

The Bridger



The Vermont Covered Bridge Society Newsletter - Spring 2008

They're Building A Bridge In Reading, Vt.

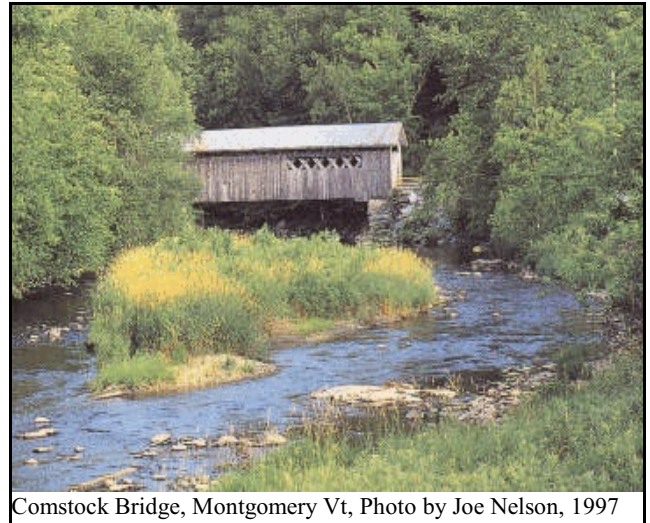
By Risa Mornis News Correspondent



RES Student's Town Truss, Photo by Johnny Easu, Feb. 15, 2008

MONTGOMERY, VT. COVERED BRIDGES*

(A Look Back) by Elizabeth Fuller



Comstock Bridge, Montgomery Vt, Photo by Joe Nelson, 1997

Reading, Vt. January 4, 2008 - The Reading Elementary School is building a bridge. Not just a model of a bridge, but a real covered bridge that will be placed at the entrance of a nature/ fitness trail to be constructed behind the school.

The bridge will be a 1/3-sized replica of the Silk Bridge in Bennington, measuring approximately 5 feet by 15 feet. The Kindergarten through six graders at RES will research, design and construct it during the winter months and raise it in the spring.

"This bridge will be identical to the bridge that I made with 4th and 5th graders at the Marlboro school," Reading's Title I Math teacher, John Esau said. "I still had a school bus license at that time, and we went on a lot of field trips to covered bridges. It got to the point that the kids would tell me what kind of trusses the bridges had."

Esau will be in charge of the project, along with Garret Mulder, builder of the full-size covered bridge built last year on Route 106 for the Osgood family. The project will include volunteers from the community, school personnel and local families.

While the project is designed to benefit the entire school community, fifth and sixth grade students will likely take the largest share of the responsibility during the design and construction phases. Esau already has an outline of projects for each class.

(Building Bridge continued on page 2)

Perhaps it is not generally known that there are more covered bridges in our town of Montgomery than in any other town in the state of Vermont.

We have eight of these old structures, all in active service.

These bridges are all of the type called Lattice Truss. In 1820 Ithiel Town, a well known architect of New Haven, Conn., invented and patented the so called Town Lattice Truss, the familiar plank lattice fastened together with wooden pins. Because of the ease and simplicity of construction this became a very popular type and was used for many of the covered bridges in Vermont.

Five of the covered bridges in our town cross Trout River, the Harnois bridge [VT-06-08], the Clapp bridge, the Comstock bridge, the bridge at the site of Hutchins mill [VT-06-07] and the one at Hectorville [VT-06-06] cross the south branch of Trout river.

Two cross the West Hill Brook, one at the foot of the hill and the other not far from Four Corners. One bridge crosses Black Falls Brook.

The Clapp bridge was the first covered bridge built in town. A man by the name of Ferguson did the work and it was he who taught the construction of the lattice plank bridge which he learned in Connecticut.

All the other bridges in town were built by Sheldon and Sevanard Jewett.

(Montgomery VT continued on page 2)

(Building Bridge continued from page 1)

From cutting out treenails for the lattice and cutting lighter boards—jobs for kindergarten through second graders—to cutting out rafters, chords and joists for the third through sixth graders, there is a job for everyone. Starting Jan. 11, students will cut and prepare all the necessary pieces for the bridge. To highlight the educational nature of the project, important parts of the finished covered bridge will be labeled with proper terminology that is stamped or engraved into hardwood or metal. A contest may be held in the spring to name the bridge.

The students have already watched a slide show of Marlboro students building their bridge and received a preview of what is to come. Marlboro students spent a lot of time making models of bridges, and on field trips, they drew and measured bridges. Esau has been interested in covered bridges for many years, incorporating the study of them into his teachings of math, history, geography, and even art. He has been a member of the Vermont Covered Bridge Society for three years and part of "bridge watch committees" during that time. "Our goal is to preserve covered bridges, keep an eye on those we still have and encourage the building of more."

Asked what he thought of the idea of building a real bridge in school, RES sixth grader Oliver Kaija said it would be good for the school as a whole, "requiring a lot of thinking, and math. And it will be really cool to see a covered bridge out behind the school." His classmate, Tom Baumann said, "working on the roof" was what he looked forward to the most. He has helped his dad, Scott Baumann build things in the past. He agrees that this project will be especially "cool." Field trips to local covered bridges in Ascutney, West Windsor, and Weathersfield will make this project even cooler from the elementary point of view.

Some of the funds for the covered bridge project were received from the WUHS endowment association (\$2500), while the rest (\$2500) has been raised by the Reading Community Recreational Space Committee as a part of the larger plan to create a walking/fitness trail behind the school. Donations of lumber from Bill Hunt and other equipment and supplies being borrowed or donated, have enabled this project to begin with few costs and a lot of community support.

