

Mitchell River Drawbridge

Comments Received By MassDOT
Regarding the Section 106 *Bridge Alternatives
Analysis and Life Cycle Cost Comparison*

Table of Contents

This document contains the comments received by MassDOT during the comment period associated with the Section 106 process.

The following comments were received prior to the May 12, 2011 report entitled: *Addendum to Bridge Alternatives Evaluation and Life Cycle Cost Comparisons Final Alternatives*:

These comments are appended to the rear of this document.

CONSULTING PARTIES

Name of Signer: Norm Pacun

Date: April 25, 2011

Affiliation: Friends of the Mitchell River Wooden Drawbridge

Page Count: 7

Name of Signer: Norm Pacun

Date: undated (hand delivered to MassDOT on May 17, 2011)

Affiliation: Friends of the Mitchell River Wooden Drawbridge

Page Count: 86

Table of Contents

CONSULTING PARTIES

Name of Signer	Florence Seldin
Organization/Affiliation	Town of Chatham
Page Count	1 Page

Name of Signer	Paul Brandenburg
Organization/Affiliation	National Trust For Historic Preservation
Page Count	14 Pages

Name of Signer	James W. Igoe
Organization/Affiliation	Preservation Massachusetts
Page Count	2 Pages

Name of Signer	Charlene Dwin Vaughn
Organization/Affiliation	Advisory Council on Historic Preservation
Page Count	2 Pages

Name of Signer	Norman Pacun
Organization/Affiliation	Friends of the Mitchell River Wooden Drawbridge
Page Count	6 Pages

Name of Signer	George Meyers
Organization/Affiliation	Chatham Citizen and MRB Consulting Party
Page Count	7 Pages

Name of Signer	Michael S. Pease
Organization/Affiliation	Pease Boat Works & Marine Railway
Page Count	1 Page

Name of Signer	James L. Cooper
Organization/Affiliation	Historical Bridge Consultant
Page Count	16 Pages

Name of Signer	Donald Aikman
Organization/Affiliation	Chatham Historical Commission
Page Count	16 Pages

Table of Contents (continued)

INTERESTED PARTIES

Name of Signer	Jane Moffett
Organization/Affiliation	Chatham Resident and Historical Commission
Page Count	2 Pages

Name of Signer	Read Moffett
Organization/Affiliation	Chatham Resident
Page Count	1 Page

Name of Signer	Gloria M. Freeman
Organization/Affiliation	Chatham Resident
Page Count	2 Pages

Name of Signer	John W. Konvalinka and Carol Smith Konvalinka
Organization/Affiliation	Chatham Residents
Page Count	2 Pages

Name of Signer	Joan and William Horrocks
Organization/Affiliation	Chatham Residents
Page Count	1 Page

Name of Signer	E. Michael Brown
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Page Count	2 Pages

Name of Signer	John W. Geiger, II
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Page Count	1 Page

Name of Signer	John W. Geiger, II
Organization/Affiliation	Chatham Resident
Page Count	1 Page

Name of Signer	Jennifer J. Buck
Organization/Affiliation	Chatham Resident
Page Count	2 Pages

**CONSULTING
PARTIES**



TOWN OF CHATHAM

OFFICE OF THE SELECTMEN
TOWN MANAGER
549 Main Street, Chatham, Massachusetts, 02633
508-945-5100



Mr. Joseph A Pavao, Jr., P.E.
MassDOT – Highway Division
Accelerated Bridge Program
10 Park Plaza, Room 6500
Boston, MA 02116

May 31, 2011

Re: Mitchell River Bridge

Mr. Pavao,

I am writing on behalf of the Chatham Board of Selection to let you know that the Board met on Tuesday, May 24, to discuss the seven alternative schemes MassDOT described at the May 17 Section 106 meeting for the reconstruction of the Mitchell River Bridge and to vote the Board's preference among these alternatives. Based on the evidence presented so far by MassDOT and consulting parties, the Board voted four to one on May 31, 2011 to support Alternative #3 (Timber Superstructure on Concrete-Steel Substructure, Steel Bascule Leaf on Concrete Pier) as embodying the most prudent balance of aesthetic, functional, and financial benefits for the Town of Chatham.

The Board hopes its decision will help move the Section 106 process towards the Memorandum of Agreement which will be the basis for further development of the bridge design. By making this decision, however, the Board in no way intends to create the impression that all its concerns about the bridge's ultimate design and appearance are satisfied. In particular, if Alternative #3 does indeed turn out to be the way forward, the Board requests that MassDOT provide timely information and an opportunity to comment on the total proposed width of the bridge, the coatings considered for protecting concrete-filled steel piles from superficial deterioration (rusting), and whether other concrete-encasing pile materials not subject to superficial deterioration are structurally feasible and cost-beneficial (e.g. fiber-reinforced plastic).

Very Truly Yours,

Florence Seldin, Chair
Chatham Board of Selectmen

INDIANA HISTORIC SPANS TASK FORCE
NATIONAL TRUST FOR HISTORIC PRESERVATION'



June 8, 2011

Ms. Damaris Santiago
Environmental Engineer
Massachusetts Division
Federal Highway Administration
55 Broadway 10th Floor
Cambridge, Massachusetts 02142

Re: Mitchell River Bridge, Chatham, Massachusetts
Mass DOT Project File No. 603390
Comments on Section 106 Consultation

Dear Ms. Santiago:

On behalf of the Indiana Historic SPANs Taskforce, the Historic Bridge Foundation, and the National Trust for Historic Preservation, we appreciate the opportunity to comment on the Mitchell River Bridge Project following the May 17, 2011 consultation meeting under Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470f. All three of our organizations have been following this project closely. Approximately a year ago, each of us submitted comments expressing our concerns about the need to evaluate the eligibility of this bridge for the National Register of Historic Places, and the national implications of some of the issues raised. Since the bridge has now been formally determined by the Keeper to be eligible for the National Register, with "exceptional significance," we appreciate the opportunity to participate in the Section 106 consultation process for the proposed replacement project. Our goals are to seek alternatives and modifications to the project that will avoid, minimize, and mitigate harm, under Section 106 of the NHPA, and to ensure that the project includes "all possible planning to minimize harm" under Section 4(f) of the Department of Transportation Act, 23 U.S.C. § 138.

Background

Following the Keeper's Determination of Eligibility to the National Register on October 1, 2010, the Federal Highway Administration (FHWA) initiated Section 106 review for the Mitchell River Bridge, with the first Consulting Party meeting held on January 25, 2011. On May 17, 2011 a second Consulting Party meeting was convened, with the following documents being provided to the Consulting Parties for Review:

- Bridge Repair/Rehabilitation Feasibility Study - March 10, 2011
- *Draft* Bridge Alternatives Evaluation and Life Cycle Cost Comparison - April 28, 2011
- *Draft* Addendum to Bridge Alternatives Evaluation and Life Cycle Cost Comparison - May 12 2011; Supplemented May 19, 2011

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- Independent Review of Mitchell River Bridge, "Bridge Alternatives Evaluation and Life Cycle Cost Comparison dated April 28, 2011" - June 3, 2011 (HDR Incorporated)¹
- PowerPoint Presentation from May 17, 2011 Consulting Party Meeting

In addition the following information was available for review:

- Video Recording of the May 17, 2011 Consulting Party Meeting - 19 Chatham TV
- Friends of the Mitchell River Wooden Drawbridge Response to the MassDOT Bridge Repair/Rehabilitation Feasibility Study and Bridge Alternatives Evaluation and Life Cycle Cost Comparison - May 13, 2011

Comments

We would like to begin by expressing our appreciation for the hard work and thought that has gone into developing the alternatives presented at the May 17 meeting. Based on our review of the materials provided, and the presentations and discussions during the meeting, we thank the agencies and consultants for recognizing the historical context of the Mitchell River Bridge, and for being responsive to the concerns expressed by the Consulting Parties, through the development of two additional wooden bridge Alternatives - 1A and 1B. We also appreciate the concession during the May 17th Consulting Party Meeting that, although Alternative 5 may represent an ideal design strictly from an engineering perspective, Alternative 3 would be considered an acceptable compromise by the transportation agencies in an effort to reduce the adverse impact on a National Register-eligible structure. This certainly represents good progress toward resolving adverse effects and developing a final alternative that will minimize harm.

Based on the information presented at the May 17 meeting, the two leading alternatives that emerged are Alternative 3 and Alternative 1B.

- All alternatives with the exception of Alternative 1 meet the project objective "to remove a structurally deficient bridge from the *Structurally Deficient Bridge List* by providing a structure that meets the latest LRFD design code and current safety standards." (Alternative 1 does not provide the 25' wide unobstructed opening for navigation.)
- All alternatives are considered feasible and prudent - there have been no suggestions that would eliminate an alternative based on these Section 4(f) considerations.

¹ While we applaud the use of an independent consultant to test the assumptions used in preparing the alternatives analysis by URS Engineering, this report was not made available to the Consulting Parties until the day before the comment deadline.

- FHWA and MassDOT clearly recognize the contextual significance of the Mitchell River Bridge, based on their agreement to move away from the engineering choice of Alternative 5 to Alternative 3 as the preferred direction.
- At the same time, Alternative 1B is extremely competitive, both in terms of cost estimates, which are very similar, and in terms of the technical criteria for evaluating the alternatives.

In our view, Alternative 1B should be selected because it is the less harmful design (i.e., more compatible with the historic character of the existing Mitchell River Bridge), and it is a feasible and prudent alternative.

Given that both Alternative 1B and Alternative 3 meet the project objectives under the Accelerated Bridge Program and are considered feasible and prudent, the Section 4(f) requirement is to develop and choose the option that incorporates “all possible planning to minimize harm.” Alternative 1B is clearly the option that would involve the least overall harm to the historic character of the Mitchell River Bridge.

- When commenting on the National Register eligibility of the Mitchell River Bridge, the Keeper found that the existing bridge was a “rare example” and “of exceptional significance as the last remaining single-leaf wooden drawbridge in Massachusetts (and perhaps the entire United States)” and “an exceptionally important part of the community’s historic identity.”
- The importance attributed to the use of all wooden materials for the bridge structure was not only emphasized in the Keeper’s determination of National Register eligibility, but was acknowledged on page 2 of the Bridge Repair/Rehabilitation Feasibility Study (March 10, 2011), noting the need to develop alternatives to “avoid, minimize or mitigate adverse effects” to the historic bridge, as required under 36 C.F.R. § 800.6(a).
- Alternative 1B clearly represents the less harmful alternative, in keeping with the historic nature and character of the Mitchell River Bridge, and the pattern represented over time of a continuous series of all-timber trestle bridge crossings at this location.

Under Section 4(f), a feasible alternative that minimizes harm cannot be rejected unless the FHWA can demonstrate “truly unusual factors,” “unique problems,” or “cost or community disruption” of “extraordinary magnitudes.” *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 401, 413 (1971); *Druid Hills Civic Ass’n v. Federal Highway Admin.*, 772 F.2d 700, 714 (11th Cir. 1985). In this case, any differential between Alternative 1B and Alternative 3, in terms of cost or other criteria, simply does not rise to the level of “extraordinary magnitudes.”

For example, comparing the estimated costs for Alternative 1B and Alternative 3 shows the following:

- Initial project costs are 19 percent *higher* for Alternative 3, as compared to Alternative 1B (\$11.047 million vs. \$9.296 million).
- When comparing estimated life cycle costs over the 75+ year lifetime of the structure, the costs for Alternative 3 are 6 percent *higher* than for Alternative 1B under the Best Case scenario (\$26.24 million vs. \$24.8 million), and 13 percent lower than for Alternative 1B under the Worst Case scenario (\$26.84 million vs. \$30.74 million).
- Assuming that actual life cycle costs would likely align somewhere between the two extremes of the Best and Worst Case scenarios, the cost difference using the mid-point between the Best and Worst Case scenarios for Alternative 1B and Alternative 3 is approximately \$1.22M. Thus Alternative 1B would involve total life-cycle costs of just under 10 percent more than Alternative 3, based on the mid-point.

TABLE 1 - LIFE CYCLE COST ANALYSIS SUMMARY

Alt.	Description	Initial Project Cost (MVP Estimate)	Overall Life Cycle Cost (Present Value with 18% Discount Rate)		Total of Upstream Responsibilities (Present Value with 8% Discount Rate)		Duration (Years) Bridge Life Cycle	
			Worst Case	Best Case	Worst Case	Best Case	Worst	Best
1A	Timber Superstn on Timber Substr Timber Bascule Span (9)	\$8,427,000	\$28,120,601	\$25,510,066	\$26,676,641	\$24,472,360	10	20
	Timber Superstn on Timber Substr Timber Bascule Span (9)	\$8,744,000	\$30,536,397	\$27,337,347	\$27,742,857	\$25,809,137	10	20
1B	Timber Superstn on Timber Substr Timber Bascule Span (9)	\$9,296,000	\$30,747,008	\$24,759,074	\$21,437,698	\$24,807,374	10	20
	Timber Superstn on Timber Substr Steel Bascule Deck on Cast. Pier (10)	\$1,138,700	\$32,188,894	\$29,622,463	\$21,628,803	\$18,245,005	10	20
3	Timber Superstn on Cast-Steel Substr Steel Bascule Deck on Cast. Pier (10)	\$1,047,100	\$29,809,854	\$26,221,139	\$23,752,884	\$20,193,189	10	20
	Timber Deck and Steel Stringer Superstn on Cast-Steel Substr Steel Bascule Deck on Cast. Pier (10)	\$1,389,100	\$27,466,283	\$26,574,530	\$22,277,481	\$17,382,830	10	20
5	Cast. Deck and Cast. Beam Superstn on Cast-Steel Substr Steel Bascule Deck on Cast. Pier (10)	\$7,420,700	\$24,574,718	\$22,410,018	\$28,777,35	\$17,784,038	10	10

- In any event, the life cycle cost analysis for Alternative 1B appears to be extremely conservative, based on the assumption that the bridge will need to be completely reconstructed (less abutments) every 20 years (worst case) to 30 years (best case). This assumption does not align with the actual history of the bridge, in which the overwhelming majority of the wooden pilings have been in place for more than 80 years. Nor does it align with the report from the **Forest Products Laboratory**: "It appears that the reports "*Bridge Alternatives Evaluation and Life Cycle Cost Comparison*" and "*Bridge Repair/Rehabilitation Feasibility Study for Bridge Street over Mitchell River*" have a tendency to underestimate the relative service life, and overestimate

the environmental impact, of treated wood in comparison to other construction materials.”²

These cost comparisons simply do not show enough of a difference between Alternative 1B and Alternative 3 to justify rejecting Alternative 1B on the basis of cost. In *Stop H-3 Association v. Dole*, 740 F.2d 1442, 1452 (9th Cir. 1985), the court held that even a \$42 million cost increase—representing more than 10 percent of the project’s total cost—for an alternative that would avoid or minimize harm to 4(f)-protected resources was not sufficiently “extraordinary” to warrant rejecting the alternative as imprudent. The court also cautioned that cost considerations should be treated as “a subsidiary factor in all but the most exceptional cases.” Applying this standard, we believe the record here would not support a decision to reject Alternative 1B based on the very minor differences in cost estimates. The independent analysis conducted by HDR states on page 6 that, “While URS’ methodology, data, and assumptions are reasonable, it can be argued that the results of the numbers are somewhat inconclusive.”

Turning to the technical criteria for evaluation, the comparison between Alternative 1B and Alternative 3 likewise fails to provide any compelling or extraordinary basis for selecting an alternative other than the one that would minimize harm.

- We find no substantial difference between the ratings of “Satisfactory” vs. “Fair” as defined in the acknowledged “nonscientific” measures outlined in the *Draft Addendum To Bridge Alternatives Evaluation And Life Cycle Cost Comparison* (May 12, 2011; Supplemented May 19, 2011):

“The ratings provided below are a nonscientific measure of the relative strengths and/or weaknesses of the alternatives as compared against the others as evaluated by the authors.

