

WILLIAM B. PINNEY
DIRECTOR



STATE OF VERMONT
AGENCY OF DEVELOPMENT AND COMMUNITY AFFAIRS
HISTORIC SITES DIVISION
MONTPELIER, VERMONT 05602
(602) 828-3226

September 27, 1974

William H DeLong, Chairman
Board of Selectmen
Cornwall Vermont 05753

Dear Mr DeLong

We are pleased to inform you that the Cedar Swamp Covered Bridge has been officially entered on the National Register of Historic Places

If you desire further information regarding this nomination, please feel free to contact us

Sincerely,

William B Pinney
Director
State Historic Preservation Officer

WBP md

WILLIAM D. PINNEY

DIRECTOR



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AGENCY OF DEVELOPMENT AND COMMUNITY AFFAIRS
HISTORIC SITES DIVISION
MONTPELIER, VERMONT 05602
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September 27, 1974

Roger H Stone, Sr , Chairman
Board of Selectmen
Salisbury, Vermont 05769

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WBP md



United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

IN REPLY REFER TO:

The Director of the National Park Service

Ronald H. Walker

is pleased to inform you that the historic property listed on the enclosed sheet has been nominated by the State Historic Preservation Officer responsible for your State's implementation of the National Historic Preservation Act of 1966, P.L. 89-665 (80 Stat 915), as amended. It has accordingly been entered in the National Register of Historic Places. A leaflet explaining the National Register is enclosed for your information and convenience.

Enclosures

ENTRIES IN THE NATIONAL REGISTER

STATE VERMONT

Date Entered SEP 10 1974

<u>Name</u>	<u>Location</u>
Cilley Covered Bridge	Tunbridge vicinity Orange County
Moxley Covered Bridge	Chelsea vicinity Orange County
Cedar Swamp Covered Bridge	Salisbury-Cornwall Town boundary Addison County
Howe Covered Bridge	Tunbridge vicinity Orange County
Dean Covered Bridge	Brandon vicinity Rutland County
Quinlan's Covered Bridge	Charlotte vicinity Chittenden County
Pulp Mill Covered Bridge	Middlebury-Weybridge Town boundary Addison County
Halpin Covered Bridge	Middlebury vicinity Addison County
Flint Covered Bridge	Tunbridge vicinity Orange County

Also Notified

Hon. George D Aiken
Hon. Robert T Stafford
Hon. Richard W. Mallary

COPY OF RECORDS
STATE OF VERMONT

WILLIAM B. PINNEY
DIRECTOR.



STATE OF VERMONT
AGENCY OF DEVELOPMENT AND COMMUNITY AFFAIRS
HISTORIC SITES DIVISION
MONTPELIER, VERMONT 05602
(802) 828-3226

January 18, 1974

Dr William J Murtagh
Keeper of the National Register
The National Register of Historic Places
Department of the Interior
National Park Service
18th and C Streets, N W
Washington, D C 20240

Dear Dr Murtagh

Enclosed please find National Register nomination forms
for the following

Cedar Swamp Covered Bridge, Addison County, Vt
Dean Covered Bridge, Rutland County, Vt
East Shoreham Covered Railroad Bridge, Addison County, Vt
Halpin Covered Bridge, Addison County, Vt
Pulp Mill Covered Bridge, Addison County, Vt
Rokeby, Addison County, Vt
Sanderson Covered Bridge, Rutland County, Vt
Thetford Center Covered Bridge, Orange County, Vt
Union Village Covered Bridge, Orange County, Vt
Wilcox-Cutts House, Addison County, Vt

These properties are being submitted under the Historic Pre-
servation Act of 1966 for inclusion on the National Register
of Historic Places

Sincerely,


William B Pinney
Director
State Historic Preservation Officer

WBP md

enclosures

WILLIAM B. PINNEY
DIRECTOR



STATE OF VERMONT
AGENCY OF DEVELOPMENT AND COMMUNITY AFFAIRS
HISTORIC SITES DIVISION
MONTPELIER, VERMONT 05602
(802) 828-3226

January 17, 1974

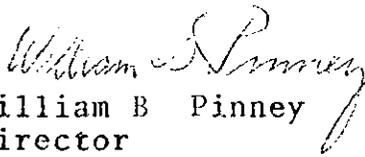
William H DeLong, Chairman
Board of Selectmen
Cornwall, Vermont 05753

Dear Mr DeLong

We are pleased to inform you that the Cedar Swamp Covered Bridge has been submitted to the Office of Archeology and Historic Preservation of the U S Department of the Interior for consideration for entry on the National Register of Historic Places Enclosed is an information leaflet on the National Register Notification of acceptance or rejection of the property will follow

If you have any questions, please do not hesitate to contact us

Sincerely,


William B Pinney
Director
State Historic Preservation Officer

WBP md

Enclosure

WILLIAM B. PINNEY
DIRECTOR



STATE OF VERMONT
AGENCY OF DEVELOPMENT AND COMMUNITY AFFAIRS
HISTORIC SITES DIVISION
MONTPELIER, VERMONT 05602
(802) 828-3226

January 18, 1974

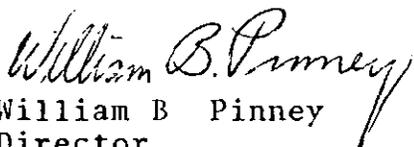
Roger H Stone, Sr , Chairman
Board of Selectmen
Salisbury, Vermont 05769

Dear Mr Stone

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If you have any questions, please do not hesitate to contact us

Sincerely,


William B Pinney
Director
State Historic Preservation Officer

WBP md

Enclosure

NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY - NOMINATION FORM

(Type all entries complete applicable sections)

STATE: Vermont
COUNTY: Addison
FOR NPS USE ONLY
ENTRY DATE

1. NAME

COMMON:
Cedar Swamp Covered Bridge

AND/OR HISTORIC:

2. LOCATION

STREET AND NUMBER:
Town road across Otter Creek, 0.6 mile west of Salisbury Station

CITY OR TOWN:
Salisbury-Cornwall town boundary

CONGRESSIONAL DISTRICT:
Vt District Rep. Richard Mallary

STATE: Vermont CODE: 50 COUNTY: Addison CODE: 01

3. CLASSIFICATION

CATEGORY (Check One)	OWNERSHIP	STATUS	ACCESSIBLE TO THE PUBLIC
<input type="checkbox"/> District <input type="checkbox"/> Building <input type="checkbox"/> Site <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Object	<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Both	Public Acquisition: <input type="checkbox"/> In Process <input type="checkbox"/> Being Considered	<input checked="" type="checkbox"/> Occupied <input type="checkbox"/> Unoccupied <input type="checkbox"/> Preservation work in progress
PRESENT USE (Check One or More as Appropriate)			
<input type="checkbox"/> Agricultural <input type="checkbox"/> Commercial <input type="checkbox"/> Educational <input type="checkbox"/> Entertainment	<input type="checkbox"/> Government <input type="checkbox"/> Industrial <input type="checkbox"/> Military <input type="checkbox"/> Museum	<input type="checkbox"/> Park <input type="checkbox"/> Private Residence <input type="checkbox"/> Religious <input type="checkbox"/> Scientific	<input checked="" type="checkbox"/> Transportation <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Comments _____

4. OWNER OF PROPERTY

OWNER'S NAME:
Towns of Salisbury and Cornwall

STREET AND NUMBER:
(no street numbers)

CITY OR TOWN:
Salisbury and Cornwall

STATE:
Vermont

CODE:
50

5. LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC:
Offices of Town Clerks

STREET AND NUMBER:
(no street numbers)

CITY OR TOWN:
Salisbury and Cornwall

STATE:
Vermont

CODE:
50

6. REPRESENTATION IN EXISTING SURVEYS

TITLE OF SURVEY:
Vermont Historic Sites and Structures Survey

DATE OF SURVEY: 1973 Federal State County Local

DEPOSITORY FOR SURVEY RECORDS:
Vermont Division of Historic Sites

STREET AND NUMBER:
Pavilion Building

CITY OR TOWN:
Montpelier

STATE:
Vermont

CODE:
50

SEE INSTRUCTIONS

STATE: Vermont
COUNTY: Addison
ENTRY NUMBER:
FOR NPS USE ONLY

7. DESCRIPTION

CONDITION	(Check One)					
	<input type="checkbox"/> Excellent	<input checked="" type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Deteriorated	<input type="checkbox"/> Ruins	<input type="checkbox"/> Unexposed
	(Check One)			(Check One)		
	<input checked="" type="checkbox"/> Altered	<input type="checkbox"/> Unaltered	<input type="checkbox"/> Moved	<input checked="" type="checkbox"/> Original Site		

DESCRIBE THE PRESENT AND ORIGINAL (if known) PHYSICAL APPEARANCE

The Cedar Swamp covered bridge consisted originally of a single span supported by two flanking timber Town lattice trusses. In 1969 a concrete pier was built under the center of the span to reinforce it. The trusses have not been significantly altered by the addition of the pier. (The bottom chords rest on timber corbels on the top of the pier. Steel tie rods and plates enclose the chord to anchor the bridge to the pier.) The abutments are built of marble blocks, which have been covered with concrete except on the face of the east abutment. Guy cables extend to the river banks from the upper ends of the north truss to provide lateral reinforcement.

The bridge is 153.5 feet long overall. The supporting pier stands under the midpoint of the span. The bridge is 18.5 feet wide, with a 14-foot roadway. The wood floor consists of planks laid flat and perpendicular to the trusses, with strips of planks overlaid transversely for the driving surfaces.

On the exterior, the large planks pegged together diagonally to form the trusses (and side walls) of the bridge are sheathed with flush boards hung vertically. Similar siding protects the ends of the trusses immediately inside the portals. There are no windows or openings in the side walls. The gable ends are also sheathed with flush vertical boards, which display extremely weathered yellow paint complemented by red trim. The portal openings are trimmed with semi-elliptical arches. The gable roof is now covered with corrugated metal sheeting.

SEE INSTRUCTIONS

8. SIGNIFICANCE

PERIOD (Check One or More as Appropriate)

- Pre-Columbian 16th Century 18th Century 20th Century
 15th Century 17th Century 19th Century

SPECIFIC DATE(S) (If Applicable and Known) 1864-65

AREAS OF SIGNIFICANCE (Check One or More as Appropriate)

- | | | | |
|--------------------------------------------------|-------------------------------------------------|----------------------------------------------------|------------------------------------------|
| <input type="checkbox"/> Aboriginal | <input type="checkbox"/> Education | <input type="checkbox"/> Political | <input type="checkbox"/> Urban Planning |
| <input type="checkbox"/> Prehistoric | <input checked="" type="checkbox"/> Engineering | <input type="checkbox"/> Religion/Philosophy | <input type="checkbox"/> Other (Specify) |
| <input type="checkbox"/> Historic | <input type="checkbox"/> Industry | <input type="checkbox"/> Science | _____ |
| <input type="checkbox"/> Agriculture | <input type="checkbox"/> Invention | <input type="checkbox"/> Sculpture | _____ |
| <input checked="" type="checkbox"/> Architecture | <input type="checkbox"/> Landscape Architecture | <input type="checkbox"/> Social/Humanitarian | _____ |
| <input type="checkbox"/> Art | <input type="checkbox"/> Literature | <input type="checkbox"/> Theater | _____ |
| <input type="checkbox"/> Commerce | <input type="checkbox"/> Military | <input checked="" type="checkbox"/> Transportation | _____ |
| <input type="checkbox"/> Communications | <input type="checkbox"/> Music | | _____ |
| <input type="checkbox"/> Conservation | | | _____ |

STATEMENT OF SIGNIFICANCE

The Cedar Swamp covered bridge is the only covered wood bridge remaining in the towns of Salisbury and Cornwall. The bridge is one of three in Vermont which straddle town boundaries along the channels of streams. (In such cases both towns share the ownership and maintenance of the bridge.) Until 1969 when a central supporting pier was built, the Cedar Swamp bridge had one of the longest wood clear spans in Vermont.

The covered bridges of Vermont are among its most cherished and symbolic historic resources. About one hundred bridges still stand in the state, the greatest concentration by area of covered bridges in the country.¹ Many of these bridges are integral parts of unique architectural environments whose physical setting and cultural context have been little altered until recently. However, extensive highway construction programs are now drastically changing the historic environment of the state. The Vermont Division of Historic Sites wishes to extend the recognition and protection of the National Register to the majority of the surviving covered bridges, including the Cedar Swamp bridge.

¹ R. S. Allen, Covered Bridges of the Northeast, The Stephen Greene Press, Brattleboro, Vt., 1957, p. 50

SEE INSTRUCTIONS

9. MAJOR BIBLIOGRAPHICAL REFERENCES

Allen, Richard Sanders, Covered Bridges of the Northeast, The Stephen Greene Press, Brattleboro, Vt, 1957

10. GEOGRAPHICAL DATA

LATITUDE AND LONGITUDE COORDINATES DEFINING A RECTANGLE LOCATING THE PROPERTY			O R	LATITUDE AND LONGITUDE COORDINATES DEFINING THE CENTER POINT OF A PROPERTY OF LESS THAN TEN ACRES		
CORNER	LATITUDE	LONGITUDE		LATITUDE	LONGITUDE	
	Degrees Minutes Seconds	Degrees Minutes Seconds		Degrees	Minutes	Seconds
NW	°	°		43 °	55'	06"
NE	°	°		73 °	10'	28"
SE	°	°				
SW	°	°				

APPROXIMATE ACREAGE OF NOMINATED PROPERTY: one acre

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE:	CODE	COUNTY	CODE
STATE:	CODE	COUNTY:	CODE
STATE:	CODE	COUNTY:	CODE
STATE:	CODE	COUNTY:	CODE

11. FORM PREPARED BY

NAME AND TITLE:
Hugh H. Henry, Historic Sites Researcher

ORGANIZATION: Vermont Division of Historic Sites DATE: 1-3-74

STREET AND NUMBER:
Pavilion Building

CITY OR TOWN: Montpelier STATE: Vermont CODE: 50

12. STATE LIAISON OFFICER CERTIFICATION

As the designated State Liaison Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service. The recommended level of significance of this nomination is:

National State Local

Name William B. Purroy

Title Director of Historic Sites
State Historic Preservation
Officer

Date 1/17/74

NATIONAL REGISTER VERIFICATION

I hereby certify that this property is included in the National Register.