The goal of the covered bridge project is to involve students in the educational process of building a bridge and all the academic skills it requires—math, art, history, research and hands-on application of learning. "This is a great project," Esau said, "for the community as well as the students." Volunteers are welcome to help Friday mornings from 8:30- 11:00 am, and can contact the school at (802) 484-7230.

(Montgomery VT continued from page 1)

The Harnois (or head bridge as it was once called)

was probably the next one built in about the year 1863.

The Comstock bridge bears the date September 1883.

The Fuller bridge [VT-06-05] was built in 1890 to replace an open bridge which collapsed under the strain of a four horse load of bobbins from Black Falls Bobbin Mill.

The last bridge to be built was the West Hill Bridge [VT-06-09], the exact dates of the [rest of the] bridges are not known.

During the past few years a special interest has been taken in these old structures. There is something about their old and weatherbeaten appearance that appeals to tourists who seem to regard the covered bridge as one of the most characteristic examples of Vermont.

Perhaps it is because these old bridges have a sturdy and enduring quality which seems to typify the traditional Vermont character.

A covered bridge is not especially beautiful in itself, but it is the setting in which so many are found, a winding road, a clear stream with a green mountain in the background, that make them most interesting from a picturesque view point.

Many of us remember the warning that was once posted on the covered bridges "Horses at a Walk." No one ever paid any heed to the warning.

The story is told of a man who owned a very spirited pair of horses and when he went to town he always drove them as fast as they could go through the covered bridge warning or no warning. Finally there were so many complaints against him that he was arrested, brought into court and fined \$5.00. He handed the judge a \$10 bill and said "Keep the change. I'm going right back through that bridge in about fifteen minutes."

The covered bridge near my home has served many other purposes than merely to bridge the stream. The fact that it was covered made it a shelter in the time of storm. It was also a favorite place for displaying advertisements and many of the old ones remain: Kendall's Spavin Cure, Battle Ax Plug Tobacco, Hords Sarsaparilla and one that is almost obliterated is for Kickapoo's Indian Sagwa (whatever that might have been).

Children used to play in the bridge; there was always time to get out of the way of an occasional team but now with modern traffic it's not a safe place even for grownups to loiter.

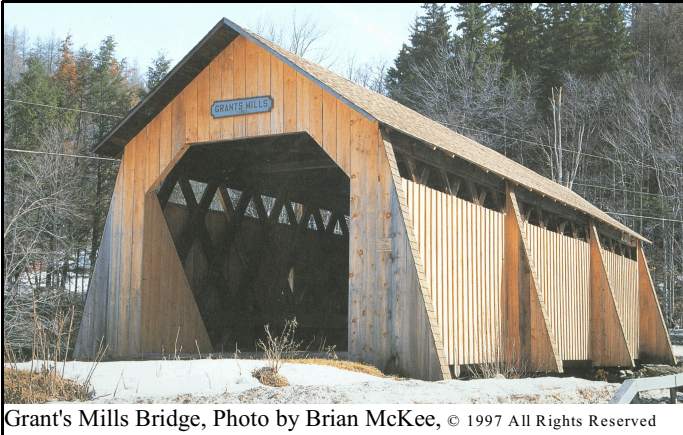
A new highway construction through the village designed to straighten the road has done away with two of the structures. Although the people of the community knew that the bridges were too narrow and low for modern traffic they watched the old landmarks torn down with more or less regret. One of the bridges known to "Old Timers" as the Clapp bridge was one to go and the other was the last bridge built which crossed the West Hill Brook, the new bridge being built further down the stream."

Written and read by Miss Elizabeth Fuller at the [Town's] 150th Anniversary.

*[From the Connecticut River Valley Covered Bridge Society *Bulletin*, January, 1956]

Grant's Mills Bridge Restoration Celebrated

[WGN NY-56-06]



Grant's Mills Bridge, Photo by Brian McKee, © 1997 All Rights Reserved

Grant's Mills Bridge was built in 1902. Sixty-six feet in length the builders used a town truss to cross Mill Brook. It served the Town of Hardenburgh, Ulster County, in upstate New York until the 1960s, when it was closed and allowed to sink into ruin.

Author Brian McKee, in his *Historic American Covered Bridges* (1997), wrote: "The bridges distinctive appearance comes from eight flying buttresses that keep it from twisting or leaning. It has been closed and bypassed, but is in excellent condition today, thanks to the efforts of Bob Vrendenburgh. A direct descendent of the original builders, Bob Vrendenburgh undertook the monumental task of restoring the bridge to pristine condition in October 1990. Twenty months and over \$13,000 later, the restoration was completed."

Country Magazine, in its January 2008 issue celebrates the restoration with its article, *Blueprint for a Covered Bridge Rescue*. Go to:

<http://www.country-magazine.com/2008/DJ08/featureX1.asp?RefURL=&KeyCode=&tdate=&PMCode=&OrgURL=>

Robert H. Durfee

2008 New Hampshire Engineer of the Year

Jan 24, 2008 - DuBois & King, Inc., is pleased to announce that Robert H. Durfee, P.E., SECB, has been selected by a jury of peers from New Hampshire's engineering societies as the 2008 New Hampshire Engineer of the Year. The award will be presented to Mr. Durfee at the annual Engineers Week Banquet to be held in Manchester, New Hampshire on February 21st.