Good - Best meets the intent of the criterion compared among all alternatives considered

Satisfactory - Generally meets the intent of the criterion, with some exception, relative to all alternatives considered

Fair - Meets some of the intent of the criterion, but not as well as the more highly rated alternatives

Poor - Essentially does not meet the intent of the criterion or meets the criterion at a low threshold as compared to the more highly rated alternatives”

² Looking to the future, the Alternative 1B substructure could be designed to be repairable by sections with minimal impact to the environment and length of closure of bridge.

- In looking at the Technical Evaluation Summary, and given the lack of differentiation of what defines “Fair” vs. “Satisfactory,” – both Alternatives 1B and 3 appear so similar in their scoring under the criteria that it would be difficult to justify a decision to select Alternative 3.

Technical Evaluation Criteria Summary

<u>Alternative</u>	<u>Roadway Function & Safety</u>	<u>Context Sensitivity</u>	<u>Navigation Function & Safety</u>	<u>Initial Cost</u>	<u>Life Cycle Cost</u>	<u>Maintenance & Service Life</u>	<u>Environment</u>
1	Good	Good	Poor	Good	Fair	Poor	Poor
1A	Good	Good	Fair	Good	Fair	Poor	Poor
1b	Good	Satisfactory	Satisfactory	Good	Fair	Fair	Fair
2	Good	Satisfactory	Good	Fair	Poor	Fair	Fair
3	Good	Fair	Good	Fair	Satisfactory	Satisfactory	Satisfactory
4	Good	Fair	Good	Fair	Satisfactory	Satisfactory	Satisfactory
5	Good	Poor	Good	Satisfactory	Good	Good	Satisfactory

Note this table identifies three ratings: Good (green), Satisfactory/Fair (blue), and Poor (Pink)

The analysis conducted by HDR recognized this similarity in the conclusion on page 2: “When the overall results cluster together, as we see in this case, selecting a preferred alternative becomes more subjective.”

Conclusions and Recommendations

In summary, we appreciate the enormous amount of work that has gone into developing Alternative 1B, and we believe it represents a feasible and prudent alternative that incorporates “all possible planning to minimize harm” under Section 4(f), and one that would minimize and mitigate adverse effects to the National Register-eligible Mitchell River Bridge, pursuant to 36 C.F.R. § 800.6(a).

Given the sensitivity to the timing of the Mitchell River Bridge Project, we believe an additional advantage to Alternative 1B is that it would be approved more expeditiously through the Section 106 and Section 4(f) review process. Since the consulting parties and preservation advocates are united in their support for Alternative 1B as being the least harmful option, the review process could well take longer to complete if Alternative 3 were chosen, and especially if a potential challenge to the decision were raised. On the other hand, selection of Alternative 1B would represent a “win/win” resolution for all parties, with the preservation interests working to expedite the process to conclusion.

Thank you again for the opportunity to comment on the Mitchell River Bridge Project. We look forward to consulting further with the Advisory Council, the

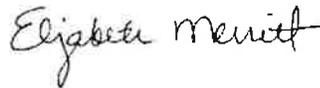
Ms. Damaris Santiago, FHWA Mass. Division
June 8, 2011
Page 7

Federal Highway Administration, and the Massachusetts DOT in an effort to resolve our concerns.

Sincerely,



Paul Brandenburg, Chair
Historic SPANs Task Force



Elizabeth S. Merritt, Deputy General Counsel
National Trust for Historic Preservation

Kitty Henderson, Executive Director
Historic Bridge Foundation

cc: Mary Ann Naber, Federal Preservation Officer, FHWA
Lucy Garliauskas, Division Administrator, FHWA Massachusetts Division
Carol Legard, FHWA Liaison, ACHP
Charlene Vaughn, ACHP
Reid Nelson, ACHP
- Joseph Pavao, Project Manager, Massachusetts DOT
Jeffrey Shrimpton, Cultural Resources Specialist, Massachusetts DOT
Brona Simon, Massachusetts SHPO
James Igoe, Preservation Massachusetts
Dorr Fox, Preservation Massachusetts
Norman Pacun, Friends of the Mitchell River Wooden Drawbridge
Marsh Davis, President, Indiana Landmarks
Roberta Lane, Northeast Office, National Trust

ATTACHMENTS

Determination of Eligibility from the Keeper of the National Register - Oct. 1, 2010
Forest Products Laboratory Report - May 10, 2011



United States Department of the Interior

NATIONAL PARK SERVICE
5400 SIEBEL SW
WASHINGTON, D.C. 20240

RECEIVED

DETERMINATION OF ELIGIBILITY NOTIFICATION

RECEIVED

06/14/2010

National Register of Historic Places
National Park Service

Name of Property: Mitchell River Bridge
Location: Barnstable County State: MA

Request submitted by: Lucy Garliauskas, Division Administrator, US Department of Transportation Federal Highway Administration.

Date received: 9/07/2010 Additional information received 9/09/2010

Opinion of the State Historic Preservation Officer:

Eligible Not Eligible No Response Need More Information

Comments:

The Secretary of the Interior has determined that this property is:

Eligible A and C Not Eligible
Applicable criteria:

Comment:

See attached for detailed comment

Carol D. Shree
Keeper of the National Register

Date: 10-1-2010



SI 8270 BULK 10

United States Department of the Interior

NATIONAL PARK SERVICE
1540 U Street, N.W.
Washington, D.C. 20240

RECEIVED
OCT 14 2010

DETERMINATION OF ELIGIBILITY NOTIFICATION

NATIONAL REGISTER OF HISTORIC PLACES NATIONAL PARK SERVICE

Name of Property: Mitchell River Bridge
Location: Chatham, Barnstable County, Massachusetts

The Mitchell River Bridge, in Chatham, Massachusetts, is eligible for the National Register of Historic Places under Criterion A for its association with local transportation history and under Criterion C as a rare surviving example of a structure embodying the distinctive characteristics of a once-common method of construction. The Mitchell River Bridge, constructed in 1980 atop the pilings of an earlier bridge, is one of a continuous line of wooden drawbridges that have spanned this river crossing for over 150 years. It is the last remaining single-leaf wooden drawbridge in Massachusetts (and perhaps in the entire United States) and as such, is of exceptional significance.

The importance of a wooden drawbridge over the Mitchell River has long been recognized by the residents of Chatham, Massachusetts. The records show that over the years, residents have insisted that when authorities proposed alterations to the Mitchell River Bridge that priority was to be given to in-kind replacement of its materials, and retention of its simple design, form and function as a wooden drawbridge. The three successive wooden drawbridges over the Mitchell River (1838, 1925, and 1980) have been depicted through the decades in drawings, paintings, postcards and photographs. The Chatham Historical Commission, the Friends of the Mitchell River Wooden Drawbridge and others have repeatedly affirmed that they consider the bridge to be historically significant, and that the simple, yet distinctive, configuration of the bridge and its presence on the landscape form an exceptionally important part of the community's historic identity.

A handwritten signature in cursive script that reads "Carol D. Shull".

Carol D. Shull
Interim Keeper
National Register of Historic Places
October 1, 2010



United States
Department of
Agriculture

Forest
Service

Forest Products Laboratory

One Gifford Pinchot Drive
Madison, WI 53726-2398
Phone: 608 231 9209
Fax: 608 231 9592
TDD: 608 231 9544

File Code: 710
Date: May 10, 2011

Mr. Norman D'Amico
Engineer of the Mitchell River Wooden Bridge, Inc.
190 Spring Lane
Grafton, MA 02633

Dear Mr. D'Amico:

Thank you for providing me with the opportunity to review the documents titled *"Study of Alternatives for Rehabilitation of Mitchell River Wooden Bridge"* (April 8, 2011) and *"Study of Alternative Rehabilitation Strategies for Mitchell River Wooden Bridge"* (March 10, 2011). It is my understanding that both documents were prepared as part of a process to evaluate options to rehabilitate and/or reconstruct the historic Mitchell River wooden bridge. After reviewing the reports I feel that there is information and some clarification on my part in the documents that I believe there are three topics in particular that warrant further discussion regarding the potential use of treated wood in the project. Initially, very important impacts on the role of impregnated preservative treatments.

Durability of pressure treated wood: Durability service life is a key component in the evaluation of the alternative construction materials in the project. The reports and related very low short-term estimates of the service life of iron, steel, bridge components, and particularly galvanized service life, for concrete and steel components. Naturally, these service life estimations have a large impact on the relative rankings of the construction materials. I am looking for these service life estimates and documented information of the U.S. establishing the durability for use in the environment in process. These short service life estimates for treated wood are in contrast with the documented service life of existing bridge piles, many of which have survived in service since 1927. The earlier report attempts to reconcile this conflict with the statement that *"...it is not possible to estimate the service life of the use of impregnated wood on the basis of previous data not pertinent to use in this..."* It is clear that impregnated wood is more durable than wood treated with other preservatives such as chromated copper arsenate (CCA) as noted and estimated in the report, and warranted further discussion.

CCA is an effective wood preservative and there is published research indicating that wood treated with CCA is at least as durable as wood treated with creosote on both marine and terrestrial exposures. A report by Johnson and Gutzmer (1990) provides data on the comparative durability of test pine treated with marine grade creosote (refer to Table A-5 in that report) and marine retention CCA. As refer to Table B-2 in that report. This data indicates that the marine durability of CCA treated wood compares favorably to that of creosote treated wood. After 10 years of exposure, the conclusion of the study, none of the panels treated with seawater retention CCA showed any damage from marine borers track. It is notable that the



test sites that report they West Florida presents a more severe hazard than the cooler water of Massachusetts. Another report by the same author (2007) provides comparative data on the relative durability of CCA treated wood in ground contact. Durability was compared for the equivalent pretensions of CCA or creosote used for terrestrial poles (see Table 1 from that report) or piles (see Table 2 of that report) in all cases. The performance of CCA treatment was compared favorably to that of creosote treated wood. This report provides service life estimates for posts treated with either creosote or an inorganic copper preservative. CCA is superior to the inorganic copper preservative (MZA) in most respects. It is noteworthy that in both types of preservatives the posts were adequately treated to below the standard pretension specified for ground contact use. However, given the standard pretension in ground contact, the field service life estimated for the creosote treated piles in the Mitchell River Bridge (see section 4.1 of the report) (*see also the caption and table 1 of the comparative table in the exposure situation study condition*) Massachusetts presents a more severe field hazard than that in Massachusetts and in a relatively mild contact exposure presents a more severe field hazard than above ground applications. The MZA treated posts should a slightly longer service life than the creosote treated post. In light of evidence to the contrary, the report's claim that a relatively creosote treated wood pile in creosote field should be substantiated.

All construction materials can occasionally experience early failures. When wood has been preservative treated with creosote (CCA) or MZA this type of failure is almost always associated with poor treatment quality, non-standard retention or penetration. This problem can be avoided by requiring that the wood be treated in accordance with the standards of the American Wood Protection Association and subsequently inspected by an accredited independent inspection agency. Early failures also occur with concrete and steel structures. Premature deterioration of concrete within 20 years or less is frequently reported, especially in structures exposed to de-icing chemicals or seawater (McNeil, 2007, 2008) and there are recently reports of concrete accelerated corrosion at the low-water line of steel piers in Louisiana (see reports of concrete (McNeil, 2008) and steel (not to name) that premature failure is likely in the Mitchell River Bridge) or that concrete and steel are problematic construction materials. The point is that comparison of the life cycle of costs of all these construction materials are not useful unless based on realistic and documented service life estimates.

Environmental Impacts Both reports frequently refer to the potential negative environmental impacts associated with preservative treated wood but do not mention the possibility, as with other construction materials, in fact all common building construction materials are potentially toxic to aquatic organisms at a local level. This includes both concrete and steel. A recent study from the University of Miami (see link) shows that for concrete, steel and preservative treated wood all have toxicity towards a variety of aquatic organisms, suggesting that in some cases concrete and even steel were more toxic than preservative treated wood (Alabado et al. 2011). Concrete in particular may contain metals such as cadmium and lead in addition to releasing them into the aquatic environment (Alabado et al. 2011). So why do not we observe zones of environmental destruction around wood concrete or steel structures? The answer, of course, is friction and environmental leach migration. In most cases the very small releases from construction materials do not result in environmental concentrations that are sufficient to cause harm to the environment. Because of the importance of this criterion in environmental breakdown

generalizations about the toxicity of treated wood or other materials, particularly where and should be regarded as prescriptive rather than describing an instruction manual. Before a construction material is judged as to environmental risks for a certain application, specific site parameters should be considered. There has been substantial research on the environmental impacts of creosote, CCA, and MCA treated wood, and models have been developed to estimate potential aquatic impacts. These models are freely available at the following website: <http://www.wypr.state.nm.us/images/stories/creosotewood/aquatic.html>. These models could be utilized to estimate the impacts associated with pressure-treated wood at this project rather than simply assuming that problems will occur. I am not aware of similar models for concrete or steel, but the absence of such models should not be taken as evidence that these other materials have zero risk.

Durability and Environmental Concerns: Pile wraps – In recent years it has become more common to pile up piles or pilings to offer the option to add on or to wrap applied at the pressure treatment plant. These wraps are applied under controlled conditions after the pile has been pressure-treated and subsequently conditioned. Because they are applied in a factory setting, this type of wrap achieves a tight bond to the wood. Unlike this, different types of reinforcement wrap applied on-site to an existing pile are referred to in the report titled *Removal of Lead Contamination from Old Steel Reinforcement in Concrete Piles*. Wraps can be applied to the entire pile or only to the area below the new column pile. These factory applied wraps are intended to shorten service life and minimize environmental releases. A study of the environmental release from CCA treated utility poles wrapped in fiberglass found and tested that leaching of copper, chromium, and arsenic from the wrapped piles was not statistically different from that released from unwrapped treated piles (see attached report: *CCA Losses from Utility Poles with Fiberglass Wraps*). The study indicates that the wraps could be highly effective in minimizing leaching from treated piles. Because even unwrapped treated piles have a long service life (AWP 2002, Grant et al 2004), the environmental impact may not be what wraps may extend the life of treated one. However, it is noted that a protective barrier might provide some durability benefit. The factory applied wraps are only mentioned in the report because their use had not at that time been discussed in either of the reports in the MTR or Green Bridge.

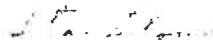
In place Supplemental Treatments – The report titled *Removal of Lead Contamination from Old Steel Reinforcement in Concrete Piles* seems to suggest that in place treatments are not effective and/or pose a significant risk to the environment. In some situations this claim has validity. For example, installing a liquid copper based preservative on the surface of an already pressure-treated beam neither does, or does very little to, improve durability and poses a substantial risk to environmental quality. In contrast, the so called internal treatments, and especially the so called pigments, cement waxes, boron treatments, increases durability with relatively low risk of environmental contamination. The so called phase III (mentioned in the report) is an example of one of these treatments. It is applied in a slurry form to be with the log removed at the time of installation. Which, is filled in the wood and the slurry is placed into the hole. The hole is then sealed with a removable threaded plug. The formulation gradually moves, as it is used for the treatment, into the surrounding wood. In application, the old tube is simply removed and replaced with a new one. These treatments have been soundly used for decades to extend the life of railroad ties and utility poles. Because they are so old, rather than newly, they can be

applied from below bridge members into upward stream treatment flows. This in turn alleviates the concern expressed in the report that most members will not be accessible for in-place treatments after construction was completed. For maximum benefit, these treatments should be started before decay becomes established and repeated every 5 to 10 years, therefore business cases that offer the service of applying treatments on a periodic basis. There is a maintenance cost associated with this type of treatment program, but concrete and steel bridge components do require routine maintenance, especially in salt water applications. It is also worth noting that maintenance activities associated with steel and concrete bridge components are not completely free of risk to the environment. Painting and the associated surface preparation is provided by the bridge maintenance activity with the greatest potential adverse impacts on surrounding waters (Dupuis, 2007). Lead chips and abrasive particles are deposited directly into the water, and there is also potential for contamination from solvent and paint over-spray (Dupuis, 2007).

Summary: The purpose of this letter is to provide more detail and perhaps greater clarity regarding the relative durability and environmental concerns associated with preservative treated wood. It appears that the report, *Bridge Durability Evaluation and Life Cycle Cost Comparison and Selective Preservation Feasibility Study for the Mitchell Street over Millis Highway*, have a tendency to underestimate the relative service life and overlook the environmental impact of treated wood in comparison to other construction materials. The service-life estimates used for treated wood in these reports should be substantiated to provide greater confidence in their value as part of the decision making process. This letter is intended to provide assistance in making a more informed decision. It is not intended to endorse or recommend any construction material for the Mitchell River bridge.