Director, Office of Archeology and Historic Preservation

Date _____

ATTEST:

Keeper of The National Register

Date _____

SEE INSTRUCTIONS



$43^{\circ} 55' 06''$

Cedar Swamp Covered Bridge

$43^{\circ} 55' 06''$
 $73^{\circ} 10' 28''$

$73^{\circ} 10' 28''$

School No

SWAMP

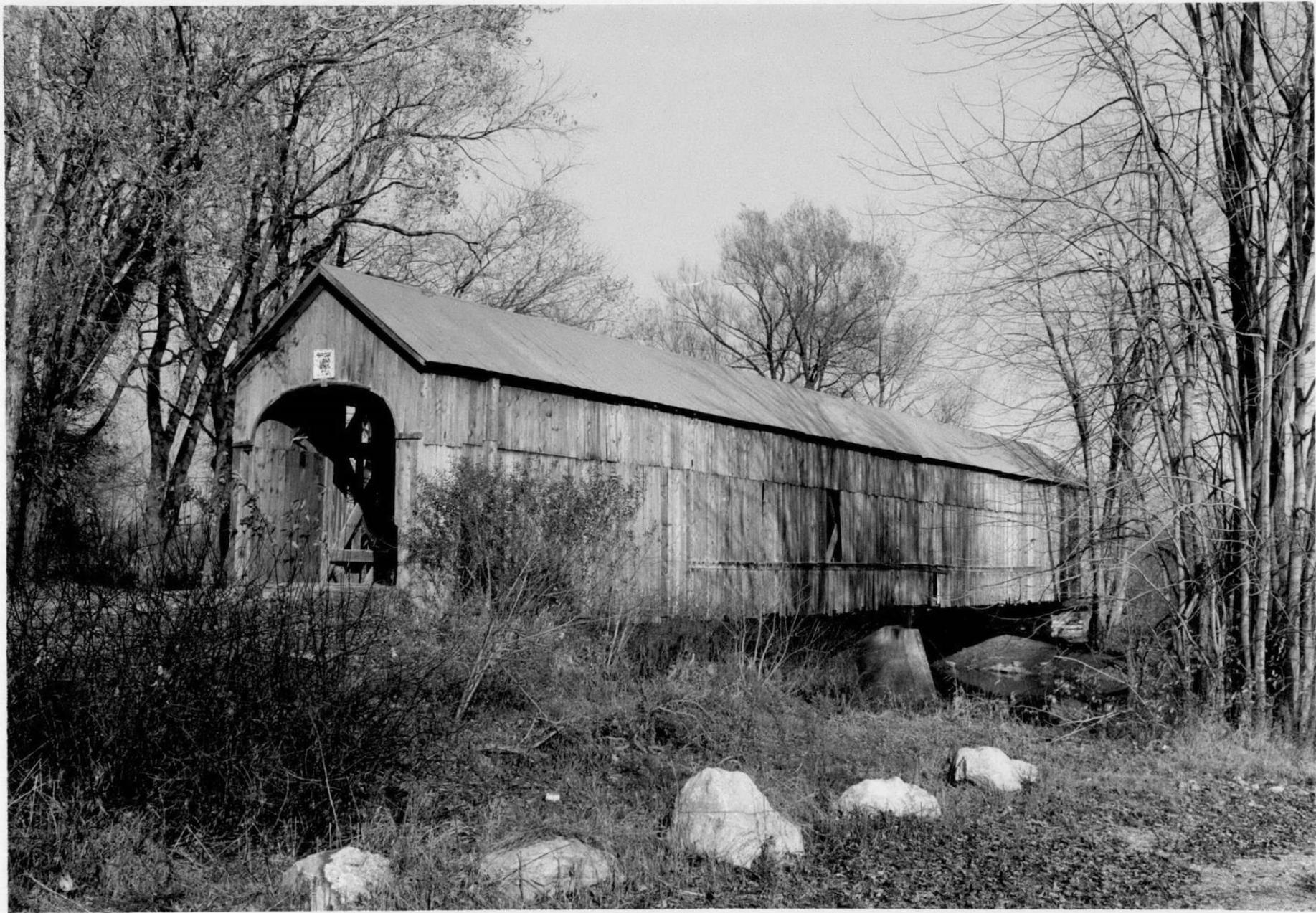
NATIONAL REGISTER OF HISTORIC PLACES
PROPERTY MAP FORM

(Type all entries - attach to or enclose with map)

STATE Vermont	
COUNTY Addison	
FOR NPS USE ONLY	
ENTRY NUMBER	DATE

SEE INSTRUCTIONS

1. NAME			
COMMON:		Cedar Swamp Covered Bridge	
AND/OR HISTORIC:			
2. LOCATION			
STREET AND NUMBER:			
Town road across Otter Creek, 0.6 mile west of Salisbury Station			
CITY OR TOWN:			
Salisbury-Cornwall town boundary			
STATE:	CODE	COUNTY:	CODE
Vermont	50	Addison	01
3. MAP REFERENCE			
SOURCE:			
U.S.G.S. 7.5 minute series (topographic) - Cornwall, Vt.			
SCALE: 1:24000			
DATE: 1943			
4. REQUIREMENTS			
TO BE INCLUDED ON ALL MAPS			
1. Property boundaries where required.			
2. North arrow.			
3. Latitude and longitude reference.			



VERMONT DIVISION OF HISTORIC SITES
COUNTY Addison TOWN Cornwall -
Salisbury
SUBJECT Cedar Swamp covered bridge
DATE 10/1973 FILE # 73-A-59
CREDIT Hugh H. Henry
VIEW south elevation and west portal

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
PROPERTY PHOTOGRAPH FORM

(Type all entries attach to or enclose with photograph)

1. NAME

COMMON

Cedar Swamp Covered Bridge

AND/OR HISTORIC

NUMERIC CODE (Assigned by NPS)

2. LOCATION

STATE

Vermont

COUNTY

Addison

TOWN

Salisbury-Cornwall

STREET AND NUMBER

Town road across Otter Creek, 0.6 mile west of Salisbury Station

3. PHOTO REFERENCE

PHOTO CREDIT Hugh H Henry
for Vt Division of
Historic Sites

DATE

October 1973

NEGATIVE FILED AT

Vermont Division of
Historic Sites

4. IDENTIFICATION

DESCRIBE VIEW, DIRECTION, ETC.

View of south elevation and west portal



VERMONT DIVISION OF HISTORIC SITES
COUNTY Addison TOWN Cornwall -
Salisbury
SUBJECT Cedar Swamp covered bridge
DATE 10/1973 FILE # 73-A-59
CREDIT Hugh H. Henry
VIEW west portal

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
PROPERTY PHOTOGRAPH FORM

(Type all entries attach to or enclose with photograph)

1. NAME

COMMON

AND/OR HISTORIC

NUMERIC CODE, (Assigned by NPS)

Cedar Swamp Covered Bridge

2. LOCATION

STATE

Vermont

COUNTY

Addison

TOWN

Salisbury-Cornwall

STREET AND NUMBER

Town road across Otter Creek, 0.6 mile west of Salisbury Station

3. PHOTO REFERENCE

PHOTO CREDIT

Lugh H. Henry
for Vt. Division of
Historic Sites

DATE

October 1973

NEGATIVE FILED AT

Vermont Division of
Historic Sites

4. IDENTIFICATION

DESCRIBE VIEW, DIRECTION, ETC.

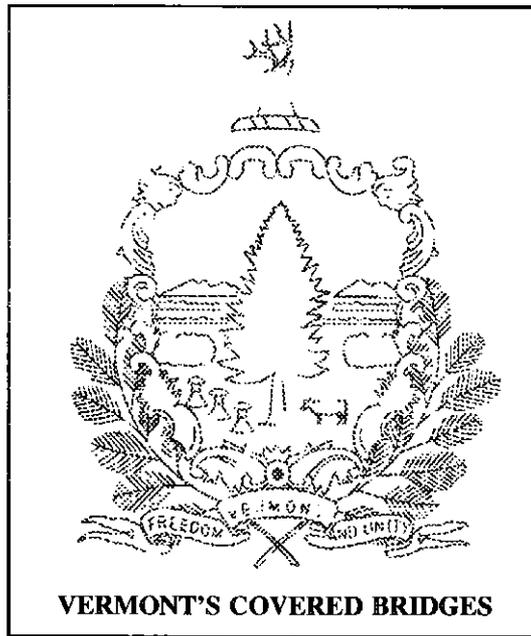
View of west portal



1983

83A-53

Vt. Div. for Historic Preservation
Addison Cty., Cornwall-Salisbury
Hugh H. Henry 6/83
83-A-53 NE
Cedar Swamp C.B. 50-8A58



COVERED BRIDGE STUDY

AT

CEDAR SWAMP (STATION) BRIDGE

**BRIDGE NO. 8
TOWN HIGHWAYS 1 AND 3**

**TOWNS OF SALISBURY/CORNWALL
ADDISON COUNTY**

MAY 1995

Prepared for:

**THE STATE OF VERMONT
AGENCY OF TRANSPORTATION**

Prepared by:

**McFARLAND-JOHNSON, INC.
BINGHAMTON, NEW YORK**

TABLE OF CONTENTS

	<u>PAGE</u>
1.0 INTRODUCTION	1
1.1 Purpose and Objectives	1
1.2 Bridge Location and History	2
2.0 STUDY METHODOLOGY	3
2.1 Introduction	3
2.2 Structural Evaluation Methodology	3
2.3 Traffic Evaluation Methodology	4
3.0 STUDY AREA CONSIDERATIONS	5
3.1 Study Area of Influence	5
3.2 Study Area Land Use	5
3.2.1 Existing Land Use	5
3.2.2 Existing Zoning	5
3.2.3 Anticipated Future Development	5
4.0 SITE ACCESSIBILITY	6
4.1 Existing Roadway System	6
4.2 Future Roadway System	6
4.3 Alternative Route Evaluation	6
5.0 TRAFFIC EVALUATION	8
5.1 Existing Traffic Volumes	8
5.2 Projected Traffic Volumes	8
5.3 Traffic Analysis	8
6.0 STRUCTURAL EVALUATION	9
7.0 CONSIDERATION OF PRESERVATION OPTIONS	11
8.0 CONCLUSION AND RECOMMENDATIONS	12

- APPENDIX A - NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY - NOMINATION FORM
- APPENDIX B - VAOT BRIDGE INSPECTION REPORT AND INVENTORY
- APPENDIX C - VERMONT COVERED BRIDGE TRAFFIC STUDY SURVEY, 1993
- APPENDIX D - VERMONT COVERED BRIDGE SURVEY, 1992
- APPENDIX E - COVERED BRIDGE STUDY TEAM
- APPENDIX F - GLOSSARY OF TECHNICAL TERMS AND BRIDGE TRUSS FRAME
CONFIGURATIONS
- APPENDIX G - GENERAL RECOMMENDATIONS FOR MAINTENANCE AND REPAIRS
OF COVERED BRIDGES

1.0 INTRODUCTION

1.1 Purpose and Objectives

The Vermont Agency of Transportation (VAOT) in a continuing effort to promote public safety and accommodate current and future traffic demands, is developing a long-range plan for the historic covered bridges located throughout the state.

The plan provides bridge specific traffic and structural data to local communities. The communities are then able to make better informed decisions involving repair, rehabilitation, or replacement of their covered bridges relative to both local transportation planning and the overall state transportation network system.

This plan has been prepared by a team effort, led by McFarland-Johnson, Inc. with support from several specialty support people/firms. Appendix E presents a listing of participants and involvement.

It is the objective of the VAOT and the Vermont Agency of Development and Community Affairs Division for Historic Preservation to preserve all covered bridges within Vermont. Many preservation actions are possible. It must be recognized, however, that most of the structures included in this study are currently carrying traffic and remain an important part of a community's transportation system. Therefore, practical options must be identified for consideration.

As a result of this Study, a course of action involving one of the following options will be recommended at each site:

- A. Close the structure to vehicular traffic, with traffic diverted to the existing transportation network,
- B. Continue use of bridge for light vehicular traffic, with heavier truck traffic diverted to other routes in the local network,
- C. Close the structure to traffic and construct an adjacent bypass structure,
- D. Rehabilitate the structure to safely support moderate traffic, or
- E. Other options, such as moving the existing structure to a nearby preservation site with structure replacement on the existing site.

It must be recognized that this statewide study of a large number of covered bridges has been ongoing for an extended period of time. Accordingly, this report may not

address the latest developments at this particular bridge site, such as accidents, new structural failures, or findings of significance as a result of biennial VAOT bridge inspections.

Since this report deals with a covered bridge, which is a rather unique type of structure, a glossary of technical terms is presented in Appendix F to facilitate the review of this document. The appendix also contains a diagram of various types of truss configurations to further assist the reviewer.

1.2 Bridge Location and History

This study addresses the Cedar Swamp (Station) Covered Bridge, located in Addison County in the west-central portion of the state (Figure 1). The bridge, located on the Salisbury/Cornwall Town line and 0.6 miles west of the Village of Salisbury Station, carries Town of Salisbury Highway 1 (Swamp Road) and Town of Cornwall Highway 3 (Swamp Road) across the Otter Creek.

The Cedar Swamp (Station) Covered Bridge is currently listed on the National Register of Historic Places. The National Register is a federal program, administered by the National Park Service, which identifies historic resources of national significance. A detailed account of the structure is contained in the "National Register of Historic Places Inventory - Nomination Form" presented in Appendix A.

A summary of the bridge's physical characteristics is provided below.

BRIDGE CHARACTERISTICS

Timber Truss Configuration	Town Lattice
Number of Spans	2 (76.8' each)
Measured Length (End to End)	153.6'
Measured Horizontal Clearance	14.25'
Measured Vertical Clearance at Truss	10.2'
Measured Vertical Clearance at Center of Bridge	13.25'
Sidewalk Provided	None
Approach Roadway Surface	Gravel (west approach) Asphalt (east approach)
Load Posting	6,000 pounds

BRIDGE SITE

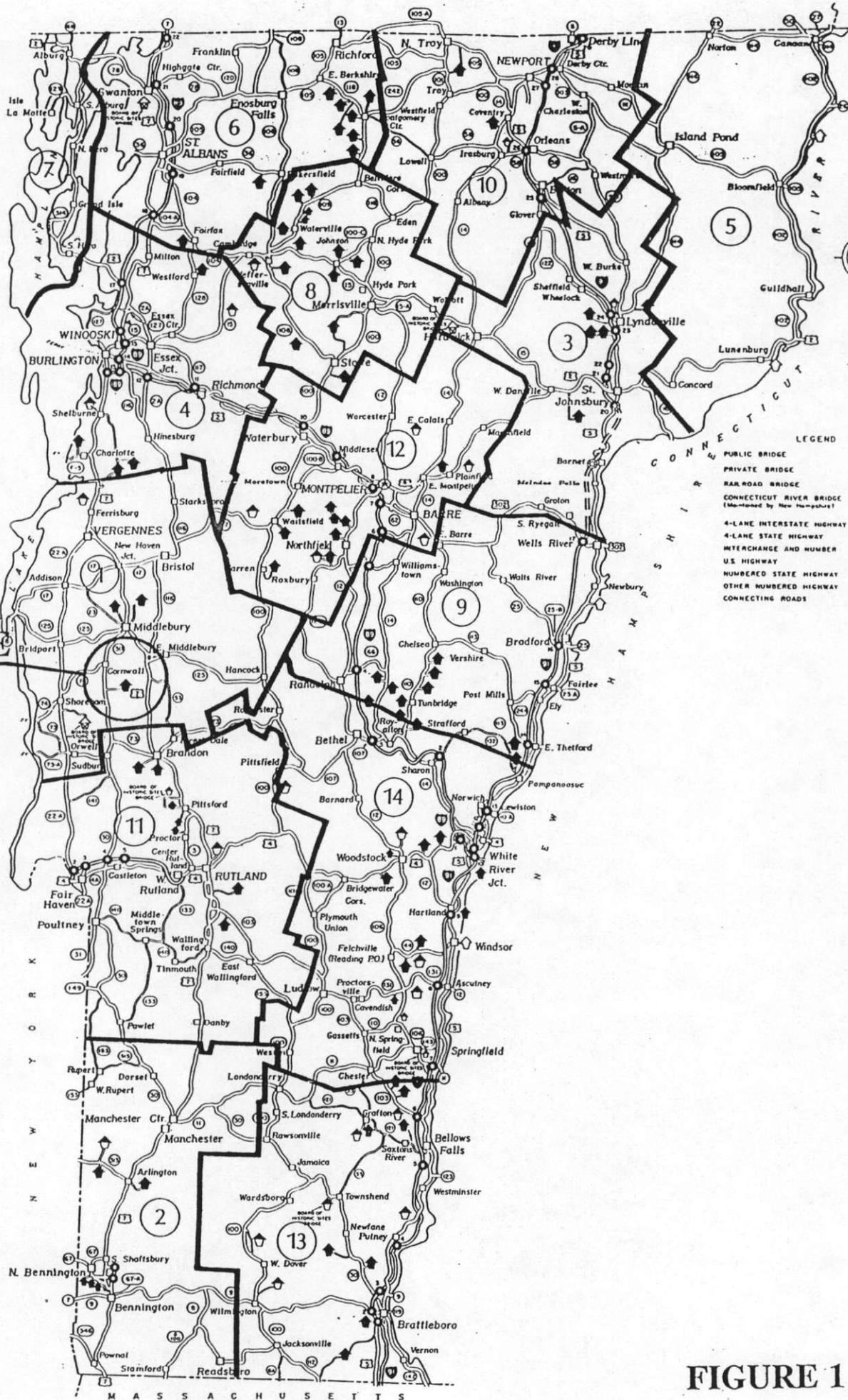


FIGURE 1

VERMONT COVERED BRIDGES

2.0 STUDY METHODOLOGY

2.1 Introduction

The two primary topics involved with this Study are structural needs/capacity and traffic needs/capacity. To obtain the necessary data several techniques were employed. The techniques included site visits, questionnaire surveys, and review of state and federal documents.

For the collection of general data, bridge sites were visited by representatives from the VAOT, McFarland-Johnson, and the Towns.

As a service to local communities, the VAOT regularly inspects all publicly owned covered bridges located throughout the State and documents pertinent traffic and structural information. A copy of the May, 1993 Bridge Inspection Report, Bridge Inventory, and Estimated Traffic Volumes are presented in Appendix B.