The Structural Engineers of New Hampshire (SENH)

nominated Durfee on the quality and depth of his professional work, volunteerism in his community, and his efforts in advancing the field of engineering. Durfee is a founding director and a past president for SENH and is noted for his efforts to encourage the training and mentoring of young engineers as an effective way to remedy the chronic shortage of experienced engineers.

Mr. Durfee is a licensed professional engineer in eight states and has 30 years of professional experience in transportation and structural engineering. He holds a B.S. in Civil Engineering from Clarkson University and a Masters of Engineering from Virginia Polytechnic Institute. As a senior engineering manager, Mr. Durfee has led the design effort for bridge, highway, roadway, dam, building, and specialty structural projects and has managed transportation projects for state agencies in New Hampshire, Vermont, Massachusetts, Connecticut, and New York.

Mr. Durfee has extensive experience assisting New Hampshire, Vermont, Maine, and Massachusetts municipalities with roadway and bridge projects and has completed design, rehabilitation, inspection, and evaluation services on well over 100 bridge projects throughout the region.

Mr. Durfee is a nationally recognized expert on covered bridges and a noted author of technical papers, publications, and presentations on bridge and structural engineering. Some of Durfee's covered bridge projects include: the Ashuelot Covered Bridge in Winchester, the Cilleyville Bog Covered Bridge in Andover, the Swiftwater Covered Bridge in Bath, and the Haverhill-Bath Covered Bridge, the state's oldest authenticated covered bridge. In 2002, his firm won a national award for his work on the Slate Covered Bridge in Swanzey.

Mr. Durfee is active in numerous professional societies. He is also a member of the National Society for the Preservation of Covered Bridges, the Covered Bridge Societies in Vermont, New York, and Pennsylvania, and the American Society of Civil Engineers.

Mr. Durfee lives in Laconia, New Hampshire with his family and works in the firm's Nashua, New Hampshire office.

Cedar Swamp C.B. Renovation Update [VT-01-01]

by Jim Ligon

Cornwall, Vt, December 19, 2007 - A brief update on what we're up to: The 1865 Town lattice bridge has been lifted over 6 feet and a temporary steel bridge was built underneath to support it. A 2nd temporary structure was built on top of that so we could actually hang the stripped timber bridge by the unloaded upper members.

(Cedar Swamp continued on Page 4)

(Cedar Swamp from Page 3)

Initial contract estimates of timber replacement was way off because it's impossible to see the extent of damage until the structure has been supported and can be disassembled.

The full length of lower bottom chord both sides need replacement, as do many of the lattice members. The major factors are very poor initial design and construction, and subsequent overloading.

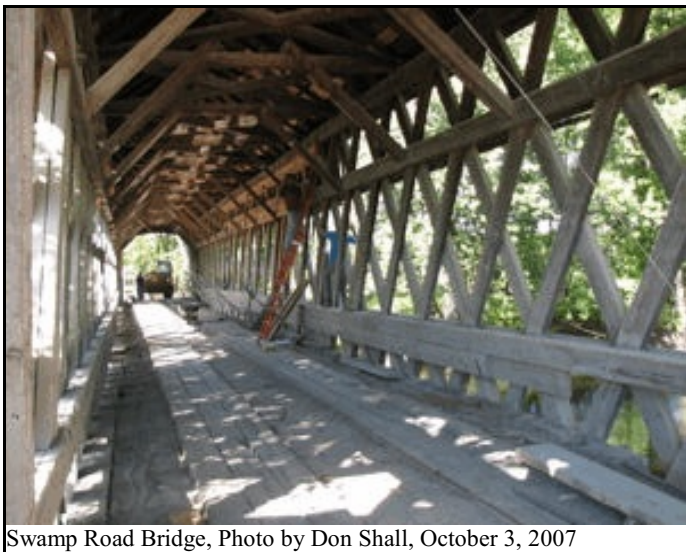
Many of the original lattice members were notched vertically between trunnel holes. I have no idea why they did that, but it allowed each point to slip. With literally thousands of points, it slipped a lot. It slipped until it broke. Then they added a pier in the middle of the river.

A pier, of course, has its own issues. They trap silt, which traps logs, which traps every other thing coming down the river. And when they all come together they hit the bridge right in the middle—Our contract called for us to clear the accumulated debris but not touch the bottom. We cleared the debris first thing, now it's back, just as it is every year.

Oh, and many, many of the original trunnel holes were drilled right at the edge of a member. Many actually split members. Bad design! For historical sake we're supposed to duplicate those structural errors? Not a good idea. Now we have saved timbers with holes drilled right out the edge or bottom which do nothing but weaken the member.

We're halfway finished replacing lattice members. Bottom chord members follow as we get to them. Progress is good and weather is as usual in a Vermont winter. We're bundled up and working.

[Jim Ligon is construction supervisor for contractor Alpine Construction, of Stillwater, N.Y.]



Swamp Road Bridge, Photo by Don Shall, October 3, 2007

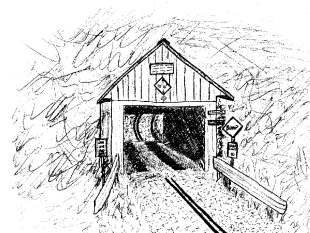
East Fairfield Bridge Ancient Ads

East Fairfield Bridge Stencil, photo by Joe Nelson, January, 2008

East Fairfield, Vt., February 14, 2008 - VCBS member Rae Laitres has been watching the covered bridge in East Fairfield Vermont. The bridge is slated for renovation this coming summer, and Laitres is concerned that the stenciled ads and poster remnants within the bridge will be lost. She has been in touch with the town and with VTrans.