Again, thank you for the opportunity to review the reports on the Mitchell River bridge project. I frequently provide advice to state, local and federal agencies on the properties, selection and specification of preservative treated wood for bridges. Although some of the issues concerning the Mitchell River Bridge are relatively common, this is the only historic wooden drawbridge that I have encountered.

Sincerely,



Stan Galloway Ph.D.
Team Leader, Wood Preservation Research,
Durability, and Wood Protection Research Group
Phone: 608-785-0241
Fax: 608-785-0292
e-mail: sgalloway@fsl.hawaii.edu

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Michael Ritzel, U.S.A. Forest Products Laboratory
660 Strobel, Strobel Engineering

[Structure. Minor – *http://www.fhwa.dot.gov/infrastructure/infrastructure/infrastructure.cfm*](#)

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Preservation
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June 8, 2011

Ms. Damaris Santiago
Environmental Engineer
Massachusetts Division
Federal Highway Administration
55 Broadway 10th Floor
Cambridge, Massachusetts 02142

RE: Comments on Section 106 Review
Mitchell River Bridge, Chatham

Dear Ms. Santiago

On behalf of Preservation Massachusetts, I appreciate the opportunity to comment on the Mitchell River Bridge Project following the May 17, 2011 consultation meeting under Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470f. Our organization has been aware of this project since last year and has become involved as a consulting party due to concerns over the impact the proposed project will have on the existing historic bridge.

Like other consulting parties, including the National Trust for Historic Preservation, Indiana Historic SPANs Taskforce, the Historic Bridge Foundation, the Friends of the Mitchell River Bridge and others, our ultimate goal was to seek alternatives and modifications to the project that will avoid, minimize, and mitigate harm, under Section 106 of the NHPA, and to ensure that the project includes “all possible planning to minimize harm” under Section 4(f) of the Department of Transportation Act, 23 U.S.C. § 138.

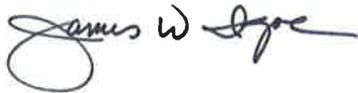
Preservation Massachusetts feels that since the Keeper of the National Register’s determination of eligibility for the Mitchell River Bridge, the resulting Section 106 process has increased awareness as to the significance of the bridge and the adverse impact a completely modern replacement would have upon the historic context of the surrounding area. Also, we feel that the 106 process as adhered to by Mass DOT and Federal Highway has resulting in design options that are more sensitive to the historic nature of the bridge and brought historic and contextual significance into consideration, where they may otherwise not have been.

Preservation Massachusetts would like to offer our comment and support for design options that were presented at the May 17, 2011 Consulting Parties meeting at Chatham Town Hall. Out of all of the options considered, we feel, as do our preservation partners, that Option 1B represents the most sensitive and compatible with the current historic bridge design. This is an important point, especially since the Keeper of the National Register cited the bridge as a “rare example” and “of exceptional significance as the last remaining single-leaf wooden drawbridge in Massachusetts (and perhaps the entire United States)” and “an exceptionally important part of the community’s historic identity.”

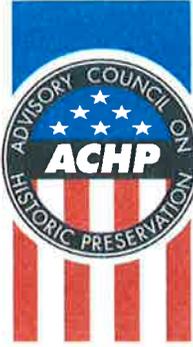
The other design presented at the May 17th meeting that represents more of a compromise of engineering and preservation is Option 3. While this design, with a wood superstructure and steel substructure, does result in an adverse effect on the existing historic bridge, we feel that it this would be a best “worst case” design scenario for the bridge, should design 1B not be an option.

On behalf of Preservation Massachusetts, the statewide advocacy organization for the Commonwealth of Massachusetts, I thank you for the opportunity to participate in this process and offer comments on this project that will have broader reaching effects beyond Chatham. We certainly hope that other communities facing similar situations with historic bridges will look to what has been accomplished in Chatham and look forward to continually working with the agencies involved in this process.

Sincerely,

A handwritten signature in black ink that reads "James W. Igoe". The signature is written in a cursive style with a large, prominent initial "J" and a long, sweeping tail.

James W. Igoe
President
Preservation Massachusetts



Preserving America's Heritage

June 9, 2011

Ms. Damaris Santiago
Environmental Engineer
Federal Highway Administration
Massachusetts Division
55 Broadway, 10th Floor
Cambridge, MA 02142

Ref: *Proposed Replacement of the Mitchell River Drawbridge
Mass DOT Project File No. 603390
Chatham, Massachusetts*

Dear Ms. Santiago:

On May 17, 2011, the Federal Highway Administration (FHWA) held its second consulting party meeting to consider the effects of replacing the Mitchell River Drawbridge in Chatham, Massachusetts. The meeting was attended by Carol Legard, the ACHP's FHWA Liaison, who found the information presented and the ensuing discussion among consulting parties to be very informative and productive. We very much appreciate having this opportunity to hear directly from the project development team, members of the Chatham Board of Selectmen, and the other Section 106 consulting parties. We also appreciate FHWA's changing its preferred alternative to Alternative 3, which would, we agree, be a more context sensitive design. This letter is in response to your invitation to provide FHWA with our comments on the bridge alternatives evaluation and life cycle cost comparison, including the May 2011 addendum to that analysis.

Based on the information provided, and comments submitted by other consulting parties, it appears that two alternatives have fallen out as the preferred alternatives. These are Alternative 1B (timber structure with a 25' navigation Channel and concrete bascule pier) and Alternative 3 (timber superstructure on a concrete and steel substructure). While we appreciate the compromise offered in FHWA's support for Alternative 3, we must agree with the consulting parties supporting Alternative 1B as the best alternative from a preservation perspective. With the life cycle costs being nearly the same, and the strong preference among preservation organizations for retaining an all timber bridge at this location, we encourage FHWA to adopt Alternative 1B as the preferred alternative. In addition, we recommend that FHWA develop a Memorandum of Agreement (MOA) that focuses on your commitment to context sensitive design.

ADVISORY COUNCIL ON HISTORIC PRESERVATION

1100 Pennsylvania Avenue NW, Suite 803 • Washington, DC 20004
Phone: 202-606-8503 • Fax: 202-606-8647 • achp@achp.gov • www.achp.gov

Thank you for inviting the ACHP's comments regarding the project. If you have any questions or require further assistance, feel free to contact Carol Legard, our EAWA Liaison, at 202-606-8503 or clegard@achp.gov.

Sincerely,



Charlene Dwin Vaughn, AICP
Assistant Director
Federal Permitting, Licensing, and Assistance
Office of Federal Agency Programs

FRIENDS OF THE MITCHELL RIVER WOODEN DRAWBRIDGE

c/o 14 SUNSET LANE

CHATHAM, MA 02633

June 7, 2011

Ms. Damaris Santiago
Environmental Engineer
Federal Highway Administration
Massachusetts Division
55 Broadway, 10th Floor
Cambridge, MA 02142

Re: Mitchell River Bridge

Chatham, Massachusetts

Dear Ms. Santiago:

The Friends of the Mitchell River Wooden Drawbridge (the "Friends"), a designated Consulting Party to the Section 106 process involving the Mitchell River Bridge in Chatham, Massachusetts, hereby submits its further comments (Fn. 1) to FHWA and the Massachusetts Department of Transportation, as required by FHWA in its email message, dated May 21, 2011, a copy of which is attached hereto.

I. Preliminary Comments:

A. In making this submission, we wish to register our strongest objections, at the outset, to the failure of FHWA and MassDOT (Fn. 2) to comply with the most basic requirements of the Section 106 process which are fundamentally intended to allow and encourage a meaningful consulting process amongst all of the parties by offering a full and robust exchange of information and views in connection with the proposed project so as to avoid, minimize or mitigate adverse effects to the federally protected historic asset (here, the National Register eligible Mitchell River Bridge, the only remaining wooden drawbridge in Massachusetts and the entire United States).

Among the important and critical requirements which have not been adhered to are the following:

1. As early as April 25, 2011, the Friends made written requests to FHWA, pursuant to the Sec. 106 Regulations, for Supporting Documentation with respect to information and statements made by MassDOT in its First Report. The request was acknowledged and received by FHWA and forwarded to MassDOT by FHWA "so that they work on a response to your request." The information requested was never received (Fn. 3), even though MassDOT must have had this information in its possession in order to make the representations and claims set forth in their First Report (e.g., the claim that the service life of a concrete and steel bridge is 75 years).

Fn. 1. The Friends hereby incorporate within this letter its full Response made on May 17, 2011, to the MassDOT Bridge Repair/Rehabilitation Feasibility Study (First Report) and the Bridge Alternatives Evaluation and Life Cycle Cost Comparison (Second Report) and delivered to the Consulting Parties at the meeting that day.

Fn. 2. While the Sec. 106 regulations call for the federal agency (here, FHWA) to be responsible for control of the process, FHWA has almost entirely deferred to MassDOT for preparation of the materials and as to control of the two consulting party hearings held on January 25 and May 17, 2011.

Fn. 3. On May 12th, following a further request by the Friends for this information and the notation that some of the items were as simple as a copy of the FHWA 75 year service policy, FHWA sent a brief one paragraph email which still failed to specify this information. On May 2nd, the Friends requested the "bascule span geometry" relied on by MassDOT for its claim that a timber bascule could not be built to cover the enlarged 25 foot span. This information has never been received.

2. On April 28, 2011, MassDOT issued its Second Report which contained detailed costs and comparisons of a wooden replacement bridge vs. a concrete and steel bridge, as well as various amalgams of each. On May 17th, the Friends issued their own Response (91 pages), including a letter from the federal Forest Products Laboratory of the U.S. Dept. of Agriculture which seriously questioned the accuracy of the cost and service life comparisons for wood and concrete/steel claimed by MassDOT, and which called for further review and clarification of these costs. MassDOT has totally ignored this letter, notwithstanding its contrary determination that a concrete and steel bridge (Alts. 2, 3, 4 and 5) is less expensive and will last longer than a timber bridge. (Fn. 4).

3. A further request for important supporting documentation included the criteria used by MassDOT to rate the various alternatives that are listed in their Second Report, and for the Report of HDR Engineering which MassDOT announced (at the May 17th hearing) that they had employed to validate the conclusions set forth in their First and Second Reports. As shown in the attached email exchange with Mr. T. Keon, the town staff person in charge of this project, this information is not being provided to the consulting parties, other than for "informational purposes". (Fn. 5.)

Fn. 4. To the extent that MassDOT may be obtaining a further engineering study from HDR Engineering, and offering its own comments following the June 8th cutoff date for responses from Consulting Parties, this information will not reach the consulting parties in time for their own comments and, therefore, does not alleviate the harm caused to the 106 Process by an incomplete and unresponsive review undertaken by the designated federal agency.

Fn. 5. See email from Joseph Pavao, Jr., MassDOT project manager to Mr. T. Keon, dated May 24, 2011, and email from Mr. Keon to Norman Pacun of the Friends (and others), dated May 24, 2011, as attached.

4. The materials and supporting documentation---- which have been denied to the Consulting Parties—go to the very heart of the validity of the Sec. 106 process. If a federal or state agency can, with impunity, issue its own conclusions and refer to supposedly specific data in support of same, but then refuse to provide or fairly identify such supporting documentation to the Consulting Parties so that these claims can be fully evaluated, then the Sec. 106 process itself has become fatally flawed and is essentially meaningless.

B. The Second Report issued by MassDOT, dated April 28th stated, without reservation of any kind, that it was not geometrically possible to construct a timber bridge with a timber bascule to cover the proposed 25 foot span (to be enlarged from the current 19'4"). The Friends' advisory engineer, John Smolen, who has designed and constructed multitudinous wooden bridges, believed otherwise, and he was willing to place his professional reputation on the line in saying this. (Fn. 6.) Then, only hours before the May 17th Consulting Parties meeting, FHWA transmitted via email a power point summary of the presentation which suddenly included two new additional alternatives (1A and 1B) for an all-timber bridge that would cover the proposed 25 foot span. In effect, after almost two years of delay, MassDOT had now recognized (finally), that such a bridge could be engineered and that Mr. Smolen was correct. Of equal importance was that the life cycle cost of Alt.1B (using MassDOT's own inflated estimates for the cost of wood) was quite similar to (MassDOT's own claimed cost of Alt. 3.

Fn. 6. See section of Friends' Response made on February 17, 2011 entitled "Discrepancy in Information Regarding a Single Leaf Bascule."

C. No explanation has been offered by either FHWA or MassDOT as to why Alternatives 1A and 1B suddenly appeared only hours before the May 17th meeting. Was this information produced because the Friends retained an advisory bridge engineer of stature who decried the claim by MassDOT of so-called

"bascule span geometry" problems with a timber bascule? Is this why the Consulting Party process is being shut down arbitrarily without this information being provided to the consulting parties? If MassDOT were required to respond to the Friends' requests for supporting documentation, particularly with respect to the cost and service life of wood vs. concrete and steel, perhaps it would become clear that the overall life cycle cost to the town would be less using wood and more using concrete and steel.

The Sec. 106 process is intended to require the federal agency (and the state agency) to use their best efforts to protect and preserve the historic asset in question. If, as we now know, an all-wood bridge (Alt. 1A), or an all-wood bridge (excepting a concrete pier to hold the counterweight) (Alt. 1B) can be constructed and that it is feasible and prudent to do so, then does not the 106 process mandate that reasonable time be allowed to review and compare these two alternatives with the other alternatives that are being offered? The position of the Friends is that the 106 process must be complied with fully and fairly, in all respects, in order to fulfill the requirement to seek to protect this historic asset.

II. ALTERNATIVE 1B APPEARS TO BE THE MOST FAVORABLE ALTERNATIVE

A. As set forth above, the Friends believe that the Section 106 process has not been complied with and that the Consulting Parties should have the opportunity to review the Supporting Documentation previously requested, plus the HDR Engineering Report following its submission to MassDOT, and that this should occur before final comments are received.

B. To the extent, however, that FHWA/MassDOT have determined that the Consulting Parties must submit their final comments not later than June 8, 2011, it is the position of the Friends that based upon the information submitted by all parties and the meetings held to date, Alt. 1B should be selected as the most preferable alternative because it is the most minimally harmful to the historic nature of the Mitchell River Bridge.

The reasons for our position are as follows:

1. The Bridge has been found by the Keeper of the National Register to be "a rare surviving example of a structure embodying the distinctive characteristics of a once-common method of construction....[and]...is one of a continuous line of wooden drawbridges that have spanned this river crossing for over 150 years. It is the last remaining single-leaf wooden drawbridge in Massachusetts (and perhaps in the entire United States) and as such, is of exceptional significance." (Emphasis Added). This finding carries great weight and sets forth the basis upon which the 106 process is to proceed.

2. The rarity of this drawbridge is in its all wooden materials, including its single-leaf wooden bascule and its timber pilings, which constitute the "distinctive characteristics of a once-common method of construction..." The continuation of these materials in its pattern as a timber trestle bridge are what caused it to be eligible for the National Register and which should be preserved to the greatest extent possible.

3. The mandate of the National Historic Preservation Act of 1966 and the Section 106 Regulations are to "seek ways to avoid, minimize or mitigate any adverse effects on historic properties" in connection with "undertakings" (projects) which involve federal licensing or financing. These adverse effects not only include physical damage such as the demolition and replacement of the existing structure, but visual elements that diminish the integrity of the property's significant historic features, as well as any change of physical features within the property's setting that contribute to its historic significance. See Sec. 800.5(a)(2), 36 CFR Part 800.

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4. The very nature of bridges and particularly drawbridges, and especially those that are to be found in harsh environments such as Cape Cod, is that they are subject to continual wear and tear with the constant need to replace individual parts and pieces over time. Thus, the roof on a covered bridge or the bascule of a drawbridge will not survive beyond a certain number of years, following which the bridge will need to be repaired/replaced/rehabilitated to the extent necessary to make it function properly. In the

case of the Mitchell River Bridge, this was done many times over the past 150 years, but at the same time, the underlying pattern and design of the Bridge along with its basic wooden materials, were retained, so that even though the entire superstructure was replaced in 1980 (31 years ago) and only 50 to 80 per cent of the 1920-25 pilings are still in place, the Bridge still qualified as being eligible for the National Register. This was so because the Keeper found, in part, that the town, over more than a century, had sought to preserve the underlying character of this timber trestle bridge, as a structure of exceptional importance to the local community.