Bridge and traffic survey questionnaires were sent by McFarland-Johnson to community representatives. The bridge survey addressed the physical characteristics of the bridge as well as local financial resources committed to bridge maintenance and repair. The traffic survey addressed existing and proposed land use relative to traffic volume and circulation patterns. Both survey questionnaires are presented in Appendices C and D.

2.2 Structural Evaluation Methodology

A structural evaluation has been performed for the bridge with the goal of determining the suitability of the current bridge load posting. The scope of work for this study does not provide for a thorough structural analysis, due to the complex nature of these types of structures. Accordingly, the investigation focused on the major components of the structure, including floor members and trusses. Also, to further restrict the truss evaluation to the intent of this study, a "plate-girder analogy" type analysis was performed to predict stress conditions for comparison with allowables.

References consulted for this effort included: "Timber Bridges: Design, Construction, Inspection, and Maintenance Specifications", 1990; "Standard Specifications for Highway Bridges (AASHTO)", 1992 edition; and the "National Design Specifications for Wood Construction", 1991 edition. A difficulty arises, however, in attempting to apply contemporary specifications to structural timber milled and graded at the time of the construction of this bridge. Original timber is usually of much better quality than material available today. Therefore, selection of "allowable" stresses are critical to the results of the analytical evaluation.

Contrary to standard practice for more routine evaluations of steel or concrete structural components, no "ratings" of the timber components have been produced. Since Vermont State Statutes limit the load posting of bridges with timber floor components to a maximum of 16,000 pounds for Class 3 highways and 20,000 pounds for Class 2 highways, the

structural evaluation performed for this bridge has been performed for the appropriate weight vehicle. If the structure is currently posted for a lower limit, then the lower limit is also considered in the investigation.

The results of the analysis lead to a comparison of predicted actual stresses with allowable stresses. The conclusion of the analysis is a determination of the suitability of the load posting. If repairs are appropriate that could increase the posted capacity of the structure, then they are included in the recommendations portion of this report.

It should be noted that the analysis has not been altered to account for structural deficiencies due to timber rot or fractures. For purposes of the analysis of this study, it has been assumed that all structural components are in good condition and that necessary structural repairs will be performed by the bridge owner to maintain an acceptable level of service.

2.3 Traffic Evaluation Methodology

The traffic evaluation considered a variety of issues. These issues included site specific characteristics such as existing and projected traffic volumes, type of vehicle, land use, environmental constraints, and local policies toward development. The evaluation process entailed the following:

- Undertake a field review at the bridge site, and make a determination whether detailed traffic counts were required (either 24-hour or intersection peak hour movements). This determination was based on volume of traffic observed, classification of the road approaching the bridge site, and observation of the surrounding land use and potential traffic generators.
- Review survey responses relative to existing and future land use, traffic generators, and bridge specific construction activity. Determine how anticipated land use, within the study area, will impact the existing covered bridge.
- Obtain from the VAOT estimated existing and future traffic volumes, the bridge inspection report, and the bridge inventory list. If the volume of traffic warrants a traffic analysis, define the roadway's quality of traffic operational conditions using the "Highway Capacity Manual Special Report 209" guidelines.
- Draw conclusions from appropriate data and make recommendations.

3.0 STUDY AREA CONSIDERATIONS

3.1 Study Area of Influence

The area of influence for this study was defined as the approximate area encompassed by a one-half mile radius around each bridge.

Figures 2A, 2B, and 3 depict the location of the Cedar Swamp Bridge along the Salisbury/Cornwall Town line. Figures 4 and 5 present general photographs of the structure and both approaches.

3.2 Study Area Land Use

3.2.1 Existing Land Use

As shown on Figure 3, the covered bridge is located along the eastern edge of the Cornwall Swamp Wildlife Management Area. The town road is appropriately named Swamp Road and is elevated approximately 2 feet above the surrounding swamp area. Town officials have indicated that the roadway floods at least once a year on the Cornwall side of the bridge and consists of land which is swamp, wetlands, and/or floodplains.

Population centers within the Town of Salisbury include Salisbury Station, West Salisbury, and Salisbury. The eastern third of the town includes the Salisbury Municipal Forest and Lake Dunmore.

The Town of Cornwall includes population centers at Cornwall and West Cornwall. The eastern quarter of the Town consists of the Cornwall Swamp Wildlife Management Area.

3.2.2 Existing Zoning

According to Town officials, both Salisbury and Cornwall have zoning ordinances and Town Plans which are currently being revised by the Town's Board of Selectmen.

3.2.3 Anticipated Future Development

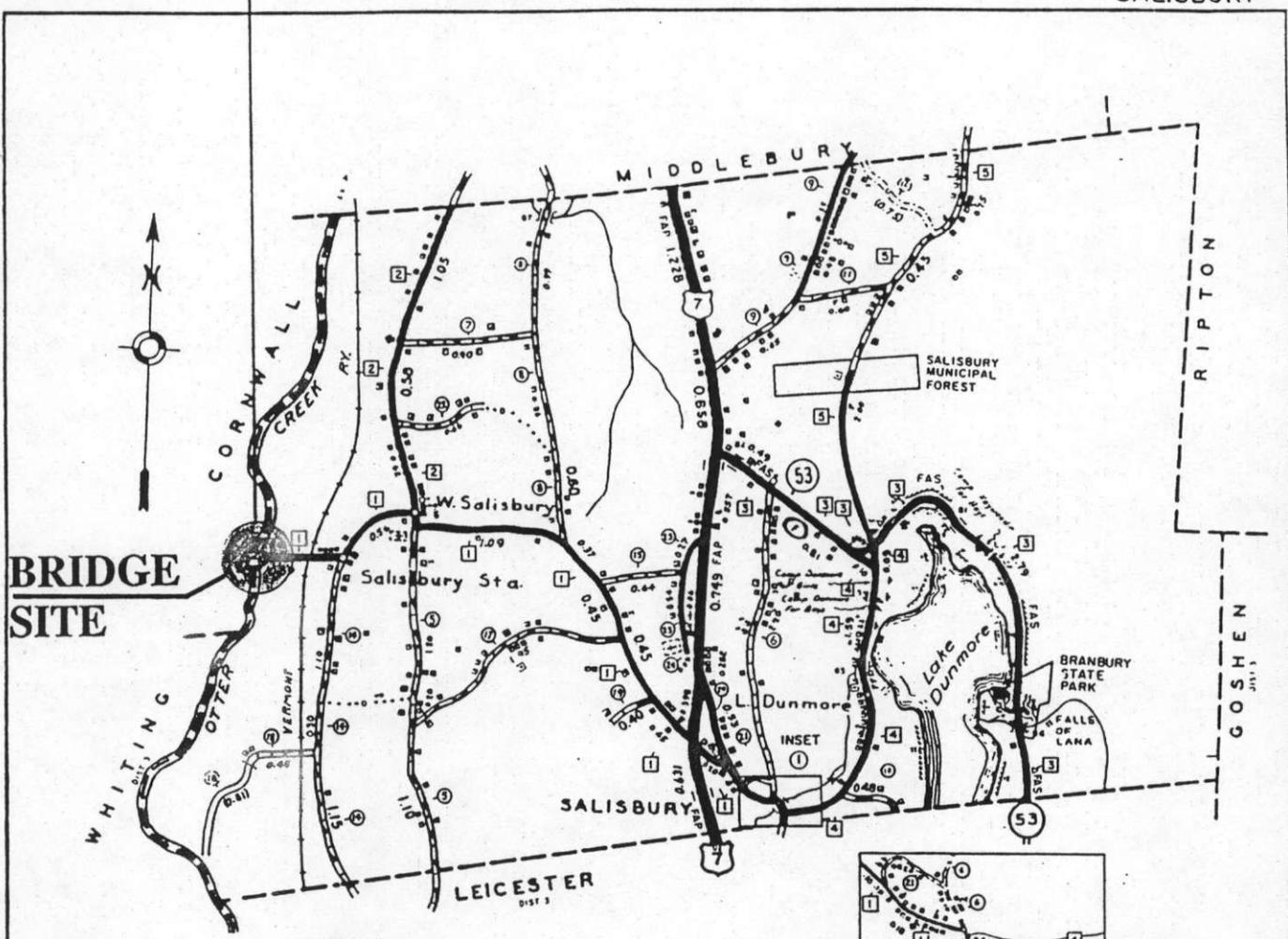
According to Town officials, there are no major land subdivisions or building permits pending that may impact traffic volumes at the Cedar Swamp Bridge. Additionally, there is no construction planned for the bridge or adjacent roadway other than minor repairs to the bridge.

Bridge No. 8
CLASS 2 TH 1

SALISBURY

SUMMARY OF TOWN HIGHWAYS

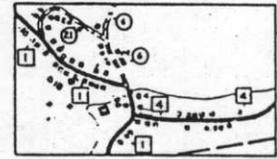
1	230
2	230
3	230
4	230
5	230
6	230
7	230
8	230
9	230
10	230
11	230
12	230
13	230
14	230
15	230
16	230
17	230
18	230
19	230
20	230
21	230
22	230
23	230
24	230
25	230
26	230
27	230
28	230
29	230
TOTALS	8,251 1,561



BRIDGE SITE

LEGEND

HIGHWAYS	ROAD SURFACE TYPES
<ul style="list-style-type: none"> ⑦ DIVIDED HWY, INTERSTATE OR STATE INTERCHANGE NUMBER — 2-LANE STATE HIGHWAY — END OF STATE HIGHWAY — TOWN HIGHWAY — UNTRAVELLED ROAD — PRIVATE ROAD AND NUMBER — DISCONTINUED HIGHWAY — LEGAL TRAIL (FORMER TOWN HWY) — FOOT TRAIL ② INTERSTATE NUMBERED ROUTE ②② J'S NUMBERED ROUTE ② STATE NUMBERED ROUTE ④ CLASS 1 TOWN HIGHWAY ④ CLASS 2 TOWN HIGHWAY ④ CLASS 3 TOWN HIGHWAY ④ CLASS 4 TOWN HIGHWAY FCA FULLY CONTROLLED ACCESS FAP FEDERAL AID PRIMARY HIGHWAY FAS FEDERAL AID SECONDARY HIGHWAY FAS FEDERAL AID SECONDARY ENDS NFH NATIONAL FOREST HIGHWAY SFH STATE FOREST HIGHWAY 	<ul style="list-style-type: none"> — BITUMINOUS MIX, MACADAM MIX. — MACADAM PENETRATION, CONCRETE — BITUMINOUS CONCRETE, BRICK OR BLOCK — SURFACE TREATED GRAVEL — GRAVEL — SOIL SURFACE (2ND CLASS GRAVEL) — GRADED AND DRAINED EARTH — UNIMPROVED EARTH — PRIMITIVE
CULTURAL FEATURES	BRIDGES
<ul style="list-style-type: none"> • FARM UNIT • DWELLING (other than farm) • SEASONAL DWELLING • MOBILE DWELLING • TOWN CLERK'S OFFICE • BUSINESS • SCHOOL • CHURCH • POST OFFICE • FIRE STATION • CEMETERY • SANITARY LANDFILL • BRIBEL PIT • SUGAR HOUSE • HALL (T, H, C, Community, G, Garage, P, Postoffice) 	<ul style="list-style-type: none"> — BRIDGE OR CULVERT LESS THAN 8 SPAN — BRIDGE OR CULVERT 16 THRU 20 SPAN — BRIDGE OVER 20 SPAN — HIGHWAY UNDERPASS — HIGHWAY OVERPASS — COVERED BRIDGE ②② BRIDGE NUMBER
	MISCELLANEOUS
	<ul style="list-style-type: none"> — RAILROAD AND GRADE CROSSING — VILLAGE CENTER



SALISBURY INSET

SCALE
0 0.1 0.2 MILES
0 0.1 0.2 KILOMETERS

GENERAL HIGHWAY MAP
TOWN OF SALISBURY

1980 POPULATION: 681
PREPARED BY
VERMONT AGENCY OF TRANSPORTATION
PLANNING DIVISION
SCALE

0 0.5 1 MILE
0 0.5 1 KILOMETERS

MILEAGE SUMMARY

CLASS 1 TOWN HIGHWAYS:	0000
CLASS 2 TOWN HIGHWAYS:	
NO 1	501
NO 2	225
NO 3	415
NO 4	228
NO 5	320
TOTAL CLASS 2 TOWN HWYS.	1689
CLASS 3 TOWN HIGHWAYS:	
TOTAL TOWN HWYS.	1925
STATE HIGHWAYS:	
STATE HWY. U.S. 7	4503
STATE HWY.	
TOTAL STATE HWYS.	4503
TOTAL TRAVELED HWYS., FEB. 10, 1983.	40,643*

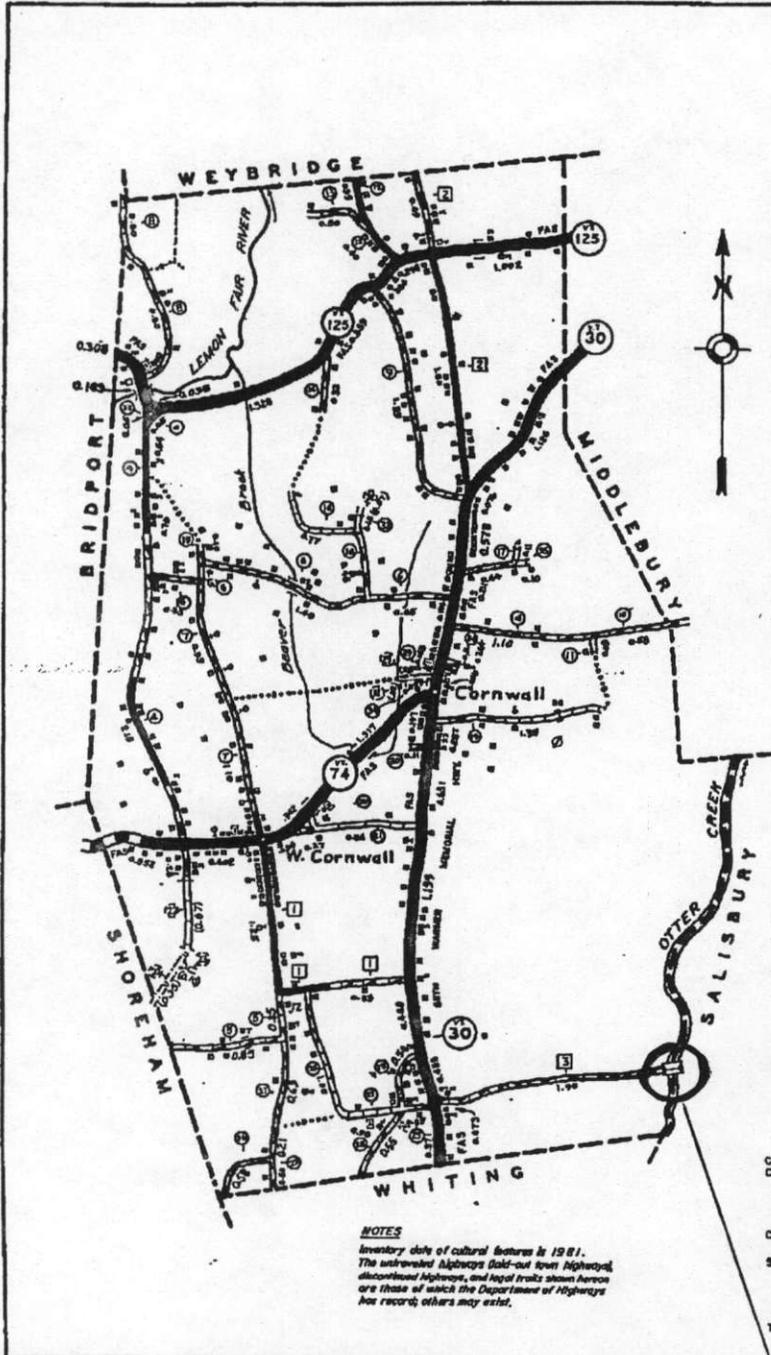
* EXCLUDES CLASS 4 MILEAGE

NOTES
Inventory date of cultural features is 1981.
The untraveled highways (faded-out town highways), discontinued highways, and legal trails shown hereon are those of which the Department of Highways has record; others may exist.