Ms. Laitres writes: "Gerry Longway, the Fairfield Town Clerk, called John Weaver [VTrans] in regard to the ads in the bridge. [Weaver's] suggestion was to get them now . . . as he cannot speak for what will happen when a bid is accepted and a contract is awarded. Gerry and I then went to the bridge and I pointed out the poster and the stenciled ads. She was very surprised. As far as the one on the gate is concerned she will touch base with the selectboard and send the highway crew to remove it. It will then be stored in the historical society which is housed in the same building as her office. She will keep me posted as to any developments."

Laitres reports that it appears that someone tried to remove the only completely intact Spavin Cure ad since she and Joe Nelson were there in January to photograph the ads.



Events

● The 9th Annual Spring VCBS meeting will be held at the Illsey Library in Middlebury, Vermont on April 19, 2008. The speaker will be Ed Barna, author of *Covered Bridges of Vermont*.

There will be coffee, tea and snacks to be had during our meeting. Lunch will be Pizza. Water and Soda will be provided. You can bring your own lunch or there are plenty of places to eat in Middlebury.

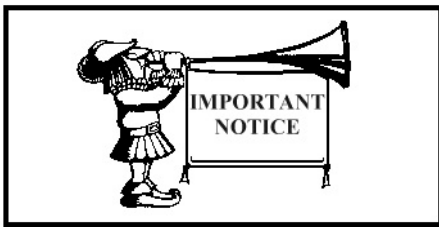
● VERMONT HISTORY EXPO 2008 will be held the weekend of June 21st-22nd, from 10:00 a.m. to 5:00 p.m., at the Tunbridge World's Fair Grounds. Set-up day is Friday, June 20, from 8 am. Volunteers for set-up and to man the display, please contact Irene Barna; ibarna@middlebury.edu

The Theme of the 2008 Expo is "Industry and Innovation: Vermont Ingenuity "

From mills, plants and factories to environment, education, culture and philosophy, Vermont can boast many inventive initiatives and vital industries that have had influence on our towns, our state, and beyond!"

● Our 9th Annual Fall VCBS Meeting will be held on October 11, 2008. There will be more information in the Summer Issue of the Bridger.

Johnny Esau, Chair, Events Committee



Transportation Needed

We have some members who have faithfully attended society meetings for many years. These folks have contributed mightily to our success and have long been part of what we do, but unfortunately they now lack the means to join our gatherings, events that have long been part of their lives.

There are three members in Lyndon and another in Shelburne who would come to our meetings if they could find a way.

If you can provide transportation for our friends, please contact me: Joe Nelson, 802.899.2093, or jcnelson@together.net.

Vermont Covered Bridge Society 9th Annual Spring Meeting

Illsey Public Library,
75 Main St., Middlebury, Vermont
April 19, 2008

Agenda

- 10:00 a.m. - Welcome
- Business Meeting
- Reading of minutes of last meeting
- Committee reports
- Old Business
- New Business
- 11:15 a.m. - Presentation: The speaker will be Ed Barna, author of *Covered Bridges of Vermont*.
- 12:00 p.m. - Lunch, Drawing for prizes, Memorabilia Table
- 1:00-3:00 p.m. - Tour Area Covered Bridges

There will be coffee, tea and snacks to be had during our meeting. Lunch will be Pizza. Water and Soda will be provided. You can bring your own lunch or there are plenty of places to eat in Middlebury.

Directions: (see map located on page 12)

From Rutland: Take Route 7 North through Pittsford, Brandon, East Middlebury and Middlebury. Route 7 will join Rt. 125 at Court Square [Stay in the LEFT LANE]. The Middlebury Inn will be on your right. After turning RIGHT, Bear LEFT down a slight hill [100 ft]. Turn LEFT onto Main St. Go about .2 of a mile. The Illsey Public Library is on your left.

From the North: Go south on Route 7 through Shelburne, Charlotte, Vergennes, and New Haven. Take a RIGHT turn onto Rt. 125/30 [Main St.] Go about .2 of a mile. The Illsey Public Library is on your left.

Parking:

To avoid parking tickets, be sure to use the "Lower" lot. The "Upper" lot has time limits.

Lodging:

● Middlebury Inn, 14 Court Sq. ,
Middlebury, VT , 802-388-4961
<http://www.middleburyinn.com>

● Courtyard by Marriot,
Rt. 7, Middlebury, VT, 802-388-7600
[http:// www.middleburycourtyard.com](http://www.middleburycourtyard.com)

● Inn on the Green,
71 S. Pleasant, Middlebury, VT, 802-388-7512
<http://www.innonthegreen.com>

Annual Director's Meeting Held

by Joe Nelson

The Annual Directors Meeting for 2008 was convened on February 1 and adjourned February 15.

Eleven of thirteen directors participated by U.S. Postal Service, email, and telephone.

Seven proposals were considered concerning dues, disposal of our collection of books, renaming a standing committee, contributing to Lyndon's Randall covered bridge, approving the annual budget, and servicing the Save-A-Bridge Fund.

Dues for Individuals, Family, Students, and Business, will not be changed. Dues for non-profits will be reduced from \$25 to \$15, passed 8 to 3. The Life Membership dues will be increased from \$100 to \$150, Life-Couple Memberships will increase from \$115 to \$150, passed 10 to 1. The date the changes will take effect will be set by the Membership Committee.