5. Therefore, to the extent that it becomes necessary to fully replace the existing Bridge (as opposed to repairing or rehabilitating it) because it is structurally deficient and only replacement would meet the latest LRFD design and current safety standards (i.e., enlarging the 19'4" current opening to 25'), this in no way means that the provisions of Sec. 106 to avoid, minimize or mitigate adverse effects on this historic property are not to be applied. (Fn. 7) The appropriate way to minimize/mitigate adverse effects on this historic property is to rebuild this bridge using all wooden materials (or as much wood as can reasonably be used) and to maintain the pattern and design that has existed for over a century so that the replacement resembles the existing Bridge to the greatest extent possible.

Fn. 7. FHWA/MassDOT have pointed to no case or provision of the Sec. 106 Regulations which would even suggest that result. Nor can any such case be found under Section 4(f) of the Transportation Act. To the contrary, case law under Sec. 4(f) strongly supports the Friends' position that the paramount purpose of Sec. 4(f) is to protect historic sites from alteration or destruction unless no feasible or prudent alternative exists.

6. MassDOT has presented seven alternatives for reconstructing the Bridge, only two of those are all wood (Alt. 1 and Alt. 1A.). Alt. 1 retains the existing 19'4" opening which all parties agree does not meet current safety standards. Alt. 1A does meet the all timber requirement with a 25' wide opening and resembles the existing Bridge, but it would mean using a counterweight that becomes submerged during operation which introduces safety and reliability problems. Alt. 1B also has a 25' opening, and resembles the existing Bridge, and is almost entirely made of timber, with the single exception of a central concrete-bascule pier that would enclose the pivoting counterweight and prevent it from being submerged during operations. (The concrete pier, however, would be faced with stone, using materials and details consistent with what is appropriate for Chatham.) Accordingly, Alternative 1B would appear to come closest in design to the existing Bridge, while reasonably seeking to avoid the engineering problem of having a submerged counterweight. Alt. 3 is more harmful to the historic asset because it does not maintain the essential pattern and design, including the timber bascule and the timber pilings, that have continued at this location for over 150 years, with the proposed concrete and steel pilings, in particular, being totally out of keeping with the existing historic structure.

7. Turning to the Life Cycle Cost Analysis prepared by MassDOT for the various alternatives, the cost comparisons reflect a claim that the service life of timber is estimated at between 10-30 years, whereas the service life of concrete and steel is between 80-100 years. Attempts on the part of the Friends to obtain the supporting documentation for these claims have been unavailing. (See I.A.1 above.) The Friends then provided copies of both the First and Second Reports to the federal Forest Products Laboratory of the U.S. Department of Agriculture for review and verification as to estimated service lives, effect of treatment on the environment, and overall costs. The Laboratory submitted a report under the signature of Dr. Stan Lebow, an authority in the field, which confirmed that the MassDOT Reports underestimated the relative service life of treated wood and overestimated the service life of concrete and steel, and that this caused wood to be shown as the more costly material and concrete and steel as less costly than the actual cost of each material. In addition, the Reports overstated the adverse effect of treated wood on the environment while understating the potential adverse effect of concrete and steel. Thus, the Life Cycle Cost Analysis done by MassDOT has been unfairly tilted in favor of concrete and steel (Alternatives 2, 3, 4 and 5) and against wood (Alternatives 1, 1A and 1B), while the response made by the Forest Products Laboratory has never been answered by MassDOT.

8. Even while recognizing that the MassDOT Reports utilize faulty numbers to compute the claimed Life Cycle Cost Analysis of Alternatives 1B and 3, the results come out surprisingly close. Alt. 1B, on a "best case" scenario, is \$1.442 million LESS than Alt. 3, and the Initial Cost of Alt. 1B is \$1.751 million LESS than Alt. 3. An accurate cost analysis of the service life of wood might well further increase the differential in favor of timber over concrete and steel.

9. In comparing Alt. 1B with Alt. 3, it is clear that Alt. 1B is rated higher than Alt. 3 by MassDOT with respect to the critical category of what they refer to as "context sensitive design", which is the central requirement under Sec. 106, i.e., to avoid, minimize, or mitigate adverse effects to the project. (Fn. 8).

10. Alt. 3, which now seems to be favored by MassDOT (Fn. 9), is primarily a concrete and steel bridge and, therefore, does not meet the requirements of Sec. 106 when an all-timber bridge (other than for the concrete pier holding the counterweight) can be built using Alt. 1B. The steel bascule does not appropriately replicate the existing timber bascule, the only one of its kind in Massachusetts and the United States, and the concrete and steel pilings are aesthetically out of place and historically inaccurate with what has been there for approximately 150 years. Under the requirements of Sec. 106 and 4(f), Alt. 1B is to be favored over Alt. 3, since protection of historic assets is of paramount importance and any cost differential is not of an extreme magnitude. (In fact, the cost comparison between Alt. 1B and Alt. 3 appears to favor Alt. 1B.)

10. The Consulting Parties representing major preservation organizations (National Trust for Historic Preservation, Historic Bridge Foundation, Indiana Historic Spans Task Force, Preservation Massachusetts) and the eminent bridge historian, Prof. James Cooper, have all concluded that Alt. 1B is the preferable choice. Their reasons are contained in a separate submission(s) which the Friends support and endorse. Given that at least six Consulting Parties are now in accord with respect to Alt. 1B, it is likely that the Sec. 106 and 4(f) processes will move forward more rapidly toward a mutually acceptable Memorandum of Understanding if Alt. 1B were accepted.

Fn. 8. MassDOT was asked to provide the Consulting Parties with the way in which it reached its conclusions as to which Alternatives received final ratings of Poor, Fair, Satisfactory or Good. MassDOT responded through FHWA that they would not provide further information as to this and that "the actual 'thought processes' to reach conclusions was governed principally by 'professional engineering judgment' of the data in front of them." Email from T. Keon, town staff, to Norm Pacun of the Friends, dated May 24, 2011.

Fn. 9. The Second Report and the Addendum submitted by MassDOT both strongly favor Alt. 5, yet even as the Addendum was being circulated amongst the Consulting Parties on May 17th, the MassDOT project manager announced that they were favoring Alt. 3.

C. In summary, the Friends are in agreement with the other Consulting Parties who are members of the preservation community of organizations and authorities in favoring Alt. 1B based upon the information submitted to date. (Fn. 10.)

Sincerely,

Norman Pacun

For the Friends of the Mitchell River Wooden Drawbridge

Attachments

cc: Mr. Joseph Pavao, Jr., Project Manager, MassDOT

Fn. 10. The Chatham Board of Selectmen, by a vote of 4-1, have stated that they are in favor of Alt. 3, but the dissenting selectman spoke in favor of Alt. 1B when he learned that the Consulting Parties who are preservation organizations were also in favor of Alt.

1B. The letter being submitted by the Chatham Board of Selectmen also contained a list of other "details" which it made clear still need to be resolved by all of the parties. The Friends have equal concerns as to the width of the new bridge, the diameter and size of the sheave poles being used in Alt. 1B, and the design speed of the new bridge, among others.

COMMENTS OF GEORGE MYERS, CHATHAM CITIZEN AND MRB CONSULTING PARTY

Response to MassDOT's Bridge Repair/Rehabilitation Feasibility Study,
Bridge Alternatives Evaluation and Life Cycle Cost Comparison and
Addendum and the May 17, 2011 Submission of the Friends of the Mitchell
River Wooden Drawbridge

Bridge Repair/Rehabilitation Feasibility Study

I agree with the Conclusions and Recommendations of MassDOT's Bridge Repair/Rehabilitation Feasibility Study set forth in Section 7.0 of the Study (pp. 55-57), particularly in view of the \$9.4 million cost to repair the MRB for an expected service life of only 10-20 years and the \$4.9 million cost to rehabilitate the MRB for an expected service life of only 20-30 years. In addition, because neither repair nor rehabilitation of the MRB will meet the 75-year design life specified in the *AASHTO LRFD Bridge Design Specifications* and in MassDOT's *LRFD Bridge Manual 2.1.2*, in my opinion, it would not be prudent nor in the financial interests of the Town of Chatham to proceed with either the repair or rehabilitation alternative.

MassDOT's determination of the expected service life of a repaired or rehabilitated all-wood MRB is consistent with the actual service lives of the original 1871 wood MRB and the several wood redesigns and reconstructions of the MRB since 1871. The service lives of those reconstructions are generally: 1871-1907 (36 years); 1907-1925 (18 years); 1925-1949 (24 years); 1949-1980 (31 years) and 1980-2011 (31 years). Those service lives do not take into account the many costly and sometime extensive additional repairs made to the several reconstructed versions of the MRB over its 140 year life span.

I also agree with MassDOT's determination that neither repair nor rehabilitation of the MRB is a prudent alternative, and that complete replacement of the bridge will provide "a more cost effective long-term solution that better addresses future maintenance, functional and safety concerns including navigation that can also address the historical significance of the bridge." Study at p. 57.

Bridge Alternatives Evaluation and Life Cycle Cost Comparison and Addendum

At the May 17, 2011 Section 106 meeting, MassDOT tentatively indicated its support for the Alternative 3 design with a substantially all-timber superstructure and a steel and concrete substructure. On May 31, 2011, the Chatham Board of Selectmen voted 4-1 to send a letter to MassDOT supporting the Alternative 3 design as historically appropriate and an acceptable compromise between the all-timber or substantially all-timber Alternative 1, 1A, 1B and 2 designs and the Alternative 5 concrete and steel design with timber walkways, guardrails and timber cladding. The Board rejected a proposal by the

dissenting selectman to specify the Alternative 1B design as a “suitable substitute for Alternative 3.”

The Alternative 5 design, in my opinion, still best serves the requirements of longevity, navigation and fiscal responsibility and reasonably honors the historical evolution of the MRB since the first bridge was built in 1871. To most casual observers, tourists and many Chatham residents, a bridge constructed according to the Alternative 5 design will appear to be identical to the existing MRB, except for the absence of the sheave poles, sheaves, cables and lift machinery. The water view of the Alternative 5 bridge will be substantially identical to the water view of the Alternative 3 and 4 designs, except from beneath the bridge.

The Alternative 5 substructure with its concrete-filled tubular steel pilings can also be made to look virtually identical to the creosoted timber pilings of the existing MRB by applying a black coating to the steel tubes, such as coal tar epoxy or another acceptable corrosion protective coating.

I also propose increasing the shoulders of the alternative selected by MassDOT to 4-feet from 2-feet to provide a safer accommodation for bike traffic on the MRB. It is puzzling that Chatham’s Bikeways Committee did not welcome and approve MassDOT’s originally proposed 4-foot bike lanes, despite the present lack of bike lanes on Bridge Street. Notably, the Bikeways Committee has included Bridge Street and the MRB as part of its Shore Road Bike Spur in Chatham according to the draft of its Bikeways Committee Working Map of 2009. Moreover, as the Committee itself has noted, long term plans include bike lanes on Bridge Street. In view of those long term plans and the inclusion of Bridge Street and the MRB in the Shore Road Bike Spur, it is shortsighted not to include 4-foot bike lanes on the MRB replacement. A 4-foot shoulder on each side of the bridge, even if not formally designated as bike lanes, would be substantially safer for cyclists who occasionally stop on the bridge to photograph or enjoy the view of Stage Harbor or watch the fishermen on the bridge walkways.

Alternative 5 is the only one of the seven alternative designs that has a crowned roadway (1/4” per foot from center) to provide for water runoff. All of the timber roadway alternatives (1, 1A, 1B, 2, 3, and 4) have a wooden decking with a level surface in cross-section (zero cross grade). The wooden decking comprises a 3” thick wood wear surface fastened to a 5 1/8” laminated wood (GLULAM) deck with no apparent provision for water runoff, except longitudinally of the bridge, and no apparent drainage for water that seeps into and is retained in the interface between the wear surface and the GLULAM deck. This type of wooden decking was cited as a primary reason for the deterioration of the wooden decking on the existing MRB. See the Bridge Repair/Rehabilitation Feasibility Study at pp. 13-17.

If a design other than Alternative 5 is selected by MassDOT, in view of the likelihood of rapid deterioration of the two-layer wooden deck structure on the bridge approach spans, it would be appropriate for MassDOT to consider a modification of the deck structure for that other alternative. Such modification could comprise, for example, a

simulated timber, crowned concrete or asphalt wear surface over the GLULAM deck rather than the 3" timber wear surface, assuming that combination is a technically acceptable design.

A bridge similar to Alternatives 3 and 4 with a modified decking described above was recently constructed by NHDOT across Seavey Creek, a tidal saltwater creek in U.S. navigable waters, in Rye, NH. The Seavey Creek Bridge was a National Register eligible, all timber bridge that was replaced in May 2009 with "a hybrid timber/concrete/steel bridge." The entire 45-page "Environmental Study Section 4(f) Evaluations" prepared by NHDOT in June 2007 is very instructive regarding the Section 106 and Section 4(f) processes with respect to replacement of a NR eligible timber bridge. The Study and Evaluations ("NH Study") can be found on the internet at: http://www.nh.gov/dot/org/projectdevelopment/environment/documents/13269_es.pdf.

At page 2 of the NH Study it is stated that: "The existing bridge deck is constructed with no cross slope and no mechanism for road draining. To facilitate deck drainage, a cross slope, created by a variable depth asphalt overlay, would be constructed [,] along with no curb, to allow the free fall discharge of roadway runoff along the entire bridge length." In the bridge cross section of Exhibit 6D of the NH Study, the asphalt wear surface is shown applied directly to the upper surface of the prefabricated, dowel-laminated wooden deck panels.

Although it is worthwhile to review the entire NH Study, of particular relevance to the present Section 106 and Section 4(f) proceeding regarding the Mitchell River Bridge project are the following:

1. Except for the draw span, the Seavey Creek Bridge is remarkably similar in length, width, environment, design and use as the Mitchell River Bridge (NH Study pp.2-3, 6-7);
2. The new Seavey Creek Bridge is supported on concrete filled steel piles coated with a black 3-coat paint system (NH Study pp. 3, 11, 27);
3. The Natural Resource Agencies stated that they would not grant wetlands permits if the proposed bridge structure included "treated wood pilings in the tidal waters" (NH Study pp. 2-4, 11);
4. The Adverse Effect Memo concluded that replacement of the Seavey Creek Bridge would have an adverse effect on the bridge, but that the adverse effects would be minimized and mitigated by replacement of the bridge with a structure similar in appearance to the existing bridge (NH Study p. 44);
5. The new Seavey Creek Bridge is provided with an 11-foot travel lane and a 4-foot shoulder (for bike travel) in each direction of travel and two 5-foot sidewalks on each side of the bridge separated from the travel lanes by a wooden crash railing (NH Study pp. 2, 8).

See the attached photos of the completed Seavey Creek Bridge.

Should MassDOT select any of the Alternative 1, 1A, 1B or 2 designs that include preservative treated wooden pilings in tidal waters, the Massachusetts natural resource agencies may determine (as the New Hampshire agencies did in the case of the Seavey Creek Bridge) not to permit the MRB project, which will cause further delay and perhaps redesign of the bridge. MassDOT and its consultant URS have recognized this possibility in light of, among other things, the September 18, 2009 letter to URS from the Massachusetts Division of Fisheries & Wildlife in Appendix D of the Bridge Alternatives Evaluation. MassDOT and URS have specifically noted that there is a risk that timber piles with preservative treatments will not be permitted for this project. See, e.g., Bridge Alternatives Evaluation pp. 3, 8, 31-32. Because of that risk, the Alternative 1, 1A, 1B and 2 designs are not appropriate and should not be selected by MassDOT for the MRB project.