FIGURE 2A

SUMMARY OF TOWN HIGHWAYS

TYPE	LENGTH (MILES)	CLASS
1	3.30	1
2	1.20	2
3	1.20	3
4	1.20	4
5	1.20	5
6	1.20	6
7	1.20	7
8	1.20	8
9	1.20	9
10	1.20	10
11	1.20	11
12	1.20	12
13	1.20	13
14	1.20	14
15	1.20	15
16	1.20	16
17	1.20	17
18	1.20	18
19	1.20	19
20	1.20	20
21	1.20	21
22	1.20	22
23	1.20	23
24	1.20	24
25	1.20	25
26	1.20	26
27	1.20	27
28	1.20	28
29	1.20	29
30	1.20	30
31	1.20	31
32	1.20	32
33	1.20	33
34	1.20	34
35	1.20	35
36	1.20	36
37	1.20	37
38	1.20	38
39	1.20	39
40	1.20	40
41	1.20	41
42	1.20	42
43	1.20	43
44	1.20	44
45	1.20	45
46	1.20	46
47	1.20	47
48	1.20	48
49	1.20	49
50	1.20	50
51	1.20	51
52	1.20	52
53	1.20	53
54	1.20	54
55	1.20	55
56	1.20	56
57	1.20	57
58	1.20	58
59	1.20	59
60	1.20	60
61	1.20	61
62	1.20	62
63	1.20	63
64	1.20	64
65	1.20	65
66	1.20	66
67	1.20	67
68	1.20	68
69	1.20	69
70	1.20	70
71	1.20	71
72	1.20	72
73	1.20	73
74	1.20	74
75	1.20	75
76	1.20	76
77	1.20	77
78	1.20	78
79	1.20	79
80	1.20	80
81	1.20	81
82	1.20	82
83	1.20	83
84	1.20	84
85	1.20	85
86	1.20	86
87	1.20	87
88	1.20	88
89	1.20	89
90	1.20	90
91	1.20	91
92	1.20	92
93	1.20	93
94	1.20	94
95	1.20	95
96	1.20	96
97	1.20	97
98	1.20	98
99	1.20	99
100	1.20	100
TOTAL	25.78	11.48



- LEGEND**
- HIGHWAYS**
- Divided hwy, Interstate or State
 - Interchange number
 - 2-Lane State Highway
 - End of State Highway
 - Town Highway
 - 11.2 to 21 Unimproved Road
 - Private Road and Number
 - Discontinued Highway
 - Legal Trail, Former Town Hwy
 - Foot Trail
 - Interstate Numbered Route
 - U.S. Numbered Route
 - State Numbered Route
 - Class 1 Town Highway
 - Class 2 Town Highway
 - Class 3 Town Highway
 - Class 4 Town Highway
 - FCA Fully Controlled Access
 - FAP Federal and Primary Highway
 - FAB Federal and Secondary Highway
 - FAS Federal, 2nd Secondary Class
 - NFH National Forest Highway
 - SFH State Forest Highway
- ROAD SURFACE TYPES**
- Asphalt or Bit. Macadam Mill
 - Macadam Penetration Concrete
 - Bituminous Concrete, Sand or Block
 - Surface Treated Gravel
 - Gravel
 - 3rd. Surface (2nd Class Gravel)
 - Graded and Drained Earth
 - Unimproved Earth
 - Waterway Primitive
- BRIDGES**
- Bridge or Culvert less than 50' span
 - Bridge or Culvert 50' thru 99' span
 - Bridge over 100' span
 - Highway Underpass
 - Highway Overpass
 - Covered Bridge
 - Bridge Number
- MISCELLANEOUS**
- Railroad and Grade Crossing
 - Village Center
- CULTURAL FEATURES**
- Farm Unit
 - Swelling (over 100' high)
 - Seasonal Swelling
 - Wetland Swelling
 - Town Clerk's Office
 - Business
 - School
 - Church
 - Post Office
 - Police Station
 - Cemetery
 - Sanitary Landfill
 - Gravel Pit
 - Sugar House
 - Mill (Lumber, Sawmill, Paper, etc.)

GENERAL HIGHWAY MAP
TOWN OF CORNWALL
 1980 POPULATION: 983
 PREPARED BY
 VERMONT AGENCY OF TRANSPORTATION
 PLANNING DIVISION
 SCALE
 0.5 1 1.5 2 MILE
 0.5 1 1.5 2 KILOMETERS

MILEAGE SUMMARY

CLASS	LENGTH (MILES)	TOTAL
CLASS 1 TOWN HIGHWAYS:	0.000	
CLASS 2 TOWN HIGHWAYS:		
NO. 1	2.20	
NO. 2	2.49	
NO. 3	1.90	
TOTAL CLASS 2 TOWN HWYS.	6.59	
CLASS 3 TOWN HIGHWAYS:	23.78	32.38
STATE HIGHWAYS:		
STATE HWY. VT. 30	4.388	
STATE HWY. VT. 74	2.899	
STATE HWY. VT. 128	4.255	
STATE HWY.		
TOTAL STATE HWYS.	13.516	
TOTAL TRAVELED HWYS., FEB. 10, 1983.		45.896*

* EXCLUDES CLASS 4 MILEAGE

NOTES
 Inventory date of cultural features is 1981.
 The unimproved highways (dashed lines) are highways,
 discontinued highways, and legal trails shown hereon
 are those of which the Department of Highways
 has records; others may exist.

BRIDGE
SITE

FIGURE 2B

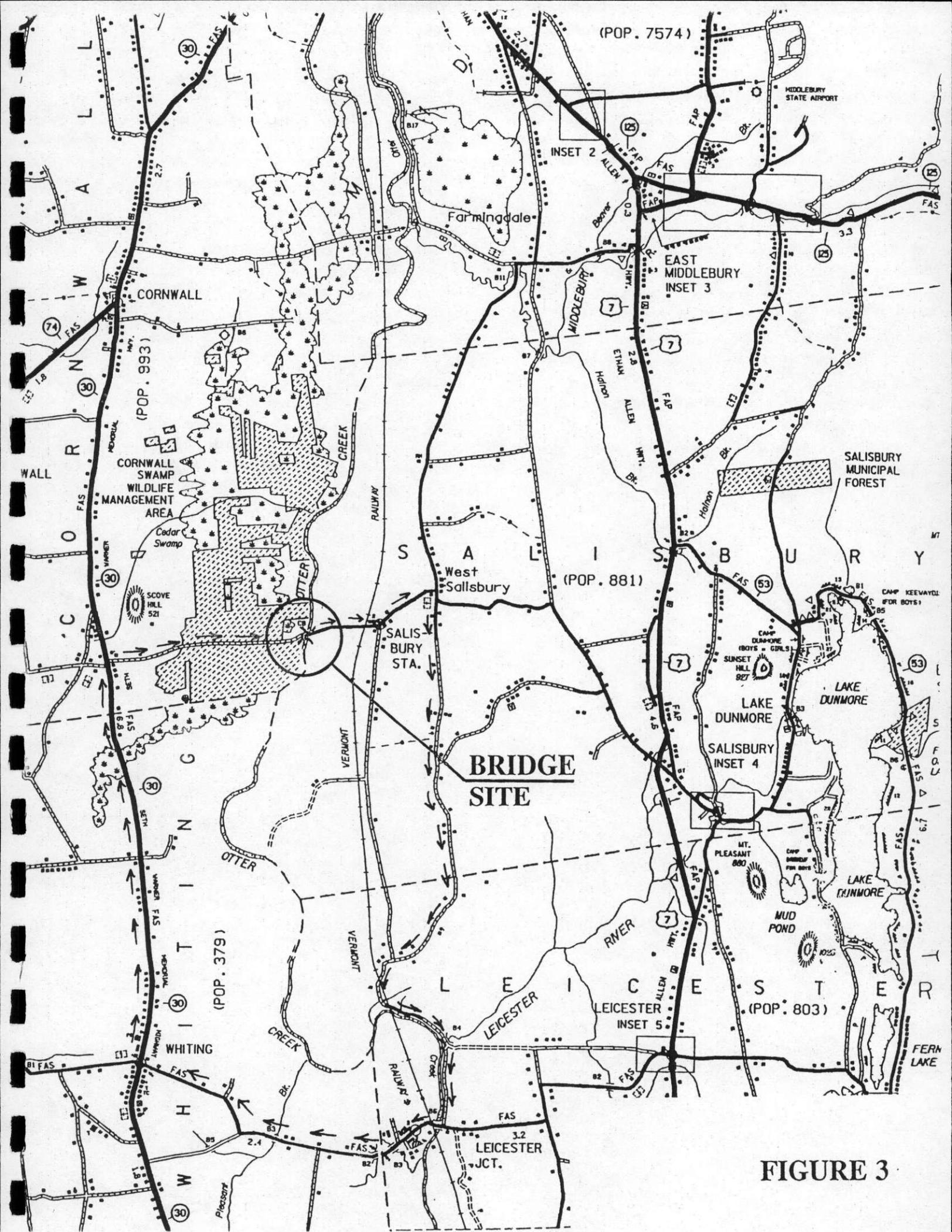
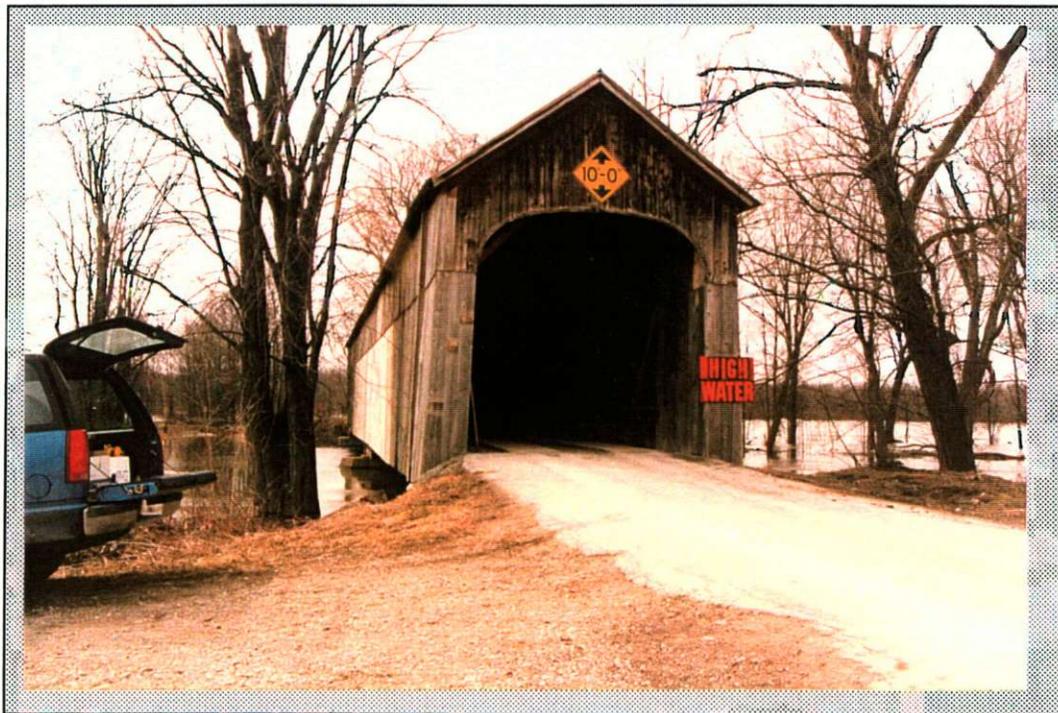


FIGURE 3

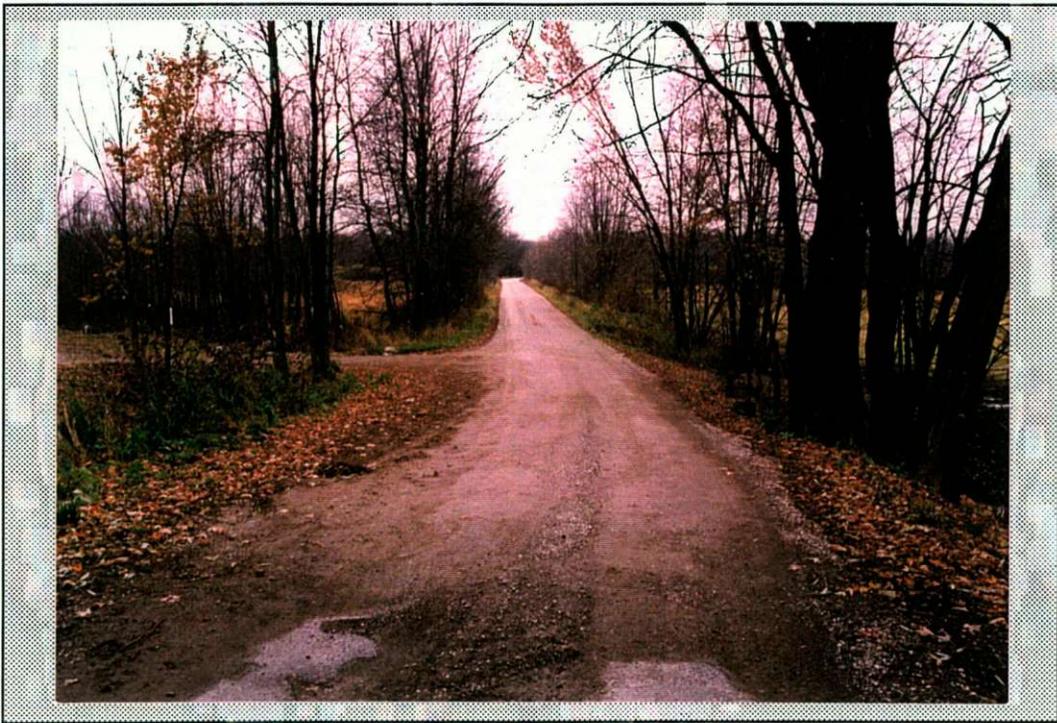


ELEVATION VIEW

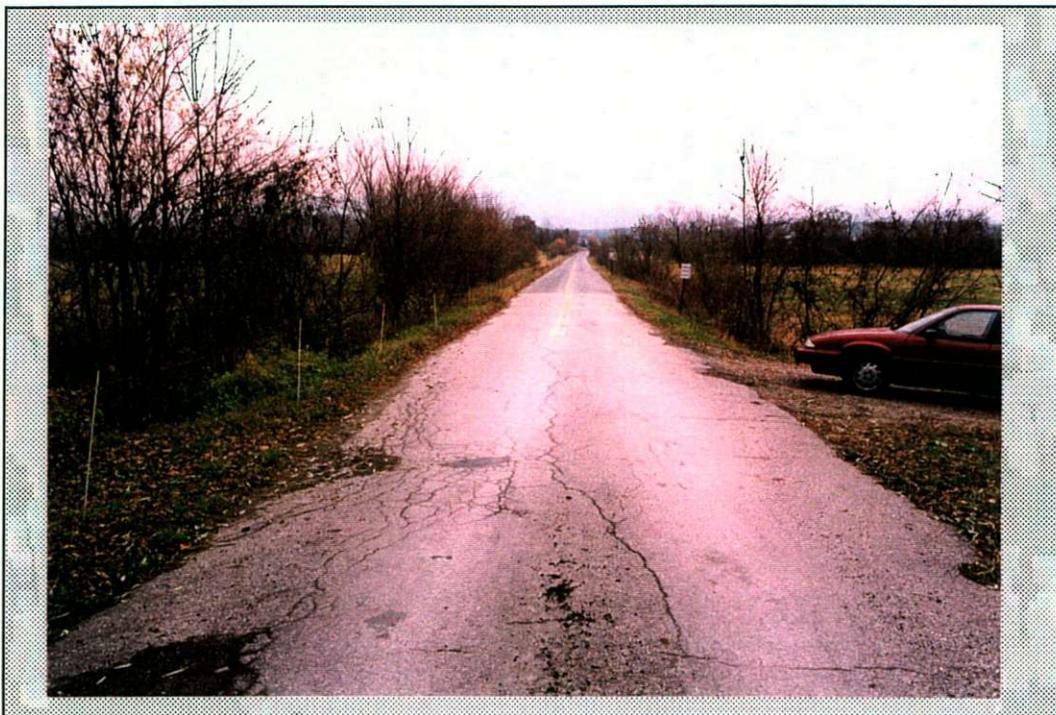


END VIEW

FIGURE 4



VIEW LOOKING WEST



VIEW LOOKING EAST

FIGURE 5

4.0 SITE ACCESSIBILITY

4.1 Existing Roadway System

As shown on Figure 2A, the current Town of Salisbury highway network consists of approximately 36 miles of Town roads and 5 miles of State roads. There are no Class 1 roads, 17 miles of Class 2 roads, and 19 miles of Class 3 roads. The bridge serves a Class 2 road, Town Highway 1 (Swamp Road).