The argument for reducing dues for non-profits is to encourage partnerships between us and historical societies in towns that own covered bridges and with the towns themselves. In the past we've had five organizations and three towns as members. A membership drive has been in planning. The argument for increasing the dues for life memberships is the rising cost of maintaining a membership over a span of years, also that similar organizations have been charging \$200 and more.

The directors voted 8 to 1 to establish a society lending library, and by a vote 9 to 2, with member volunteer Warren Trip serving as curator/librarian. A proposal to send the books to the Covered Bridge Museum at the Bennington Center for the Arts was defeated by a vote of 8 to 2. The proposal to send the books to the Lyndon Historical Society's Shores Memorial Museum as part of an interpretive program for the Town of Lyndon's covered bridges was defeated by 9 to 1.

The directors approved renaming the Crafts Committee "Historical Committee" 11 to 0. The function of the Crafts Committee was collecting and purchasing covered bridge memorabilia for sale to fund the promotion of the preservation of covered bridges. Important covered bridge history was set aside for cataloging and preserving. The artifacts include china, carvings, framed pictures, newspaper and magazine clippings, newsletters, postcards, and books. These activities will continue under the Historical Committee. In addition, the committee will support the society lending library, and the preparation of artifacts for display and publication.

The directors approved a contribution of \$600 to help with repairs to the Randall Bridge by a vote of 8 to 3. One of the three voted for \$1000, two for \$300. Friends of the late Katherine Ramsey, Director of the Lyndon bridge-watch area, have contributed funds to be used in her memory. The whole amount will go to the Randall Bridge project.

The annual budget was approved 11- 0, the annual Save-A-Bridge Fund allocation was approved 11- 0. The quorum

requirement having been met, Director Dick Roy moved to adjourn, John Weaver seconded the motion. The Annual Director's Meeting was adjourned.

About Your Board of Directors

by Joe Nelson

It is very likely that the average member of the Vermont Covered Bridge Society doesn't know that we have Board of Directors. These are the folks who see that our dues and donations are used properly. They oversee all society business and activities guided by the society's constitution and bylaws. In short, the thirteen-member Board of Directors is the governing body of the Vermont Covered Bridge Society.

While Board membership includes the VCBS president, vice president, secretary, and treasurer, it also includes VCBS members who volunteered to head a standing committee or to organize an active Bridge-watch for a Vermont bridge. The number of Board members is not limited by the bylaws—any member can volunteer for a seat on the board. Any member can contact the Board with ideas and suggestions. Here are the Board members and what they do:

John Weaver, VCBS President and Bridge-watch Coordinator; Joe Nelson, VCBS Vice President, Chair of the Communications Committee (newsletter, etc.), and interim Chair of the Crafts Committee (now Historical Committee) and Chairman of the Board by appointment; Neil Daniels, VCBS Treasurer, and Chair of Weathersfield Bridge-watch Chapter; Irene Barna, VCBS Secretary; Suzanne Daniels, Chair of the Membership Committee; Johnny Esau, Chair of the Events Committee; Terry Shaw, Chair of the Legislation-watch Committee; William McKone, Chair of the Cambridge Bridge-watch Chapter; Ed Rhodes, Chair of the Stowe Bridge-watch Chapter; Ed Barna, Director-at-large; David Wright, Advisory Director, and President of the National Society for the Preservation of Covered Bridges (NSPCB); Richard Roy, Advisory Director and a Vice President of the NSPCB; and Donna Freeland, Advisory Director and President of the New York State Covered Bridge Society, our newest member.

An Invitation.....

by Joe Nelson

If you have ideas that will help the VCBS in its mission, contact us. Also, membership on the Board of Directors is open to any member willing to chair a committee—the Historical Committee needs a chairperson. Contact me at: jenelson@together.net or write Joe Nelson, PO Box 267, Jericho, VT 05465, and I will help you make the contact you need.

Membership

by Suzanne Daniels
Director, Membership

In the 2007 fall session of the Institute of Lifelong Education at Dartmouth (ILEAD), VCBS Vice President Joe Nelson and Treasurer Neil Daniels gave a six class program about Vermont Covered Bridges. Due to the interest generated by this course, it was decided to repeat it again at ILEAD and also to the Vermont communities where covered bridges exist.

During the classes at Dartmouth, Joe and Neil used projection equipment provided by ILEAD. In discussing the future presentations to Historical Societies, Town Officials, Schools, Chamber of Commerce, etc. , it was realized that the VCBS should have its own equipment in order to create the appropriate programs for the various audiences. Therefore, Sue and Neil Daniels and I have agreed to donate the amount necessary to purchase such equipment.

By means of this equipment, programs will be created to inform and educate Vermont citizens of the value of these structures to the state and the visual enjoyment that they provide for all. The overall purpose is to create new members of all ages throughout the state.

According to Trish Kane's report, as of January 18 the VCBS has 155 members! Curiously, of those 155, only 73 are Vermonters. Eighty-two of us are from 22 states and Canada: Arizona, California, Connecticut, DC, Florida, Illinois, Indiana, Massachusetts, Maine, Michigan, Minnesota, Missouri, North Carolina, New Hampshire, New Jersey, New York, Ohio, Oregon, Pennsylvania, South Carolina, Virginia, and Ontario. And now—Welcome our newest member and the newest state to join us, Sandi Simkulet of Andover, Kansas, and a welcome to Al and Ron McGay of North Syracuse of New York. This totals 158 members, 23 states and Canada represented.

