roadway between solid-parapet concrete railings. The remodeling, completed in 1939, widened the bridge's abutments and slab on each side to accommodate a 60-foot-wide roadway with two sidewalks. In keeping with the New Deal's labor-intensive, work-relief aesthetic, the CCC adorned Bridge No. 3355 with meticulous stonework, covering its new abutment extensions, railings, and retaining walls with rockfaced, random-coursed granite.

As one of Minnesota's rare examples of an ornamental concrete-slab bridge, Bridge No. 3355 is eligible for the National Register for its design under Criterion C, within the historic context of "Reinforced-Concrete Highway Bridges in Minnesota, 1900-1945." The Multiple Property Documentation Form associated with this context states, in Registration Criterion 5, that a concrete highway bridge may be eligible under Criterion C if it displays notable aesthetics. With its elaborate, well-executed, ornamental stonework, Bridge No. 3355 fulfills this criterion.

Bridge No. 3355 is also eligible under Criterion A for its association with the CCC's Mille Lacs Lake wayside beautification project, within the historic contexts of "Federal Relief Construction in Minnesota, 1933-1941" and "Roadside Development on Minnesota Trunk Highways, 1920-1960."

The following is excerpted from the Mn/DOT Historic Roadside Development, Structures Inventory form:

The Whitefish Creek Bridge (Bridge 3355) was constructed in 1939 by the Civilian Conservation Corps (CCC) working in cooperation with the Minnesota Department of Highways and the National Park Service. The bridge was built by the enrollees of a CCC camp that was established in 1935 on the southern edge of Garrison. The camp was sponsored by the Department of Highways, supervised by the National Park Service, and operated by the U.S. Army.

Bridge 3355 was designed to incorporate a small, pre-existing concrete slab bridge that was built in 1921. The expansion of Bridge 3355 allowed for a 60'-wide roadway and two sidewalks. The bridge had been completed by November of 1939, according to a dated historic photo. T.H. 169 over Whitefish Creek was

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widened as part of a large T.H. 169 and T.H. 18 improvement project directed by the highway department's Mille Lacs Lake Highway Development Plan.

The bridge plans were signed in January of 1939. A "General Note" on the plans describes the work: "The existing reinforced concrete bridge which was constructed by the Minnesota Highway Department is to be extended on both sides because of the change in the present highway to two lanes with island. The extensions to match up with the present structure . . ." The bridge plan is signed by four officials from the Department of Highways -- Harold E. Olson (Engineer of Roadside Development), A. R. Nichols (Consulting Landscape Architect), A. W. Moulster (District Engineer) and O. L. Kipp (Construction Engineer) -- and three officials representing the National Park Service -- Agge Thompson (CCC Camp Superintendent who signed under "Checked by"), Harold W. Lathrop (Minnesota Department of Conservation Park Authority), and Ed Lasey (Inspector).

The bridge plan includes the statements "Designed by H. O. Skooglun" and "Drawn by H. O. Skooglun." Skooglun apparently worked within the National Park Service's Minnesota Central Design Office in St. Paul, under the supervision of Edward W. Barber who was chief architect and major designer for the Park Service. Skooglun also designed the Garrison Pedestrian Underpass (Bridge 5265), the Garrison Creek Culvert (Bridge 5266), the T.H. 169 Culvert at St. Alban's Bay, and the Kenney Lake Overlook -- all a few miles from Whitefish Creek (all are included in this inventory). Also participating in the design of the project was Arthur R. Nichols who was Consulting Landscape Architect for the Minnesota Department of Highways in the 1930s. Nichols participated in the design of all of the CCC-built roadside development improvements near Garrison.

The Mille Lacs Lake Highway Development Plan and the Garrison CCC Camp

The Whitefish Creek Bridge was built as part of the Mille Lacs Lake Highway Development Plan (also known as the Mille Lacs Lake SP-15 project). Operating between September of 1935 and March of 1940, this project improved many miles of T.H. 169 and T.H. 18 west and north of Mille Lacs to facilitate increased recreational and commercial travel. It was the most extensive roadside development project undertaken by the CCC in the state.

The bridge and other components of the project were planned by the Minnesota Department of Highways and the National Park Service, and were built with CCC labor from the Mille Lacs Lake Highway Wayside CCC Camp (Camp SP-15) that was located on the western side of T.H. 169 on the southern edge of Garrison. The first portions of the plan to be developed were a 4-mile section of T.H. 18 northwest of Garrison, a 5.5-mile section of T.H. 169 north of Garrison, and a 7-mile section of T.H. 169 south of Garrison. A construction plan noted: "Ultimate development of the parkway and connecting waysides is to continue around the entire lake, a distance of approximately 90 miles." The project was never completed to the extent planned. However, between 1936 and 1939, the highway department and the CCC constructed at least seven known standing structure projects in the Garrison area, all of which are extant and are included in this study. They are the following:

Garrison Concourse  
Garrison Creek Culvert (Bridge 5266)  
Garrison Pedestrian Underpass (Bridge 5265)  
Garrison Rest Area  
Kenney Lake Overlook  
T.H. 169 Culvert at St. Alban's Bay

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Whitefish Creek Bridge (Bridge 3355)

Historian Rolf Anderson writes:

The principal design work for the Mille Lacs Lake Highway Wayside projects was executed in the [National Park Service's] Minnesota Central Design Office in St. Paul, which was actually a branch office of the National Park Service Regional Office in Omaha. . . . Principal figures included Edward W. Barber, the chief architect and major designer, V. C. Martin, who designed the Kitchen Shelter [at the Garrison Rest Area], Oscar Newstrom, and N. H. Averill who completed many of the master plans and landscape designs. . . . Park Service engineers and landscape architects had experimented with a variety of styles and eventually concluded that buildings constructed with native materials and designed to harmonize with their natural settings were most appropriate (Anderson, "Mille Lacs Lake Kitchen Shelter" 1990:8-5).

The 1938 ~Annual Report~ of the highway department's Roadside Development Division summarized work completed that year in the Mille Lacs Lake area:

The construction work on a large masonry concourse overlooking Mille Lacs Lake was begun in 1936 and continued through 1937 and 1938. In addition, some major changes in alignment and design of the roadway have been made, together with the construction of several large drainage structures which were provided with rustic stone headwalls [see Garrison Creek Culvert, Whitefish Creek Bridge, T.H. 169 Culvert at St. Alban's Bay, and Garrison Pedestrian Underpass (Bridge 5265)]. Grading operations are now in progress, extending from Garrison to 1 1/2 miles south and consist of a divided roadway of two 30 foot lanes with an island of 6 to 90 feet between (~Annual Report~ 1938:19).

CCC Camp SP-15, also known as the Mille Lacs Highway Wayside Camp, was located on the western side of T.H. 169 on the southern edge of Garrison. The camp was established in September of 1935 and was one of four CCC camps in Minnesota that were sponsored by the Department of Highways. Camp superintendent was Agge Thompson. The camp's 200 enrollees worked primarily on the Mille Lacs Lake Highway Development Project. Work on the Project ended when the men of CCC Camp SP-15 were transferred on March 31, 1940, to the St. Croix Recreational Demonstration Area (now St. Croix State Park).

The Garrison CCC Camp was one of four CCC camps in the state that were sponsored by the Minnesota Department of Highways. (Most of the state's other CCC camps were sponsored by agencies such as the Department of Conservation's State Parks Division, the U.S. Forest Service, and the Soil Conservation Service.) The first of the four highway department camps was the Spruce Creek Camp that was established on the Cascade River on the North Shore in 1934. The other three highway department CCC camps were established in 1935.

The four CCC camps sponsored by the Minnesota Department of Highways were the following:

- Lakeshore (Camp SP-19), located near Knife River on the North Shore
- Leech Lake (Camp SP-16), located near Whipholt on Leech Lake
- Mille Lacs Lake (Camp SP-15), located at Garrison on Mille Lacs Lake
- Spruce Creek (Camp SP-13), located near Cascade River on the North Shore

The four camps were established specifically for highway improvements and were supervised by the National Park Service. Each camp had approximately 200 enrollees who worked on roadside landscaping

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and erosion control, and constructed wayside rests, bridges, culverts, and similar highway structures. Rolf Anderson calls Mille Lacs the "largest and most extensive of these [highway CCC camps]" (Anderson, "Garrison Concourse" 1990:8-3).

Nine sites constructed by these camps are included in this Historic Roadside Development Structures Inventory (see individual inventory forms):

Built by the Spruce Creek Camp  
Cascade River Overlook (includes Bridge 5132)  
Spruce Creek Culvert (Bridge 8292)

Built by the Mille Lacs Lake Camp  
Garrison Concourse  
Garrison Creek Culvert (Bridge 5266)  
Garrison Pedestrian Underpass (Bridge 5265)  
Garrison Rest Area  
Kenney Lake Overlook  
T.H. 169 Culvert at St. Alban's Bay  
Whitefish Creek Bridge (Bridge 3355)

No properties built by the Lakeshore or Leech Lake CCC camps are included in this study. (One of the principal accomplishments of the Lakeshore Camp is the elaborate Knife River Historical Marker on old Highway 61 several miles northeast of Duluth. The site is intact but in fragile condition. It is no longer on right-of-way and is now within the jurisdiction of St. Louis County Highway Department. No standing structures built by the Leech Lake CCC Camp, which operated for only six months, are known to be extant.)

#### STATEMENT OF SIGNIFICANCE

The Whitefish Creek Bridge (Bridge 3355), built in 1939 by the CCC, is one of seven bridges recorded in this inventory that are faced with stone. It is one of 14 sites in the inventory known, or suspected, to have been built by the CCC. The bridge is one of five sites in the study that were designed by H. O. Skooglund of the National Park Service (NPS), and one of eight sites in the study that were designed by NPS designers (in collaboration with A. R. Nichols).

This property has been evaluated within the historic context "Roadside Development on Minnesota Trunk Highways, 1920-1960." It is recommended that the Whitefish Creek Bridge is ELIGIBLE for the National Register under this historic context because it meets the following registration requirements:

Significant to the History of Roadside Development. The Whitefish Creek Bridge is one of nine properties in this inventory that were built by the four CCC camps in Minnesota that were sponsored by the MHD. (All four camps were dedicated to roadside development.) The MHD-sponsored CCC camps improved many miles of trunk highway, as well as constructing 9 of the 68 Depression-era properties in this inventory. These numerous New Deal-era sites represent the MHD's first large-scale effort to construct roadside development facilities in the state. Whitefish Creek is an excellent example of the distinctive and well-constructed public facilities, built by the MHD in partnership with federal relief agencies, that met the objectives of roadside development while providing essential work and job training to the nation's unemployed during the Depression. (National Register Criterion A.)

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Furthermore, the bridge is significant as one of seven sites that were built near Garrison by the CCC as part of the Mille Lacs Lake Highway Development Project. This 4 1/2-year-long roadside development project improved and developed T.H. 169 and T.H. 18 near Garrison for recreational purposes. It was the most extensive roadside development project undertaken by the CCC in the state. The seven properties near Garrison (four of which are bridges) are rare in the state for their variety, design quality, degree of integrity, and close geographic proximity. The properties are testimony to the success of the partnership between the MHD, the National Park Service, and the CCC. This collaboration produced functional, long-lasting, and aesthetically-superior roadside amenities that continue to enhance the experience of the traveling public today. (National Register Criterion A.)

Design Significance. The Whitefish Creek Bridge is an excellent example of the application of the "National Park Service Rustic Style" to small highway bridge. It has stonework of excellent quality. The site displays the special labor-intensive construction techniques and distinctive use of indigenous materials that characterize both the Rustic style and federal relief construction in Minnesota. (National Register Criterion C.)

#### Historic Context

Reinforced-Concrete Highway Bridges in Minnesota  
Federal Relief Construction in Minnesota, 1933-1941  
Roadside Development on Minnesota Trunk Highways, 1920-1960

#### National Register Criteria

A, C

#### References

Minnesota Department of Transportation Bridge Database; Bridge No. 3355 File, in Minnesota Department of Transportation, Waters Edge Building, St. Paul; Bridge No. 3355 File, in Minnesota Department of Transportation Records Storage Center, St. Paul; Bridge No. 3355 File (plans), in Minnesota Department of Transportation District 3 Office, Brainerd, Minnesota; Rolf T. Anderson, Draft National Register of Historic Places Nomination Form for Mille Lacs Lake Kitchen Shelter, 9 October 1990, in State Historic Preservation Office (SHPO), Minnesota Historical Society, St. Paul; Robert M. Frame, "Reinforced-Concrete Highway Bridges in Minnesota," National Register of Historic Places Multiple Property Documentation Form, Sec. F, 8, in SHPO; field inspection by Chad Perkins, 20 September 1996; "Historic Roadside Development Structures on Minnesota Trunk Highways," prepared for Minnesota Department of Transportation by Gemini Research (Susan Granger, Scott Kelly, Kay Grossman), December 1998.



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#### Character-Defining Features

Character-defining features are prominent or distinctive aspects, qualities, or characteristics of a historic property that contribute significantly to its physical character. Features may include materials, engineering design, and structural and decorative details.



Feature 1. Architectural design and treatment. The 1939 headwalls and railings faced with granite present an unusual combination of Art Deco form with a rustic, stone-masonry surface treatment. The 1939 design was prepared by the National Park Service for the Minnesota Highway Department as part of a roadside and wayside beautification program. The work was completed by the Civilian Conservation Corps as part of the work relief programs of the New Deal. This feature includes the two granite sidewalks.

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### IV - Engineering Data

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Inspection Date	2/23/2005	<i>(Inspection and inventory data in this section was provided for this project by Mn/DOT in May 2005)</i>
Sufficiency Rating [1]	68	
Operating Rating [1,2]	16.33	
Inventory Rating [1,2]	10.88	

Posted Load [1]	0
Design Load [1]	1
Deficiency Rating Status [1]	

#### Condition Codes

Deck:	7
Superstructure:	7
Substructure:	7
Channel and Prot.:	7
Culvert:	N

#### Appraisal Ratings

Struct. Eval.:	4
Deck Geometry:	9
Underclearances:	N
Waterway Adequacy:	8
Appr. Alignment:	8

#### Smart Flag Data [1]

*(A check indicates data items are listed on the Bridge Inspection Report)*

Fracture Critical [1]	N
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#### Last Inspection Date

#### Waterway Data

Scour Code [1]:	The inventory database indicates that Bridge 3355 has been screened and assigned an "I" code. An "I" code indicates a low risk for failure due to scour.
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#### Roadway Data

ADT Total:	10200
Truck ADT Percentage:	4
Bypass Detour Length [2]:	59.5441

#### Roadway Clearances

Roadway Width [2]:	18.288
Vert. Clearance Over Rdwy [2]:	99.99
Vert. Clearance Under Rdwy [2]:	
Lat. Under Clearance Right [2]:	0
Lat. Under Clearance Left [2]:	0

#### Geometry Characteristics

Skew:	0
Structure Flared:	0

[1] These items are defined in the glossary in Appendix A. [2] These items are provided in metric units.

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#### Roadway Characteristics

Lane Widths: 12'

Number of Lanes: 2

#### Shoulders

Width: 10' (E), 6' (W)

Paved or Unpaved: Paved (E), Unpaved (W)

Comments: None

#### Guardrail

Length: NW 154', all ends

Comments: None

Vertical Curves: N/A

Horizontal Curves: 200' off of north end – curve to the east

Sight distance: 500' S (across bay 0.75 miles), 1,000' N

#### Other information:

Development plans for this section of roadway prepared by Doug Larson

#### Floodplain Data

A detailed Flood Insurance Study (FIS) has not been performed at or near this location. The District was contacted to obtain additional information. They did not have any record of the bridge deck being overtopped at this location. Based on this evidence, Bridge 3355 is not expected to inundate with a Q100 flood event.