In the Town of Cornwall, Figure 2B shows a highway network consisting of approximately 33 miles of town roads and 14 miles of state roads. There are no Class 1 roads, 7 miles of Class 2 roads, and 26 miles of Class 3 roads. The bridge serves a Class 2 road, Town Highway 3 (Swamp Road).

As shown on Figure 3, Town Highways 1 and 3 (Swamp Road) serves as a primary link between the Towns of Salisbury and Cornwall. The road is a paved Class 2 road in the Town of Salisbury and a gravel Class 2 road in the Town of Cornwall.

Regional highways in the Town of Salisbury include the north-south U.S. Route 7 and State Route 53. The Town of Cornwall has the north-south State Route 30 and the east-west State Routes 74 and 125.

According to both Town officials, the bridge and road are not used by school buses. There is concern of use by overweight vehicles and vandalism. It has also been indicated that the roadway, on the Cornwall side of the bridge, floods at least once a year.

The covered bridge is currently posted for a 6,000 pound load limit.

4.2 Future Roadway System

A goal of both Towns is to maintain and plan for a network of roadways within each Town that will provide safe and adequate transportation balanced with the desire to retain the scenic beauty and natural areas of the Towns.

Currently, other than maintenance and minor repairs, Town officials have indicated that there is no roadway or bridge construction planned for the bridge site.

4.3 Alternative Route Evaluation

Part of the Evaluation of preservation options identified in subsection 1.1 is the consideration of available alternative routes. A transit of the local transportation network led to the following observations:

- The shortest detour (bridge-to-bridge circuit) on established roads (minimum of Class 3 T.H.) is approximately 15 miles (identified on Figure 3).
- No load restrictions were posted at any bridge on the detour route at the time of our transit. Further, VAOT information indicates that the maximum posting capacity for a bridge on the detour is 27 tons (which provides sufficient capacity for this detour to be acceptable).
- No vertical clearance restrictions exist at any of the bridges on the detour.
- A local site bypass may be possible if necessary, on the upstream side of the existing covered bridge; however, this issue was not studied in-depth.

5.0 TRAFFIC EVALUATION

5.1 Existing Traffic Volumes

According to 1994 VAOT data, the estimated average daily traffic volume at the bridge site for the Year 1992 was approximately 500 vehicles per day.

5.2 Projected Traffic Volumes

An estimated average daily traffic volume of 700 vehicles per day on the bridge is projected by the VAOT for the Year 2013.

Following the initial site visit, it was determined that a detailed assessment of traffic capacity issues was not necessary for the Cedar Swamp Covered Bridge. Therefore, no additional traffic counts were taken.

5.3 Traffic Analysis

The Cedar Swamp Covered Bridge did not warrant a traffic analysis for several reasons. The VAOT estimated traffic volume confirms, given the existing study area's land use, there are no significant traffic generators. According to Town officials, there is no proposed new development that may affect traffic volumes at the bridge. Additionally, there are no current Town plans for construction at the bridge, or at either bridge approach, other than minor repairs. The fact that the approach road is gravel and surrounding lands are swamp, wetlands, and/or floodplains in the Town of Cornwall also indicates that it is a low traffic volume road. Finally, Town Highways 1 and 3 (Swamp Road) adequately serves the traffic volume needs of the community.

6.0 STRUCTURAL EVALUATION

During a visit to the bridge site in March, 1993, an evaluation of various maintenance repairs was performed to facilitate continued use of the structure as a covered bridge. At this time, the following deficiencies were observed:

- Some wear and rot in runner planks.
- Bullet holes in metal roof.
- Several floor beams tipped.
- Spalled and cracked backwall at Abutment 2.

A thorough discussion about the condition of the structure is contained in the VAOT Bridge Inspection Report, presented in Appendix B. Pertinent bridge dimensions are shown on Figure 6. Photos of relevant portions of the structure are presented in Figures 7 and 8.

The bridge is currently posted for a legal load limit of 6,000 pounds.

Size and description of truss and floor system members were also recorded by the Engineer. The following pertinent information was noted:

- Plank timber decking (2 layers, 1-7/8" each layer)
- Floor beams (3-7/8" x 11 3/4", spaced at 2'-1", 2 spaces at 3'-0" at pier)
- Truss upper bottom chord (2 1/2" x 10 3/4", 4 per chord) (plus two extra members, partial length)
- Truss lower bottom chord (2 3/4" x 11 1/2", 4 per chord)
- Truss upper top chord (3" x 10 3/4", 4 per chord) (plus four extra members over pier)
- Truss lower top chord (2 1/2" x 10 3/4", 4 per chord) (plus four extra members over pier)

The analytical investigation described under Section 2.12 of this report concludes that the structural capacity of the bridge, when in good condition, is adequate to support vehicle weights of up to 14,000 pounds (limited by the capacity of the floor beams). Further, the analysis indicates that the trusses can support vehicle weights of up to 40,000 pounds (which is considered

to be the maximum prudent limitation for a structure of this type). No major structural repairs are identified as necessary at the time of this investigation that reflect on the capacity of the structure; however, continued use of the structure, under a load posting of 6,000 pounds, assumes that the Towns will correct the identified deficiencies in the near future and provide necessary and proper maintenance.

The preceding paragraph makes reference to a structure in "good condition" That terminology indicates physical configuration and material properties similar to that at the time of original construction, i.e. "like new" Good condition components have no significant defects, such as: cracks, crushing, buckles, areas of rot, insect attack, or impact damage. Good condition also implies proper connections including tight and solid joinery and no missing components.

The bridge site is noted as being very flood prone, but there is no evidence of ice damage to the structure.

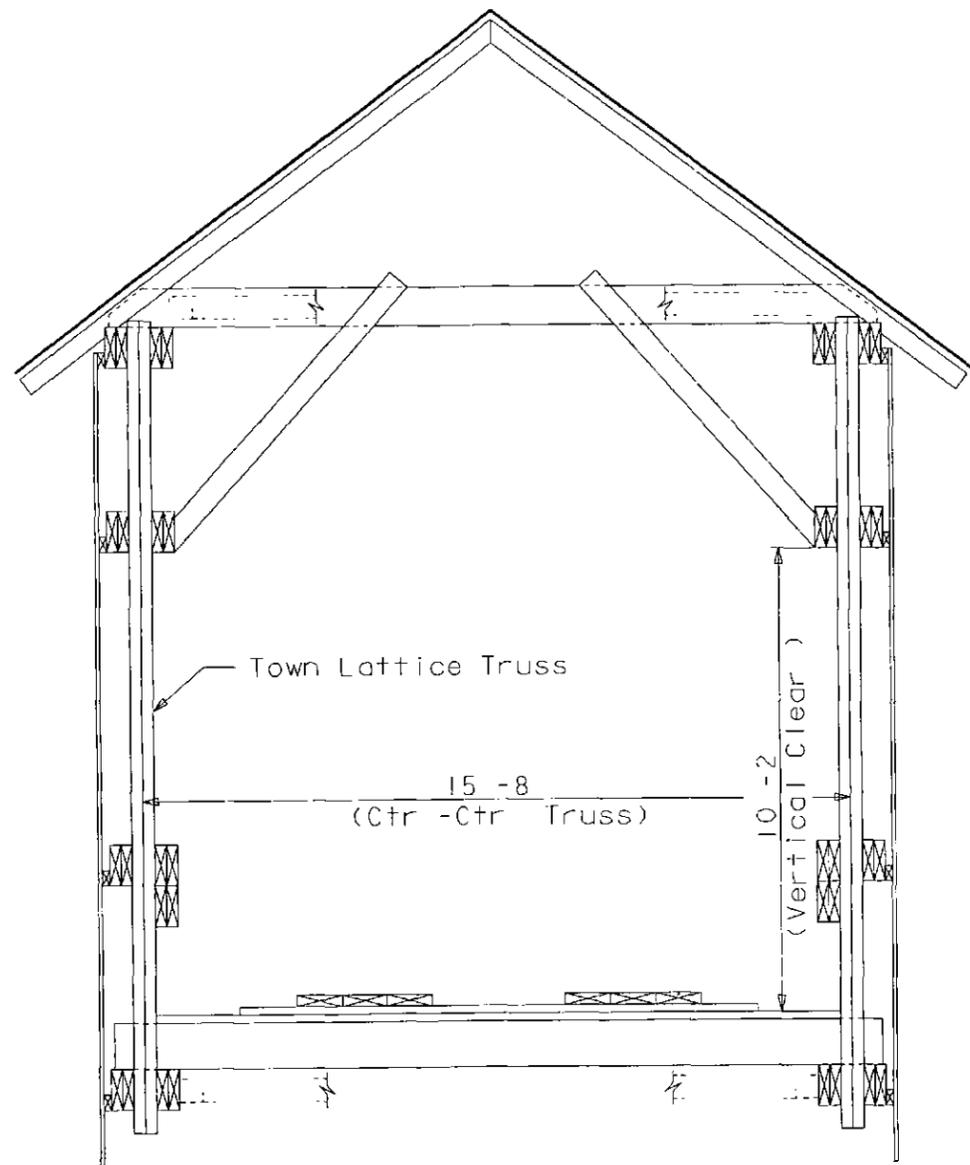
BRIDGE NAME
CEDAR SWAMP
STATION

BRIDGE NUMBER
8

TOWN HIGHWAY
1

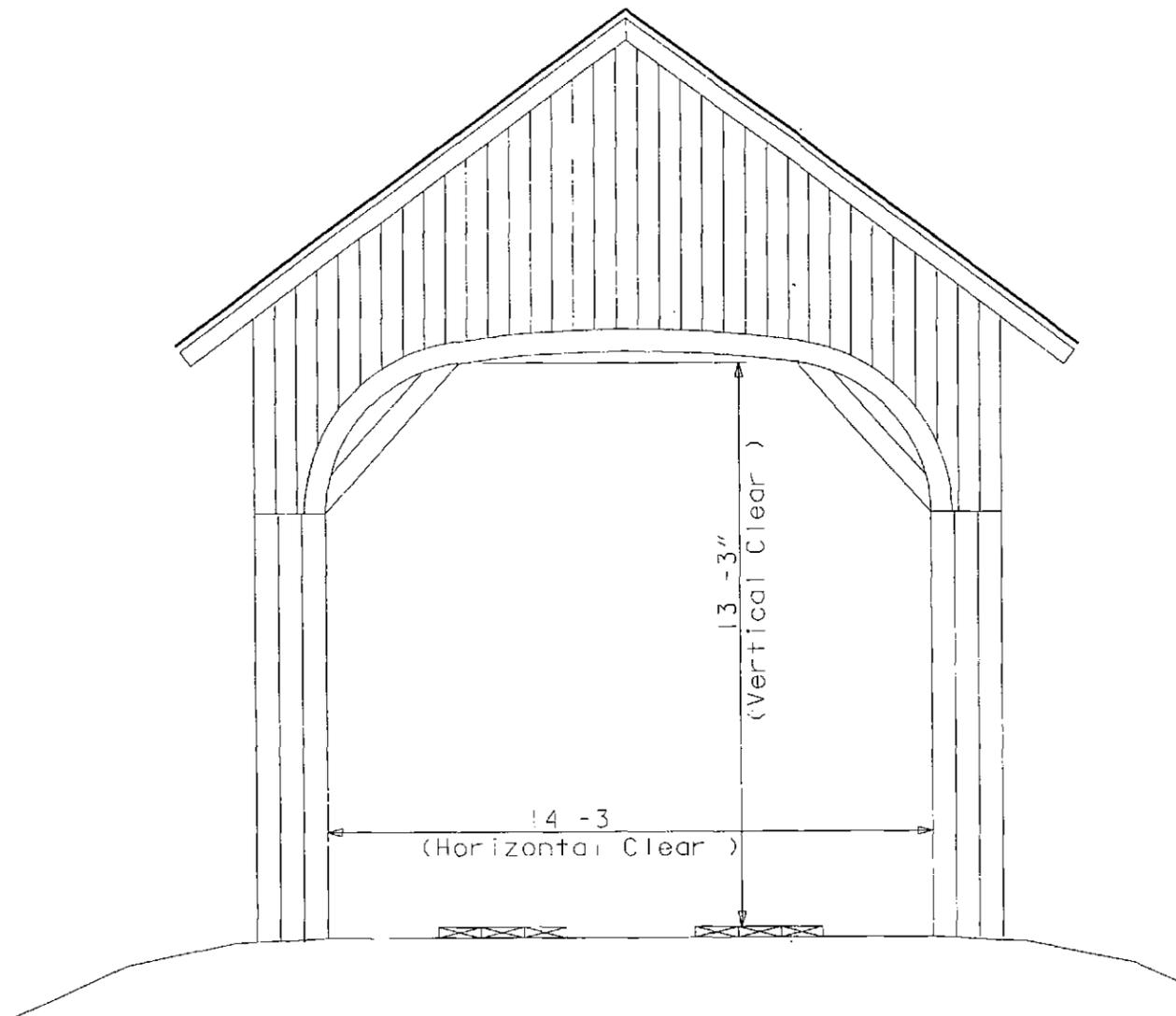
FEATURE CROSSED
OTTER CREEK

DATE
3-31-93



CROSS SECTION

1/4" = 1 - 0"



END VIEW

1/4" = 1 - 0"