And now, our Early Renewal Contest. Thanks to each of you who mailed your membership dues on time, and a special thanks to you who renewed for two years. As in years past, the drawing was done by Ruth Nelson's first grade reading group at the Jericho Elementary school. (The little rascals have fun doing it.) The winners are: **Scott Mc Laughlin**, a copy of *Spanning Time, Vermont's Covered Bridges*, by Joseph C. Nelson; **Marge Converse**, a copy of *New England's Covered Bridges*, by Ben and June Evans; and **Caroline Clapper**, a one year free membership to the VCBS. Congratulations all, and thank you for your membership.

Upcoming Birthdays and Anniversaries

March

2 John Billie
2 Gordon O'Reilly
4 Sarah Ann Gallagher
8 Neil Daniels
16 Bruce Laumeister
12 Priscilla Farnham
21 Thomas & Lisette Keating
23 Steve Miyamoto

April

13 Gary Krick
22 Anthony Daniels

May

3 William Carroll
3 Tom Davis
3 Thomas Keating
9 Erwin Eckson
10 Charles Lovastik
11 Hank & Sally Messing
11 Steve Wheaton
12 James Crouse
12 Jeanette Wilson
17 Ron Bechard
18 Ruth Nelson
19 Mary Ann Waller
22 Irene Barna
22 Lisette Keating
27 June Gendron
28 Bill McKone



Our VCBS Board meeting has concluded and we look forward to a well attended spring meeting in April at Middlebury. Please plan to attend and take part in VCBS decisions and activities. 2008 looks like an interesting and exciting year.

Also, this has been an exceptional year for snow loads, so try to do your bridge-watch spring covered bridge site visits early this year. We have been known to lose a bridge or two in March, due to snow loads - un-shoveled roofs.

Yours in bridging, John Weaver, President, VCBS

Covered Bridge Fiction or Fact

by Bob & Trish Kane

Question #6 - During a covered bridge restoration or rehabilitation, often times contractors have come across a design flaw when the bridge was actually built. Given that you would like to rehabilitate the bridge historically correct, should this flaw be corrected during the rehabilitation or left as part of the original design even though it is an actual flaw in the design.

Ron Branson, IN

To maintain historical accuracy, you must leave the flaw; however, it may be desirable to add some compensation if the error could impact safety standards, or to better preserve the structure in the future.

Joseph Conwill, ME

Should a design flaw be corrected? First, we need to ask, is it really a flaw? Maybe it is not, if the bridge has stood so long that way. There is already a pronounced trend towards “homogenizing” covered bridges during repair projects. If we say to go ahead and make changes, we will lose even more local detail. Burr trusses having only a single treenail in the post/top chord joint will all be modified, Paddleford trusses will all receive new non-historic top plates and additional rafters (this has already happened to at least one bridge) – and so forth.

Having said that, if there is a real flaw which clearly threatens the structure, it should be changed. The classic case is Perrine’s Bridge near Rifton, NY. As long as anyone could remember, the siding did not extend down to the arch ends. This feature was reproduced in the 1968/69 restoration, and the arch ends are again seriously rotted. There is an inconclusive photographic clue that this bridge may once have had siding down there. In any case, I think it should have it now, even if it didn’t in the past.

Robert Durfee, NH

The answer to this question is another question. How does the flaw affect safety at the bridge?

If the design flaw does not affect the load capacity of the bridge (i.e. does not reduce the bridge capacity) or safety to the public, then I would leave the flaw in place as part of the historic fabric. I have seen a situation where timber members in a bridge were salvaged from a previous bridge, and have unintended notches or trunnel holes where it was not needed. A close analysis of this noticed or holed member indicated it was still capable of supporting the intended loads. You leave this flaw in place, as part of the historic fabric and as a sample of Yankee thriftiness.

If the flaw does affect the bridge capacity or safety, then it should be corrected. I would follow the Vermont Historic Covered Bridge Preservation Plan in making the correction. The preference would be to retain as much of the existing fabric (i.e. keep the flaw in place), and install a correction that using historic methods for strengthening, and is reversible (i.e. removable in the future). A sample of this situation occurs when a tension butt splice in the bottom chord of the truss, is placed in a high stress area (usually near the pier). This condition reduces the capacity of the truss and bridge. The repair is to add on a new timber member (sister splice), and attach using trunnels. The repair retains the historic fabric (retains the flaw), strengthens using traditional methods, and is reversible.

Bob & Trish Kane, NY

If it is a bridge that is opened to the public and is a safety issue, or if it threatens the preservation of a bypassed bridge, it should most definitely be corrected. If not, leave it as it was originally constructed.

Jan Lewandoski, VT

It depends upon what the flaw is and how serious, and if it actually caused trouble in the past. If the goal is to keep the bridge functioning at its original clear span with its dead load and traffic, any design flaws in the truss that have produced evidence of stress or displacement need to be remedied.

In the case of the Big Eddy Bridge (1833) in Waitsfield, Vt. (an excellent 108 ft. span) the only flaw was the undersized nature of the first posts at the edge of the abutments, the ones that carry the great accumulated load of the truss, which were no bigger than any other post. Also, the check braces had been removed from behind their lower bearing shoulders sometime in the past, which may have been most of their problem. I replaced the posts using a stronger species (white oak as opposed to the former spruce), an increased the thickness dimensions by 1 inch each way. Also, I put the check braces back in. Remedied and changed, but within the original design of the bridge.