#### Accident Data

The Mn/DOT Accident Database reports 36 accidents associated with this bridge for the 15-year period of 1990-2004 including:

16 – Property Damage – No Apparent Injury accidents

11 – Injury – Possible Injury accidents

4 – Injury – Non-Incapacitating Injury accidents

2 – Injury – Incapacitating Injury accidents

3 – Fatal accidents

#### Location of Plans

Bridge Office

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### V - Existing Conditions / Recommendations

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#### Existing Conditions

Available information was reviewed prior to assessing the options for preservation of Bridge 3355 and visiting the bridge site. This information is cited in the Project Introduction section of this plan. A site visit was conducted to qualitatively establish the following:

1. General condition of structural members
2. Conformation to available extant plans
3. Roadway geometry and alignment
4. Bridge geometry and clearances

#### Serviceability Observations:

When computed analytically, Bridge 3355 has marginal load capacity (HS12 Inventory, HS18 Operating). Based on an initial Physical Inspection Rating conducted in 1975, the bridge was determined to be functioning properly with legal loads and not showing signs of distress. The Physical Inspection Rating form contains the following statement:

“The physical inspection of this structure indicates that a load posting restriction will not be required since the structure shows no signs of distress from carrying normal traffic. The structure will be inspected for signs of distress at intervals not to exceed 6 months until such time as it is strengthened or replaced.”

The roadway width between masonry sidewalks is generous at 60 feet. In addition to two through traffic lanes, a turn lane for southbound TH 169 traffic to County Road 25 is provided on the bridge. Currently, the guardrails tie in to the stone masonry at each corner of the bridge. The bridge railing is of stone masonry construction and is believed to be unreinforced (1939 drawings are difficult to read). In addition to uncertain strength characteristics, the railing contains blunt projecting surfaces that are potential snag points for vehicles. The original slab in the middle of the current bridge has a lower soffit elevation than the 1939 slab addition on the upstream side of the bridge, restricting the hydraulic opening inside the bridge and causing debris to lodge part way under the bridge. Silt and vegetation are partially blocking the channel on the upstream side of the bridge.

#### Structural Condition Observations:

The slabs appear in relatively good condition. Each abutment contains one or two vertical cracks in the vicinity of the west construction joint.

The granite blocks appear in good condition. One odd-colored stone has been installed on the outside face (west side) of the south end of the west railing. The masonry has deteriorated and is missing mortar. In several locations, vegetation is growing in the mortar joints.

No evidence of significant settlement was noted during the site visit. The edges of the slab contain embedded longitudinal steel “I” section, which serves as a lintel to support the railing. The web of the section is filled with granite stonework and labeled as the “Granite Arch” on one of the 1939 plan sheets. Lintel elements and soffits on both sides of the bridge are deteriorated.

#### Non-Structural Observations:

The bituminous pavement contains transverse cracks at both ends of the bridge. The embankment at the southeast corner of the bridge has eroded away, exposing round rock masonry and undermining the

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### V - Existing Conditions / Recommendations

Bridge Number: 3355

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corner of the wingwall. A concrete topping has been installed on the top of the masonry railing to function as a capstone. The east sidewalk is substantially covered with sand and vegetation. Both sidewalks have vegetation growing in the joints and at the interface with the railings.

#### Date of Site Visit

August 17, 2005

# Minnesota Department of Transportation (Mn/DOT)

## Historic Bridge Management Plan

### V - Existing Conditions / Recommendations

Bridge Number: 3355



Figure 1. A view looking south from the west shoulder. A turn lane to access Mille Lacs County Road 25 is provided on the bridge.



Figure 2. Looking south along the west sidewalk and railing. A considerable amount of vegetation is growing on the shoulder and in the masonry joints. Concrete has been placed on top of the railing to function as a capstone. 1939 railing contains significant snag points and blunt impact surfaces.



Figure 3. Typical mortar joint condition on the inside face of the east railing. (Missing mortar, deep cavities, and vegetation growing in joints).



Figure 4. Vegetation and silt deposits are partially blocking the hydraulic opening on the upstream side of the bridge.



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Figure 5. Cut granite and rock masonry evident at the SE corner of the bridge. Missing mortar and vegetation growing in the joints.



Figure 6. Cracks in the abutment breastwall on the north abutment near the west construction joint.



Figure 7. Cracks in the south abutment breastwall near the west construction joint. The upstream side of the wall is to the right in this photo. The lower original slab functions as a hydraulic constraint inside the bridge.



Figure 8. Soffit deterioration at the south end of the west lintel.

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## Historic Bridge Management Plan

### V - Existing Conditions / Recommendations

Bridge Number: 3355

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#### Overall Recommendations

With a goal of keeping Bridge 3355 in continued use at the existing location for a period of roughly 20 years, its uncertain load capacity and safety issues must be addressed. The unreinforced stone masonry railings with multiple snag points present a safety concern. It is recommended that a new slab span (with HS25 capacity) be constructed over the existing bridge. It should be detailed with low-profile, crash-tested, safety barriers at the edges of the slab. The barriers would be located just inside of the existing masonry sidewalks. This would permit the relocation of the guardrail from the stone masonry corners of the bridge to the ends of the new railing. With consideration of these factors, the recommended future use is rehabilitation for continued vehicular use on-site.

Rehabilitation for less-demanding use on-site and relocation were also considered. Due to site constraints, it is economically impractical to build a parallel structure with approach roadways on either side of the existing bridge. Conversion of the bridge to one-way traffic would not solve the load capacity issue. Relocation is impractical. An ordinary slab span is difficult to relocate due to its size and weight. The unusually large width of this structure and the character-defining stone masonry railings magnify the difficulty of relocating this bridge.

#### Recommended Future Use:

Rehabilitation for continued vehicular use on-site, in consultation with SHPO and the Mn/DOT CRU.

Due to concerns for archaeological sites, Mn/DOT CRU will consult with the Mille Lacs THPO regarding any proposed work on Bridge 3355.

#### Recommended Stabilization Activities:

1. Remove debris and vegetation from the masonry sidewalks, railings, and wingwalls on both sides of the bridge.
2. Remove silt and vegetation that is partially blocking the hydraulic channel on the upstream side of the bridge.
3. Seal the joints between the sidewalks and the railings and wingwalls.
4. Seal the transverse cracks in the roadway pavement.
5. Restore the embankment at the southeast corner of the bridge to its original elevation.

#### Recommended Preservation Activities:

1. Conduct an inspection of all concrete and masonry elements noting deteriorated elements.
2. Conduct a mortar analysis. The mortar should be analyzed by means consistent with the intent of the National Park Service's Preservation Brief 2, Repointing Mortar Joints in Historic Masonry Buildings, for purposes of specifying the mortar mix to be used for repointing. The fundamental goals of the mortar analysis should be to: a) match the historic mortar in color, texture, and tooling; b) match the repointing mortar sand with the historic mortar to the extent possible; c) specify a repointing mortar of greater vapor permeability and less compressive strength than the stone masonry; and d) specify a repointing mortar as vapor permeable and with the same, or less, compressive strength as the historic mortar. Require repointing mortar to be consistent with the findings of the mortar analysis.
3. Conduct a chloride sampling program for the portions of the existing concrete slab and abutments

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located within 15 feet of the headwall on each side of the bridge. Consider electrochemical chloride extraction for retained regions with chloride contamination exceeding 75% of the corrosion threshold.

4. Conduct a field survey and pavement coring program to determine approach roadway geometrics and top of slab elevations.
5. Construct a new slab superstructure spanning the original slab structure with new abutments and approach panels. To ensure the longevity of the historic slab, the new slab should function independently of the old and not transfer dead loads or vehicular loads. This solution retains the historic fabric of existing concrete slabs.
6. Contingent upon the findings of the masonry and concrete inspections, repair the masonry railings and wingwalls. Reconstruct the lintel elements at both edges of the existing slab. While performing masonry repairs and reconstruction tasks, utilize a mortar with the properties recommended in the mortar analysis.
7. Construct new safety barriers integral with the slab and approach panels. The barriers should satisfy current FHWA requirements and be as low profile as possible to minimize obscuring the character-defining railing.
8. Seal cracks in the existing abutments.
9. Install a drainage system behind the new abutments
10. Restore the masonry sidewalks. Photograph, label, carefully remove, and temporarily store the existing stone from the sidewalks. Construct a new reinforced concrete sleeper slab on each side of the bridge to support the reconstructed sidewalks. Rebuild the masonry sidewalks on the sleeper slabs. Utilize a mortar consistent with that recommended in the mortar analysis.

#### Projected Inspections to Monitor Bridge Condition

##### Routine:

Conduct routine inspections on an annual basis. Implement the resulting recommended maintenance efforts within a 12-month period.

##### Special:

Conduct an in-depth, arm's length masonry and concrete inspection at 5-year intervals. Implement recommended maintenance or repair efforts within a 24-month period.

#### Recommended Maintenance Activities

1. Flush the deck, approach panels, railings, and wingwalls with water on an annual basis, preferably in the spring.
2. Repoint, or remove and re-set, stone masonry identified as deteriorated in the arm's length inspection. Repointing should be completed in a manner consistent with the National Park Service's Preservation Brief 2, Repointing Mortar Joints in Historic Masonry Buildings.
3. Clean stone masonry. Prior to rehabilitation efforts, test cleaning methods on a small area of the bridge. A simple water wash and scrubbing with natural bristle or synthetic bristle brush should be attempted first and used if found to be effective. If water washing and scrubbing is found to be ineffective, more aggressive means should be tested. Limit any pressure washing to pressures no

# Minnesota Department of Transportation (Mn/DOT)

## Historic Bridge Management Plan

### V - Existing Conditions / Recommendations

Bridge Number: 3355

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higher than 300 psi. Clean the entire exposed surface of the stone masonry, prior to repointing if possible, using the selected cleaning method. The cleaning should be accomplished in a manner consistent with the National Park Service's Preservation Brief 1, Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings. Extensively clean the stone masonry on a 30-year cycle.

# Minnesota Department of Transportation (Mn/DOT)

## Historic Bridge Management Plan

### VI - Projected Agency Costs

Bridge Number: 3355

#### Qualifier Statement

The opinions of probable costs provided below are in 2006 dollars. The costs were developed without benefit of preliminary plans and are based on the above identified tasks using engineering judgment and/or gross estimates of quantities and historic unit prices and are intended to provide a programming level of estimated costs. Refinement of the probable costs is recommended once preliminary plans have been developed. The estimated preservation costs include a 20% contingency and 5% mobilization allowance of the preservation activities, excluding soft costs (see Appendix D, Cost Detail, Item 5: Other). Actual costs may vary significantly from those opinions of cost provided herein.

For itemized activity listing and costs, see Appendix D.

#### Summarized Costs

Maintenance costs: \$5,000 annualized

Stabilization activities (not annualized)

Superstructure: \$0

Substructure: \$0

Railing: \$4,000

Deck: \$800

Other: \$11,000

Total: \$15,800

Preservation activities

Superstructure: \$91,000

Substructure: \$43,000

Railing: \$35,000

Deck: \$70,000

Other: \$188,000

Contingency: \$60,000

Total: \$487,000

#### Applicable Funding

The majority of funding for the rehabilitation and reuse of historic bridges in the state of Minnesota is available through federal funding programs. The legislation authorizing the various federal funding programs is the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

SAFETEA-LU programs include the Transportation Enhancement (TE) Fund, the Surface Transportation Program (STP), the Highway Bridge Replacement and Rehabilitation Program (HBRRP), National Highway System Funds, and the National Historic Covered-Bridge Preservation Program. A program not covered by SAFETEA-LU, the Save America's Treasures Program, is also available for rehabilitation and reuse of historic bridges that have national significance.

Other than the Save America's Treasures Program, the federal funds listed above are passed through Mn/DOT for purposes of funding eligible activities. While the criteria for determining eligible activities are determined largely by federal guidelines, Mn/DOT has more discretion in determining eligible activities under the TE fund.

The federal funding programs typically provide 80-percent federal funding and require a 20-percent state/local match. Typical eligible activities associated with these funds include replacement or rehabilitation of structurally deficient or functionally obsolete bridges for vehicular and, non-vehicular uses, painting, seismic retrofit, and preventive maintenance. If a historic bridge is relocated, the



# Minnesota Department of Transportation (Mn/DOT)

## Historic Bridge Management Plan

### VI - Projected Agency Costs

**Bridge Number: 3355**

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estimated cost of demolition can be applied to its rehabilitation at a new site. It should be noted that the federal funds available for non-vehicular uses are limited to this estimated cost of demolition. However, TE funds can be applied to bridge rehabilitation for non-vehicular use.

State or federal bridge bond funds are available for eligible rehabilitation or reconstruction work on any publicly owned bridge or culvert longer than 20 feet. State bridge bond funds are available for up to 100 percent of the "abutment to abutment" cost for bridges or culverts longer than 10 feet that meet eligibility criteria.

A more in-depth discussion regarding funding can be found in the Minnesota Historic Bridge Management Plan.

#### Special Funding Note

If traffic must be maintained at the current site during rehabilitation, additional costs associated with temporary structures, traffic control and phased construction would significantly increase total project costs. Because those costs would also be incurred with a replacement structure, they have not been included.



**Minnesota Department of Transportation (Mn/DOT)**

**Historic Bridge Management Plan**

**Appendices**

**Bridge Number: 3355**

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**Appendix A. Glossary of Preservation and Engineering Terms**

## Glossary

**Appraisal ratings** – Five National Bridge Inventory (NBI) inspection ratings (structural evaluation, deck geometry, under-clearances, waterway adequacy, and approach alignment, as defined below), collectively called appraisal ratings, are used to evaluate a bridge’s overall structural condition and load-carrying capacity. The evaluated bridge is compared with a new bridge built to current design standards. Ratings range from a low of 0 (closed bridge) to a high of 9 (superior). Any appraisal item not applicable to a specific bridge it is coded N.

**Approach alignment** – One of five NBI inspection ratings. This rating appraises a bridge’s functionality based on the alignment of its approaches. It incorporates a typical motorist’s speed reduction because of the horizontal or vertical alignment of the approach.

**Character-defining features** – Prominent or distinctive aspects, qualities, or characteristics of a historic property that contribute significantly to its physical character. Features may include structural or decorative details and materials.

**Condition rating** – Level of deterioration of bridge components and elements expressed on a numerical scale according to the NBI system. Components include the substructure, superstructure, deck, channel, and culvert. Elements are subsets of components, e.g., piers and abutments are elements of the component substructure. The evaluated bridge is compared with a new bridge built to current design standards. Component ratings range from 0 (failure) to 9 (new); element ratings range from 1 (poor) to 3 (good). In rating a bridge’s condition, Mn/DOT pairs the NBI system with the newer and more sophisticated Pontis element inspection information, which quantifies bridge elements in different condition states and is the basis for subsequent economic analysis.

**Deck geometry** – One of five NBI inspection ratings. This rating appraises the functionality of a bridge’s roadway width and vertical clearance, taking into account the type of roadway, number of lanes, and Average Daily Traffic (ADT).

**Deficiency** – The inadequacy of a bridge in terms of structure, serviceability, and/or function. Structural deficiency is determined through periodic inspections and is reflected in the ratings that are assigned to a bridge. Service deficiency is determined by comparing the facilities a bridge provides for vehicular, bicycle, and pedestrian traffic with those that are desired. Functional deficiency is another term for functionally obsolete (see below). Remedial activities may be needed to address any or all of these deficiencies.

**Deficiency rating** – A nonnumeric code indicating a bridge’s status as structurally deficient (SD) or functionally obsolete (FO). See below for the definitions of SD and FO. The deficiency rating status may be used as a basis for establishing a bridge’s eligibility and priority for replacement or rehabilitation.