FIGURE 6

VERMONT AGENCY OF TRANSPORTATION
COVERED BRIDGE STUDY

BRIDGE NO. 8 (CEDAR SWAMP STATION)
TH 1 OVER OTTER CREEK
END VIEW AND CROSS SECTION

TOWN SALISBURY/CORNWALL

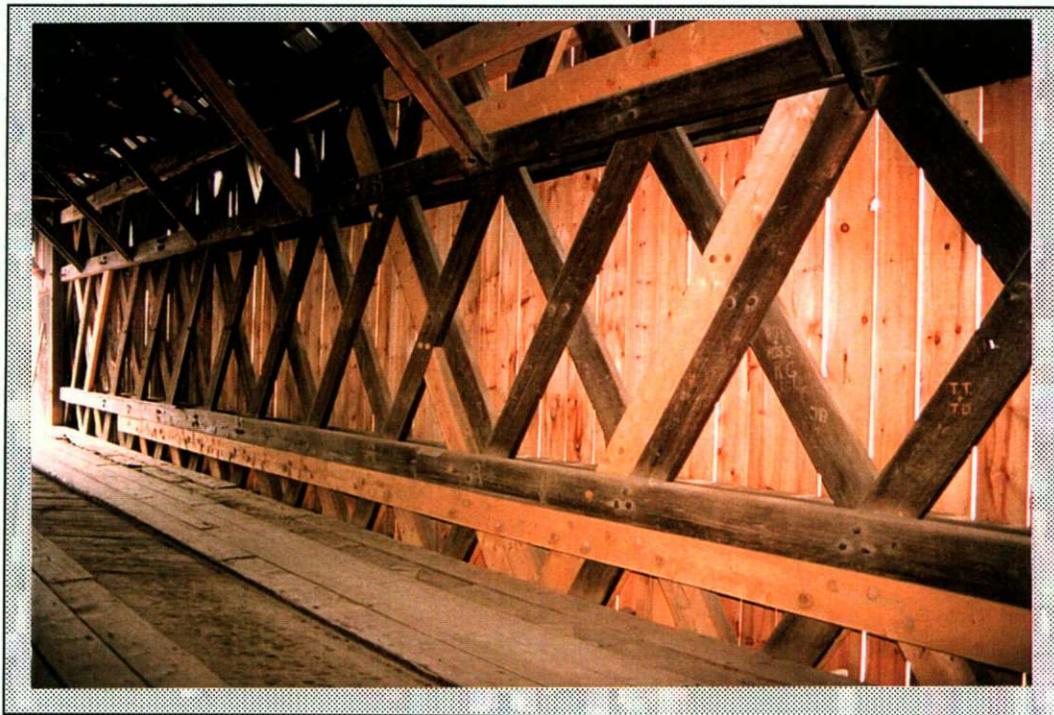
COUNTY ADDISON

McFARLAND-JOHNSON INC
BINGHAMTON, NY





ROOF FRAMING

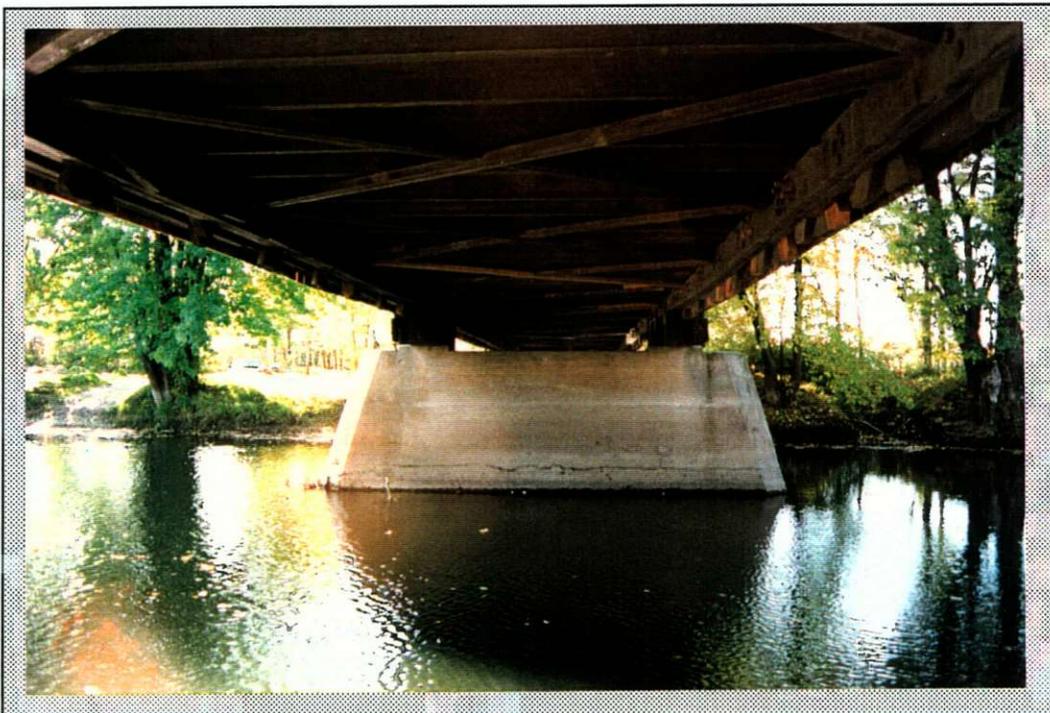


TOWN LATTICE TRUSS

FIGURE 7



CONCRETE PIER



CONCRETE ABUTMENT

FIGURE 8

7.0 CONSIDERATION OF PRESERVATION OPTIONS

Referring to the preservation options outlined in subsection 1.1 of this report, considerations are summarized as follows:

- A. Close the structure and divert traffic:
This structure currently carries light traffic adequately. Also, the detour is quite long (15 miles). This option is not acceptable.
- B. Continue use of bridge for light traffic, with heavier truck traffic diverted to other local routes:
This structure can safely support vehicle weights up to 14,000 pounds. A floor replacement would be required to safely support heavier vehicles which is considered within the response to Option D, not B. Since this structure may be subjected to occasional use by unauthorized, heavier vehicles due to the lengthy detour route, adoption of this option as a permanent solution to the preservation needs of this bridge may be inappropriate. However, selection of this option may be acceptable for the short-term, assuming preparations are undertaken to provide for heavier vehicles in the longer term, through any of the following options. Improvements including timber repairs, roof repairs, abutment repairs, installation of guide rails, and traffic signs are estimated to cost about \$22,000 for this option.
- C. Close structure and construct an adjacent bypass:
A permanent bypass structure may be possible at this site. The bypass would permit use of this site by all legal vehicles. The cost of construction for a two-lane structure is estimated to be \$575,000. However, stabilization of the existing structure will also be required to avoid failure from loads imposed by the self-weight of the structure and snow loading. An estimate of appropriate stabilization is \$10,000. Additional right-of-way costs may range from a few thousand dollars, to much more, depending on the particulars at this site. We have assumed a ROW allowance of \$5,000. Therefore, the total cost of this option is estimated to be \$590,000. Although this option is feasible, it appears to be less desirable than Option D.
- D. Rehabilitate structure for moderate traffic:
This structure can be rehabilitated to safely support all vehicles with weights up to 40,000 pounds. The current floor system will have to be replaced. An estimate of cost for floor replacement is \$118,000. Coupled with an estimate of repairs (cited in Option B as \$22,000), the total cost estimate for this option becomes \$140,000.
- E. Relocate the structure to a preservation site and build a new structure at the existing site:
Since a bypass structure may be possible, if required, this option is unnecessary.

8.0 CONCLUSION AND RECOMMENDATIONS

Having considered the traffic needs at this site, condition of the structure, and merits of the various preservation options, we have identified Option D as the most apparent appropriate long-term course of action to provide for preservation of this covered bridge. That is, rehabilitate the structure (including floor replacement) for use by vehicles subject to weight restrictions of 40,000 pounds. Oversize and heavier vehicles should be directed to alternate routes.

In addition to floor replacement, we recommend the following repair measures to improve current conditions and to support the commitment for long-term preservation:

- Replace runner planks.
- Repair metal roof.
- Repair floor beams.
- Repair backwall at Abutment 1.
- Provide guide rail on each approach for compliance with VAOT standards.
- Install new signs to replace missing or damaged signs indicating "One Lane Bridge", vehicle weight limits, and vertical clearance in accordance with VAOT standard and the Manual of Uniform Traffic Control Devices (MUTCD).

The estimate of construction cost for Option D repairs, guide rail installation, and floor replacement is \$140,000.

To assist the Town in implementing these recommendations, we offer the following general discussion. The State statute limitations for timber deck structures on Town Highways relate to the posted weight limitation of the structure. Operators of vehicles with weights in excess of the posted limitation are required to obtain a permit from the Town to cross the structure. Section 6.0 of this report provides information on the theoretical capacity of the structure, which may exceed the statute limitations and/or posting capacity, and indicates the maximum weight for permit vehicles. It is important that the Town strictly adhere to, and enforce, the posting and permitting requirements, including all Town-owned vehicles. Use of the structure by heavier vehicles risks damage to, and potential collapse of, the bridge.

Because it is the Town's responsibility to maintain these structures, and because wooden covered bridges require different attention than concrete and steel bridges, general guidance on maintenance and repairs is offered in Appendix G.

APPENDIX A

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY - NOMINATION FORM

NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY - NOMINATION FORM

(Type all entries complete applicable sections)

STATE: Vermont
COUNTY: Addison
FOR NPS USE ONLY
ENTRY DATE

1. NAME

COMMON:
Cedar Swamp Covered Bridge

AND/OR HISTORIC:

2. LOCATION

STREET AND NUMBER:
Town road across Otter Creek, 0.6 mile west of Salisbury Station

CITY OR TOWN:
Salisbury-Cornwall town boundary

CONGRESSIONAL DISTRICT:
Vt District Rep. Richard Jallary

STATE: Vermont CODE: 50 COUNTY: Addison CODE: 01

3. CLASSIFICATION

CATEGORY (Check One)	OWNERSHIP	STATUS	ACCESSIBLE TO THE PUBLIC
<input type="checkbox"/> District <input type="checkbox"/> Site <input type="checkbox"/> Building <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Object	<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Both	Public Acquisition: <input type="checkbox"/> In Process <input type="checkbox"/> Being Considered	<input checked="" type="checkbox"/> Occupied <input type="checkbox"/> Unoccupied <input type="checkbox"/> Preservation work in progress
PRESENT USE (Check One or More as Appropriate)			
<input type="checkbox"/> Agricultural <input type="checkbox"/> Commercial <input type="checkbox"/> Educational <input type="checkbox"/> Entertainment	<input type="checkbox"/> Government <input type="checkbox"/> Industrial <input type="checkbox"/> Military <input type="checkbox"/> Museum	<input type="checkbox"/> Park <input type="checkbox"/> Private Residence <input type="checkbox"/> Religious <input type="checkbox"/> Scientific	<input checked="" type="checkbox"/> Transportation <input type="checkbox"/> Other (Specify) _____ _____ _____
Yes: <input type="checkbox"/> Restricted <input checked="" type="checkbox"/> Unrestricted <input type="checkbox"/> No			

4. OWNER OF PROPERTY

OWNER'S NAME:
Towns of Salisbury and Cornwall

STREET AND NUMBER:
(no street numbers)

CITY OR TOWN:
Salisbury and Cornwall

STATE:
Vermont

CODE:
50

5. LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC.:
Offices of Town Clerks

STREET AND NUMBER:
(no street numbers)

CITY OR TOWN:
Salisbury and Cornwall

STATE:
Vermont

CODE:
50

6. REPRESENTATION IN EXISTING SURVEYS

TITLE OF SURVEY:
Vermont Historic Sites and Structures Survey

DATE OF SURVEY: 1973 Federal State County Local

DEPOSITORY FOR SURVEY RECORDS:
Vermont Division of Historic Sites

STREET AND NUMBER:
Pavilion Building

CITY OR TOWN:
Montpelier

STATE:
Vermont

CODE:
50

Vermont
Addison

7. DESCRIPTION

CONDITION	(Check One)				
	<input type="checkbox"/> Excellent	<input checked="" type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Deteriorated	<input type="checkbox"/> Ruins
	(Check One)		(Check One)		
	<input checked="" type="checkbox"/> Altered	<input type="checkbox"/> Unaltered	<input type="checkbox"/> Moved	<input checked="" type="checkbox"/> Original Site	

DESCRIBE THE PRESENT AND ORIGINAL (If known) PHYSICAL APPEARANCE

The Cedar Swamp covered bridge consisted originally of a single span supported by two flanking timber Town lattice trusses. In 1969 a concrete pier was built under the center of the span to reinforce it. The trusses have not been significantly altered by the addition of the pier. (The bottom chords rest on timber corbels on the top of the pier. Steel tie rods and plates enclose the chord to anchor the bridge to the pier.) The abutments are built of marble blocks, which have been covered with concrete except on the face of the east abutment. Guy cables extend to the river banks from the upper ends of the north truss to provide lateral reinforcement.

The bridge is 153.5 feet long overall. The supporting pier stands under the midpoint of the span. The bridge is 18.5 feet wide, with a 14-foot roadway. The wood floor consists of planks laid flat and perpendicular to the trusses, with strips of planks overlaid transversely for the driving surfaces.

On the exterior, the large planks pegged together diagonally to form the trusses (and side walls) of the bridge are sheathed with flush boards hung vertically. Similar siding protects the ends of the trusses immediately inside the portals. There are no windows or openings in the side walls. The gable ends are also sheathed with flush vertical boards, which display extremely weathered yellow paint complemented by red trim. The portal openings are trimmed with semi-elliptical arches. The gable roof is now covered with corrugated metal sheeting.

B. SIGNIFICANCE

PERIOD (Check One or More as Appropriate)

- | | | | |
|-----------------------------------------|---------------------------------------|--------------------------------------------------|---------------------------------------|
| <input type="checkbox"/> Pre-Columbian; | <input type="checkbox"/> 16th Century | <input type="checkbox"/> 18th Century | <input type="checkbox"/> 20th Century |
| <input type="checkbox"/> 15th Century | <input type="checkbox"/> 17th Century | <input checked="" type="checkbox"/> 19th Century | |

SPECIFIC DATE(S) (If Applicable and Known) 1864-65

AREAS OF SIGNIFICANCE (Check One or More as Appropriate)

- | | | | |
|--------------------------------------------------|-------------------------------------------------|----------------------------------------------------|------------------------------------------|
| <input type="checkbox"/> Aboriginal | <input type="checkbox"/> Education | <input type="checkbox"/> Political | <input type="checkbox"/> Urban Planning |
| <input type="checkbox"/> Prehistoric | <input checked="" type="checkbox"/> Engineering | <input type="checkbox"/> Religion/Philosophy | <input type="checkbox"/> Other (Specify) |
| <input type="checkbox"/> Historic | <input type="checkbox"/> Industry | <input type="checkbox"/> Science | _____ |
| <input type="checkbox"/> Agriculture | <input type="checkbox"/> Invention | <input type="checkbox"/> Sculpture | _____ |
| <input checked="" type="checkbox"/> Architecture | <input type="checkbox"/> Landscape Architectur | <input type="checkbox"/> Social/Humanitarian | _____ |
| <input type="checkbox"/> Art | <input type="checkbox"/> Literature | <input type="checkbox"/> Theater | _____ |
| <input type="checkbox"/> Commerce | <input type="checkbox"/> Military | <input checked="" type="checkbox"/> Transportation | _____ |
| <input type="checkbox"/> Communications | <input type="checkbox"/> Music | | _____ |
| <input type="checkbox"/> Conservation | | | _____ |

STATEMENT OF SIGNIFICANCE

The Cedar Swamp covered bridge is the only covered wood bridge remaining in the towns of Salisbury and Cornwall. The bridge is one of three in Vermont which straddle town boundaries along the channels of streams. (In such cases both towns share the ownership and maintenance of the bridge.) Until 1969 when a central supporting pier was built, the Cedar Swamp bridge had one of the longest wood clear spans in Vermont.

The covered bridges of Vermont are among its most cherished and symbolic historic resources. About one hundred bridges still stand in the state, the greatest concentration by area of covered bridges in the country.¹ Many of these bridges are integral parts of unique architectural environments whose physical setting and cultural context have been little altered until recently. However, extensive highway construction programs are now drastically changing the historic environment of the state. The Vermont Division of Historic Sites wishes to extend the recognition and protection of the National Register to the majority of the surviving covered bridges, including the Cedar Swamp bridge.

1 R. S. Allen, Covered Bridges of the Northeast, The Stephen Greene Press, Brattleboro, Vt., 1957, p. 59

MAJOR BIBLIOGRAPHICAL REFERENCES

Allen, Richard Sanders, Covered Bridges of the Northeast, The Stephen Greene Press, Brattleboro, Vt, 1957

10. GEOGRAPHICAL DATA

LATITUDE AND LONGITUDE COORDINATES DEFINING A RECTANGLE LOCATING THE PROPERTY			O R	LATITUDE AND LONGITUDE COORDINATES DEFINING THE CENTER POINT OF A PROPERTY OF LESS THAN TEN ACRES		
CORNER	LATITUDE	LONGITUDE		LATITUDE	LONGITUDE	
	Degrees Minutes Seconds	Degrees Minutes Seconds		Degrees Minutes Seconds	Degrees Minutes Seconds	
NW	°	°		43 ° 55' 06"	73 ° 10' 28"	
NE	°	°				
SE	°	°				
SW	°	°				

APPROXIMATE ACREAGE OF NOMINATED PROPERTY: one acre

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE:	CODE	COUNTY	CODE
STATE:	CODE	COUNTY:	CODE
STATE:	CODE	COUNTY:	CODE
STATE:	CODE	COUNTY:	CODE

11. FORM PREPARED BY

NAME AND TITLE:
Hugh H. Henry, Historic Sites Researcher

ORGANIZATION: Vermont Division of Historic Sites DATE: 1-3-74

STREET AND NUMBER:
Pavilion Building

CITY OR TOWN: Montpelier STATE: Vermont CODE: 50

12. STATE LIAISON OFFICER CERTIFICATION

As the designated State Liaison Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service. The recommended level of significance of this nomination is:

National State Local

Name: William B. Penney

Title: Director of Historic Sites
State Historic Preservation
Officer

Date: 1/17/74

NATIONAL REGISTER VERIFICATION

I hereby certify that this property is included in the National Register.

Director, Office of Archeology and Historic Preservation

Date: _____

ATTEST:

Keeper of The National Register

Date: _____

APPENDIX B

VAOT BRIDGE INSPECTION REPORT AND INVENTORY

LETTER WRITER
05/18/93

TOWN BRIDGE INSPECTION REPORT

STAGING INSP.

TOWN SALISBURY BR NO 8
STR OVER/~~UNDER~~ WATER CL RD 2 T H # 1
DATE INSPECTED 05/04/93 INSP BY BURK, M.J.

APPROACHES.

RAILS _____
ALIGNMENTS _____
SETTLEMENT - ABUT 1 END _____
ABUT 2 END _____
EMBANKMENTS _____

REMARKS _____

DECK.