The Alternative 1, 1A and 1B designs incorporate a cable/pulley operating system with two sheave poles, a very large diameter (45") deflector sheave at the top of each pole, wire rope and two electric winches for operating an all timber bascule span. The entire cable/pulley bascule span operating equipment is exposed to the weather, unlike the weather protected, direct drive operating equipment for the span proposed for the remaining Alternatives 2, 3, 4 and 5. I agree with MassDOT's analysis of disadvantages of the cable/pulley operating system and the advantages of the direct drive operating system as set forth on page 26 of the Bridge Alternatives Evaluation report.

As between Alternatives 3 and 4, it was noted at the May 17, 2011 Section 106 meeting that visually there is very little difference between those two alternatives. In addition, the Bridge Alternative Evaluation states that "Alternatives 3 and 4 are virtually equal to each other in construction cost, life-cycle costs, and in meeting project design criteria. However, Alternative 3 provides a slightly more context sensitive solution than Alternative 4 with the use of approach span timber stringers in lieu of approach span steel stringers." Nevertheless, of those two alternatives, I agree with MassDOT's conclusion that Alternative 3 is the better choice because of the more context sensitive use of timber stringers rather than steel stringers and the slightly better cost analysis for Alternative 3, especially the potential \$190,000 to \$484,000 cost savings for Chatham.

The 91-Page Submission of the Friends of the Mitchell River Wooden Drawbridge

At the May 17, 2011 Section 106 meeting, the Friends of the Mitchell River Wooden Drawbridge submitted a 91-page document criticizing as "incorrect," "unfair" and "exaggerated" many of the statements and conclusions of MassDOT's Bridge Repair/Rehabilitation Feasibility Study and Bridge Alternatives Evaluation and Life Cycle Cost Comparison. The Friends also accuse MassDOT of prejudice against a timber replacement for the MRB. I disagree with the Friends' criticisms and responded to a number of them at the aforementioned May 31, 2011 Chatham Board of Selectmen's meeting. To the extent my responses at that meeting are relevant to MassDOT's reports, I have included them below.

In Section VI of its submission, the Friends take MassDOT to task for not including information in its reports about a wood pile product treated with chromated copper arsenate (CCA) and wrapped with a fiber-reinforced polymer. That product is made under the trade name Strong-Seal® by Wood Preservers, Inc., a small, privately-owned lumber treating and landscaping company located in Warsaw, Virginia. Based on the company's website, Strong-Seal® piles were first produced in 2002, less than 10 years ago and have been used primarily for private piers, docks and seawalls and for residential and commercial utility poles. Neither the company's website nor the Friends submission gives any life cycle information for the Strong-Seal® product and makes no claim that it has ever been used for vehicular bridge pilings. Apart from any other reason for not using preservative treated wood pilings for the MRB replacement, using a product like Strong-Seal® for the MRB pilings is what MassDOT's Mr. Shoukry Elnahal characterized as an "experimental project" that MassDOT will not engage in with ABP funding.

In Section VII, the Friends contend that MassDOT has exaggerated the service life of steel and concrete pilings apparently based solely on electrolysis problems associated with steel pilings at the Chatham Fish Pier. MassDOT's Alternatives 3, 4 and 5 are all designed with concrete-filled tubular steel pilings in the water. These are the same type of standard pilings that have been used in FHWA and other state DOT bridge projects for many years in countless bridges constructed in both salt and fresh water. See, e.g., the discussion above regarding the pilings for the Seavey Creek Bridge. The pilings supporting the designed 150-year service life Skyway portion of the San Francisco-Oakland Bay Bridge are 8 ½ foot diameter steel tubes driven 300 feet deep into the bottom of the bay, then cleaned out and filled with steel and concrete. The caisson foundations of the Tappan Zee Bridge built over the Hudson River in the 1950s are supported on concrete-filled steel tubes. The Union Pacific Railroad Bridge over the Salt River in Arizona is supported on 105-year old concrete-filled steel tubes. There are other examples too numerous to list here of the greater longevity of this commonplace bridge construction technology over preservative treated wood pilings.

The Friends' claim of MassDOT's alleged "prejudice against a timber drawbridge" in Section III is unfounded. At the May 17 meeting, MassDOT tentatively supported the Alternative 3 design, which has an all timber superstructure. In addition, with respect to the substructure pilings, MassDOT has repeatedly explained that, based on its experience, sound engineering practices, potential permitting problems and the required 75-year service life of the MRB, the use of preservative treated wood pilings in the water is not a recommended alternative for replacement of the MRB.

Conclusion

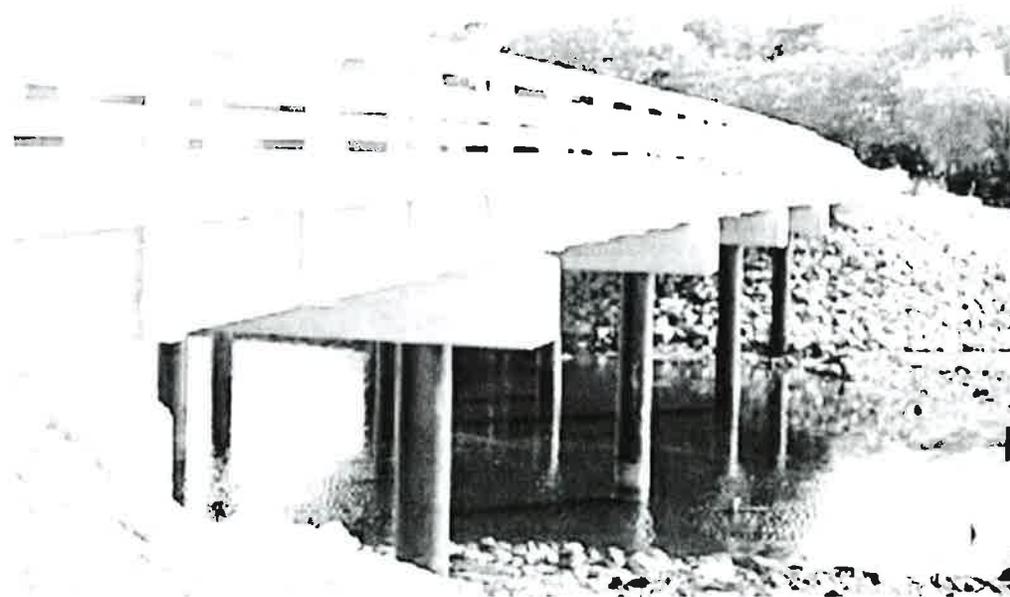
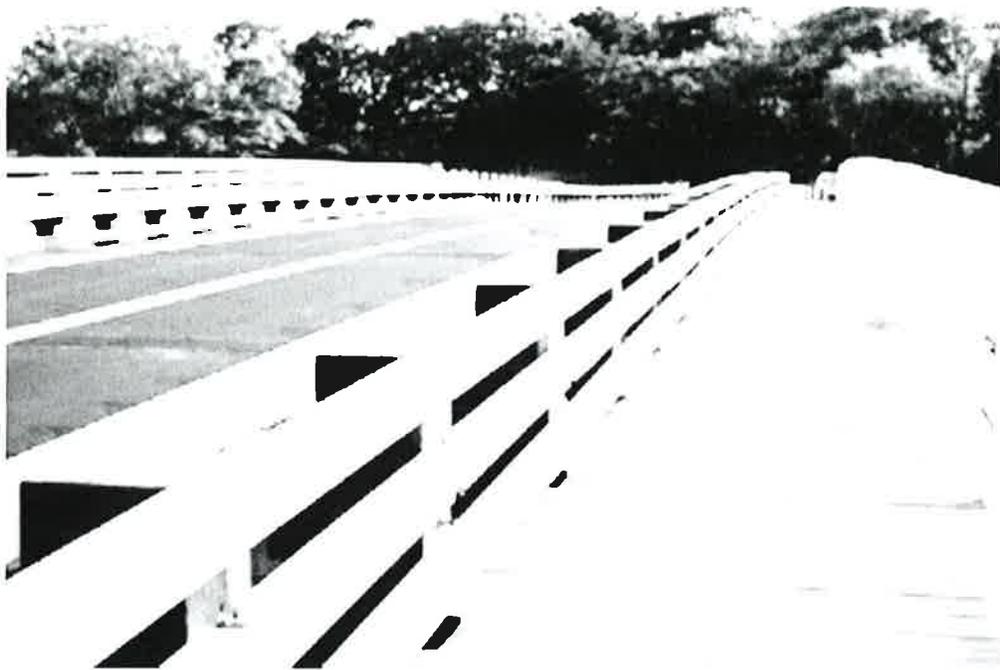
For the reasons set forth above, I continue to support the Alternative 5 design for the MRB. With an appropriate solution to what I perceive to be a potential retained moisture problem with all the remaining alternatives, I would support either one of the Alternative 3 or 4 designs if selected to advance under NEPA. I do not support any design,

including the Alternative 1, 1A, 1B and 2 designs, that has a timber substructure in the water. I also do not support any of the Alternatives 1, 1A and 1B for the further reason that those designs incorporate a weather-exposed cable/pulley operating system rather than a weather-protected direct drive operating system.

Respectfully,

George Myers
MRB Consulting Party

SEAVEY CREEK BRIDGE – RYE, NH 2009



Refurbished Seavey Creek Bridge opened in May 2009. Now eight feet wider than the all timber bridge it replaced with allowance for two 4-foot bicycle lanes, the bridge on Route 1A at the north end of Odiorne State Park also has a five-foot wide walkway with a 42-inch high rail (top photo). Piles are concrete-filled steel tubes painted with a black corrosion resistant coating (bottom photo). Structure should be free of major repairs for at least 50 years, according to the New Hampshire Department of Transportation

Damaris Santiago

Environmental Engineering



June 3, 2011



Damaris,

As a 106 consulting party, we at Pease Boat Works & Marine Railway want to thank you and your team for the outstanding process you facilitated in mitigating a proper design for the new Mitchell River Bridge.

As the principal user to date, our focus is not only the historical and aesthetic aspects but the functioning qualities of a commercial moving span that will be safe and dependable as well as ease in operation. The new bridge also needed to be improved in respect to vertical clearance and horizontal opening or span.

Taking all options into consideration we believe *alternative #3* is the best choice for the Town of Chatham as well as the Boat Works.

The following two conditions we mentioned at the last meeting and therefore we would like Mr. Pavo to incorporate them into the plan if at all possible.

- 1) In bridge placement, the opening span needs to be moved to the west to best incorporate the natural channel and navigable approach for passage. This is critical due to the need to line the vessel up parallel to the span. Our desire would be to move the east fender in the opening to the west five (5) feet. This along with the wider opening span will give proper navigation way.
- 2) As mentioned in the last meeting, we request that the overhanging deck be removed as an order of condition once construction starts.

Sincerely thanks,

Michael S. Pease
David Kells

Cc/Joe Pavao

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7 June 2011

Ms. Damaris Santiago
Environmental Engineer
Massachusetts Department of Transportation

ABOUT: Consulting Party Comments
Mitchell River Bridge Project, Chatham

Ms. Santiago:

I was pleased to learn in the latest Consulting Parties meeting (17 May 2011) that MassDOT and its consultants acknowledged the finding of the Keeper of the National Register on the eligibility of the Mitchell River Bridge by adding 1A and 1B to the list of feasible and prudent alternatives and effectively withdrawing alternative 5.

I will assess the options now before the consulting parties within the context of my two reports to the Keeper which suggested some modestly-modified approaches for judging the significance of uncovered timber spans and assessing the Mitchell River Bridge within that context. As I argued in those reports, the story of any uncovered timber bridge over time in North America has been one of periodic repair, rehabilitation, replacement. The development of wood preservatives since the late 19th century and their improvements over time have, however, significantly lengthened the life-span of uncovered timber from the 10-15 years typical in the mid-19th century to a potential of more than half a century today.

The historical record is one of continuity and change. To be “historic” the elements of continuity must outweigh those of change. The significant continuity in the Mitchell River Bridge is found less in the amount of aged original materials than in its structural pattern. As the Keeper said, the Mitchell River Bridge is a rare example of a once-common type of timber beam and draw structure which “form[s] an exceptionally important part of the community’s historic identity.” The continued significance of the Mitchell River Bridge rests in retaining – in rehabilitation or replacement – that once-common timber beam and draw span pattern.

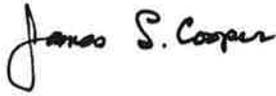
Applying the yardstick noted above, I would judge only alternatives 1, 1A and 1B as having little-to-no “adverse effect” on the Mitchell River Bridge’s significance. These three options are all-timber trestle spans with a single-leaf draw lifted over sheave poles. Wrapping the timber piles with fiber-reinforced polymers – should that be found useful for extending life-span of the timbers – would fall within the on-going evolutionary development of wood preservatives.

The differences within the three minimally adverse options are worth attention. Alternative 1 comes very close to replicating the existing structure as it was supposed to be with a 19' 4" navigational opening at the draw and a widened deck. Alternative 1A is much like Alternative 1 but with a 25' opening for boats. Alternative 1B turns the bascule pier of 1A from timber to a reinforced concrete system to, among other things, house and thereby protect the counterweight.

Applying our yardstick to the three options underlines that the amount of adverse effect grows a bit with each option, but it does not extend beyond the bounds of reasonable change over time that retains the basic timber beam and draw span pattern. River channels wander and boats in use on a river can change in size, so adjusting the width of the draw to current needs is as sensible now as it must have been to the Chatham and Cape Cod carpenters who built and rebuilt the uncovered timber bridge in the 19th and 20th centuries. While we do not know, I suspect the first Mitchell River draw-span leaf (leaves) did not have counterweights. But successor draws did. Hence the use of a counterweight in a stone-faced, reinforced-concrete enclosure can be seen as a secondary evolutionary change.

Alternatives 3, 4, and the withdrawn 5 all use a "modern substructure," a contemporary form of bascule, and a varied amount of timber from decking to facing. In progression, each more substantially violates the historical pattern of the Mitchell River Bridge. Thus Alternative 1B seems like the best option for the design of the rebuilt structure: It retains most of the historical pattern while accepting some modest functional change within it.

Sincerely yours,

A handwritten signature in cursive script that reads "James S. Cooper". The signature is written in black ink and is positioned below the typed name.

James L. Cooper, PhD
Professor Emeritus of History
& historic bridge consultant

Some Thoughts on Determining Significance for Uncovered Timber Structures

by

James L. Cooper, Ph.D.
Emeritus Professor of History
and historic bridge consultant

Historical Context

for the Structures

Until about 1900, tens of thousands of uncovered timber bridges carried American roadways over canals, creeks, rivers, and gullies. These “ordinary structures” came in a wide variety of formats.¹ A good many were simple beam or trestle structures. Some were trussed in a wealth of variations on Palladian themes.² Some of these wove wrought-iron rods and bolts, sometimes with cast-iron plates, into the largely-timber trusses. A few – mainly over canals and navigable waterways – included moveable spans. Most of these timber superstructures were supported on timber crib or pile substructures.

As is common knowledge, uncovered and untreated timber rots fairly rapidly. Depending on the climate, the life-cycle of such a span might range from five to approximately twenty years.³ The local authorities who were responsible for roadway bridges understood that maintenance and repair were interchangeable terms for these uncovered timber spans. When flooding washed out the timber substructure and carried off the bridge or pervasive rot threatened the stability of the whole, the local authorities typically contracted with local carpenters to replace – often with local wood – one relatively inexpensive timber structure with another. Only the process and the design patterns seemed to be permanent.

One way to break the cycle of constant repairing and replacement was to roof and side the timber superstructure and to seat it on cut-stone abutments and piers. With spans lengthened to leave less substructure in the water to be scoured, raised above the typical flood level, and protected

¹ Professor Robert McCullough, (University of Vermont Historic Preservation Program), *Timber Crossings*, 5-6 [<http://www.uvm.edu/coveredbridges/papers/McCulloughpaper>].

² Sometimes called “rafter trusses.” McCullough, *Crossings*, 19-25.