**Design exception** – A deviation from standard bridge design practices that takes into account environmental, scenic, aesthetic, historic, and community factors that may have bearing upon a transportation project. A design exception is used for federally funded projects where federal standards are not met. Approval requires appropriate justification and documentation that concerns for safety, durability, and economy of maintenance have been met.

**Design load** – The usable live-load capacity that a bridge was designed to carry, expressed in metric tons according to the allowable stress, load factor, or load resistance factor rating methods. An additional code was recently added to assess design load by a rating factor instead of tons. This code is used to determine if a bridge has sufficient strength to accommodate traffic demands. A bridge that is posted for load restrictions may not be adequate to accommodate present or expected truck traffic.

**Fracture critical** – Classification of a bridge having primary superstructure or substructure components subject to tension stresses and which are non-redundant. A failure of one of these components could lead to collapse of a span or the bridge. Tension members of truss bridges are often fracture critical. The associated inspection date is a numerical code that includes frequency of inspection in months, followed by year, and month of last inspection.

**Functionally obsolete (FO)** – The FHWA classification of a bridge that cannot meet current or projected traffic needs because of inadequate horizontal or vertical clearance, inadequate load-carrying capacity, and/or insufficient opening to accommodate water flow under the bridge.

**Historic fabric** – The material in a bridge that was part of original construction or a subsequent alteration within the historic period (e.g., more than 50 years old) that has significance in and of itself. Historic fabric includes both character-defining and minor features. Minor features have less importance and may be replaced more readily.

**Historic bridge** – A bridge that is listed in, or eligible for listing in, the National Register of Historic Places.

**Historic integrity** – The authenticity of a bridge's historic identity, evidenced by the survival and/or restoration of physical characteristics that existed during the bridge's historic period. A bridge may have integrity of location, design, setting, materials, workmanship, feeling, and association.

**Inspections** – Periodic field assessments and subsequent consideration of the fitness of a structure and the associated approaches and amenities to continue to function safely.

**Inventory rating** – The load level a bridge can safely carry for an indefinite amount of time expressed in metric tons or by the rating factor described in design load (see above). Inventory rating values typically correspond to the original design load for a bridge without deterioration.

**Maintenance** – Work of a routine nature to prevent or control the process of deterioration of a bridge.

**Minnesota Historical Property Record (MHPR)** – A documentary record of an important architectural, engineering, or industrial site, maintained by the MHS as part of the state’s commitment to historic preservation. MHPR typically includes large-format photographs and written history, and may also include historic photographs, drawings, and/or plans. This state-level documentation program is modeled after a federal program known as the Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER).

**National Bridge Inventory** – Bridge inventory and appraisal data collected by the FHWA to fulfill the requirements of the National Bridge Inspection Standards (NBIS). Each state maintains an inventory of its bridges subject to NBIS and sends an annual update to the FHWA.

**National Bridge Inspection Standards** – Federal requirements for procedures and frequency of inspections, qualifications of personnel, inspection reports, and preparation and maintenance of state bridge inventories. NBIS applies to bridges located on public roads.

**National Register of Historic Places** – The official inventory of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture, which is maintained by the Secretary of the Interior under the authority of the National Historic Preservation Act of 1966 (as amended).

**Non-vehicular traffic** – Pedestrians, non-motorized recreational vehicles, and small motorized recreational vehicles moving along a transportation route that does not serve automobiles and trucks. Includes bicycles and snowmobiles.

**Operating rating** – Maximum permissible load level to which a bridge may be subjected based on a specific vehicle type, expressed in metric tons or by the rating factor described in design load (see above).

**Posted load** – Legal live-load capacity for a bridge usually associated with the operating or inventory ratings as determined by a state transportation agency. A bridge posted for load restrictions may be inadequate for truck traffic.

**Pontis** – Computer-based bridge management system to store inventory and inspection data and assist in other bridge data management tasks.

**Preservation** – Preservation, as used in this report, refers to historic preservation that is consistent with the Secretary of the Interior’s *Standards for the Treatment of Historic Properties*. Historic preservation means saving from destruction or deterioration old and historic buildings, sites, structures, and objects, and providing for their continued use by means of restoration, rehabilitation, or adaptive reuse. It is the act or process of applying measures to sustain the existing form, integrity, and material of a historic building or structure, and its site and setting. Mn/DOT’s *Bridge Preservation, Improvement and Replacement Guidelines* (BPIRG) describe preservation differently, focusing on repairing or delaying the deterioration of a bridge without significantly improving its function and without considerations for its historic integrity.

**Preventive maintenance** – The planned strategy of cost-effective treatments that preserve a bridge, retard future deterioration, and maintain or improve its functional condition without increasing structural capacity.

**Reconstruction** – The act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location. Activities should be consistent with the Secretary of the Interior's *Standards for the Treatment of Historic Properties*.

**Rehabilitation** – The act or process of returning a historic property to a state of utility through repair or alteration which makes possible an efficient contemporary use, while preserving those portions or features of the property that are significant to its historical, architectural, and cultural values. Historic rehabilitation, as used in this report, refers to implementing activities that are consistent with the Secretary of the Interior's *Standards for the Treatment of Historic Properties*. As such, rehabilitation retains historic fabric and is different from replacement. However, Mn/DOT's *Bridge Preservation, Improvement and Replacement Guidelines* (BPIRG) describe rehabilitation and replacement in similar terms.

**Restoration** – The act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time. Activities should be consistent with the Secretary of the Interior's *Standards for the Treatment of Historic Properties*.

**Scour** – Removal of material from a river's bed or bank by flowing water, compromising the strength, stability, and serviceability of a bridge.

**Scour critical rating** – A measure of bridge's vulnerability to scour (see above), ranging from 0 (scour critical, failed, and closed to traffic) to 9 (foundations are on dry land well above flood water elevations). This code can also be expressed as U (unknown), N (bridge is not over a waterway), or T (bridge is over tidal waters and considered low risk).

**Serviceability** – Level of facilities a bridge provides for vehicular, bicycle, and pedestrian traffic, compared with current design standards.

**Smart flag** – Special Pontis inspection element used to report the condition assessment of a deficiency that cannot be modeled, such as cracks, section loss, and steel fatigue.

**Stabilization** – The act or process of sustaining a bridge by means of making minor repairs until a more permanent repair or rehabilitation can be completed.

**Structurally deficient** – Classification indicating NBI condition rating of 4 or less for any of the following: deck condition, superstructure condition, substructure condition, or culvert condition. A structurally deficient bridge is restricted to lightweight vehicles; requires immediate rehabilitation to remain open to traffic; or requires maintenance, rehabilitation, or replacement.

**Structural evaluation** – Condition of a bridge designed to carry vehicular loads, expressed as a numeric value and based on the condition of the superstructure and substructure, the inventory load rating, and the ADT.

**Sufficiency rating** – Rating of a bridge's structural adequacy and safety for public use, and its serviceability and function, expressed on a numeric scale ranging from a low of 0 to a high of 100. It is a relative measure of a bridge's deterioration, load capacity deficiency, or functional obsolescence. Mn/DOT may use the rating as a basis for establishing eligibility and priority for replacement or rehabilitation. Typically, bridges rated between 50 and 80 are eligible for rehabilitation and those rated 50 and below are eligible for replacement.

**Under-clearances** – One of five NBI inspection ratings. This rating appraises the suitability of the horizontal and vertical clearances of a grade-separation structure, taking into account whether traffic beneath the structure is one- or two-way.

**Variance** - A deviation from standard bridge design practices that takes into account environmental, scenic, aesthetic, historic, and community factors that may have bearing upon a transportation project. A design variance is used for projects using state aid funds. Approval requires appropriate justification and documentation that concerns for safety, durability and economy of maintenance have been met.

**Vehicular traffic** – The passage of automobiles and trucks along a transportation route.

**Waterway adequacy** – One of five NBI inspection ratings. This rating appraises a bridge's waterway opening and passage of flow through the bridge, frequency of roadway overtopping, and typical duration of an overtopping event.



**Minnesota Department of Transportation (Mn/DOT)**

**Historic Bridge Management Plan**

**Appendices**

**Bridge Number: 3355**

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**Appendix B. Guidelines for Bridge Maintenance and  
Rehabilitation Based on the Secretary of the  
Interior's Standards**

## **Guidelines for Bridge Maintenance and Rehabilitation Based on the Secretary of the Interior's Standards**

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1. The original character-defining qualities or elements of a bridge, its site, and its environment should be respected. The removal, concealment, or alteration of any historic material or distinctive engineering or architectural feature should be avoided.
2. All bridges shall be recognized as products of their own time. Alterations that have no historical basis and that seek to create a false historical appearance shall not be undertaken.
3. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
4. Distinctive engineering and stylistic features, finishes, and construction techniques or examples of craftsmanship that characterize an historic property shall be preserved.
5. Deteriorated structural members and architectural features shall be retained and repaired, rather than replaced. Where the severity of deterioration requires replacement of a distinctive element, the new element should match the old in design, texture, and other visual qualities and where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
6. Chemical and physical treatments that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the most environmentally sensitive means possible.
7. Significant archaeological and cultural resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
8. New additions, exterior alterations, structural reinforcements, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
9. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Source: Ann Miller, et al. *A Management Plan for Historic Bridges in Virginia*. Charlottesville, Va.: Virginia Transportation Research Council, 2001.

**Minnesota Department of Transportation (Mn/DOT)**

**Historic Bridge Management Plan**

**Appendices**

**Bridge Number: 3355**

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**Appendix C. Current Mn/DOT Structure Inventory Report**

**Current Mn/DOT Bridge Inspection Report**

**Past Maintenance Reports (if available)**

**Other Reports (if available)**

# Mn/DOT STRUCTURE INVENTORY REPORT

Bridge ID: 3355

US 169 OVER WHITE FISH CREEK

Date: 01/04/2006

* IDENTIFICATION *	* ROADWAY DATA *	Def. Status ADEQ    Suff. Rating 68.0																																																																																																																																																								
<b>Agency Br. No.</b> (3355) (RS 1) - 1 <b>District</b> 03 <b>Maint. Area</b> 3A <b>County</b> 48 MILLE LACS (95) <b>City</b> <b>Township</b> 48009 KATHIO <b>Placecode</b> 32516 <b>Desc. Loc.</b> 2.2 MI S OF COUNTY LINE <b>Sect.</b> 7 <b>Tnsp.</b> 043N <b>Range</b> 27W <b>Lat.</b> 46d 12m 54s <b>UTM-Y</b> 5118240.48 <b>Long.</b> 93d 47m 30s <b>UTM-X</b> 438937.36 <b>Toll Bridge (Road)</b> NO <b>Custodian</b> STATE <b>Owner</b> STATE <b>Inspector</b> DISTRICT 3 <b>BMU Agreement No</b> <b>Year Built</b> 1921 <b>Yr Fed Rehab</b> <b>Year Remod.</b> 1939 <b>Temp.</b> <b>Skew</b> 0 <b>Plan Avail.</b> CENTRAL	<b>Route System (Fed)</b> USTH <b>Mn. Route System</b> USTH <b>Route Number</b> 169 <b>Roadway Name</b> US 169 <b>Roadway Function</b> MAINLINE <b>Roadway Type</b> 2 WAY TRAF <b>Control Section</b> 4814 <b>BDG. Reference Point</b> 227+00.727 <b>Date Opened to Traffic</b> 01-01-1939 <b>Detour Length</b> 37 mi <b>Lanes</b> 2 ON BRIDGE (1) <b>ADT</b> 9,500 <b>HCA DT</b> 285 <b>ADT Year</b> 2004 <b>Functional Class</b> RUR/PR ART OTH <b>Nat'l. Hwy. System</b> NHS <b>STRAHNET</b> NOT STRAHNET <b>Truck Net</b> NOT TRUCKNET <b>Fed. Lands Hwy.</b> N/A <b>OnBaseNet</b> ON BASENET	<b>* WATERWAY DATA *</b> <b>Drng. Area</b> <b>Wtrwy. Opening</b> 120 sq ft <b>Navigation Control</b> NO PERM REQD <b>Nav. Vert./Hrz Clr.</b> <b>Nav. Vert. Lift Clr.</b> <b>MN Scour Code</b> I-LOW RISK <b>Scour Eval. Year</b>  <b>* INSPECTION DATA *</b> <b>Inspection Date</b> 02-23-2005 (UBKA) <b>Inspection Frequency</b> 24 <b>Inspector</b> DISTRICT3  <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Condition Codes</th> <th colspan="2">Appraisal Ratings</th> </tr> </thead> <tbody> <tr> <td>Deck</td> <td>7</td> <td>Struct. Eval.</td> <td>4</td> </tr> <tr> <td>Superstruct.</td> <td>7</td> <td>Deck Geometry</td> <td>9</td> </tr> <tr> <td>Substruct.</td> <td>7</td> <td>Underclearances</td> <td>N</td> </tr> <tr> <td>Chan. &amp; Prot.</td> <td>7</td> <td>Waterway Adeq'cy</td> <td>8</td> </tr> <tr> <td>Culvert</td> <td>N</td> <td>Appr. Alignment</td> <td>8</td> </tr> </tbody> </table>	Condition Codes		Appraisal Ratings		Deck	7	Struct. Eval.	4	Superstruct.	7	Deck Geometry	9	Substruct.	7	Underclearances	N	Chan. & Prot.	7	Waterway Adeq'cy	8	Culvert	N	Appr. Alignment	8																																																																																																																																
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Culvert	N	Appr. Alignment	8																																																																																																																																																							
<b>* STRUCTURE DATA *</b> <b>Service On</b> HWY;PED <b>Service Under</b> STREAM  <b>MN Main Span</b> 109 CONCR/SLAB SPAN <b>MN MSpn Det Def</b>  <b>MN Appr. Span</b> <b>MN ASpn Det Def</b>  <b>Culvert Type</b> <b>Barrel Length</b>  <b>No. Main Spans</b> 1 <b>No. Appr.Span</b> 0 <b>Total Spans</b> 1 <b>NBI Len. (?)</b> NO  <b>Main Span Length</b> 16.0 ft <b>Structure Length</b> 20.0 ft  <b>Abut. Mat'l.</b> CONCRETE <b>Abut. Fnd. Type</b> UNKNOWN <b>Pier Mat'l.</b> <b>Pier Fnd. Type</b> NOT APPL  <b>Deck Width</b> 72.0 ft <b>Deck Material</b> CIP CONC <b>Wear Surf. Type</b> BITUMINOUS <b>Wear Surf. Inst. Yr.</b> <b>Wr. Crs/Fill Depth</b> 0.50 ft <b>Deck Membrane</b> NONE <b>Deck Rebars</b> NOT/APPL <b>Deck Rebars Inst. Yr.</b> <b>Structure Area</b> 1,440 sq ft <b>Roadway Area</b> 1,195 sq ft <b>Swk Width L/R</b> 4.0 ft    4.0 ft <b>Curb Ht. L/R</b> 0.7 ft    0.2 ft <b>Rail L/R/FHWA</b> 02    02    NO <b>Ped. Fencing</b> NO, NOT EXIST <b>Hist. Significance</b> NATL REGISTER <b>Bird Nests (?)</b> NO	<b>* ROADWAY CLEARANCES *</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>If Divided</th> <th>NB-EB</th> <th>SB-WB</th> </tr> </thead> <tbody> <tr> <td><b>Rdwy. Wid. Rd 1/Rd 2</b></td> <td></td> <td>60.0 ft</td> <td></td> </tr> <tr> <td><b>Vrt. Clr. Ovr. Rd 1/Rd 2</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>Max Vert Clr Rd 1/ Rd 2</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>Horz U/Clr - Rd 1/Rd 2</b></td> <td></td> <td>327.8 ft</td> <td></td> </tr> <tr> <td><b>Lat UndClr Left/Right</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>RR UndClr Vert/Lat</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>Appr. 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**Mn/DOT BRIDGE INSPECTION REPORT**