The famous Pulp Mill Bridge (1854) in Middlebury is another story entirely. Built as a 200 ft. clear span originally, the flaws of design and understanding were so fatal (no bearing shoulders where the posts crossed thought the lower chords is only the most egregious) that it first had arches added and then was subdivided into three spans after a decade or two of breaking its members. Restoring this bridge means significant changes in its framing details and sizing of members, or leaving it dramatically altered at three short spans with half the bracing reversed.

In general, I'm in favor of keeping bridges working, and that may mean remedying original design flaws. However, the improvements should be no more than necessary and within the tradition of the original framing. I'm not fond of supporting the roadway on steel or glulams, the bridge seems sadly reduced to

just a cover then. On the other hand, lattice trusses can be subdivided without significant alteration of the truss and may be a good way to keep historic material intact. A bridge like Salisbury Station in Vt. was built with wider than normal lattice spacing and too few lattice crossing, got in trouble, but is OK as two spans (it still needed some reinforcement of damaged chords).

I believe that most bridges that had serious design flaws just don't exist any more, or are very altered. The wooden truss bridge really took historic timber framing to its limits. Church attics are full of poorly conceived trusses and bad distribution of loads, but their shorter spans and lesser floor loads (usually just a plaster ceiling), and the forgiving nature of timber, allow them to function successfully anyhow.

Joe Nelson, VT

I'm not a builder, but my answer to the Trivia Question would be to not correct the problem unless it is a safety issue. The design error can be preserved as a signature of the original builder.

Sylvain Raymond, (ATAWALK) Canada

A design flaw emerged during the construction, between 1726 and 1746, of the Frauenkirche in Dresden, Germany. To save costs, master-builder George Bahr chose a wooden dome to cover the huge church. During the project, sufficient funds were found to build the dome with sandstone, like the rest of the building. Unfortunately, the load-bearing capacity of the Frauenkirche walls had been calculated with a wooden cupola, whose weight was only a third of the stone dome. Nor were the wind loads on such a large building adequately understood. So the Church of our Lady, the Frauenkirche, was built of stone from top to bottom. Although large copper rods and hooks were used to anchor the dome to its supports, the structure was never as stable as if a stone dome had been planned from the start.

Numerous problems followed. Around 1916, cracks started to appear at the bottom of the dome, signaling ever-present support and weight problems. New anchors had to be added inside and outside the Frauenkirche. Throughout the 1920s and 30s, other attempts were made to stabilize the dome, but finally, in 1938, an inspection determined that the building was NOT safe, and the church was closed. Not even the bells could be rung, pending further studies and repair. After the war started, all of Germany's resources went to the war effort. During bombing on February 13, 1945, the Frauenkirche endured a direct hit but apparently the ordinance did not explode. Nevertheless, the firestorm all around soon caused the windows to implode, and the interior of the cathedral self-combusted. The resulting high temperatures made the sandstone walls very brittle, and the extra weight of the dome was too much for the damaged structure. On the morning of the 15th of February, the Frauenkirche collapsed.

According to those who rebuilt the structure from 1993 to 2005, if the walls had been built with large enough bottom-ring support for a stone dome, the structure could have survived.

Nonetheless, the new Frauenkirche will probably never need to have its dome strengthened since titanium ring hardware was used.

Many people criticized the whole venture, but the resulting flood of tourists in Dresden speaks volumes for the enterprise. If one goes to the extent of recreating such a masterpiece, why would we be so stupid as to include flaws that would jeopardize the success of the whole enterprise? Errors are human; we all make mistakes.

Evolution is a grandiose adventure. An example is the Henry Bridge in Bennington, built by someone who had left the bridge-building school a bit too early!!! When rebuilt, it was well executed and much stronger than the original. For the sake of the towns-people who must use these structures, I really believe we should respect those who teach us that being inflexible to the point of perpetuating mistakes will never be a great idea!.

David A. Simmons, OH

There is no set response for your question, which is, of course, why it's good to raise it. Here is another, contrasting point of view.

The Helmick Mill Covered Bridge (OH-58-35) was built in Morgan County, Ohio, in 1867 by Samuel Price. The builder was definitely from the empirical, craft tradition. The bridge displays little understanding of scientific design principles, so components like the floor beams are vastly undersized.

Although county officials cannot be said to have been much of a steward of the bridge, they did install a steel I-beam pier in the center, thus insuring the bridge's preservation into the 21st century. It also adversely affected one of the most picturesque bridge settings in the entire Midwest (see the two-page spread in Miriam Wood's and my new book). Now discussions are centering around how to rehab the bridge to remove the center pier but still preserve the craft, "undersize" characteristics of the bridge. I have argued that the undersize floor beams should definitely be preserved as one of the few such examples still intact. One idea has been the "encapsulation" inside a newer arched structure. To my knowledge, no final decision has been made.

John Weaver, VT

As a professional engineer, I would address the design flaw, especially if it involved public safety and structural performance of the bridge. However, as a covered bridge enthusiast, I would attempt to not compromise the historical integrity of the structure. Many times solutions can be developed which will meet both criteria, and will be quite satisfactory to all parties, users and owners.

Miriam Wood, OH

This is a tough question! To be historically accurate, I believe you would leave the design flaw as it was originally built.