³ Phillip C. Pierce, Robert L. Brungraber, Abba Lichtenstein, and Scott Sabol, *Covered Bridge Manual* (Turner-Fairbank Highway Research Center for FHWA, 2005), 25.

from the elements, the covered bridge might survive with appropriate repairs for a century or more.⁴ Since these grand structures were relatively expensive, they required the support of a fairly large population base for adequate taxation or tolling. Indeed, covered bridges were akin to the grand mansions of the elite – which we have honored and celebrated – while the inexpensive “ordinary” timber structures that they typically replaced were closer to worker housing – that we have more often ignored.

As Americans clear-cut ever more of the land, the cost of timber increased inexorably in the East and Midwest, while, after 1890, the price of iron and steel came down as supply grew and reinforced concrete became another competitive material for bridge design and construction. The building of bridges in timber declined generally before the turn into the twentieth century. As must have been replicated in communities across at least the eastern half of the United States, the Elkhart County, Indiana, Surveyor condemned in mid-1925 “an old wooden bridge [which was] probably the last of its kind in the county.”⁵

Only the process of treating wood kept uncovered timber bridge construction alive on railroads across much of the nation after 1900.⁶ Creosoting came close to doubling the life of wood. Note that a leading civil engineering handbook of the period measured the life-span of timber in terms of railroad ties.⁷ Even more modern forms of treatment have lengthened timber life to 50 years or more.⁸

Large quantities of excellent timber in the Pacific Northwest did keep timber bridge-building alive in that region into the mid-twentieth century. In 1939, Seattle city authorities reported that

⁴ At least three extant covered bridges have authenticated construction dates earlier than 1830. Almost 200 extant structures were built in the 1870s; another 149 in the 1880s. Pierce, Brungraber, Lichtenstein, and Sabol, *Covered Bridge Manual*, 20-21.

⁵ “County Board Requested to Build Bridge,” *Goshen Daily Democrat*, 24 July 1925: p1c2.

⁶ See McGinley Kalsow & Associates, *Annotated Bibliography of Alaska Railroad and Related Timber Bridges* (Anchorage, Alaska, 2008).

⁷ “Creosoted pine ties last about 15 yrs, creosoted oak 18 yrs, and creosoted beech 20 yrs”. Untreated yellow pine ties last 4-6 yrs in the south and 8-12 yrs in the north; white oak ties last 5-10 yrs. John C. Trautwine, *The Civil Engineer’s Pocket-Book* (Philadelphia, 1872), 20th edition (1919): 786-788.

⁸ Llewellyn N. Edwards, *History and Evolution of Early American Bridges* (Orono, Maine, 1959), 1-1. For contemporary wood treatments, see J. J. Morrell (Department of Wood Science and Engineering, Oregon State University) and S. T. Lebow (U.S. Forest Products Laboratory, Madison, Wisconsin), “Initial Treatment of Wood in Covered Bridges,” in Pierce, Brungraber, Lichtenstein, and Sabol, *Covered Bridge Manual*, 219-237.

“many of the smaller and most of the older bridges in the city are timber structures, chiefly Douglas fir.”⁹

J. G. James, a well-respected student of early timber bridges, concluded that at the end of the eighteenth century “It was left to America, where there were fresh pine forests and a new generation of carpenter-builders, unfettered by deck-arch theory and masonry traditions, to take up the development where Switzerland and Germany had left off and empirically to perfect the truss bridge in forms suited to mass-production and capable of carrying railway loads.”¹⁰ Americans, in short, made extraordinary contributions to timber-bridge design that need to be recognized in their many ordinary as well as their more heroic versions.

for the National Park Service

As historic preservation became professionalized in the 1920s, the Historic American Building Survey gave birth by 1935 to the National Register of Historic Places at a time, coincidentally, when uncovered timber structures were largely gone from American roadways.¹¹ Out-of-sight often becomes out-of-mind. Designed particularly for buildings, Register criteria and guidelines require in any case some translation when applied to bridges. Uncovered timber structures represent a wholly endangered class where the Secretary of Interior’s guidelines are narrowly defined and rigidly applied.

One of the conventional guidelines for Register-eligibility suggests that the structure and most of its materials be at least 50 years old. When do repairs to, or replacement of parts of, a structure disqualify a structure’s eligibility? Should we apply a quantitative or a qualitative measure here?

Hundreds of covered timber bridges are currently listed on the National Register. It is not clear how much of the original structure is extant on many of these listed spans. The deck (roadway and stringers) and the coverings – siding and roofing – wear out and have been periodically replaced on almost all. If the roof has leaked – and this is not uncommon – some of the rafters and upper bracing may have rotted. If the flooring is not tight, water and chemicals may seep below the roadway and stringers to degrade the floor-beams and lateral bracing and require their replacement. Holes in the siding, degraded portals, and poor roadway alignment may add to the inevitable penetration of moisture into the trusses – especially at their ends and at member connections – and require the strengthening or replacement of some members. Then there is the

⁹ “This timber has a life of 10 to 12 years in this climate. After that age, unless there has been a considerable percentage of replacement, they become dangerous.” “Maintenance Experience on 120 Bridges,” *Engineering News-Record*, (14 September 1939), 123: 88-90.

¹⁰ J. G. James, “The Evolution of Wooden Bridge Trusses to 1850,” *Journal of the Institute of Wood Science* (June, December 1982), 9: 116-135, 168-193.

¹¹ James M. Lindgren, *Preserving Historic New England* (New York, 1995).

repair of collision damage. How many “adverse effects” does it take to disqualify (or delist) a structure?

Interpreting Guidelines Flexibly for the Eligibility of Timber Bridges

Quantitative Dimensions

Unless we are prepared to erase our rich cultural heritage in timber bridges, we need to move beyond a merely quantitative assessment of extant original material for Register-eligibility. We are being a-historical if we do not allow for regular repairs to and periodic replacement of timber members. Living within the limits of the materials at hand is not “adverse”; it represents a recognition and acceptance of natural forces.

In any case, those elements of timber bridges that necessarily wear out relatively quickly – *i.e.*, in less than 50 years – should *not* play any significant role in eligibility determinations, especially if replacement has been in-kind. That includes the deck (riding surfaces and stringers) on all timber structures as well as covering – siding and roofing – on covered superstructures.

Qualitative Dimensions

At least two elements should remain central for the consideration of eligibility of any timber bridge: (a) context and (b) design pattern and function:

(a) *Context* can be a tricky matter for a bridge since many designs have been generic or standardized, a number were selected out of a catalogue, and some were intended to be easily moved or relocated. In bridge design and construction, context had more to do with industrial and transportation than with architectural concerns. However a bridge design was originally selected, it remains relevant to determine how much of the original context for its service remains essentially intact. What is the balance in the given case between continuity and change?

- If the nature of the locational context has remained largely the same since the structure was built – or at least over the last 50 years – this should weigh in on behalf of eligibility.
- If the bridge has been relocated within the last 50 years, then the new context should be judged on the basis of its similarity to the original one. The location should be disqualifying only if in quite sharp contrast with the original context.

(b) *Design pattern and function*. Both of these character-defining elements ought to be critical for eligibility. The bridge should adhere to the original pattern of its design and function according to that design.

- For an uncovered timber bridge, some flexibility needs to be allowed within the “original design pattern”. For example, a structure consisting of timber-beam on timber-pile

approaches with a King-post style center span should not be found ineligible largely because in the process of a periodic substantial repair or rehabilitation some piles were replaced and an approach beam-span or two somewhat lengthened or shortened or most of the truss members replaced in kind. The key to eligibility here is to see that the basic character-defining structural format remains intact and functional.

- If we don't honor the role of the carpenter-craftsman in repairs or alterations that are consistent with the fundamental patterns of design, we won't preserve many – or, indeed, probably any – of the uncovered timber bridges that represent an important early part of American contributions to bridge design. The increasingly-rare remains of a whole class of our cultural heritage will, in consequence, be lost.

– June 2010

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11 July 2010

TO: The Keeper of the National Register of Historic Places

ABOUT: The Significance of the Mitchell River Bridge, Chatham, Massachusetts

I am attaching "Some Thoughts on Determining Significance for Uncovered Timber Structures," the principles of which I have worked out and applied in consultation with the Indiana Division of Historic Preservation and Archaeology to assess the significance of a variety of Hoosier timber bridges. These principles provide the foundation for my specific comments on the Mitchell River Bridge.

Quantitative Dimensions

The rehabilitation of the Mitchell River timber bridge in the early 1980s produced the most change known to have been made in this 12-span structure in the last 50 years:

- Not surprisingly, the 1980 construction plans call for the essentially in-kind replacement of the deck (stringers and riding surface), a matter which should not affect the cultural significance of the bridge.¹
- *Substructure:* 76 of the previously existing 84 piles for the 11 bents remain in place. Bent #7 was moved about 4-feet closer to Bent #6 to allow for a wider draw span. The new bent resulted in the replacement of the old one with its 8 piles. 11 supplementary piles were also added to the bents. In short, 10 of the previously existing 11 bents and 91% of the old piles remain. The 1980 rehabilitation did include recapping all the piles and re-bracing many of the bents.
- *Superstructure:* The draw span and the mechanisms for it were replaced in the 1980s with a somewhat wider draw hinged on the West rather than on the East.

¹ Bayside Engineering Associates, Inc., "Bridge No. C-7-1" [Chatham, Bridge Street over Mitchell River, as reissued for construction, 24 May 1980] 10 plan sheets.

- Hence, in the last 50 years, 11 of the 12 spans of the bridge underwent little to no significant change for an uncovered timber structure, especially one exposed to a coastal environment.

Qualitative Dimensions

(a) Context

The road and the bridge were intertwined from the start. Chatham Town Historian, Eleanor Henderson, has reported that Bridge Street was first laid out in 1854 in part to facilitate the access of William Mitchell, a farmer, to the town. David Edwards and George Atwood, well-regarded local carpenters, erected the first of a long line of timber structures to carry the street over the river for \$1,300 in 1858.² Over the last century and a half, the street and the Mitchell River Bridge have continued to serve in a rural to semi-rural environment. In the terms of highway agency engineers, the road still operates more as a “rural collector” than as a thoroughfare.

circa 1900

2009 photos



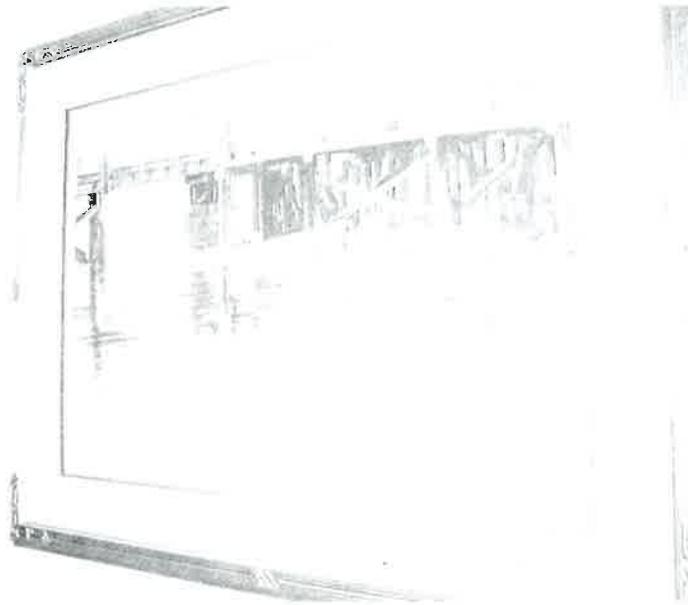
² Eleanor Henderson, “Unearth background information of Chatham’s Mitchell River Bridge,” *Cape Cod Chronicle*, 25 March 1976.

In *Timber Crossings*, Professor Robert McCullough of the University of Vermont Historic Preservation Program made some important observations about the significance of timber bridges as “distinct landscape features” documented by artists and photographers:

Whether ordinary or heroic, bridges often stand apart from their surroundings.... Elements of appearance – shape, mass, curve, angle, wall plane, contrast of solid and void, texture, color – all merge to create building forms that can dominate and thus transform their settings. . . . Public recognition that bridges can be distinctive landscape features is a beginning point in what often becomes a complicated dialogue about highway and bridge design. The subtlety of this argument is easily lost in public debate where matters of cost and safety tend to dominate discussion. * * *

Regardless of the period or genre of landscape art, however, at least two contributions of the artist are valuable to the discussion about bridge and highway projects. The first is the practiced skill of observing landscapes. The second is the intuitive understanding that certain features, bridges among them, make strong visual contributions to the whole. For those who are charged with making decisions about our modern highways and bridges, recognition that changes to very legible parts of our landscapes can weaken awareness of our surroundings is crucial.³

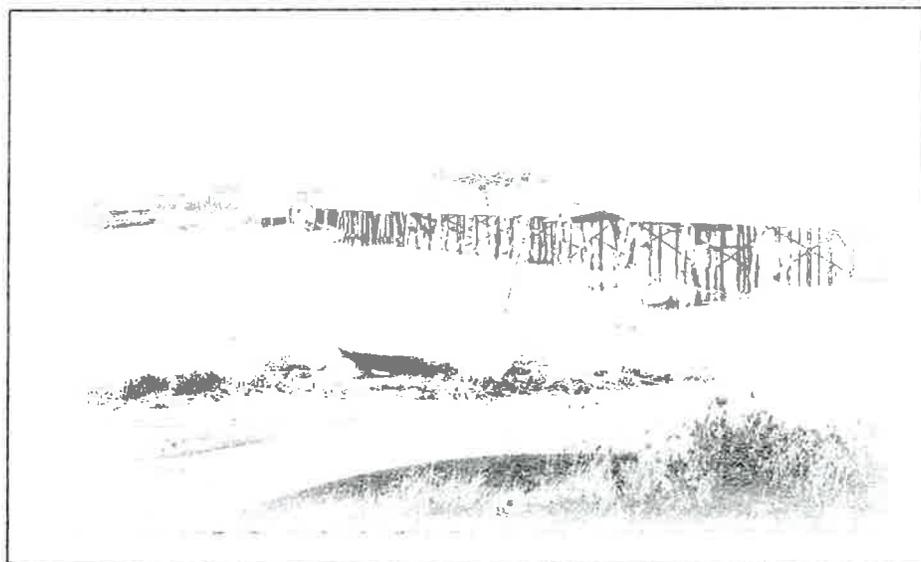
The multitude of artists who have sketched, painted, and photographed the Mitchell River Bridge in its setting provide ample evidence that Chatham has here what Professor McCullough outlines as “distinct landscape features” testifying to and documenting significant local context:



–Neil Drevitsen, “Tween Tides”
Atwood House Museum, Chatham

³ Robert McCullough, *Timber Crossings*, 24, 32.
[<<http://www.uvm.edu/coveredbridges/papers/McCulloughpaper>>].

The 1871 references to heavy and light hinges “for draw,” chain, and sheaves make it clear that the local carpenters hired to work on the Mitchell River Bridge intended to include a hinged draw span within the structure. The following photographs of the bridge taken before 1907 quite probably shows off the craftsmanship of the 1870s carpentry. By dividing the weight between two leaves and keeping each upwardly angled in closure, each could be hand drawn with minimum labor. The slight additional opening also allowed a couple more feet of waterway clearance:



The hump-back within the closed draw span may, however, have had something to do with a reported injury at the draw in 1903. In meeting, the town responded by ordering the immediate

posting of a “Use at Your Own Risk” sign at the bridge and appointing a committee to see if Chatham could do away with the moveable span. The town committee reported that the town did not have the necessary authority to obstruct a navigable stream with a low, stationary, timber-trestle bridge, so a moveable span had to remain.⁵

In 1907, Chatham appropriated \$5,000 to rehabilitate the Mitchell River Bridge. The town extended the fill on each side of the bridge to reduce the number of timber-beam spans, installed a new draw span, probably replaced the structure’s riding surface, and erected an iron railing.



— postcard
mailed
in 1910

The 1907 draw span was reported to have a “flat” surface “to ride over,” suggesting that the draw had been reduced from the troublesome two to a single leaf, now with a counter-weight behind the pivot and beneath the riding surface in order to facilitate its lifting.



—Model T Ford
in transit;
mailed 1926

⁵ Henderson, “Unearth background information,” *Cape Cod Chronicle*, 25 March 1976; Baisly, “Chronology of Chatham,” *Chronicle*, 23 January 1974.