Inspector: DISTRICT3

**BRIDGE 3355 US 169 OVER WHITE FISH CREEK****INSP. DATE: 02-23-2005**

County: MILLE LACS Location: 2.2 MI S OF COUNTY LINE Length: 20.0 ft  
 City: Route: USTH 169 Ref. Pt.: 227+00.727 Deck Width: 72.0 ft  
 Township: KATHIO Control Section: 4814 Maint. Area: 3A Rdwy. Area / Pct. Unsnd: 1,195 sq ft  
 Section: 07 Township: 043N Range: 27W Local Agency Bridge Nbr: 3355 Paint Area / Pct. Unsnd:  
 Span Type: CONCR / SLAB SPAN  
 NBI Deck: 7 Super: 7 Sub: 7 Chan: 7 Culv: N Open, Posted, Closed: OPEN  
 Appraisal Ratings - Approach: 8 Waterway: 8 MN Scour Code: I-LOW RISK Def. Stat: ADEQ Suff. Rate: 68.0  
 Load Posting: NO SIGNS Traffic Signs: NO SIGNS Horiz. Cntl. Signs: DELINEATORS Vert. Cntl. Signs: NOT APPL

**STRUCTURE UNIT: 0**

ELEM NBR	ELEMENT NAME	STR UNIT	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
39	CONC SLAB - BIT O/L	0	2	02-23-2005 10-15-2002	1,442 SF 1,442 SF	1,442	0	0	0	0
Notes: THERE IS SOME CRACKING AND A COUPLE OF POTHOLES IN THE BITUMINOUS OVERLAY.										
320	CONC APPR SLAB-BITOL	0	2	02-23-2005 10-15-2002	2 EA 2 EA	2	0	0	0	N/A
Notes:										
333	RAILING - OTHER	0	1	02-23-2005	160 LF	160	0	0	N/A	N/A
Notes: RAILING IS MASONARY CONSTRUSTION ( GRANITE BLOCK). THERE IS SOME MINOR LEACHING SHOWING IN SOME OF THE LOWER MORTAR JOINTS.										
215	CONCRETE ABUTMENT	0	2	02-23-2005 10-15-2002	144 LF 144 LF	140	4	0	0	N/A
Notes: BOTH ABUTMENTS HAVE A COUPLE OF MODERATE CRACKS.										
359	CONC DECK UNDERSIDE	0	2	02-23-2005 10-15-2002	1 EA 1 EA	1	0	0	0	0
Notes:										
361	SCOUR	0	2	02-23-2005 10-15-2002	1 EA 1 EA	1	0	0	N/A	N/A
Notes:										
964	CRITICAL FINDING	0	2	02-23-2005 10-15-2002	1 EA 1 EA	1	0	N/A	N/A	N/A
Notes: DO NOT DELETE THIS CRITICAL FINDING SMART FLAG.										
981	SIGNING	0	2	02-23-2005 10-15-2002	1 EA 1 EA	1	0	0	N/A	N/A
Notes:										
982	GUARDRAIL	0	2	02-23-2005 10-15-2002	1 EA 1 EA	1	0	0	N/A	N/A
Notes:										
984	DRAINAGE	0	2	02-23-2005 10-15-2002	1 EA 1 EA	1	0	0	N/A	N/A
Notes:										
986	CURB & SIDEWALK	0	2	02-23-2005 10-15-2002	1 EA 1 EA	0	1	0	N/A	N/A
Notes: BOTH SIDEWALKS AND RAILINGS ARE ROCK MASONARY CONSTRUCTION. SOME OF THE ROCK SLABS HAVE SETTLED AND WEEDS ARE GROWING UP IN A FEW OF THE JOINTS.										

# Mn/DOT BRIDGE INSPECTION REPORT

Inspector: DISTRICT3

**BRIDGE 3355 US 169 OVER WHITE FISH CREEK**

**INSP. DATE: 02-23-2005**

**STRUCTURE UNIT: 0**

ELEM NBR	ELEMENT NAME	STR UNIT	ENV	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
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General Notes: BRIDGE 3355 INSPECTED 23 FEB 05 PLATT/NIELSEN

\_\_\_\_\_  
Inspector's Signature

\_\_\_\_\_  
Reviewer's Signature / Date

**MNDOT HISTORIC ROADSIDE DEVELOPMENT  
STRUCTURES INVENTORY**

ML-KAN-005  
CS 4814

Whitefish Creek Bridge (Bridge 3355)

<b>Historic Name Other Name</b>	Whitefish Creek Bridge (Bridge 3355)	<b>CS # SHPO Inv #</b>	4814 ML-KAN-005
<b>Location</b>	TH 169 300' N of CSAH 25	<b>Hwy District Reference</b>	TH 169 3A 227.7
<b>City/Township County Twp Rng Sec USGS Quad UTM</b>	Kathio Township Mille Lacs 43N 27W Sec 7 Vineland Z15 E438860 N5118080	<b>Acres Rest Area Class</b>	NA
<b>Designer</b>	Skoogleun, H O, Natl Park Serv Nichols, A R, Consult Land Arch	<b>SP #</b>	169-18-23-4 1804-08
<b>Builder</b>	Civilian Conservation Corps (CCC)	<b>SHPO Review #</b>	
<b>Historic Use Present Use</b>	Bridge/ Culvert/ Dam Bridge/ Culvert/ Dam	<b>MHS Photo #</b>	013535.20-24
<b>Yr of Landscape Design</b>	1939	<b>MnDOT Historic Photo Album</b>	Nic 1.21
<b>Overall Site Integrity</b>	Intact/Slightly Altered		
<b>Review Required</b>	Yes		
<b>National Register Status</b>	Eligible, see Statement of Significance		
<b>Historic Context</b>	Roadside Development on Minnesota Trunk Highways, 1920-1960 Reinforced Concrete Highway Bridges, 1900-1945		
<b>List of Standing Structures</b>			
<b>Feat#</b>	<b>Feature Type</b>	<b>Year Built</b>	<b>Fieldwork Date</b>
01	Bridge/Culvert	1939	08-03-97
			<b>Prep by</b>
			Gemini Research Dec. 98 G1. 94
			<b>Prep for</b>
			Site Development Unit Cultural Resources Unit Environmental Studies Unit
NOTE: Landscape features are not listed in this table			
<b>Final Report</b>	Historic Roadside Development Structures on Minnesota Trunk Highways (1998)		

Whitefish Creek Bridge (Bridge 3355)

■ BRIEF

The Whitefish Creek Bridge (Bridge 3355) is a concrete slab, granite-faced bridge that carries T.H. 169 over Whitefish Creek at Wigwam Bay on the western shore of Mille Lacs Lake. The bridge is located about 300' north of CSAH 25 in Mille Lacs County's Kathio Township.

■ STANDING STRUCTURES

**Bridge.** Built 1939 by the CCC. Designed by H. O. Skooglun of the National Park Service. Bridge 3355 is a concrete slab span bridge with granite headwalls that carries T.H. 169 over Whitefish Creek. The bridge was designed to incorporate a smaller, pre-existing concrete slab span bridge (with a 16' span) that had been built in 1921. The new bridge was constructed when T.H. 169 was widened to a divided highway. The structure is approximately 80' long and 76' wide and was originally designed to support a roadway with two 27'-wide lanes separated by a 6'-wide median. It has headwalls and railings built of gray, random ashlar, roughly-cut (or lightly rockfaced) Isle granite. The bridge has a 16'-wide span with a stone and concrete substructure. The headwalls are stepped both in height and width and have a flat granite arch that is supported by brackets. The headwalls have simple, 21"-wide, stone railings. Inside the railings are 4'-wide granite flagstone sidewalks that are lined with granite curbs. (The curb faces were originally about 8" according to the original plans.) The bridge's design emphasizes the strength and beauty of the granite masonry through simple shapes and lines. Metal guardrails (each about 150' long) have been added to the ends of each railing.

■ OTHER LANDSCAPE FEATURES AND PLANTINGS

The bridge is located just a few feet west of the shore of Mille Lacs.

No original planting plan has been located. The bridge plans indicate natural trees nearby -- perhaps there were no additional plantings. The topography of the site is basically flat.

■ SETTING

Whitefish Creek links Whitefish Lake (located about one-third mile west of the bridge) with Mille Lacs. The creek flows under T.H. 169 and into Mille Lacs. The bridge is surrounded by Mille Lacs Lake on the east; the T.H. 169 right-of-way, the lakeshore, and resort and cabin properties on the north and south; and a forest and wetlands area to the west.

■ INTEGRITY

**Alterations**

The bridge appears to have been built closely to the original plan.

The structure is basically intact. The roadway pavement thickness has apparently increased through the years so that only about 3" of the original 8" curb face is currently exposed above the gravel shoulder. A thin veneer of concrete has been added to the top of the



**Whitefish Creek Bridge (Bridge 3355)**

railings. Metal guardrails have been added to the ends of each railing. The property retains integrity of location, design, setting, materials, workmanship, feeling, and association.

**Notes on Condition**

The bridge appears to be in fair condition. A thin veneer of concrete has been added to the top of the railings. The bridge and its sidewalk are overgrown with weeds and brush.

**■ HISTORICAL BACKGROUND**

The Whitefish Creek Bridge (Bridge 3355) was constructed in 1939 by the Civilian Conservation Corps (CCC) working in cooperation with the Minnesota Department of Highways and the National Park Service. The bridge was built by the enrollees of a CCC camp that was established in 1935 on the southern edge of Garrison. The camp was sponsored by the Department of Highways, supervised by the National Park Service, and operated by the U.S. Army.

Bridge 3355 was designed to incorporate a small, pre-existing concrete slab bridge that was built in 1921. The expansion of Bridge 3355 allowed for a 60'-wide roadway and two sidewalks. The bridge had been completed by November of 1939, according to a dated historic photo. T.H. 169 over Whitefish Creek was widened as part of a large T.H. 169 and T.H. 18 improvement project directed by the highway department's Mille Lacs Lake Highway Development Plan.

The bridge plans were signed in January of 1939. A "General Note" on the plans describes the work: "The existing reinforced concrete bridge which was constructed by the Minnesota Highway Department is to be extended on both sides because of the change in the present highway to two lanes with island. The extensions to match up with the present structure . . ." The bridge plan is signed by four officials from the Department of Highways -- Harold E. Olson (Engineer of Roadside Development), A. R. Nichols (Consulting Landscape Architect), A. W. Moulster (District Engineer) and O. L. Kipp (Construction Engineer) -- and three officials representing the National Park Service -- Agge Thompson (CCC Camp Superintendent who signed under "Checked by"), Harold W. Lathrop (Minnesota Department of Conservation Park Authority), and Ed Lasey (Inspector).

The bridge plan includes the statements "Designed by H. O. Skooglun" and "Drawn by H. O. Skooglun." Skooglun apparently worked within the National Park Service's Minnesota Central Design Office in St. Paul, under the supervision of Edward W. Barber who was chief architect and major designer for the Park Service. Skooglun also designed the Garrison Pedestrian Underpass (Bridge 5265), the Garrison Creek Culvert (Bridge 5266), the T.H. 169 Culvert at St. Alban's Bay, and the Kenney Lake Overlook -- all a few miles from Whitefish Creek (all are included in this inventory). Also participating in the design of the project was Arthur R. Nichols who was Consulting Landscape Architect for the Minnesota Department of Highways in the 1930s. Nichols participated in the design of all of the CCC-built roadside development improvements near Garrison.

**The Mille Lacs Lake Highway Development Plan and the Garrison CCC Camp**

The Whitefish Creek Bridge was built as part of the Mille Lacs Lake Highway Development Plan (also known as the Mille Lacs Lake SP-15 project). Operating between September of

Whitefish Creek Bridge (Bridge 3355)

1935 and March of 1940, this project improved many miles of T.H. 169 and T.H. 18 west and north of Mille Lacs to facilitate increased recreational and commercial travel. It was the most extensive roadside development project undertaken by the CCC in the state.

The bridge and other components of the project were planned by the Minnesota Department of Highways and the National Park Service, and were built with CCC labor from the Mille Lacs Lake Highway Wayside CCC Camp (Camp SP-15) that was located on the western side of T.H. 169 on the southern edge of Garrison. The first portions of the plan to be developed were a 4-mile section of T.H. 18 northwest of Garrison, a 5.5-mile section of T.H. 169 north of Garrison, and a 7-mile section of T.H. 169 south of Garrison. A construction plan noted: "Ultimate development of the parkway and connecting waysides is to continue around the entire lake, a distance of approximately 90 miles." The project was never completed to the extent planned. However, between 1936 and 1939, the highway department and the CCC constructed at least seven known standing structure projects in the Garrison area, all of which are extant and are included in this study. They are the following:

- Garrison Concourse
- Garrison Creek Culvert (Bridge 5266)
- Garrison Pedestrian Underpass (Bridge 5265)
- Garrison Rest Area
- Kenney Lake Overlook
- T.H. 169 Culvert at St. Alban's Bay
- Whitefish Creek Bridge (Bridge 3355)

Historian Rolf Anderson writes:

The principal design work for the Mille Lacs Lake Highway Wayside projects was executed in the [National Park Service's] Minnesota Central Design Office in St. Paul, which was actually a branch office of the National Park Service Regional Office in Omaha. . . . Principal figures included Edward W. Barber, the chief architect and major designer, V. C. Martin, who designed the Kitchen Shelter [at the Garrison Rest Area], Oscar Newstrom, and N. H. Averill who completed many of the master plans and landscape designs. . . . Park Service engineers and landscape architects had experimented with a variety of styles and eventually concluded that buildings constructed with native materials and designed to harmonize with their natural settings were most appropriate (Anderson, "Mille Lacs Lake Kitchen Shelter" 1990:8-5).

The 1938 *Annual Report* of the highway department's Roadside Development Division summarized work completed that year in the Mille Lacs Lake area:

The construction work on a large masonry concourse overlooking Mille Lacs Lake was begun in 1936 and continued through 1937 and 1938. In addition, some major changes in alignment and design of the roadway have been made, together with the construction of several large drainage structures which were provided with rustic stone headwalls [see Garrison Creek Culvert, Whitefish Creek Bridge, T.H. 169 Culvert at St. Alban's Bay, and Garrison Pedestrian Underpass (Bridge 5265)]. Grading operations are now in progress, extending from Garrison to 1 1/2 miles south and consist of a divided roadway of two 30 foot lanes with an island of 6 to 90 feet between (*Annual Report* 1938:19).

CCC Camp SP-15, also known as the Mille Lacs Highway Wayside Camp, was located on the western side of T.H. 169 on the southern edge of Garrison. The camp was established

**Whitefish Creek Bridge (Bridge 3355)**

in September of 1935 and was one of four CCC camps in Minnesota that were sponsored by the Department of Highways. Camp superintendent was Agge Thompson. The camp's 200 enrollees worked primarily on the Mille Lacs Lake Highway Development Project. Work on the Project ended when the men of CCC Camp SP-15 were transferred on March 31, 1940, to the St. Croix Recreational Demonstration Area (now St. Croix State Park).

The Garrison CCC Camp was one of four CCC camps in the state that were sponsored by the Minnesota Department of Highways. (Most of the state's other CCC camps were sponsored by agencies such as the Department of Conservation's State Parks Division, the U.S. Forest Service, and the Soil Conservation Service.) The first of the four highway department camps was the Spruce Creek Camp that was established on the Cascade River on the North Shore in 1934. The other three highway department CCC camps were established in 1935.