Martin Bridge Update, August 2007

From NYSCBS Newsletter, Feb. 2008



A New Covered Bridge Society's First Event

The Bucks County Covered Bridge Society, founded in the Fall of 2007, will present their first public event, the Mood's Covered Bridge Festival and Dedication. This community celebration will be held on Saturday, April 19, 2008 at Covered Bridge Park, Blooming Glen Road, Perkasio, P A 18944

The society will hold a "Breakfast on the Bridge" from 9:30 to 11:00 am. The Festival Hours are 11:00 am to 4:00 pm. The Admission is free. The festival will feature Arts and Crafts Vendors, Live Entertainment, Raffles and Chances, Community Information, Bridge Dedication Ceremony at 2:00 pm, and Lots of Great Food!

For more information: Phone: 215-257-9156 extension 33
E-Mail: buckscountycbs@verizon.net
Web Site: www.buckscountycbs.org.

The Bucks County Covered Bridge Society meets on the first Wednesday of each month at 7:30 PM. at the Perkasio Fire House, 100 N. 5th Street (at the corner of Arch), Perkasio, P A 18944.

Upper Falls Covered Bridge Reopens

[WGN 45-14-08]

Weathersfield, Vt. January 26, 2008 - Closed for renovation since the the summer of 2007, the Upper Falls covered bridge will be opened to traffic This weekend.

The 127-foot Town Lattice truss bridge recieved new chords, floor system, roof, and siding at a cost of \$1.2 million. Work on the abutments is scheduled for this coming spring. The bridge currently serves five families.

Also known as Downers Bridge, it was built in 1840 to cross the Black River. Other covered bridges built in this era are the Depot Bridge in Pittsford (1840), the Sanderson Bridge in Brandon (c1838), The Great Eddy Bridge in Waitsfield (1833), and the Taftsville Bridge in Taftsville/Woodstock (1836). All of these bridges are on the National Register of Historic Sites, and are an active part of Vermont's highway system.

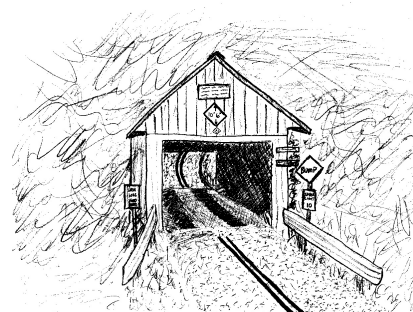
Thanks to the Vermont Youth Conservation Corps, work on the trails portion of the project was completed between July 23,2007 and August 3, 2007. The trail extends from the bridge site across the floodplain including two wetland crossings and up the large knoll through the woods to the old Montpelier to Wells River rail bed.

A crew of nine very dedicated young people cleared trees/brush, hauled and placed gravel and a culvert in a wet area, tilled, seeded and mulched the stone circle and built about 100 feet of elevated wetland crossings. These young people were organized, thoughtful and worked hard. If they are representative of Vermont youth, the state's future will be in good hands.

Thanks to Danny Tetreault and Tim Davis from the town road crew and the Town's excellent equipment, we moved twelve large stones from the wooded area of the town's 72 acre parcel to the top of the large knoll to form a 40 foot diameter stone circle. This feature was suggested by Martin Johnson and was laid out after visiting stone circles on his property. There is something special about a stone circle. You can see the stones on the top of the knoll from Rte 2 driving east. Please hike up the rail bed and down the new trail to take a look.

Unfortunately, the permitting of the actual covered bridge and parking portion of the project took longer than anticipated so there was not enough time left in the construction season to bid and construct the project this year. We expect to bid the project in late fall and construction will commence in the spring and summer of 2008. The project now includes a parking lot for cars with an ability to park and turn buses and campers. This lot is about 300 feet east of the bridge with a walkway back to the bridge. In front of the bridge there will be a granite sitting wall and granite posts with high quality signs describing the bridge and local environment.

The bridge will be rehabilitated in a manner that preserves as much of the existing timbers and planking at possible. The abutments will be rebuilt down to the water level with granite on both sides and stone will be placed on the river bank to help protect the area near the bridge from erosion. *Submitted by: Rich Phillips, Martin Covered Bridge Project Co-Manager*



The Martin Bridge Project

The Martin Covered Bridge and surrounding acreage was generously donated to the Town of Marshfield in 2003 by Charles "Chip" Thorndike. The bridge was in need of repairs and in danger of being lost.

The citizens of Marshfield voted to sell some parcels of land that had been acquired through tax sales over the years, and volunteers began fund-raising. Through these efforts, the bridge was moved to stable footing on land, and the Town began applying for grants.

The Town has received a grant of \$40,000 from the Vermont Housing & Conservation Board, and a grant of \$188,000 from the Agency of Transportation. The project has also received grants of \$5,000 from the Block foundation, \$5,000 from the Orton Fund, \$1,000 from Walmart and \$1,000 from the Vermont Covered Bridge Society, in addition to many private donations.

Volunteers have raised additional funds through an auction and a steak barbecue, and sales of bridge-related merchandise. The proceeds from the grants and fund-raising will be used to restore the bridge and abutments, move it back to its original location, and build a park, parking area, and walking trails from the bridge to the former rail-bed.

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(Dues and Donations are used to promote preservation of Vermont's covered bridges.)

I volunteer to participate in the following preservation program(s):

- Adopt-a-bridge Newsletter staff
 Events Committee Crafts Committee

Make all checks for dues and donations payable to the Vermont Covered Bridge Society. Mail to:

The V.C.B.S., Inc.
Attn: Treasurer
P.O Box 97
Jeffersonville, VT 05464-0097



Vermont Covered Bridge Society, 9th Annual Spring Meeting, April 19, 2008

Illsey Public Library, 75 Main St., Middlebury, Vermont

Additional details located on Page 5 of this newsletter.