The piles in the bents that supported the beam or trestle spans do not appear to have been part of the 1907 scope of work. Not surprisingly, continued deterioration forced the bridge's closure from 1915 to 1920. In 1926, the town appropriated \$9,000 "to rebuild the wooden trestle after the style of the old one."⁶

Chatham undoubtedly undertook some other periodic repairs between 1926 and the 1980s rehabilitation of the bridge. As has reoccurred in the recent discussions over the Mitchell River Bridge, the state of Massachusetts had also proposed in the 1970s to replace the extant timber structure with a concrete bridge. This proposal ran into a storm of protest led by F. Spaulding Dunbar, owner of the Mill Pond Boatyard: "'All are in favor,' he said, 'of retaining the 'Old Cape Cod' character of the present bridge, but definitely with an operable draw span. No one, and this is emphatic, wants a modern concrete monstrosity. Not only because the looks of such a bridge is contrary to the 'flavor' of the area, but also because such a bridge would encourage the speeding of cars."⁷ Dunbar did want the reconstructed draw span to be a few feet wider, to be hinged on the West rather than on the East, and to open to 90° rather than 60°.

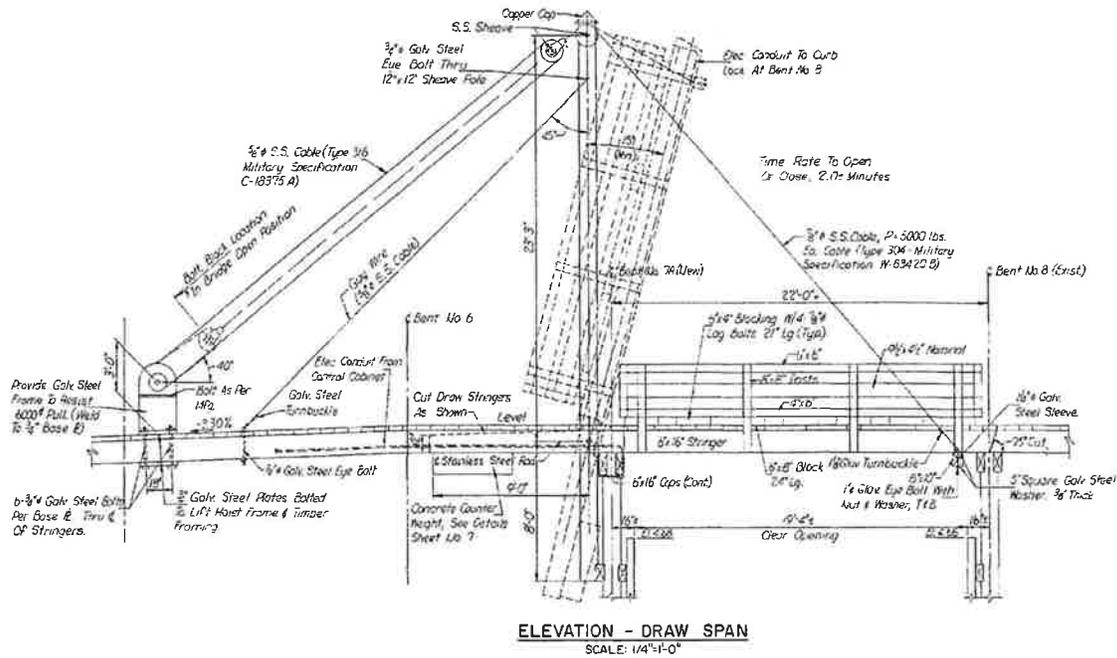


Note the single-leaf draw with counter weights and the old metal railing that date from 1907. – *Cape Cod Chronicle*, 15 July 1971

⁶ Reports on town meeting agendas and actions, *Chatham Monitor*, 5 February 1925, 15 October 1925, 4 February 1926, 3 June 1926; Henderson, "Unearth background information," *Cape Cod Chronicle*, 25 March 1976.

⁷ "CG Wants Chatham Drawbridge But Selectmen Want State Money," *The Cape Codder*, 15 July 1976; F. Spaulding Dunbar to William J. Naulty, First Coast Guard District (Boston), 17 January 1977.

Francis X. McGrath, project engineer for Bayside Engineering which designed the 1980s rehabilitation of the Mitchell River Bridge reported to the press in 1977 “that the bridge was sound. The easterly side is showing some deterioration, he said, sidewalks will need replacing and a new railing will have to be installed.” “The bridge, he said, ‘would look exactly the same.’”⁸



– Bayside Engineering plant sheet #10, “reissued for construction” 24 May 1980

In Sum

(a) **Context.** Few, if any, places and their structural content remain exactly the same over a century and a half on planet earth. The context of the Mitchell River Bridge – itself a “distinct landscape feature” – shows remarkably more continuity than change.

(b) **Design Pattern and function.**

- Since at least 1871, if not from its beginning in 1858, the Mitchell River Bridge has consisted of a timber trestle plus a draw span.

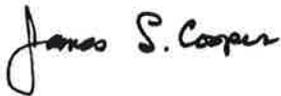
⁸ “Chatham’s Mitchell River Span Gets Once-Over from Engineers,” *The Cape Codder*, 6 January 1977.

- Excluding the deck and some bracing, the extant beam or trestle spans date largely to 1926.
- The draw span probably consisted of two hinged leaves from at least 1871 to 1907 and of a single pivoted leaf with counterbalance from 1907 to the present. In all cases the draws were lifted by hand cranks (until the 1980s when an electric winch was installed), possibly via metal chains (1871-1907) and certainly with metal cables (1907-present) over timber sheaves.
- Changes in the pattern of the draw span from 1907 to the present have been quite secondary. The span has been widened a few feet, the pivot or hinge has been placed on the West rather than the East, and an electric winch has replaced the hand-crank. As the designer of the one known major rehabilitation of the draw in the last century said, “the bridge ... would look exactly the same.”

Afterword

The fact that the Mitchell River Bridge is quite likely the only extant timber trestle and single-leaf draw structure in the United States adds to the significance of this structure with its pattern rooted in pre-modern times. The American landscape was once dotted with timber bridges of fixed and moveable spans that craftsmen rather than engineers designed. Almost none of that heritage is left for us to preserve. This rare remnant deserves special consideration.

Sincerely yours,



James L. Cooper
emeritus Professor of History
& historic bridge consultant

From: D. Aikman
Sent: Tuesday, June 07, 2011 4:15 PM
To: Santiago, Damaris (FHWA)
Cc: Patti Buck; Bob Oliver
Subject: Mitchell River Bridge

Damaris,

As a consulting party to the Mitchell River Bridge project, The Chatham Historical Commission met this morning, June 7, 2011, and passed the following resolution as its comment to the proposed bridge reconstruction: " Whereas The Keeper has determined that the design of the Mitchell River Bridge is historically significant, and whereas the Commission believes that it is the responsibility of the Town to preserve such design, the Chatham Historical Commission thereby endorses Alternative 1B as listed on the Table 1 Life Cycle Analysis Summary, if it is determined to be fiscally prudent and feasible."

The vote was 5 in favor and 1 against.

Donald Aikman
Vice Chairman
Chatham Historical Commission

**INTERESTED
PARTIES**

From: Read and Jane Moffett

Sent: Wednesday, June 08, 2011 12:10 AM

To: Pavao, Jr., Joseph (DOT)

Subject: Mitchell River Bridge in Chatham Mass.

Dear Mr. Pavao,

As a member of the Chatham Historical Commission and Chatham Preservation Committee, I am very interested in preserving the Mitchell River Bridge in Chatham. I have attended all of your public hearings and was very glad to hear at the last forum on May 17th that you came up with two more plans which are mostly wooden structures.

I am writing you to support the design 1B, which is all-wood except for a central cement pier (which is faced with stone) to hold the counterweight and help it stay dry when the bridge is opened.

I believe that this alternative is the most acceptable from a historic standpoint and is also reasonable in terms of its cost.

We, who are preservationist, appreciate your willingness to listen to our concerns, discuss and come up with a new plan -1B. -

Sincerely,

Jane Moffett

Via email dated June 8, 2011 to Damaris.Santiago@dot.gov

Dear Ms. Santiago

As a member of the Chatham Historical Commission and Chatham Preservation Committee, I am very interested in preserving the Mitchell River Bridge in Chatham. I have attended all of your public hearings and was very glad to hear at the last forum on May 17th that you came up with two more plans which are mostly wooden structures.

I am writing you to support the design 1B, which is all-wood except for a central cement pier (which is faced with stone) to hold the counterweight and help it stay dry when the bridge is opened.

I believe that this alternative is the most acceptable from a historic standpoint and is also reasonable in terms of its cost.

We, who are preservationist, appreciate your willingness to listen to our concerns, discuss and come up with a new plan -1B.

Sincerely,

Jane Moffett

Via email dated June 7, 2011 to Damaris.Santiago@dot.gov

Dear Ms. Santiago,

I am a full time resident of Chatham and I very much hope that you will build alternative 1B, which is close to what we have now, but is also practical. I strongly suspect that almost all my fellow Chatham residents would support a bridge design that is all wood or as close to all wood as practical, except for their concern about cost.

Looking at your cost estimates shows that the initial cost is less for 1B than for 3, which DOT tentatively recommended at the May 17th meeting. The maintenance costs, which the Chatham residence would bear, are in the best case close to the same for 1B and 3. Only in the worst case are the maintenance costs significantly higher for 1B. However, even if the worst case should happen, the cost per resident spread over many years is less than a dinner out. And in the best case, there is no difference.

What you do get with 1B is preserving one important piece of our history to be appreciated for many more years rather than having an ordinary and sterile steel and concrete structure.

I appreciate your listening to the many comments you have gotten and I hope you will select 1B as the best alternative for Chatham.

Sincerely,

Read Moffett

Via email

From: Gloria Freeman [mailto:freeannie@comcast.net]
Sent: Monday, June 06, 2011 04:58 PM
To: Santiago Damaris <Damaris.Santiago@dot.gov>
Cc: Pavao, Jr., Joseph (DOT)
Subject: Mitchell River Bridge, Chatham, MA

Ms. Damaris Santiago
Environmental Engineer
Federal Highway Administration
55 Broadway, 10th Floor
Cambridge, MA 02142

Re: Mitchell River Bridge, Chatham, MA

Dear Ms. Santiago:

I am writing to comment on the Section 106 process involving the Bridge and to express my preference for the alternative of the seven options that have been suggested which I believe to be the most beneficial.

- 1) I am disappointed that the consulting and interested parties have not seen the HDR Report mentioned at the May 17, 2011 Section 106 Consulting Parties meeting, and will not have the opportunity to comment on it before the deadline of June 8th that Federal Highway and MassDOT have dictated. The lack of that document, as well as the refusal to provide supporting documentation for findings in Reports 1 and 2 as requested by the Friends of the Mitchell River Wooden Drawbridge (the "Friends"), speaks loudly about both Federal Highway and MassDOT's interest in a meaningful interactive consultation which is called for in the Section 106 review.
- 2) Federal Highway and MassDOT have moved inch by inch from the rigid position of never building a wooden drawbridge until the May 17th meeting when we suddenly learned that it could be built and were shown an alternative (Alt. 1B) which is essentially made of timber except for a central concrete-bascule pier, covered with stone, that would enclose the counterweight and keep it dry. Those of us who strongly desire to protect the underlying character of our Bridge were elated, and for many valid reasons.
 - a. Alt. 1B is both prudent and feasible.
 - b. Alt. 1B meets the latest LRFD design code and current safety standards, including the 25' wide opening.

c. The cost analysis of Alt. 1B over the 75 plus year lifetime is even less costly, using a best case scenario, than Alt. 3, which MassDOT, at the meeting, said they were now considering as the design of choice. This is true particularly in consideration of Dr. Stanley Lebow's letter (Forest Products Laboratory of the Department of Agriculture) indicating that the relative service life of wood is greater and the environmental impact is less than was outlined in MassDOT's Reports 1 and 2.

d. Alt. 1B would provide a roadway that would be safer and slower. (I am very concerned about increasing speed on the Bridge. There are many pedestrians and bikers using Bridge Street; and there is both a marina and a town landing adjacent to the site.) I also believe that the area should be preserved in its natural state because it is worth going slowly to enjoy the scenic view.

e. Using MassDOT's "Technical Evaluation Criteria Summary", Alt. 1B is similar to that of Alt. 3. Also MassDOT rates Alt. 1B higher in the "context sensitive design" category, which is the essence of the Section 106 process to find ways to avoid, minimize, or mitigate harm to a historical property. It provides the best option when considering the adverse effect on the National Register-eligible Bridge's integrity to convey its significance based on its setting, design, materials, and "feeling". Alt. 1B is clearly the option that is minimally harmful.

f. Numerous consulting parties have expressed concern about the timing of the process. Clearly Alt. 1B would move more quickly through the process because we learned at the May 17th meeting that several of the preservation groups strongly favor it, including the Friends.

While I realize that the consulting parties share a variety of concerns and goals, it seems to me that whether the focus is on preservation (so important to Chatham's citizens), or time (because of the limitation of funding of the Accelerated Bridge Program), or cost, Alt. 1B would provide the best solution to accommodate all parties.

Sincerely,

Gloria M. Freeman

cc: Mr. Joseph Pavao, Jr., Accelerated Bridge Program Project Manager, MassDOT-Highway Division

Via email

John W Konvalinka and Carol Smith Konvalinka
384 Main Street
Chatham MA 02633

June 4, 2011

Ms. Damaris Santiago
Environmental Engineer
FHWA
55 Broadway 10th Floor
Cambridge, MA 02142

Subject: **Mitchell River Bridge**

Dear Ms. Santiago:

As homeowners in Chatham Massachusetts we are deeply distressed at the prospect of destroying the historic Mitchell River Bridge – the last wooden drawbridge in Massachusetts and the entire United States – and replacing it with a “modern” design bridge of questionable merit whose main “benefits” seem to be allowing unwanted additional traffic and dangerously higher auto speeds in an environmentally sensitive and pedestrian-friendly area.

We are particularly concerned that the “facts” and “figures” used by MassDOT to justify the steel and concrete bridge seem not to hold up under any kind of reasonable scrutiny. We have seen no substantiation for MassDOT’s claim that wood lasts only 10-30 years and that concrete and steel lasts between 80 and 100 years. We believe that if these numbers were realistically stated the economics would clearly favor the reconstruction and maintenance of the existing wooden bridge over the 75 year life used by MassDOT.

The claims made by MassDOT for the high cost of wood and its low service life have been rebutted completely by the Forest Products Laboratory of the US Dept. of Agriculture. The Department has also rebutted the claim that concrete and steel – which rusts in salt water and will be difficult and costly to repair – do not present any major problems. We know from experience at the Chatham Fish Pier that this isn’t so; that electrolysis of the concrete and steel pilings has taken place and has been very costly to deal with.

We are further concerned that MassDOT has failed to consider in its reports the “StrongSeal” fiberglass wood piling wrapping process whose effectiveness and reasonable costs have been accepted by the New Jersey DEP and US Fish and Wildlife Service.

It also concerns us that MassDOT has made a number of changes in various positions taken during the life of the bridge discussions. Initially, MassDOT said that it could not

build an all-timber drawbridge if the channel was widened to 25 feet, but then suddenly changed its mind and has now presented two ways to do that. Shifts in position like this, as well as all of the issues described above, compel us to question the depth of MassDOT's analysis of this entire project.

We know that you are familiar with the many other concerns and arguments which have been raised about this ill advised bridge replacement project, and ask that you take all of these concerns seriously to avoid making a costly and unnecessarily destructive decision.

Thank you for your consideration.