The four CCC camps sponsored by the Minnesota Department of Highways were the following:

- Lakeshore (Camp SP-19), located near Knife River on the North Shore
- Leech Lake (Camp SP-16), located near Whipholt on Leech Lake
- Mille Lacs Lake (Camp SP-15), located at Garrison on Mille Lacs Lake
- Spruce Creek (Camp SP-13), located near Cascade River on the North Shore

The four camps were established specifically for highway improvements and were supervised by the National Park Service. Each camp had approximately 200 enrollees who worked on roadside landscaping and erosion control, and constructed wayside rests, bridges, culverts, and similar highway structures. Rolf Anderson calls Mille Lacs the "largest and most extensive of these [highway CCC camps]" (Anderson, "Garrison Concourse" 1990:8-3).

Nine sites constructed by these camps are included in this Historic Roadside Development Structures Inventory (see individual inventory forms):

Built by the Spruce Creek Camp  
Cascade River Overlook (includes Bridge 5132)  
Spruce Creek Culvert (Bridge 8292)

Built by the Mille Lacs Lake Camp  
Garrison Concourse  
Garrison Creek Culvert (Bridge 5266)  
Garrison Pedestrian Underpass (Bridge 5265)  
Garrison Rest Area  
Kenney Lake Overlook  
T.H. 169 Culvert at St. Alban's Bay  
Whitefish Creek Bridge (Bridge 3355)

No properties built by the Lakeshore or Leech Lake CCC camps are included in this study. (One of the principal accomplishments of the Lakeshore Camp is the elaborate Knife River Historical Marker on old Highway 61 several miles northeast of Duluth. The site is intact but in fragile condition. It is no longer on right-of-way and is now within the jurisdiction of St. Louis County Highway Department. No standing structures built by the Leech Lake CCC Camp, which operated for only six months, are known to be extant.)

■ **PREVIOUS SHPO REVIEWS**

There apparently have been no previous SHPO cultural resource reviews of the property, except that the bridge was determined to be eligible for the National Register by the Mn/DOT Historic Bridge Inventory. (See Statement of Significance below.)

■ **STATEMENT OF SIGNIFICANCE**

The Whitefish Creek Bridge (Bridge 3355), built in 1939 by the CCC, is one of seven bridges recorded in this inventory that are faced with stone. It is one of 14 sites in the inventory known, or suspected, to have been built by the CCC. The bridge is one of five sites in the study that were designed by H. O. Skooglund of the National Park Service (NPS), and one of eight sites in the study that were designed by NPS designers (in collaboration with A. R. Nichols).

This property has been evaluated within the historic context "Roadside Development on Minnesota Trunk Highways, 1920-1960." It is recommended that the Whitefish Creek Bridge is ELIGIBLE for the National Register under this historic context because it meets the following registration requirements:

Significant to the History of Roadside Development. The Whitefish Creek Bridge is one of nine properties in this inventory that were built by the four CCC camps in Minnesota that were sponsored by the MHD. (All four camps were dedicated to roadside development.) The MHD-sponsored CCC camps improved many miles of trunk highway, as well as constructing 9 of the 68 Depression-era properties in this inventory. These numerous New Deal-era sites represent the MHD's first large-scale effort to construct roadside development facilities in the state. Whitefish Creek is an excellent example of the distinctive and well-constructed public facilities, built by the MHD in partnership with federal relief agencies, that met the objectives of roadside development while providing essential work and job training to the nation's unemployed during the Depression. (National Register Criterion A.)

Furthermore, the bridge is significant as one of seven sites that were built near Garrison by the CCC as part of the Mille Lacs Lake Highway Development Project. This 4 1/2-year-long roadside development project improved and developed T.H. 169 and T.H. 18 near Garrison for recreational purposes. It was the most extensive roadside development project undertaken by the CCC in the state. The seven properties near Garrison (four of which are bridges) are rare in the state for their variety, design quality, degree of integrity, and close geographic proximity. The properties are testimony to the success of the partnership between the MHD, the National Park Service, and the CCC. This collaboration produced functional, long-lasting, and aesthetically-superior roadside amenities that continue to enhance the experience of the traveling public today. (National Register Criterion A.)

Design Significance. The Whitefish Creek Bridge is an excellent example of the application of the "National Park Service Rustic Style" to small highway bridge. It has stonework of excellent quality. The site displays the special labor-intensive construction techniques and distinctive use of indigenous materials that characterize both the Rustic style and federal relief construction in Minnesota. (National Register Criterion C.)

The Whitefish Creek Bridge was also determined to be ELIGIBLE for the National Register by the Mn/DOT Historic Bridge Inventory. The bridge inventory states:

**Whitefish Creek Bridge (Bridge 3355)**

As one of Minnesota's rare examples of an ornamental concrete-slab bridge, Bridge No. 3355 is eligible for the National Register for its design under Criterion C, within the historic context "Reinforced-Concrete Highway Bridges in Minnesota, 1900-1945." The Multiple Property Documentation Form associated with this context states, in Registration Criterion 5, that a concrete highway bridge may be eligible under Criterion C if it displays notable aesthetics. With its elaborate, well-executed, ornamental stonework, Bridge 3355 fulfills this criterion (Hess 1997).

The property may also be associated with the "Federal Relief Construction, 1933-1943" and "Tourism and Recreation in the Lake Regions, 1870-1945" historic contexts.

■ **OTHER COMMENTS**

This property may require further evaluation for potential archaeological resources.

T.H. 169 over this bridge is very busy during the summer months.

■ **REFERENCES**

*An Appraisal Inventory of Work Done with WPA and Other Federal Relief Funds Through the Functioning of the Department of Highways, State of Minnesota.* May 9, 1938. Minnesota Highway Department Records, Minnesota Historical Society.

Anderson, Rolf T. "Federal Relief Construction in Minnesota, 1933-1941." National Register of Historic Places Multiple Property Documentation Form. Oct. 9, 1990; amended Aug. 30, 1993.

Anderson, Rolf T. "Garrison Concourse." National Register of Historic Places Registration Form. Oct. 9, 1990.

Anderson, Rolf T. "Mille Lacs Lake Kitchen Shelter/Garrison Wayside Shelter." National Register of Historic Places Registration Form. Oct. 9, 1990.

Anderson, Rolf T. "Minnesota State Park CCC/WPA/Rustic Style Historic Resources." National Register Multiple Property Documentation Form. Sept. 3, 1988.

*Annual Report of the Accomplishments of Roadside Development Along the Trunk Highways in Minnesota.* Minnesota Department of Highways. 1938.

Hess, Jeffrey A. Minnesota Historic Bridge Inventory Form for Bridge 3355. Hess-Roise and Co. for Mn/DOT Historic Bridge Study. 1997.

"Master Plan Report - Minnesota S.P. 15 - Mille Lacs Lake." Circa 1930s. Copy in Mn/DOT Site Development Unit flat files.

*Minnesota State Park and Recreational Area Plan.* Minnesota Department of Conservation. Division of State Parks. March 1939.

Site Plans. Minnesota Department of Transportation, St. Paul.

Whitefish Creek Bridge (Bridge 3355)

Thiel, George A. and Carl E. Dutton. *The Architectural, Structural, and Monumental Stones of Minnesota*. Minneapolis: The University of Minnesota Press, 1935.

■ **ADDITIONAL BACKGROUND INFORMATION**

Mille Lacs is the state's second-largest lake in square area and has approximately 150 miles of shoreline. T.H. 169 follows the shore of Mille Lacs Lake for about 20 miles.

The Mille Lacs area has a long tradition of Native American habitation. By the mid-1600s, Mille Lacs was called "Mde Wakan" by the Dakota and was an important religious and cultural center. The Ojibwe called the lake "minsi sagaigon" meaning "everywhere lakes" because of the many lakes located in the vicinity. The French translated the Ojibwe name into "Mille Lacs" meaning "thousand lakes." Mille Lacs is now the cultural center for the Mille Lacs Anishinabe. The Mille Lacs Anishinabe band currently has about 2,800 members.

Whitefish Lake was called Ga-atikumegokag, "the place of white fish," by the Ojibwe. Whitefish Creek links Whitefish Lake (located about one-third mile west of the bridge) with Mille Lacs. The creek flows into Mille Lacs, under T.H. 169, at the western shore of the lake.

**Local Stone**

The granite used to construct the bridge was probably obtained from a quarry near Isle, a community located on the southeastern shore of Mille Lacs Lake. The Isle-Warman Creek granite region contains outcroppings of red, gray, and black granite that were quarried by various companies. The Cold Spring Granite Company, for example, operated a quarry about five miles south of Isle as early as 1935. Light gray granite from the site was called Isle Granite and was marketed under the name of Cold Spring Pearl White granite.

**WHITEFISH CREEK BRIDGE (BRIDGE 3355)**

**SHPO INV. # ML-KAN-005**

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**Location:** Bridge 3355 is located on T.H. 169 about 300 feet north of CSAH 25 in Mille Lacs County's Kathio Township. The bridge allows the Whitefish Creek to flow under TH 169 into Mille Lacs Lake at Wigwam Bay.

**Introduction:** The Whitefish Creek Bridge (#3355) was built in two sections: the original bridge was a 16'-0" section built in 1921. The bridge was added onto and enlarged by the CCC in 1939 to its current width of 76'-0". Its headwalls and railings are built of gray random ashlar, rusticated Isle granite. H.O. Skooglun of the National Park Service designed the structure. Metal guardrails currently extend from each end of the headwalls. The highway was repaved and the guardrails extended during the summer of 2000.

**Architect's Survey Date:** October 6, 1999

**Plans/Sketches:**

1. 01/39 Reinforcing Design Plan
2. 01/39 Design Bridge Plan—Existing Conditions as of 10/99
3. Site plan sketch (MJBA 10/99)
4. 03/29/68 Letter MnDOT "Central Files" expressing concerns about the load capacity of the bridge
5. Dept. of Highways, Bridge Maintenance...(Note: 7/8/78 repairs)
6. MNHD Roadside Development Plans T.H. 169-18, Sheets 1 and 7 of 8
7. FHA Photos of Wood Timber/Steel and Stone Masonry Guardrails samples

**MNDOT HISTORIC ROADSIDE DEVELOPMENT  
STRUCTURES INVENTORY**

ML-KAN-005  
CS 4814

Whitefish Creek Bridge (Bridge 3355)

<b>Historic Name</b> <b>Other Name</b>	Whitefish Creek Bridge (Bridge 3355)	<b>CS #</b> <b>SHPO Inv #</b>	4814 ML-KAN-005
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<b>Location</b>	TH 169 300' N of CSAH 25	<b>Hwy</b> <b>District</b> <b>Reference</b>	TH 169 3A 227.7
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<b>City/Township</b> <b>County</b> <b>Twp Rng Sec</b> <b>USGS Quad</b> <b>UTM</b>	Kathio Township Mille Lacs 43N 27W Sec 7 Vineland Z15 E438860 N5118080	<b>Acres</b> <b>Rest Area Class</b>	NA
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<b>Designer</b>	Skoogle, H O, Natl Park Serv Nichols, A R, Consult Land Arch	<b>SP #</b>	169-18-23-4 1804-08
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<b>Builder</b>	Civilian Conservation Corps (CCC)	<b>SHPO Review #</b>	
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<b>Historic Use</b>	Bridge/ Culvert/ Dam	<b>MHS Photo #</b>	013535.20-24
<b>Present Use</b>	Bridge/ Culvert/ Dam		

<b>Yr of Landscape Design</b>	1939	<b>MnDOT Historic Photo Album</b>	Nic 1.21
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<b>Overall Site Integrity</b>	Intact/Slightly Altered		
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<b>Review Required</b>	Yes		
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<b>National Register Status</b>	Eligible, see Statement of Significance		
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<b>Historic Context</b>	Roadside Development on Minnesota Trunk Highways, 1920-1960 Reinforced Concrete Highway Bridges, 1900-1945		
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**List of Standing Structures**

Feat#	Feature Type	Year Built	
01	Bridge/Culvert	1939	
NOTE: Landscape features are not listed in this table			

<b>Fieldwork Date</b>	08-03-97
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<b>Prep by</b>	Gemini Research Dec. 98 G1. 94
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<b>Prep for</b>	Site Development Unit Cultural Resources Unit Environmental Studies Unit
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<b>Final Report</b>	Historic Roadside Development Structures on Minnesota Trunk Highways (1998)
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## Stabilization/Preservation/Restoration

### 1. Spatial Organization and Land Patterns

#### a. Functional Relationships:

- Assessment: The Whitefish Creek Bridge (Bridge 3355) is a granite-faced concrete slab bridge that carries Whitefish Creek under T.H. 169 and into Mille Lacs Lake at Wigwam Bay. The bridge was designed in the National Park Service Rustic Style to blend with its natural setting and to visually enhance T.H. 169 (then part of the "Minnesota Scenic Highway") while at the same time serving a utilitarian engineering function. Except for plantings, the site is generally intact in size and spatial organization.

- Recommendations:

Stabilization: None.

Preservation/Restoration: Purchase the parking area directly southwest of the bridge to provide for a small screened parking area, picnicking and walking. Plant new turf and trees near the parking lot that complement the Rustic Style design and place two or three wooden picnic tables, a privy and several trash receptacles throughout this area. Add interpretive signage to inform the visitors about the bridge's history and the CCC's work along T.H. 169, etc. **Work Period:** 1 - 3 years.

#### b. Visual Relationships:

- Assessment: The Bridge was designed to be viewed by vehicles driving over it, but today is easily missed by cars driving at 50-60 mph. The recently extended steel guardrails overwhelm the masonry structure, obscuring its presence to the motorist unless one is specifically looking for it.

The bridge's design enhances the view of the highway in this scenic area and provides visual interest to the nearby resorts, cabins, and beaches. Again, the metal guardrails overwhelm the design. Today the bridge is best seen from either the beach or from a privately owned parking area located southwest of the structure.

The view from the bridge includes Mille Lacs Lake to the east, forest and wetlands to the west, forests to the north, and resorts and cabins to the south. There is a private parking area immediately southwest of the bridge. A condominium building and marina can be seen across the bay to the northeast.

The setting has changed little since the 1930s except that cabins to the west have been razed and buildings to the south have been remodeled. There are also more cars on the highway. Future commercial and resort development in the vicinity is likely and T.H. 169 is scheduled to be widened to a four-lane highway and/or realigned. The wetlands to the west and the lake to the east may serve to buffer the bridge somewhat from surrounding development.

- Recommendations:

Stabilization: None.

Preservation: Clear brush from the western side of the bridge to improve its visibility. **Work Period:** ASAP.

Restoration: Clear brush from the western side of the bridge to bring it into view. Acquire additional acreage west and southwest of the bridge, including the privately owned parking area, to protect the site's visual context. If a new T.H. 169 roadway is built west of the current alignment, plant appropriate natural buffers to screen the new, modern highway from the historic bridge similar to the way that the T.H. 169 4-lane is screened from CSAH 35 just north of the Grand Casino at Vineland. **Work Period:** 1 - 3 years.

### 2. Topography

- Assessment: The site is flat except at the banks of the creek and ditches along T.H. 169.

- Recommendations: None.

### 3. Vegetation

- Assessment: Original landscaping plans from the 1930s (S.P. 4814-10) intended that T.H. 169 be lined with evergreens and shade trees, and that the bridge be set off with pines. This landscaping was part of a 2.8-mile Roadside Development project. Sheet 7 of the plan specifies that 32 "Western Yellow Pine" (*Pinus Ponderosa*) be placed in four groups of eight at the four corners of the bridge. Twenty American Elm were to be planted on the right-of-way just south of the bridge at the intersection of the highway and CSAH 25 (groups of 10 were to be placed on the northwestern and southwestern corners of the intersection). Twenty Green Ash were to be planted on both sides of T.H. 169 at Sta. 343-346.5, about 600' south of the bridge. Finally, between Sta. 328.67 and 350 (extending 1,000' north and 1,100' south of the bridge), 13,310 unspecified evergreen transplants were to be installed on both sides of T.H. 169. (See plans for S.P. 4814-10 for details on the thousands of evergreens, American Elms, Green Ash, and Lombardy Poplars that were planted as part of the 2.8-mile project.)