RUNNERS _____
SURFACE _____
CURBS _____
DRAIN OPENINGS _____
GUIDE RAILS _____
JOINTS _____
SIDEWALKS _____
PARAPETS _____
WINDSLOTS _____
FASCIA _____
SCUPPERS _____
UNDERSIDE _____
VIBRATION _____

REMARKS _____

SUPERSTRUCTURE.

STRINGERS _____
BEARINGS GOOD
COVER PLATES _____
DIAPHRAGMS CROSSED WOOD BEAMS
TEE BEAMS _____
FLOOR BEAMS LT. END OF BM. #50' PAST ABUT #2. IS CRACKED
PLATE GIRDERS OFF DIAGONAL
SIDE GIRDERS _____
TRUSS SEVERAL SPLITS OR CHECKS ON INSIDE FLANKS
OF LOWER INSIDE SECTIONS OF BOTTOM CHORDS - WOOD
MEMBER ALIGNMENT CHORDS BOWED. (@ RT. END OF PIER
CAMBER ARCHES OVER PIER
PAINT _____
RUST _____

REMARKS 3 FLOOR BEAMS PARTIALLY TIPPED OVER
APPROX. 35 FEET PAST ABUT #2.

SUBSTRUCTURE.

ABUTMENTS _____
CONC CAPS _____
WINGS _____
BACKWALLS _____
UNDERMINING _____
SPALLING _____
SETTLEMENT _____
PILES _____
PIER(S) _____
FOOTING _____
ON LEDGE ABUT #1 _____ ABUT #2 _____ PIER(S) _____
REMARKS _____

CHANNEL.

SCOUR _____
EMBANKMENTS _____
HYDRAULIC ADEQUACY _____
GRAVEL BARS _____
DEBRIS _____
RIPRAP _____
REMARKS _____

PIPES.

DEBRIS _____
BARREL _____
CAMBER _____
FOOTING/ABUTMENTS _____
COVER _____
WINGS _____
HEADWALLS _____
GUIDE RAILS _____
REMARKS _____

LADDER INSPECTION _____ DIVER INSPT _____
BOAT INSPECTION _____ WADERS INSPT _____
SERVI-LIFT INSPECTION _____

POSTING SIGNS _____
LOAD _____
CLEARANCE _____
OTHER _____

OVERALL COMMENTS _____

SUBSTRUCTURE.

ABUTMENTS MINOR CRACKS
 WINGS NONE AS SUCH
 CONC CAPS CONC. PADS UNDER BRGS. @ ABUT #1
 BACKWALLS CRACKS & SPALLS - ABUT #1 ESPECIALLY
 UNDERMINING NONE - 10' DEEP @ PIER
 SPALLING NONE ON BACKWALLS
 SETTLEMENT NONE ?
 PILES NONE SEEN
 PIER(S) MINOR CRACKS & SPALLS
 FOOTING NONE SEEN
 ON LEDGE ABUT #1 NO ABUT #2 NO PIER(S) NO
 REMARKS _____

CHANNEL.

SCOUR SOUND AROUND PIER - STRONG CURRENT
 * EMBANKMENTS SOUND EXISTING W. FRONT OF BOTH ABUT.
 HYDRAULIC ADEQUACY POSSIBLY NEGATIVE
 GRAVEL BARS MINOR
 * DEBRIS SM. BUILDUP @ UPSTREAM END OF PIER
 RIPRAP NOT MUCH SHOWN
 REMARKS _____

PIPES.

DEBRIS _____
 BARREL _____
 CAMBER _____
 FOOTING/ABUTMENTS _____
 COVER _____
 WINGS _____
 HEADWALLS _____
 GUIDE RAILS _____
 REMARKS _____
 A

LADDER INSPECTION HEAVY TRAFFIC - NARROW DIVER INSPT DUE 10 1992
 BOAT INSPECTION _____ WADERS INSPT _____
 SERVI-LIFT INSPECTION NONE NONE

POSTING SIGNS
 LOAD 6,000 LBS
 CLEARANCE 10'0"
 OTHER NONE

OVERALL COMMENTS ADD SUPPORT UNDER GND FLOOR BMS @
ABUT #1, INSTALL APPROACH CURBGRILLS, SM. ROTTEN
SECTIONS W. ENDS OF RUNNER PLANKS @ ABUT #2,
FLOOR BMS. 14 & 15 PAST ABUT #2 ARE PARTIALLY TIPPED
OVER. SMALL BUILDUP OF DEBRIS @ UPSTREAM END
OF PIER.

Structure has an upgrade on each end, with a gradual corner onto abut 2. There are no approach guide rails on either end. Approach roadway embankments are eroded some at all four corners. Structure is a 2-span thru-truss wooden covered bridge. Deck consists of a double layer of wood planks with wood runners. The top layer of deck planks barely extend past the outside edges of the runners. Each section of runners is made up of three planks in span 1, and four planks in span 2. Several new sections of runner plank have been added on the abut 1 end. The deck surface has a small gravel buildup overall. The runner planks are worn some, and the ends of the planks at abut 2 have small rotten sections. There are no curbs or bridge guide rails. Approx 50% of the outside vertical boarding is new on both sides of the deck. Structure has a painted metal roof. The roof has been patched on the left side, approx 25' past abut 2. Several bullet holes are present; however, the rest appears to be in fair to good shape. The planks in the abut 2 end false doors are fairly new. Many of the lattice members have been spliced or doubled up. Much of the upper and lower section of top chord has been stiffened on either side of the pier, as well as the upper section of bottom chord. Doubled wood planks were used for the stiffeners, and attached with wooden pegs, on both inside and outside of the lattice members, either just above or below the existing chords. All previously broken members in the chords appear to have been replaced. The chords have some reverse camber, with multiple small bows. 1/2" - 2" gaps were noted in the butt splices of the planks along the bottom chords; however, this should not be as much of a factor since the chords have been stiffened. The upper truss members are nearly vertical on both sides. New wooden bearing blocks have been added under the bottom chords, along with new horizontal wood beam bearing pads. New wood beam bearing supports have been added under the end floor beams along centerline at abut 2. No supports are present at abut 1. Both bottom chords have a short, accelerated section of reverse camber just past the pier on the abut 1 side. Many of the floor beams are slightly tipped; however, floor beams 14 and 15 past abut 2 have tipped several inches, and floor beam 15 is nearly tipped over. Most of the tipped floor beams are near or just past the abutments. Crossed wood plank bracing is present between the bottom chords. The bearing blocks over the pier have been treated with creosote, while the newer bearing blocks at each abutment appear to be untreated. Abut 1 is grouted laid up stone blocks with concrete pads under the bearing areas, and a concrete backwall. Backwall is spalled, with several cracks. Abut 2 and its backwall are concrete. The backwall is quite narrow, and wood plank extensions have been added on both ends. The wood planks are deteriorated, with rotten sections. Backwall has a few fine cracks and small spalls, with minor cracks in the abutment. The pier is a solid concrete column. It has minor cracks and spalls overall. A small pile of branches and debris have collected against the upstream end of the pier, and should be removed. Structure is posted for vertical clearance of 10'-0", and legal load limit of 6,000 lbs.

nov3092 rwk

Cross Ref.

1. State Code	501
2. District	5
3. County Code	001
4. Place Code	62575
5. Inventory Route	180C20010
6. Name of Feature Crossed	OTTER CREEK
7. Facility Carried by	C2001
8. Bridge Code Number	100117000801171
9. Location	0.7 MI TO JCT W CL3 TH14
10. In Route, Min. Vertical Clearance	1104
11. Milepoint	000000
16. Latitude	43552
17. Longitude	073105
19. Distance to Alternate Facility, Miles	14
20. Toll	3
21. Maintenance Responsibility	03
22. Owner	03
26. Functional Classification Code	09
27. Year Structure was Built	1865
106. Year Reconstructed	1966
208. Last Project Number	COV.BR.8
209. Project Name	
28. Lanes On/Under Structure	0100
29. ADT On Structure	000500
30. Year Of ADT	92
242. Source of ADT	2
31. Design Live Load	1
32. Approach Width (Incl. Shoulder), Feet	018
33. Bridge Median	0
34. Skew Angle, Degrees	00
35. Structure Flared	0
36. Traffic Safety Features	0000
37. Historical Significance	1
38. Navigation Control?	0
39. Nav. Vertical Clearance, Feet	000
40. Nav Horizontal Clearance, Feet	0000
41. Structure Open, Posted or Closed to Traffic	P
42. Type of Service	15
43. Type of Structure, Main Spans	710
44. Type of Structure, Approach Spans	000
45. Number of Main Spans	002
46. Number of Approach Spans	0000
47. Total Horizontal Clearance, Feet	130
48. Maximum Span Length, Feet	0071

Cross Ref.

49. Overall Length of Structure, Feet	000156	
50A. Left Sidewalk Width	000	-
50B. Right Sidewalk Width	000	-
51. Roadway Width (Curb to Curb), Feet	0130	
52. Deck Width (Out to Out), Feet	0130	-
53. Vertical Clearance Over, Feet	1000	-
54. Vertical Clearance Under, Feet	N0000	-
55. Underclearance, Lateral-Right	N999	-
56. Underclearance, Lateral-Left	000	-
58. Rating of Deck	5	
59. Rating of Superstructure	4	
60. Rating of Substructure	6	
61. Rating of Channel	6	
62. Rating of Culvert and Retaining Walls	N	
67. Structural Condition	2	
68. Deck Geometry	2	
69. Vertical and Horizontal Underclearances	N	
*70. Bridge Postings	4	
71. Waterway Adequacy	5	
72. Approach Alignment	6	
211. Rating of Paint	N	
212. Year Structure Last Painted	0000	
75. Type of Work	311	-
76. Length of Structure Improvement	000158	-
90. Date Inspected, mm/yy	11/92	-
91. Designated Inspection Frequency	24	
92. Critical Feature Inspection	N Y24N	-
93. Critical Feature Inspection Date	0793	-
94. Bridge Improvement Cost	000545	-
95. Roadway Improvement Cost	000040	-
96. Total Project Cost	000713	-
97. Year of Improvement Cost Estimate	91	
98. Border Bridge		-
99. Border Bridge Structure No.		-
100. Defense Highway Designation	0	
101. Parallel Structure Designation	N	
102. Direction of Traffic	3	
103. Temporary Structure Designation		
104. Highway System	0	
107. Deck Structure Type	8	
108. Wearing Surface/Protective System	700	-
109. Average Daily Truck Traffic	02	
110. Designated National Network	0	
111. Pier or Abutment Protection		
112. NBIS Bridge Length	Y	
113. Scour Critical Bridges	6	
114. Future ADT	000700	-
115. Year of Future ADT	13	
116. Minimum Navigation Vertical Clearance	000	-
200. State System Code	07	

Run Date 02/15/94

Vermont Agency of Transportation

Rte. No. C2001

Rev. By -----

BIS, Print Items for Revision

Bridge No. 0008

Rec. No 5107

Town Structures 20 Feet And Over

Town SALISBURY

0008

000156 Bridge Town Line Brid

District 5

Cross Ref.

201. Single Twin Bridge Code	1	
202. Town State Line Code	1	
203. Special Situations	0	
204. Principal Duplicate Report Code	0	
205. Long Short Bridge Code	1	
206. Route Log Station Number	0000000	
207. Code for Feature Crossed	5	
210. Weight of Structural Steel	00000	
213. Number of Utilities	0	
214. Year of Last Maintenance Activity	1992	
215. Type of Maintenance Performed	22	
216. Hydraulic Structure	Y	
217. Hydraulic Report Available	N	
218. Year of Hydraulic Report		
219. Scour Susceptibility	1	
220. Alignment of Bridge Deck and Beams	1	
221. Type of Bridge Rail	000000	
222. Type of Approach Railings	000000	
223. Type of Expansion Joint	17	
224. Type of Bearing Device	11	
225. Type of Foundation	09	
226. Vert. Clearance Under Bridge (Highway)	0000	
227. Vert. Clearance Under Bridge (Railroad)	0000	
228. Vert. Clearance Under Bridge (Waterway)	0124	
64. Operations Ratings	203	
66. Inventory Ratings	203	
229. H Truck @ 67% YP	NR	
230. 3 Axle Straight Truck @ 67% YP	0	
231. 4 Axle Straight Truck @ 67% YP	0	
232. 3S2 Truck @ 67% YP	0	
233. 3S2 Truck at 75% YP	3	
234. 5 Axle Semi-Trl Truck @ 67% YP (SHT W.B.)	0	
235. 6 Axle Semi-Trl Truck @ 75% YP	0	
236. Load Posting Signs	02603	
237. Federal Sufficiency Ratings	003.1	
238. State Sufficiency Ratings	003.1	
239. Deficiency Status of Structure	SD	
240. Route Log Bridge Number	0008	
241. Bridge Plans on File	1	
241. Bid Let Date		

APPENDIX C

VAOT COVERED BRIDGE TRAFFIC STUDY SURVEY, 1993
TOWNS OF SALISBURY/CORNWALL

RECEIVED

VERMONT COVERED BRIDGE TRAFFIC STUDY SURVEY, 1993

FEB 1993

McFARLAND-JOHNSON INC.

INSTRUCTIONS:

- Please complete the questionnaire to the best of your ability and return in enclosed envelope.
- All questions should be directed to, and completed questionnaire returned to:

Phillip C. Pierce, P.E. Project Manager
McFarland-Johnson, Inc.
171 Front Street, P.O. Box 1980
Binghamton, NY 13902-1980
(607)723-9421
(607)723-4979 (FAX)

Name of Bridge: **Station Bridge**
Town: **Town of Cornwall**
County: **Addison County**
Bridge No. **VAOT Bridge No. 008**
Roadway Carried: **Town Highway 13**
Waterway Crossed: **Otter Creek**

1. Does your community have a local planning official or office, or is planning carried out at the county or regional level?

Remarks: Yes, we have a Planning Commission
Plans for the bridge are made in conjunction
with Salisbury selectboard + Cornwall selectboard

Contact Name: Raymond Paquette, Chair - Cornwall
Selectboard
Contact Telephone No. (802) 462-2905

Contact Address: RD 2, Box 2282
Middlebury, VT 05753

2. Is your community's planning guided by a comprehensive or master plan or other planning document? If so, may we receive a copy?

Remarks: Town plan presently at
printers. Copy will be sent as
soon as available

3. Are there any short or long-range planning issues that might affect your local covered bridge?

Remarks: No

4. Does your community have any planned bridge or roadway construction at the bridge site?

Remarks: Only maintenance

5. Do you have any major land subdivision or building permit applications that may impact your local bridge? What is the size of the development(s)?

Remarks: No. All land West of Otter Creek at the bridge
is swamp, wetlands and/or flood plain

6. Does your community have zoning ordinances and maps? Any rezoning applications at this time?

Remarks: Yes, we have ordinances + maps.
No rezoning applications.

7. Is the approach road to your local bridge a primary school bus and/or emergency services route? Also, is this bridge used by fuel trucks and heavy snow plows?

Remarks: No wt limit 6000#

8. Do you have available records (last 3 years) of accidents that have occurred at or near your bridge site?

Remarks: Not readily available,

9. Has your community had other traffic studies prepared which relate to your local bridge and adjacent roadway? If so, may we receive a copy?

Remarks: No

10. What is your perception with regard to traffic congestion or traffic control problems at your bridge site?

Remarks: Some small vehicle + ag traffic overloads

11. This questionnaire was completed by: Stu Johnson / Joan Payne
Title: Food Commissioner / Town Clerk
Address: RD 4 Box 680 Middlebury VT 05753
Telephone: () 802-462-2775

Please return your completed questionnaire in the enclosed envelope. Your contribution to this effort is greatly appreciated.