Today the bridge is surrounded by grassy highway ditches, the sandy beach of Lake Mille Lacs, and dense woods to the west and north, including a large stand of evergreens. The pines, elms, most of the ash, and some of the evergreen transplants specified on the plans are missing in the immediate environs of the bridge but may be still standing in the forest to the north and west. Trees and brush growing along Whitefish Creek are currently obscuring the western facade of the bridge. Weeds are encroaching on the bridge's walkways and curbs.

- Recommendations:  
Stabilization and Preservation: cut back weeds and brush from the bridge to a distance of 6'. Reseed with appropriate groundcover to reduce erosion. Establish and follow a regular schedule of mowing and trimming. Work Period: Cut back brush ASAP; other work--annually and routine maintenance  
Restoration: Restore the original planting plan for the bridge and nearby right-of-way. If plants specified in the original plans are not available, use substitute plants of similar size, shape, color, and texture. Establish and follow a regular schedule of mowing and trimming. Work Period: 1 - 3 years and provide annual and routine maintenance.

### 4. Circulation

#### a. Access:

- Assessment: Traffic on T.H. 169 is often heavy and now travels at 50-60 mph, considerably faster than when the bridge first opened. Because of the volume and speed of the traffic, slowing to view the bridge is dangerous.

In 2000, the highway over the bridge was resurfaced with an overlay that raised the elevation of the pavement about 3". There is a gravel shoulder between the edge of this pavement and the bridge's flagstone walkway and curb. The portion of the gravel shoulder closest to the curb was not disturbed during the 2000 overlay. About 3" of the curb's original 8" curb face is currently exposed above the gravel on the western side of the highway. Little, if any, of the curb face is exposed on the eastern side of the highway. During the 2000 improvements, the metal guardrails extending from the ends of the bridge were lengthened. Their added length has visually overwhelmed the stonework.

T.H. 169 is scheduled to be widened to a four-lane highway in the near future. In one of the proposed alternatives, T.H. 169 would be realigned several hundred feet to the west and this portion of "old" T.H. 169 would become a county highway serving the lakeshore. If the road eventually becomes a county highway, traffic over the bridge may be lighter.

- Recommendations:  
Stabilization: Cut weeds back from stone curbing and keep the bridge weed-free. If the bridge is eventually transferred to county ownership because T.H. 169 is realigned, take steps to insure the bridge's future preservation and proper maintenance after the transfer. Work Period: Weeds--ASAP; maintenance--annually.

**Preservation:** Cut weeds back from stone curbing and keep the bridge weed-free. If the bridge is eventually transferred to county ownership because T.H. 169 is re-aligned, take steps to insure the bridge's future preservation and proper maintenance after the transfer. **Work Period:** Weeds—ASAP; maintenance—annually.

**Restoration:** Lower the elevation of the highway paving and gravel shoulder to increase the visibility of the stonework and restore the original curb depth. (Costs of highway modifications are not included in this document.)

If the bridge is eventually transferred to the county because T.H. 169 is re-aligned, take steps to insure the bridge's future preservation and proper maintenance after the transfer.

It is recommended that the highway speed limit over the bridge be reduced to 45 mph. **Work Period:** 1 - 5 years.

b. Pedestrian walks

- **Assessment:** The Bridge has 4'-wide granite flagstone walkways located just inside the stone railings. Newer roadway grades have covered parts of the edges and most of the surfaces have settled and/or heaved and are overgrown with vegetation and covered with roadway sand and gravel. Currently there is no pedestrian footpath extending north and south of the bridge and **none** is recommended. Today, walking from the highway right-of-way, across the bridge, and across the highway are not safe due to the speed and amount of traffic. The bridge is most safely approached from the parking area to the southwest and along the wide sandy beach.

Current plans for the reconstruction of T.H. 169 include discussion of a possible bike trail along the western shore of Mille Lacs that would presumably cross the bridge.

- **Recommendations:**

**Stabilization:** None.

**Preservation and Restoration:** Despite the fact that pedestrian travel over the bridge is not recommended, the flagstone walkways should be carefully preserved because they are an integral part of the bridge structure (see Sidewalk under Structures below). Acquire the parking area southwest of the bridge (see Parking Areas below). Participate in plans for possible future development of a bike trail over the bridge. **Work Period:** 3 - 5 years. Land acquisition costs are not included.

c. Parking Areas

- **Assessment:** The Bridge was not designed with a parking area. The only possible parking is on a privately owned parking area, which is not currently in use, at the southwestern corner of the bridge. This parking area provides an excellent view of the bridge and pedestrian access to its western face.

- **Recommendations:**

**Stabilization/Preservation and Restoration:** Acquire the parking area southwest of the bridge to provide safe public access to the bridge, provide a location for an interpretive marker, and buffer the bridge from inevitable future development. It is recommended that this acquisition be explored as soon as possible during this quiet time in the development of the immediate vicinity. If the parking area is acquired, redesign it for about 5-8 cars and landscape the remaining area with appropriate plants (inspired by S.P. 4814-10), an interpretive marker, and perhaps a portable picnic table based on historic MHD designs. **Work Period:** 1 - 3 years.

5. Water Features: Not applicable

6. Structures, Furnishings and Objects

a. Bridge/culvert

- **Assessment:** It is in generally good condition and is structurally sound. Maintenance is required. The "Bridge Maintenance, Repairs and Renewals" records show that the masonry was cleaned and regouted and sidewalks repaired in 1978. Tops of walls are covered with about one inch of concrete topping. Condition of the mortar topping is poor. At the south end of the east wall about 2'-0" of the topping is missing. Many stone joints are in poor condition or are missing. Granite stones are missing in a few spots. Green paint (graffiti) is located on the southwest side of the west wall. Vegetation is overgrown along the walls. Exposed foundations of round fieldstone are visible at the banks of each wall indicating that the grade has settled since it was built.
  - **Recommendations:**  
**Stabilization, Preservation and/or Restoration:** Completely remove the concrete topping from the walls and clean all exposed stone. Remove all mortar from all joints and prepare for repointing. Repoint all joints including the topside joints of the walls. Cutback the existing vegetation along the base of the walls to remove and repair and repoint all fieldstone foundation joints. The faces of the stone at the bridgeheads shall be cleaned and all graffiti removed from the stone in the locations named above. Replace missing stones with matching granite and/or fieldstone. Stabilize the grade to prevent erosion following masonry restoration. **Work Period:** 3 - 5 years.
- b. Curb, stone
- **Assessment:** Original drawings show the curb about 8" above the roadway surface. In 2000, the highway over the bridge was resurfaced with an overlay that raised the elevation of the pavement about 3". There is a gravel shoulder between the edge of the asphalt pavement and the bridge's flagstone walkway and curb. The portion of the gravel shoulder closest to the curb was not disturbed during the 2000 overlay. About 3" of the curb's original 8" curb face is currently exposed above the gravel on the western side of the highway. Little, if any, of the curb face is exposed on the eastern side of the highway.
  - **Recommendations:**  
**Stabilization:** Remove all weeds. **Work Period:** ASAP and annually.  
**Preservation and Restoration:** Remove all weeds. Regrade the driving surface to expose the curb and restore the elevation of the flagstone walking surfaces along the bridge walls as originally designed. **Work Period:** 3 - 5 years.
- c. Guardrail, metal
- **Assessment:** During the 2000 improvements, the metal guardrails extending from the ends of the bridge were lengthened. Their added length has visually overwhelmed the stonework.
  - **Recommendations:**  
**Stabilization:** Replace existing with timber-faced metal guardrail that is visually appropriate for the stone masonry bridge walls. See enclosed photo example. **Work Period:** 1 - 3 years.  
**Preservation:** Replace the metal guardrails with a stone masonry guardrail, similar to the picture included. **Work Period:** 1 - 5 years.  
**Restoration:** Replace the metal guardrails with a stone masonry guardrail, similar to the picture included. **Work Period:** 1 - 5 years.
- d. Sidewalk
- **Assessment:** Existing flagstone is in fair to good condition. Parts of the walks are covered from a buildup of sand, gravel, and vegetation. Much of the walking surface is uneven due to freeze/thaw actions and neglected maintenance.
  - **Recommendations:**  
**Stabilization:** None.  
**Preservation/Restoration:** Cut down asphalt driving surface to expose original 8" high concrete curb. Install new driving surface to match original grades. Repair de-

teriorated curb as described above. Remove all flagstone and catalog original location to re-install in those locations. Regrade all substrate material on which the flagstone rests. Add sand as needed and compact. Re-install existing flagstone and provide new matching stone using Isle granite for those pieces that are missing. Provide regular maintenance. Work Period: 3 - 5 years.

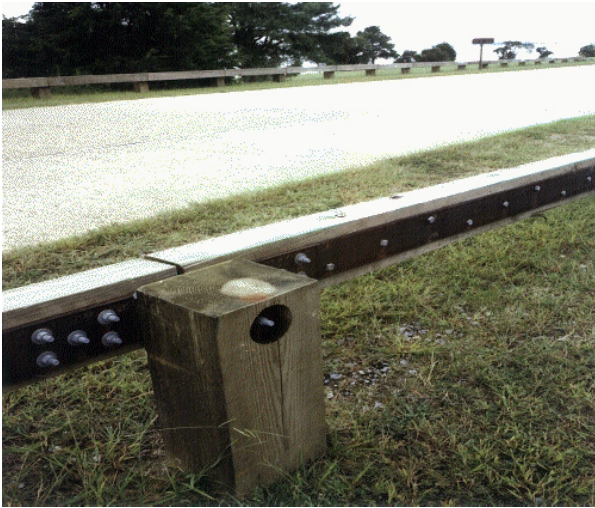
7. **Accessibility Considerations:** Does not apply.
8. **Health and Safety Considerations:** All construction and masonry restoration materials and methods shall be environmentally approved for the preservation of the water quality standards in the lake and creek. Extra safety precautions are needed while construction work is completed due to the high volume and speed of the traffic. No pedestrian movement over TH 169 is recommended.
9. **Environmental Considerations:** Not applicable
10. **Other Considerations/Recommendations:** Signage is recommended to be done as soon as possible to raise the public's awareness of this site's historic importance and educational value. Provide a sign on each side of the highway indicating the historic bridge's location so that motorists may choose to stop on the west side to get a closer look at the construction methods used by the CCC during the 1930's. Locate an interpretive plaque in the acquired parking area that tells a brief story of the CCC and the historic roadside construction. If the parking area cannot be acquired, then the interpretive signage should be eliminated for highway safety.
11. **Conclusion:** The restoration of this bridge is critical due to the near future highway changes proposed. *MnDOT's acquisition of the adjacent parking area to the west is imperative and should occur as soon as possible.* The parking area is currently an "eyesore" and will provide a small, safe picnicking and interpretative area for travelers.

Because the guardrails serve a very useful purpose and fulfill safety requirements, they must be maintained. However, because of their length and current metal design, they *significantly and negatively* impact the stone bridge and its visual historic value. Therefore the replacement of these metal rails with historically sensitive designs that are already approved by the Federal Highway Administration must be undertaken when the bridge repairs occur.

Provide interpretive signage that describes the history of the site, its designers and builders. The panel design should be simple and unobtrusive. If necessary, create a sensitively designed, hard-surfaced access to the panel such as "grass-crete."

	Stabilization	Preservation	Restoration
<b>Spatial Organization and Land Patterns</b>			
Off-site impacts			
Functional relationships			
Visual relationships			
Cultural landscape limits (land acquisition)			
<b>Topography</b>			
Character-defining feature			
Non-contributing corrective work			
<b>Vegetation</b>	\$2,860	\$2,860	\$45,530
<b>Circulation</b>			
Access road and internal roadways ( <i>guardrail costs below</i> )			
Parking areas	\$33,754	\$33,754	\$33,754
Pedestrian walks		\$12,953	\$15,356
Paths and trails			
<b>Water Features</b>			
<b>Structures, Furnishings and Objects</b>			
Bath house			
Bench(es), other			
Bench(es), stone			
Bridge/culvert	\$72,125	\$72,125	\$72,125
Cave			
Council ring			
Curb, stone	\$562	\$6,477	\$6,477
Curb, concrete			
Dam			
Dock			
Drinking fountain(s)			
Entrance Wall			
Fireplace(s), other			
Fireplace(s), stone			
Flagpole(s), other			
Flagpole(s), stone			
Flagstone pad			
Footbridge			
Foundation of building			
Gravestone			
Guardrail, stone (Replace w/historic)	(Timber/Steel) \$18,304	(Stone Masonry) \$154,880	(Stone Mas.) \$154,880
Info board			
Info booth			
Marker			
Other feature			
Overlook wall			
Picnic shelter(s)			
Picnic table(s), other		\$2,640	\$2,640
Picnic table(s), stone			
Privies		\$880	\$880
Refuse container(s), stone			
Restroom building			
Retaining wall			
Rock garden			
Sea wall			
Sidewalk			
Signpost, other			
Signpost, stone			
Spring water outlet			
Statue			
Storage building			
Trail steps			
Wall			
Well/pump			
<b>Accessibility Considerations</b>			
<b>Health and Safety Considerations</b>			
<b>Environmental Considerations</b>			
<b>Other Considerations (signage)</b>	\$6,336	\$6,336	\$6,336
<b>ESTIMATED COSTS</b>	<b>\$133,941.00</b>	<b>\$292,904.00</b>	<b>\$337,978.00</b>

Guardrail/wall Options that are historically appropriate.



**Wood Timber/steel Reinforced Guardrail**

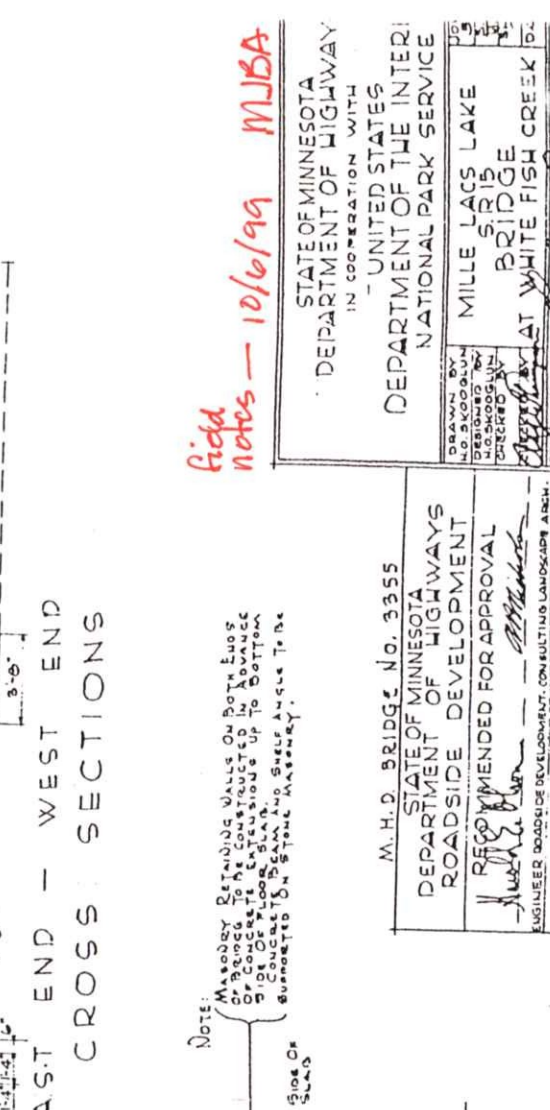
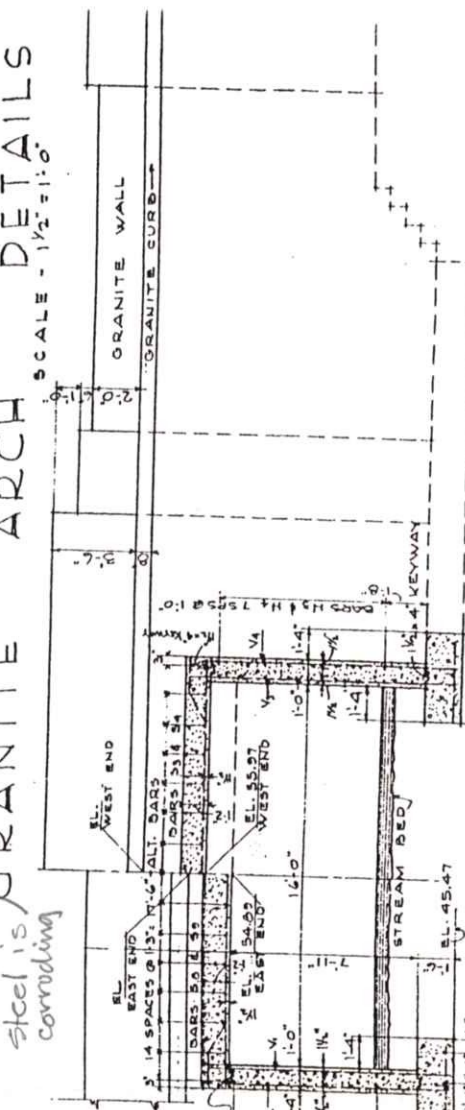
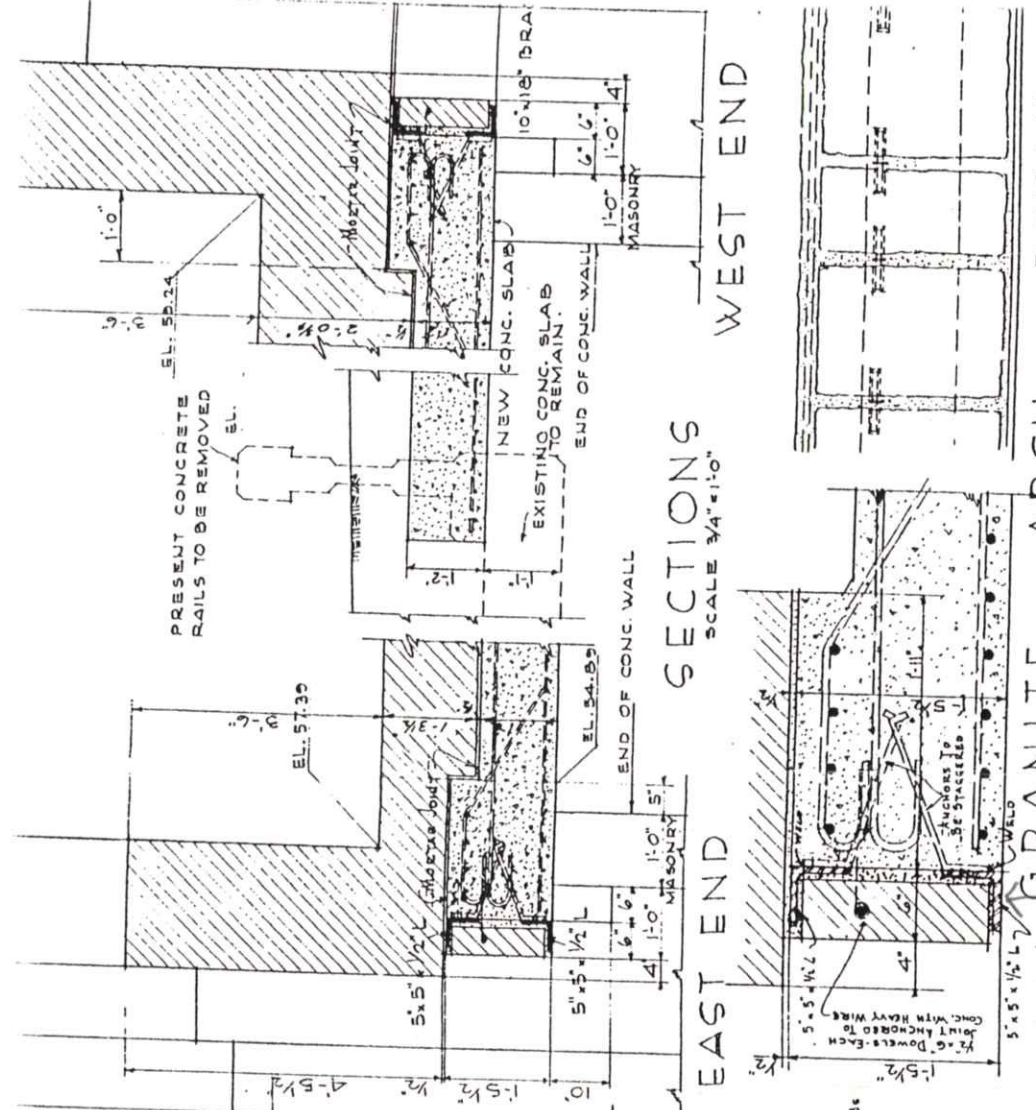
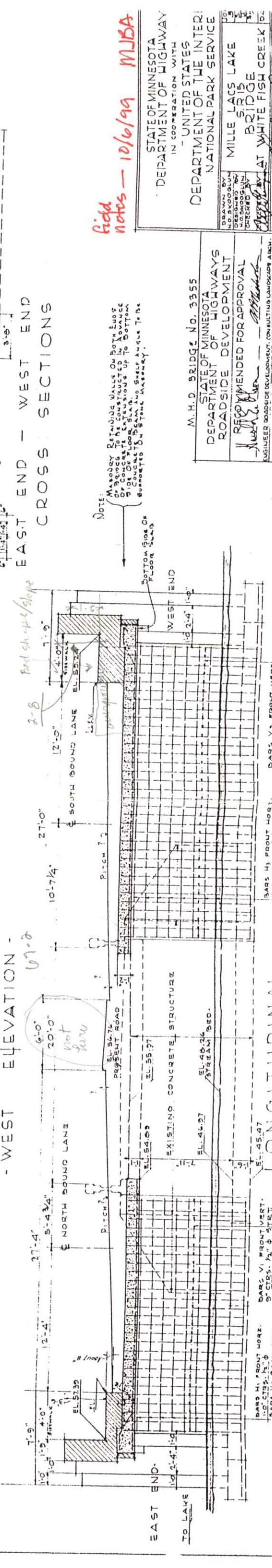
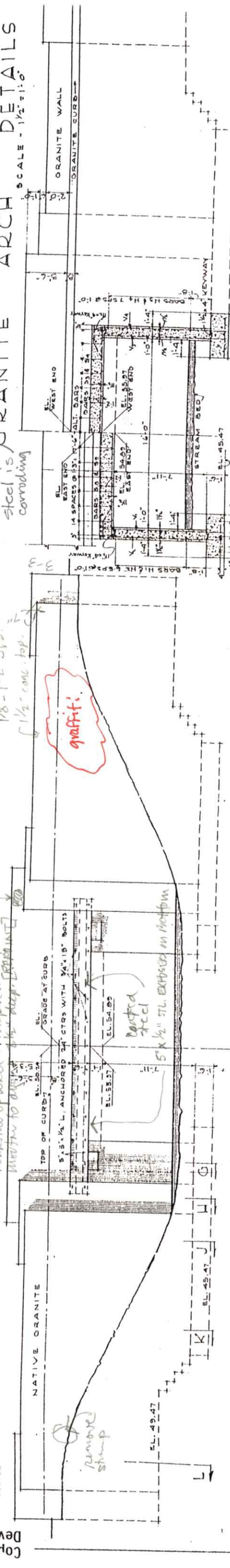
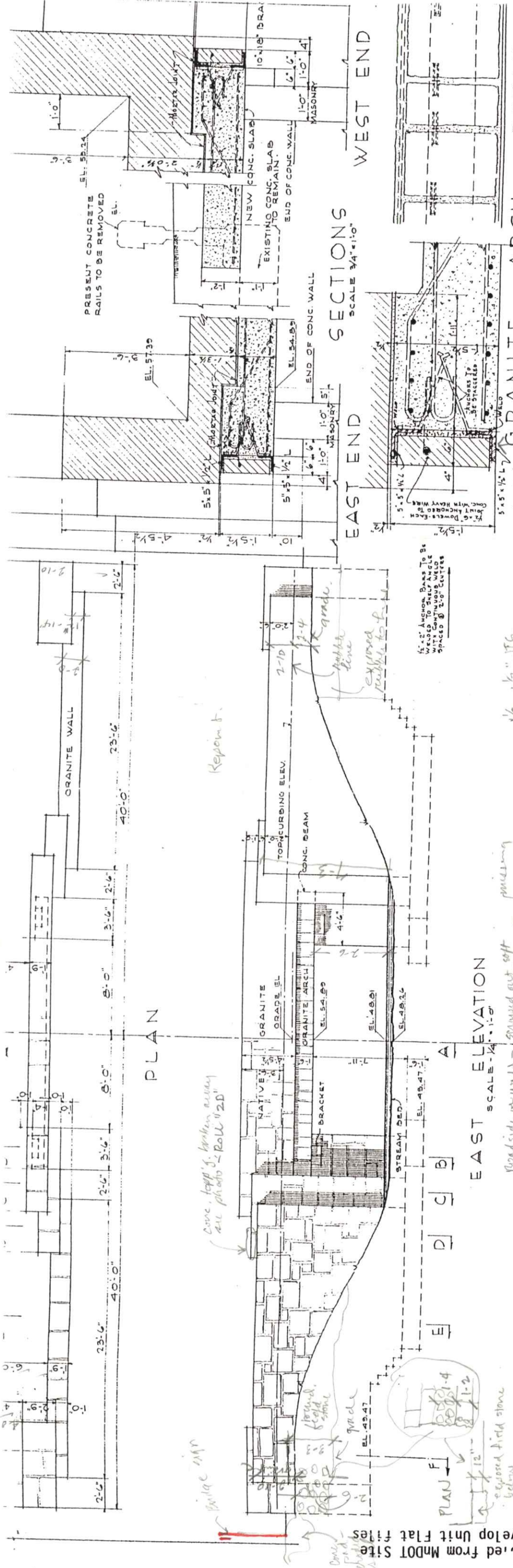


**Stone Masonry Guardwall**









Copied from MndOT Site  
Develop Unit Flat Sites

Remove stump  
exposed field stone below  
grade  
found field stone  
bridge pier  
conc. topped 5' between existing rail photo 2 RD'  
Report  
1/8-1 1/2\"/>

field notes - 10/16/99 MJBA

STATE OF MINNESOTA  
DEPARTMENT OF HIGHWAY  
IN COOPERATION WITH  
UNITED STATES  
DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

M.H.D. BRIDGE NO. 3355  
STATE OF MINNESOTA  
DEPARTMENT OF HIGHWAYS  
ROADSIDE DEVELOPMENT

RECOMMENDED FOR APPROVAL  
M. J. B. A.  
ENGINEER, ROADSIDE DEVELOPMENT, CONSULTING LANDSCAPE ARCH.

DRAWN BY  
NO. 500000  
DATE  
CHECKED BY  
DATE

MILLE LAKE LAKE  
BRIDGE  
AT WHITE FISH CREEK

DATE

NOTE: Masonry Retaining Walls On Both Ends of Bridge To Be Constructed To Advance Of Concrete Materials Up To Bottom Of Floor Slab. All Steel Angles To Be Supported On Special Machinery.

graffiti

not here

Remove stump

exposed field stone below

grade

found field stone

bridge pier

conc. topped 5' between existing rail photo 2 RD'

Report





M J B A

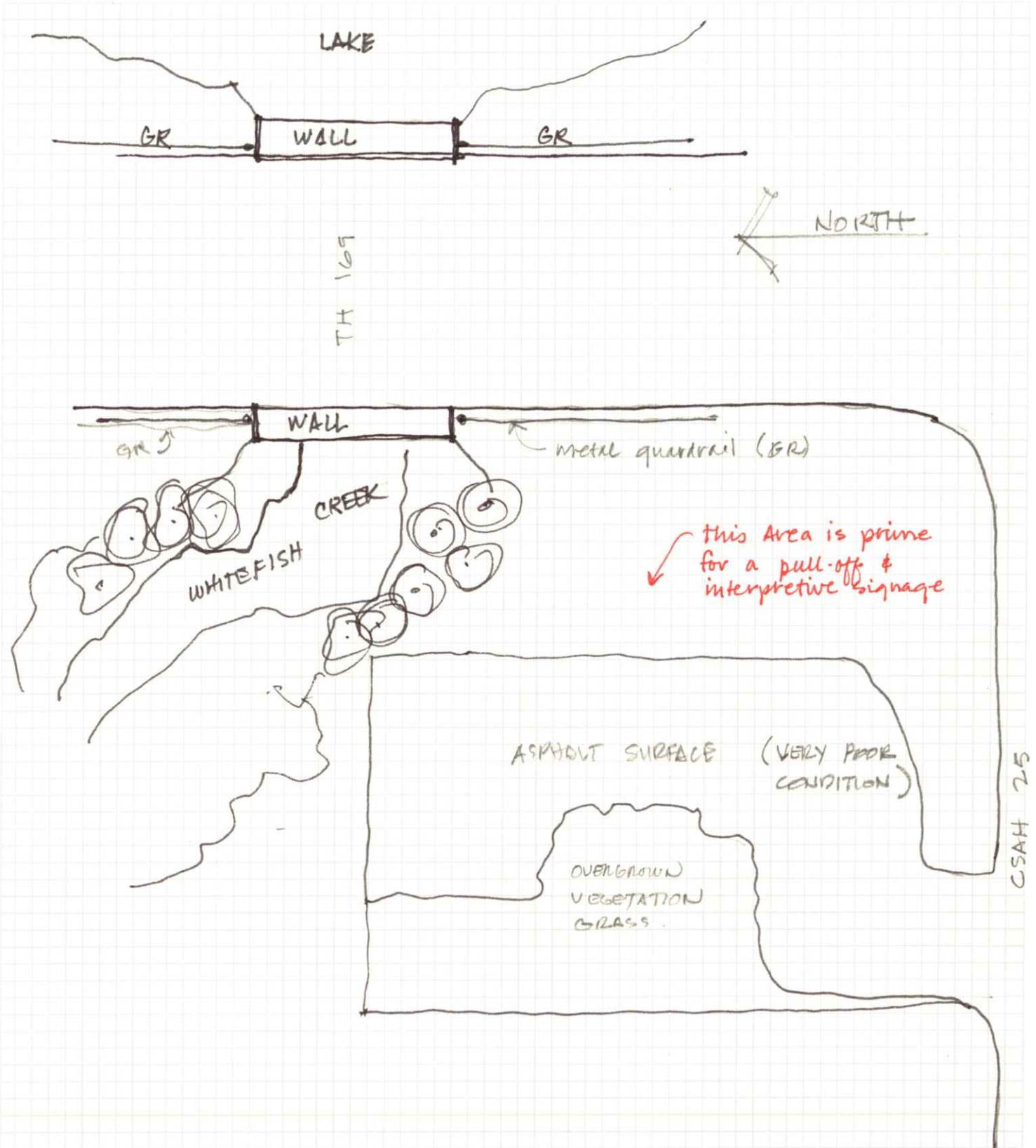
- ARCHITECTURE
- INTERIOR DESIGN
- HISTORIC PRESERVATION

# MICHAEL J. BURNS ARCHITECTS, LTD.

824 CENTER AVENUE, MOORHEAD, MN 56560 ■ 2878 LILAC LANE NE, FARGO, ND 58102  
■ (218) 233-6620 ■ (701) 298-0140 ■ FAX: (218) 233-6621

Project MNDOT RPA Project No. 9919

Subject WHITEFISH BRIDGE #3355 Date 10-6-99



HIGHWAY

# CENTRAL FILES

March 29, 1968

E. E. Johnson  
Bridge Maintenance Supervisor

G. H. Kolstad  
Chief, Centralized Operations

Bridge #3355 on T.H. 169, 4.7 miles north of  
Vineland

Herewith one set of prints for the slab span Bridge #3355.