APPENDIX D

**VERMONT COVERED BRIDGE SURVEY, 1992
TOWNS OF SALISBURY/CORNWALL**

file

VERMONT COVERED BRIDGE SURVEY, 1993

INSTRUCTIONS:

- Please complete the questionnaire to the best of your ability.
- Please write in a legible manner; printing is preferable.
- Skip those areas which do not apply, or about which you have no knowledge/information.
- Please complete one questionnaire per bridge.
- All questions should be directed to, and questionnaire(s) returned to:

Phillip C. Pierce, P.E. Project Manager
 EMJ/McFarland-Johnson Engineers, Inc.
 171 Front Street, P.O. Box 1980
 Binghamton, New York 13902-1980
 (607) 723-9421 [phone]
 (607) 723-4979 [fax]

Name(s) of Bridge: Swamp Rd Bridge

Town: Cornwall / Salisbury

County: Addison

Feature Crossed: Otter Creek
 (River/Stream Name)

Feature Carried: Swamp Rd
 (Route Name/Number)

Total Length of Bridge: _____ Total Number of Spans: 2

Date Built: long time ago -

Bridge Designer/Engineer: _____

Bridge Builder/Contractor: _____

Bridge Company: _____

- Integrity of Bridge:
- Original (unaltered) condition
 - Minor alterations
 - Significant alterations

Dates and descriptions of known alterations:
originally a single span, center support installed

Location of Bridge:

Original location

New location (moved)

If the bridge has been moved, what was its date of relocation and original location? _____

Integrity of site:

Original site conditions

Minor alterations

Significant alterations

Are there any cultural resources associated with the bridge (i.e. Village, Grist Mill)? If so, please list:

How much has been spent on maintenance over the last 40 years (1952 to 1992)? \$ _____

How much has been spent on repairs over the last 40 years (1952 to 1992)? \$ _____

How much has been spent on maintenance over the last 10 years (1982 to 1992)? \$ _____

How much has been spent on repairs over the last 10 years (1982 to 1992)? \$ _____

3 ~ 35k
roof structural repair

Do you have an annual repairs budget for this specific bridge? Yes No
If yes, how much?

\$ 7000

Flooding History at the Bridge:

Often (Annually)

Rarely

Never

Maximum Flood Height above bridge roadway surface? _____

Dates of Floods? 1927

Please list locations of sources of documentary information materials:

Road floods West of bridge most every year

Please list local historical societies that are interested/active concerning this bridge:

Name of Organization/Association _____

Contact Person _____

Address _____

Telephone Number _____ () _____

Name of Organization/Association _____
 Contact Person _____
 Address _____
 Telephone Number () _____

Name of Organization/Association _____
 Contact Person _____
 Address _____
 Telephone Number () _____

This questionnaire was completed by: Stuart Johnson
 Title: Road Commissioner

Address: RD 4, Box 680
Middlebury, VT 05753

Telephone: 802-462-2752 (town garage)
462-2324 (home)

CONCLUDING COMMENTS:

missing answers check your files as we went through
this once before

APPENDIX E

COVERED BRIDGE STUDY TEAM

- Primary Consultant:** McFarland-Johnson, Inc.
- Subconsultant:** B&B Engineered Timber
Dr. Robert (Ben) Brungraber, Owner
Timber Materials Specialist
- Subcontractor:** Restoration and Traditional Building
Jan Lewandoski, Owner
Covered Bridge Reconstruction Specialist
- Subcontractor:** Bridge Software Development International, Ltd.
Dann Hall, Principal
Refined Computer Analysis of Brown Bridge

APPENDIX F

GLOSSARY OF TECHNICAL TERMS AND BRIDGE TRUSS FRAME CONFIGURATIONS

APPENDIX F

GLOSSARY OF TECHNICAL TERMS

(Reference, in part: Covered Bridges of the Northeast by Richard Sanders Allen, 1985.)

ABUTMENT - The shore foundation upon which a bridge rests, usually built of stone but sometimes of bedrock, or concrete.

ARCH - A structural curved timber, or arrangement of timbers, to support a bridge, usually used in covered bridges together with a truss. Most commonly used with a multiple kingpost truss. Thus, a supplemental or auxiliary arch is one which assists a truss; a true arch bridge is entirely dependent upon the arch for support.

BEARING BLOCKS - Timber components used to shim between two components (e.g. blocking pieces between a bolster beam and truss chord).

BED(DING) TIMBERS - Timber components typically located between the top of abutment/pier and the underside of the truss bottom chord. Intended to serve as sacrificial components to be easily replaced when deteriorated from rot; thereby protecting truss components from similar deterioration.

BOLSTER BEAMS - Longitudinal timber components beneath the truss bottom chord that project past the face of the abutment. Intended to provide additional support of the truss. Most commonly used beneath Town Lattice trusses.

BRACE - A diagonal timber in a truss which slants toward the mid-point of the bridge.

CAMBER - A slight convexity, upward bowing or "hump" of the chords, built in to allow the bridge to be level after it settles.

CHORD - The top (upper chord) or bottom (lower chord) member or members of a bridge truss; may be a single piece or series of long joined pieces. Town Lattice trusses typically contain two levels of top and bottom chords; hence, there may be upper and lower top chords and upper and lower bottom chords.

COMPRESSION MEMBER - A timber or other truss member which is subjected to squeeze. Often a diagonal member such as a brace or counterbrace. Also a top chord.

COUNTER-BRACE - A diagonal timber in a truss which slants away from the mid-point of the bridge (opposite from brace).

DISTRIBUTION BEAMS - Longitudinal timber components aligned below, and supported by, the floor beams of the structure. Intended to force participation of several floorbeams in supporting axle loads of vehicles. Rarely effective.

FACE OF ABUTMENT - The side of the abutment toward the center of the stream.

FLOOR BEAM (OR FLOOR JOIST) - Transverse beam between bottom chords of trusses on which longitudinal joists (or "stringers") or decking are laid.

GOOD CONDITION - Indicator of physical configuration and material properties similar to that at time of original construction. Having no significant defects, such as: cracks, crushing, buckles, rot, insect attack, or impact damage.

JOIST (OR STRINGER) - Timbers laid longitudinally on the floor beams of a bridge and over which the floor planking is laid.

KNEE BRACES - Transverse timber components connecting the upper portion of the truss with the transverse tie beams, usually positioned at a 45 degree angle.

LAMINATED ARCH - A series of planks bolted together to form an arc; constructed in such a manner that the boards are staggered to give extra strength.

LATERAL BRACING - An arrangement of timbers between the two top chords or between the two bottom chords of bridge trusses to keep the trusses spaced apart correctly and to insure their strength. The arrangement may be very simple, or complex.

LONGITUDINAL - Direction parallel to the bridge.

PIER - An intermediate foundation between abutments, built in the stream bed, for additional support for the bridge. May be made of stone, concrete, wood, etc.

PORTAL - General term for the entrance or exit of a covered bridge; also used to refer to the boarded section of either end under the roof.

POST - Upright or vertical timber in a bridge truss; *center post* is the vertical timber in the center of a truss; *end post* is the vertical timber at either end of the truss.

RAFTER - One of a series of relatively narrow beams joined with its opposite number to form an inverted V to support the roof boards of a bridge.

ROT - Deterioration of timber material evidenced by soft spots/areas as a result of poor ventilation and/or excessive moisture.

RUNNING PLANKS - Longitudinal timber planks on the top of the deck intended to provide an easily replaceable wearing surface. Also tends to guide vehicles along the center of the bridge and causes traffic to reduce travel speeds.

SAG - Opposite of camber; permanent downward deflection of trusses at middle of span.

SISTER - Additional Town Lattice web member inserted adjacent to a damaged or deteriorated existing web member that provides additional strength to the truss without replacing the existing member.

SKEWED BRIDGE - A bridge built diagonally across a stream.

SPAN - The length of a bridge between abutments or piers. *Clear span* is the distance across the bridge, measuring from the face of one abutment to the face of the other. The length usually given is for the *truss span*, i.e., the length between one endpost of the truss and the other, regardless of how far the truss may overreach the actual abutment. Bridges of more than one span are called multi-span bridges.

SPLICE - A method of joining timbers, especially end-to-end, by means of a scarf or other joint, sometimes with keys or wedges inserted to give additional strength and stability to the joint. A *splice-clamp* is a metal or wooden clamp designed to hold two spliced timbers together.

TENSION MEMBER - Any timber or rod of a truss which is subjected to pull or stretch.

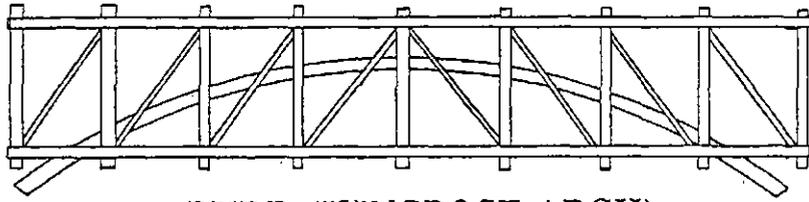
TIE BEAM - Transverse timber component connecting tops of top chords. A part of the upper lateral bracing system.

TRANSVERSE - Direction at right angle to bridge (i.e. 90° to bridge), opposite of longitudinal.

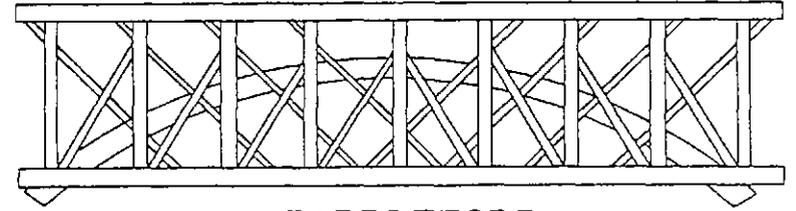
TREENAILS (TRUNNELS) - Wooden pins which are driven into holes of slightly smaller diameter to pin members of lattice trusses together. (Pronounced "trunnels").

TRUSS - An arrangement of members, such as timbers, rods, etc., in a rigid form so united that they support each other plus whatever weight is put upon the whole. Covered bridge trusses, including arch trusses, employ a triangle or a series of combined triangles, since this is the form which cannot be forced out of shape by external pressure. Truss is also used to refer to just one side of a bridge.

BRIDGE TRUSS FRAMES

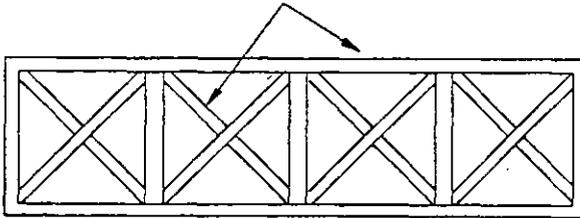


BURR (KINGPOST ARCH)



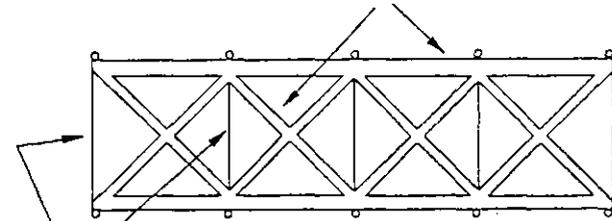
PADDLEFORD

ALL WOOD



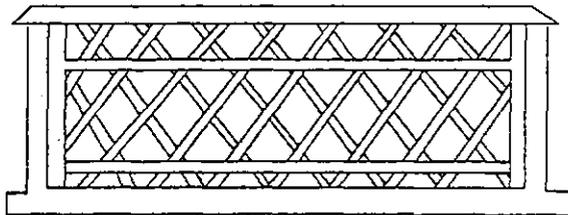
LONG

WOOD



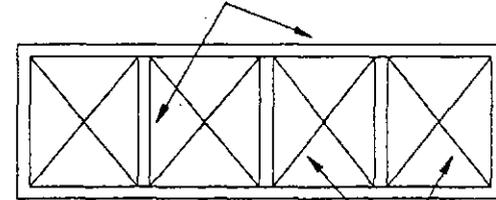
HOWE

IRON



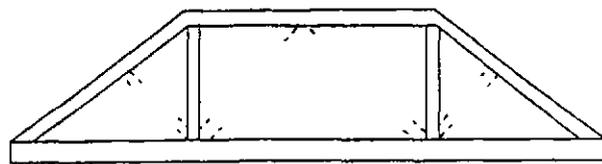
TOWN LATTICE

WOOD

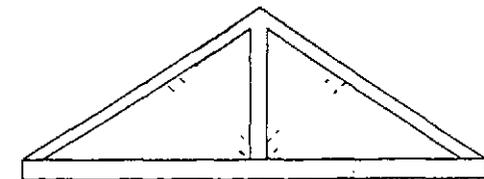


PRATT

IRON



QUEENPOST



KINGPOST

APPENDIX G

GENERAL RECOMMENDATIONS FOR MAINTENANCE AND REPAIRS OF COVERED BRIDGES

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RECOMMENDATIONS FOR FUTURE MAINTENANCE

Regular maintenance and proper repairs can help preserve these unusual structures for an indefinite period of time. The following discussion highlights good maintenance measures.

- Maintaining a waterproof roof and side boarding system is an extremely important measure that can prolong the life of these bridges.
- The buildup of dirt and debris, tracked onto the bridge from vehicles or introduced by poor roadway drainage, should be regularly removed to help prevent opportunities for decay to develop. The material would ideally be removed with air pressure. Use of water jets to remove the dirt is effective; however, it introduces moisture into areas of the bridge that are hard to dry and would otherwise have stayed dry.

The trusses should be raised above direct contact with the foundation units, via timber bedding timbers or bearing blocks. The inevitable deterioration of those components can be addressed with much less expensive replacements whenever necessary.

- The bridge structure should be elevated above the approach roadway so that road drainage does not flow onto the floor system. If elevating the structure is neither possible nor practical, then significant and effective drainage collection systems should be installed on the uphill end of the bridge to minimize the amount of drainage entering the bridge.
- All timber components should be kept in like new condition and the structure should be "tight" A structure that is loose enough to distort, will undergo an accelerated rate of deterioration. The diagonal compression members of Multiple Kingpost structures are occasionally so loose as to be subject to handshifting by a person. Knee bracing and top lateral bracing in the roof area is often damaged by oversized vehicles, and should be repaired as it is discovered.

RECOMMENDATIONS FOR FUTURE REPAIR PRACTICES

A number of examples of poor quality past repairs are evident in existing covered bridges. The following discussion highlights some of the common problems and the more appropriate repair measures.

the trunnels for load transfer among the individual components. Although failure of trunnels is uncommon (or at least not readily observable nor often noted by repairers), short chord components lead to excessive deformations of the trunnels and/or holes, so that the "gaps" between chord members enlarge. It is good practice for rehabilitation of such structures to require replacement components to be as long as possible.

- Town Lattice diagonals often exhibit cracking along the axis of the member, beginning at the end of the member, and passing through trunnel holes. In many instances, bottoms of lattice members may also be damaged from ice and/or flooding impact forces. In such cases, lattice members have been "spliced" in the past by cutting the member off above the upper lower chord. A replacement bottom end has been joined to the existing upper portion by the use of steel bolts (with or without steel "shear plates"). In many instances, the splice is made with a pair of bolts (often only 3/4 inches in diameter) in either end of each timber component. Not only is the bolted connection weaker than a corresponding connection with trunnels, but the end distance of the bolt is often substantially less than required by Code.
- Several Queenpost trusses have been rehabilitated through installation of steel "heel plates" at the end post to bottom chord joint. In most examples, the bolting patterns do not appear to conform to timber design specifications. There are other, more subtle problems with these added steel plates.

Moisture condenses on these large steel plates and can cause decay in the concealed wood surface behind. The larger plates can be inducing large perpendicular to the grain load components in the bolts, through eccentricities in the forces being transferred. Unless the steel plates are drilled in place (a difficult procedure) it is very tough to get the holes in the wood aligned with those in the steel. The "hole oblonging" this causes when installing the bolts can seriously compromise the capacity of the designed joint, as well as allow an unexpected amount of deflection in the "repaired" structure.

Use of these plates seems to be inspired in efforts to avoid authentic restoration techniques or extensive timber chord replacement. Skilled timber craftsmen are often able to restore the capacity of these critical joints without resorting to the use of bolts, and usually produce a stronger connection.

- Distribution beams have been added to the underside of the floorbeams on many covered bridges. The longitudinal members were intended to force participation of several floorbeams in the support of axle weights of vehicles. Specific installations may include one or two lines of members hung beneath the floorbeams by steel U-bolts. In practice, the members are usually ineffective due to several reasons. The relative stiffness of the distribution beam is usually much less than the floorbeam, and hence cannot perform its intended function. The connections are usually sufficiently loose so that the floorbeam beneath the axle deflects without fully engaging the distribution member.

The positive benefit of added resistance to ultimate failure of the floor system caused by an overload vehicle does not offset the adverse effect that it represents due to its own

weight. Existing distribution beams should be removed when a structure is rehabilitated. No new beams should be installed. New replacement floor systems should be sized and detailed to properly support vehicle loading by conventional design practice. Some bridges contain features that make the installation of a new floor difficult and may require special attention.