It has been suggested that this structure should have a thorough reinspection as there are some aspects which may have been over looked in the routine annual inspection.

This structure originally built as a 16' slab span with 19' between curbs in 1920 was subsequently widened in 1939. The grade has been raised so that the curbs are no longer visible on the old structure or perhaps they were cut off in the widening process and there is a question as to just what the present dead load consists of.

It should be noted as to whether or not any deficiencies are showing up which could be a result of overloading on both the new and the old portion. It would be of interest to determine the exact depth of fill and what it consists of as to whether or not it is bituminous material, gravel, and so forth.

Please give this your early attention and advise.

Attachment:  
Prints

cc:  
J. L. Spencer  
D. J. Aune  
A. L. W. Anderson  
R. P. Braun

GHK:lt

S.P. 169-18-23-4=4814

10-T

STATE OF MINNESOTA  
DEPARTMENT OF HIGHWAYS.  
BRIDGE MAINTENANCE, REPAIRS AND RENEWALS

DATE

13

BRIDGE NO. 3355 MAINT. NO. 815 LOCATION SEC. 7 TWP. 43 RGE 27 T.H. NO. 169-18 COUNTY Mille Lacs  
 LOCATED 4.7 MILES N FROM Vineland STREAM WHITE FISH CREEK  
 YEAR BUILT 1920 BUILT BY Milaca Br. Co. COS. OF CONSTRUCTION \$ 2750.00  
 DESCRIPTION 16' Slab 16' WIDTH OF ROADWAY CONC. TYPE FLOOR Conc.

DATE	REPAIRS RECOMMENDED	EST. COST	DATE	REPAIRS COMPLETED	COST
1937			1937	Reflector Buttons Repairs	125.61
1939	Widened Natl Park Service Labor	1225.00	1939	Repairs	19.86
	M. 7000	148.00	1941	Misc Br. Maint. & Inspt.	9.10
	Plus 7314 Man hours CCC	?	1958	REPAIRING	22.03
1939	Material by State	2659.12	1959	Inspection	11.77
	Engineering & Supervision	615.65	1960	Misc. Repairs	5.98
			1961	By Area 3-B	8.80
			7-8-75	CLEAN + REGRIND to BLKS REPAIR S. SIDE WALKS	1,189.69

RECENT BLKS - ?

could have been  
mortar shows enough weathering













1. East Side looking North



2. Looking North along TH 169



3. North End of the East Wall looking NE



4. West Wall looking North



5. North Wall looking South (*Curb is not visible*)



6. West Wall looking South (*overgrown turf*)



7. Close-up of Flagstone Walk





8. Close-up of Granite Header over Culvert



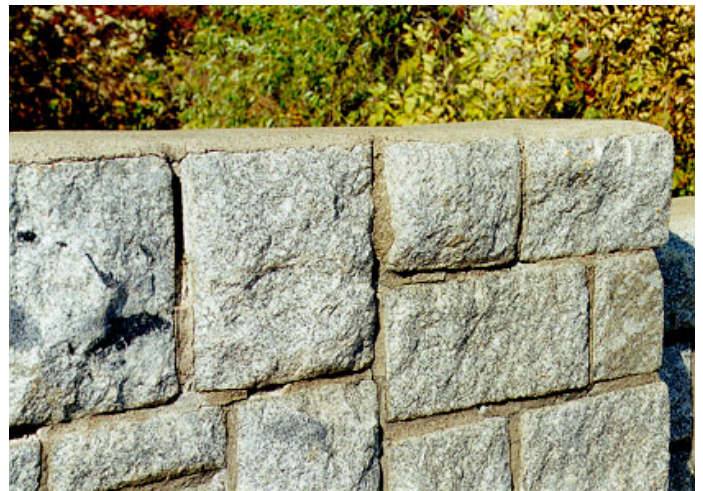
9. Close-up of Mortar Joint Condition.



10. Missing Stone and Poor Mortar



11. Mortar Topping at Walls (*broken and spalling*)



12. Mortar Joint Conditions



13. Patched End Caps (*spalled mortar topping above sloped stone patch and loose mortar behind*)



14. Wall End showing Poor Mortar Conditions and Overgrown Vegetation





15. Granite/Fieldstone Foundation



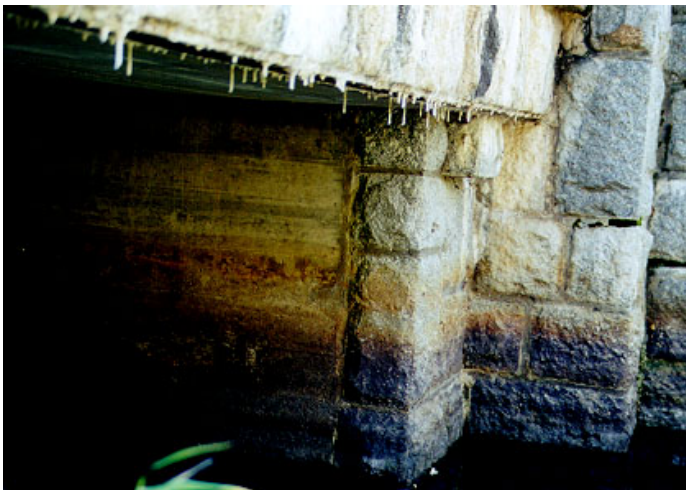
16. Granite/Fieldstone Foundation (Note: fill settling)



17. Culvert Opening (Note: Condition of granite header and surrounding mortar joints)



18. Graffiti on West Wall



19. Culvert Condition Showing Granite, Concrete and Water Level Variations

## SITE BOUNDARIES

### ■ RECOMMENDED BOUNDARY OF NATIONAL REGISTER-ELIGIBLE PROPERTY

The recommended boundary of the National Register-eligible property is shown by the dashed line on the accompanying sheets entitled "Whitefish Creek Bridge (Bridge 3355) Site Boundaries." The base maps for these sheets are a Minnesota Department of Transportation (Mn/DOT) Right-of-way Map and a Mn/DOT aerial photo.

The eastern boundary of the National Register-eligible property follows the Mn/DOT right-of-way line, which is also the shoreline of Mille Lacs Lake. The western boundary follows the Mn/DOT right-of-way line and the bank of Whitefish Creek, as shown. The northern and southern boundaries are drawn at points 100' north and 100' south of the bridge's midpoint.

#### **Boundary Justification**

The recommended boundary of the National Register-eligible property encompasses the bridge and its original plantings. The plantings originally extended north and south approximately 100' from the midpoint of the bridge and east and west to approximately the right-of-way lines (see plans for S.P. 4814-10).

### ■ RECOMMENDED BOUNDARY OF MN/DOT HISTORIC SITE CONSERVATION ZONE

The recommended boundary of the Mn/DOT Historic Site Conservation Zone is also shown on the accompanying sheets. The Conservation Zone encompasses both the National Register-eligible property, marked by the dashed line, and adjacent areas marked by the solid line.

#### **Boundary Justification**

The Mn/DOT Historic Site Conservation Zone is recommended to provide a special management zone that includes both the National Register-eligible site and a larger area that encompasses part of the historic property's early physical and visual "context" or setting.

Preserving the property's physical and visual setting will help protect its historic integrity and enhance the public's understanding of, and appreciation for, the historic site design. The Conservation Zone will help buffer the site from elements that may detract from its historic character.

It is recommended that the Conservation Zone boundaries include the National Register-eligible property and additional land described as follows:

North and south of the National Register-eligible property, it is recommended that the Conservation Zone include all Mn/DOT right-of-way extending along the trunk highway 400' north and 400' south of the eligible property. West, northwest, and southwest of the National Register-eligible property, it is recommended that the Conservation Zone extend to a line 200' west of the National Register-eligible property, as shown.

It is recommended that Mn/DOT retain all current right-of-way within the Conservation Zone. It is further recommended that Mn/DOT preserve the Conservation Zone by taking such actions as special right-of-way planting and maintenance, acquiring additional property or scenic easements, and/or creating partnership agreements with individuals or groups interested in preserving the historic property and its setting. The Mn/DOT Cultural Resources Unit should be consulted regarding these activities.

In particular, it is recommended that Mn/DOT replant and maintain its right-of-way within the Conservation Zone following historic photos and original planting plans (see sheet 7 of 8 of S.P. 4814-10).

It is further recommended that Mn/DOT purchase the 200'-deep Conservation Zone area west, northwest, and southwest of the National Register-eligible site. This parcel is one of few locations near the bridge where a visitor can park, safely view the bridge, and walk to the bank of Whitefish Creek. After acquisition, it is recommended that Mn/DOT provide safe public access to the bridge, an interpretive marker, and appropriate plantings to buffer the bridge from future nearby development that may detract from its historic character. It is recommended that the parcel be redesigned with a small parking area, an interpretive marker, a picnic table based on historic MHD designs, and plantings consistent with S.P. 4814-10. (It is also recommended that the Whitefish Creek Bridge be jointly interpreted with other CCC-built sites in the area. For more information, see the site boundary recommendations for Garrison Concourse, Garrison Pedestrian Underpass, and the T.H. 169 Culvert at St. Alban's Bay.)

■ **MORE INFORMATION**

For detailed information on the Whitefish Creek Bridge's structures, landscape, and significance, refer to:

Mn/DOT Historic Roadside Development Structures Inventory form for Whitefish Creek Bridge (Bridge 3355) (Gemini Research, Dec. 1998).

"Mn/DOT Historic Roadside Development Structures Preservation and Restoration Report" for Whitefish Creek Bridge (Bridge 3355) (Michael J. Burns Architects and Gemini Research 2001).

Prepared by Gemini Research May 1, 2004.



**Whitefish Creek Bridge (Bridge 3355)  
Site Boundaries**



 National Register-eligible Property  
 Historic Site Conservation Zone  
Conservation Zone includes the  
National Register-eligible Property

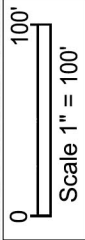


Photo taken Spring 1999





**Minnesota Department of Transportation (Mn/DOT)**

**Historic Bridge Management Plan**

**Appendices**

**Bridge Number: 3355**

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**Appendix D. Cost Detail**







**Mn/DOT Historic Bridge Management Plan**

**BRIDGE No. 3355 MAINTENANCE/STABILIZATION/PRESERVATION (M/S/P) Work Items and Costs**

Notes:

1 Costs are presented in 2006 dollars.

2 Unit costs are presented to the dollar or cent depending on the precision of the specific value.

**MAINTENANCE COST SUMMARY**

	ITEM	ANNUAL COSTS
1.00	SUPERSTRUCTURE	\$ -
2.00	SUBSTRUCTURE	\$ 1,000
3.00	RAILINGS	\$ 1,500
4.00	DECK	\$ 500
5.00	OTHER	\$ 2,000
		\$ 5,000

**1.00 SUPERSTRUCTURE**

REF. No.	ITEM / DESCRIPTION OF WORK	EXPECTED LIFE CYCLE - YEARS	ITEM QTY	QTY UNIT	UNIT COST	ITEM TOTAL	ANNUAL COST
1.05					\$ -	\$ -	\$ -
1.10					\$ -	\$ -	\$ -
1.15					\$ -	\$ -	\$ -
1.20					\$ -	\$ -	\$ -
1.25					\$ -	\$ -	\$ -
1.30					\$ -	\$ -	\$ -
1.35					\$ -	\$ -	\$ -
1.40					\$ -	\$ -	\$ -
1.45					\$ -	\$ -	\$ -
1.50					\$ -	\$ -	\$ -
						\$ -	\$ -

**2.00 SUBSTRUCTURE**

REF. No.	ITEM / DESCRIPTION OF WORK	EXPECTED LIFE CYCLE - YEARS	ITEM QTY	QTY UNIT	UNIT COST	ITEM TOTAL	ANNUAL COST
2.05	Flush abutments and wingwalls w/ water	1	1	LS	\$ 1,000.00	\$ 1,000	\$ 1,000
2.10					\$ -	\$ -	\$ -
2.15					\$ -	\$ -	\$ -
2.20					\$ -	\$ -	\$ -
2.25					\$ -	\$ -	\$ -
2.30					\$ -	\$ -	\$ -
2.35					\$ -	\$ -	\$ -
2.40					\$ -	\$ -	\$ -
2.45					\$ -	\$ -	\$ -
2.50					\$ -	\$ -	\$ -
						\$ 1,000	\$ 1,000

**3.00 RAILINGS**

REF. No.	ITEM / DESCRIPTION OF WORK	EXPECTED LIFE CYCLE - YEARS	ITEM QTY	QTY UNIT	UNIT COST	ITEM TOTAL	ANNUAL COST
3.05	Flush historic and new railings w/ water	1	1	LS	\$ 500.00	\$ 500	\$ 500
3.10	Tuckpoint deteriorated mortar joints	5	1	LS	\$ 5,000.00	\$ 5,000	\$ 1,000
3.15					\$ -	\$ -	\$ -
3.20					\$ -	\$ -	\$ -
3.25					\$ -	\$ -	\$ -
3.30					\$ -	\$ -	\$ -
3.35					\$ -	\$ -	\$ -
3.40					\$ -	\$ -	\$ -
3.45					\$ -	\$ -	\$ -
3.50					\$ -	\$ -	\$ -
						\$ 5,500	\$ 1,500

**4.00 DECK**

REF. No.	ITEM / DESCRIPTION OF WORK	EXPECTED LIFE CYCLE - YEARS	ITEM QTY	QTY UNIT	UNIT COST	ITEM TOTAL	ANNUAL COST
4.05	Flush slab and approach panels w/ water	1	1	LS	\$ 500.00	\$ 500	\$ 500
4.10					\$ -	\$ -	\$ -
4.15					\$ -	\$ -	\$ -
4.20					\$ -	\$ -	\$ -
4.25					\$ -	\$ -	\$ -
4.30					\$ -	\$ -	\$ -
4.35					\$ -	\$ -	\$ -
4.40					\$ -	\$ -	\$ -
4.45					\$ -	\$ -	\$ -
4.50					\$ -	\$ -	\$ -
						\$ 500	\$ 500

**5.00 OTHER**

REF. No.	ITEM / DESCRIPTION OF WORK	EXPECTED LIFE CYCLE - YEARS	ITEM QTY	QTY UNIT	UNIT COST	ITEM TOTAL	ANNUAL COST
5.05	Routine inspection	1	1	LS	\$ 1,000	\$ 1,000	\$ 1,000
5.10	In-depth arm's length masonry inspection	5	1	LS	\$ 5,000	\$ 5,000	\$ 1,000
5.15					\$ -	\$ -	\$ -
5.20					\$ -	\$ -	\$ -
5.25					\$ -	\$ -	\$ -
5.30					\$ -	\$ -	\$ -
5.35					\$ -	\$ -	\$ -
						\$ 6,000	\$ 2,000