Sincerely,

Copy to:

Mr. Joseph Pavao
Project Manager - Re: Mitchell River Bridge
Commonwealth of Massachusetts
Dept. of Transportation - Highway Division
10 Park Plaza
Boston, MA 02116

26 Ivy Lane
Chatham, MA 02633
June 4, 2011

Ms. Damaris Santiago, Environmental Engineer
FHWA
55 Broadway 10th Floor
Cambridge, MA 02142

Dear Ms. Santiago:

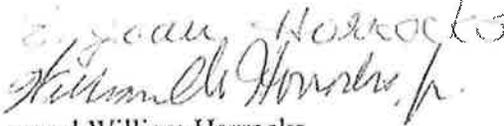
We write concerning the Mitchell River Bridge project in Chatham, Mass. Our home near the Chatham lighthouse overlooks Bridge Street. We use the Mitchell River Bridge on approximately one third of all trips to or from our house. We highly value the bridge and enjoy especially the nostalgic (to us) sound that the tires of our car make as we pass across its wooden bed. This bridge, as it exists, is perfect for Chatham. Its historic nature (confirmed by the Keeper of the National Register) and the fact that it is the last wooden draw bridge in the United States make its preservation all the more important to us and, we believe, to the citizens of Chatham. Next year, 2012, is the 300th anniversary of the founding of Chatham. This iconic bridge has been in place for half of those years.

As is the case with most historic structures, the Mitchell River Bridge has been rebuilt and repaired many times. We understand the need to renovate the bridge and are supportive of making necessary improvements, but only so long as the basic historic structure remains intact. We do not want a new bridge, we want a carefully renovated and rebuilt one that preserves it as an historical entity. Engineers have considered several alternatives for rebuilding this structure and we support Alternative 1B, an all-wood bridge except for a central concrete pier (faced with stone) to hold the counterweight and protect it from the salt water when the bridge is open.

Others will comment on the economics of the various alternatives. Estimates have shown, however, that wooden Alt. 1B is less expensive to build than some of the more modern construction possibilities. It is important to note that flattening or widening the bridge, as has been proposed, would be detrimental to safety by encouraging faster driving on Bridge Street which has much pedestrian and bicycle traffic and road-side parking for beach-goers.

Thank you for considering our comments when you make your decision regarding the bridge.

Sincerely yours,


Joan and William Horrocks

Re: Mitchell River Bridge

June 3, 2011

My family has been summering in Chatham for over 50 years. The town is a very special place - one where my wife and I are doing all we can to have our 6 grandchildren experience the many gifts that the town affords its residents and visitors and to get them to love it, just as we did for their parents 35 years ago.

Part of Chatham's uniqueness and cultural ethos is its heritage and quaintness. The Mitchell River Bridge is a meaningful part of this ambiance. Last year by sheer coincidence I was taking our 3 and 5 year old grandchildren on a boat ride – just to get them to feel at home on the water – and we came upon the bridge as it was being raised. This prompted grandpa to talk about Chatham and its maritime background and allowed our grandchildren to go through the waterway while looking up to the sky at the same time. Fortunately I had a cell phone with me to capture this whole experience for posterity.

What I'm trying to convey is that the bridge is very unique (the only wooden draw bridge in the Commonwealth and perhaps the whole U.S.) and it is worthwhile to try to save/keep its uniqueness if reasonably possible. I have monitored the “discussions” between town, state and federal officials and various non-governmental interested parties via the internet and newspapers while being away from Chatham this winter. As someone who was trained in business administration, what I saw was various well meaning parties taking sides on different technical and aesthetic issues many times without ever getting to the “truth”. How long treated wood vs coated steel would last in salt water is an example of this. Another example is what is the environmental impact and best estimate of the discounted total cost of constructing and maintaining the bridge over a 75 year period using the 2 materials under consideration.

The Friends of the bridge (of which I am one) has presented expert testimony which calls into question some of the assertions/assumptions by various government employees which ultimately pointed them to their (tentative) recommendation to select option 3. To my knowledge these different “facts” have not been thoroughly investigated or specifically refuted by these representatives.

When I was working in the private sector, I always used the standard of having any decision I made being robust enough to be fully vetted by the (then) Boston Globe spotlight team on the front page of the paper. While Globe readers (fellow employees in my case) certainly could disagree with my decision, the rigor, fairness and open-mindedness of the process that I used to get to the “truth” hope-fully was always above legitimate criticism. It may be a tough standard, but it is one that ultimately generates trust and respect (and optimizes good decision probabilities).

I ask that the federal and state agencies responsible for making the ultimate determination of the Mitchell River Bridge design and materials used to build the bridge apply the same standard of rigor, fairness and open mindedness to this project.

Thank you for your consideration.

Sincerely,

E. Michael Brown
85 Henshaw Drive
Chatham, Ma 02633

John W. Geiger, II
15 Bay Lane
Chatham, MA 02633-2339

Ms. Damaris Santiago
Environmental Engineer
FHWA
55 Broadway 10th Floor
Cambridge, MA 02142



Subject: Mitchell River Bridge

May 26, 2011

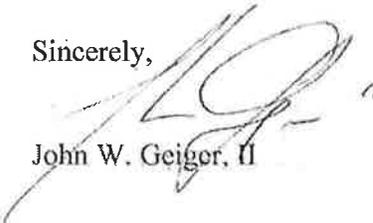
Dear Ms. Santiago,

I appreciate this opportunity to comment on the standing of the Mitchell River Bridge project following our town selectmen's decision to endorse a concrete and steel structure wrapped in a wood veneer. As a Chatham taxpayer, this decision does not represent my position on the rebuild of the bridge. I will state to you, I believe the Mitchell River Bridge should continue to represent Chatham's past and remain a wooden structure for future generations to enjoy and appreciate. I believe along with many others it is important to Chatham as a town that we seek to preserve the last wooden drawbridge in Massachusetts while at the same time preserving one of the last vestiges of our community's history and character.

With the many public meetings on the bridge, it is more and more evident that solution's exists to address the concerns from an engineering point of view that will safeguard the materials used for construction for a period of many years. If there are tradeoffs when pitting longevity against the historic nature of the bridge and what it represents, I believe those tradeoffs are warranted in the interest of respecting the historical nature of the structure.

I would request that the interested parties do the responsible thing and work through the issues so that in the end Chatham citizens can continue to use and care for the historic wooden bridge we have known for some 150 years.

Sincerely,



John W. Geiger, II

June 2, 2011

Ms. Damaris Santiago
Environmental Engineer
Federal Highway Administration
55 Broadway, 10th Floor
Cambridge, MA 02142

Subject: Mitchell River Bridge
Chatham, MA

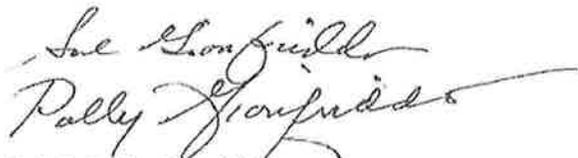
Dear Ms. Santiago:

We respectfully ask that your department please consider the historical integrity of the Mitchell River Bridge.

We are also hopeful that the replacement bridge will replicate the current one by being built as an all wooden structure.

Thank you for your consideration of this request.

Sincerely,

Handwritten signatures of Sal and Polly Gionfriddo in cursive script.

Sal & Polly Gionfriddo
126 Round Cove Road
Chatham, MA 02633

Jennifer J. Buck
Two Charles Place
Pepperell, MA 01463



June 4, 2011

Ms. Damaris Santiago
Environmental Engineer
Federal Highway Administration
55 Broadway 10th Floor
Cambridge, MA 02142

Re: Mitchell River Bridge
Town of Chatham

Dear Ms. Santiago:

As a so-called summer resident of Chatham, I have spent every one of my summers in this town which is more home to me than my regular residence. I won't bore you with the details of why I love Chatham so much, but the Mitchell River Bridge would be one of them – and high on the list. I hope that when it is replaced, it will be as much like the existing historic bridge as possible, with a wooden roadway and timber pilings.

I have been faithfully following the Section 106 Process, and I am perplexed that the Chatham Board of Selectmen, as well as MassDOT, will not support Alternative 1B, now that it has been included in the suggested alternatives. In my opinion, this option might provide us with the opportunity to retain the great honor of having our bridge - the last of its kind – remain eligible for the National Register, and assist us in doing what Chatham citizens have always done, which is to preserve and protect our history and heritage.

Alternative 1B comes closest in resembling our existing bridge, while also providing a minimally harmful effect on the historic structure, and which does not diminish the integrity of the streetscape that clearly contributes to the bridge's historic significance. The cost analysis based on a best case scenario is less than Alternative 3; and the Department of Agriculture's Forest Products Laboratory has expressed that the service life of timber has been underestimated and the environmental impact overestimated in MassDOT's reports.

There seems to be a battle of wills going on, and our town and its citizens will be the only losers if the decision about what to build is not based on what is in the best interest of the historic character of the town. I am convinced, especially now that so many preservation organizations are supporting 1B as that alternative which best minimizes the adverse effects on the structure, that it would move quickly through the process with the support of the Friends of the Mitchell River Wooden Drawbridge and the preservation community.

Finally, Chatham will be celebrating its 300th anniversary in less than a year. The thought that we could lose the look and sound and feel of this bridge would hang a heavy cloud over whatever celebration is in the making.

I encourage you to look more closely at Alternative 1B as the bridge design of choice. There will be no losers, but only grateful citizens who will get to keep the last wooden drawbridge and also have a structurally sound and safe bridge.

Sincerely,


Jennifer J. Buck

cc: Mr. Joseph Pavao, Jr.
Accelerated Bridge Program Project Manager
MassDOT-Highway Division
10 Park Plaza, Room 6500
Boston, MA 02116

From: Norman Pacun [mailto:clamknife@comcast.net]

Sent: Monday, April 25, 2011 10:04 AM

To: Santiago, Damaris (FHWA)

Cc: Stephenson, Pamela (FHWA); joseph.pavao@state.ma.us; Kevin.M.Walsh@state.ma.us; Norman Pacun

Subject:

FRIENDS OF THE MITCHELL RIVER WOODEN DRAWBRIDGE

C/O 14 SUNSET LANE

CHATHAM, MA 02633

April 25, 2011

CERTIFIED - RETURN RECEIPT REQUESTED (copy also being sent by email)

Ms. Damaris Santiago

Environmental Engineer

U.S. Department of Transportation

Federal Highway Administration, Massachusetts Division

55 Broadway, 10th Floor

Cambridge, MA 02142
River Bridge Project

Re: Chatham, MA-Mitchell

Dear Ms. Santiago:

The undersigned Friends of the Mitchell River Wooden Drawbridge is a designated Consulting Party pursuant to the process being conducted by your Agency under the provisions of Section 106 of the National Historic Preservation Act of 1966 and the applicable Regulations thereunder (36 CFR Part 800).

By letter of March 21, 2011, your Agency provided the various consulting parties with a copy in CD format of the Repair/Rehabilitation Feasibility Report ("Report") for the above referenced Mitchell River Bridge Project, as prepared by MassDOT, Highway Division. At the undersigned's request, we were furnished under cover of a letter dated March 23, 2011, with a hard copy of such Report, consisting of 58 pages of text and fifteen separate Appendices.

We have now completed our initial examination of such Report and in accordance with the provisions of the applicable Regulations (Sec. 800.11 et. seq.) and our status as a Consulting Party, wherein we have previously shown a demonstrated interest in this undertaking, and further in accordance with our oral comments made on the record at the initial Consulting Parties meeting held on January 25, 2011, we hereby formally request that your Agency and MassDOT provide the undersigned and the other Consulting Parties with the documentation specified on the attached Schedule A to support the determinations and findings set forth in such Report and thereby to allow ourselves and other Consulting Parties to properly understand the basis of the Report.

As set forth on Schedule A, we have referred to the specific determinations and findings contained in the Report, the page or pages on which they are found, and the documentation we are requesting from you and MassDOT to support their determinations and findings. Where such support is in the form of primary source documents which can be made available to us in written form or by way of the internet, we would request that we be given copies initially in written form. Also, we request that responses to individual requests for documentation be forwarded to us as soon as they are available, rather than as a single package upon your completion of our entire request.

Since the Report is exceptionally lengthy, please be aware that we may have additional requests for documentation and support as we complete our review.

Please also note that upon the completion by MassDOT of its review and finalization of an alternatives

evaluation and life cycle cost report and its being furnished to the consulting parties, as described in your letter of March 21st, you should anticipate that we may have similar requests for documentation to support the findings and determinations made therein, unless such documentation is included with or attached to the Report itself.

Should you have any questions regarding this letter, please do not hesitate to contact the undersigned at the above address or by telephone at 508 945 1627.

Sincerely,

Norman Pacun

For the Friends of the Mitchell River Wooden Drawbridge

cc: Pamela Stephenson

Joseph Pavao, Jr.

Kevin Walsh [Mitchell River Bridge](#).

SCHEDULE A TO LETTER OF APRIL 23, 2011

1. On Page 2 of the Report, it is stated that “Although the bridge is currently safe, anticipated deterioration in the near future is expected to reduce the load carrying capacity to a threshold where load restrictions will be required.” On Page 13 of the Report, it is acknowledged that in January 2011, the Town reduced the posted speed across the Bridge to 15 mph; however, the Report omits reference to the decision of the Town, at the same time, to reduce the posted load over the Bridge to automobiles and light trucks. (As of April 21, 2011, signs have been posted by the Town with respect to both speed and loads.)

Given the reduced speed and loads as referred to above, please provide supporting documentation for the following statements:

- A. That further speed and load reductions “will be required” in the “near future”.
- B. The specific dates or estimated range of dates that are referenced as being in the “near future”.
- C. The specific dates or estimated range of dates that are referenced in the statement that “Without corrective action, the condition of the timber is ultimately expected to reach a level where the bridge will be unsafe to carry traffic.” (Page

2.)

2. On Page 3 of the Report, it is stated that “...some of the consequences and deficiencies individually may be considered minor...”

Please identify which of the alleged deficiencies shown “individually may be considered minor”.

3. On Page 3 of the Report, it is stated that “Modern strengthening methods such as fiber reinforced polymer (FRP) sheets or pile jackets are expensive relative to the cost of the timber, do not have a long-term performance history for use in salt water environments, and may introduce visual impacts.”

Please provide supporting documentation that “FRP sheets or pile jackets are expensive relative to the cost of the timber”, including specific dollar amounts known or estimated as to the individual and total cost of such jackets; the performance history that is relied on in the Report that is not “long-term”, as well as any other performance history for such pile jackets; and the “visual impacts” which are referred to, whether favorable or unfavorable.

4. On Page 52 of the Report, it is stated that “The FHWA has a policy that bridges replaced using federal funding be designed with a minimum service life of 75 years.”

Please provide supporting documentation of such FHWA policy and any FHWA Regulations or other written authority to which this policy refers or which is referred to by this policy.

5. On Page 52 of the Report, it is also stated that “Currently, it is not practical to design a timber bridge in this environment for a minimum 75 year service life.”

Please provide supporting documentation for this statement and also the minimum year service life that a timber bridge in this environment can be designed for and the supporting documentation for same.

6. On Page 52 of the Report, it is stated that “...it is anticipated that the [timber] bridge will need to be replaced two or three times over a 75 year life cycle period.”

Please provide supporting documentation for this statement.

Please also provide supporting documentation with respect to the claimed 20-30 year minimum service life of a timber bridge, as follows:

A. The species of timber being used.

B. The pressure-treating and/or other preservative treatment being used with respect to such species.

C. The documentation supporting the claim that timber will only have a 20-30 year minimum service life, giving effect to the statement at page 53 of the Report that “the anticipated service life associated with each scope of work is shown as a range that envelopes the likely best case to the worst case scenario.

7. On Page 52 of the Report, it is stated that “...it is possible for a timber bridge with a 20 to 30 year minimum service life (following major repair, rehabilitation or replacement) to have an overall life cycle cost that is similar to a concrete and steel bridge with a 75 year service life.”

Please provide supporting documentation for the statement that a concrete and steel bridge has a 75 year service life. If such 75 year period is based on estimates, please provide the estimated range of service life, both minimum and maximum, including the likely best case and worst case scenario for concrete and steel, as well as any documentation which disputes or questions such service life. Please also provide supporting documentation as to any warranties or guaranties which are to be given by MassDOT and/or FHWA to the Town of Chatham with respect to such 75 year service life.

8. On Page 50 of the Report, it is stated that “Due to a wide variety of factors that contribute to deterioration, it is difficult to estimate with accuracy the remaining service life of timber members.

However, experience with similar bridges in similar environments in Massachusetts provides some

guidance in this area.” Following this on Page 51 is a chart entitled “Summary of Timber Elements Service Life”.

Please provide supporting documentation for this statement, including the “similar

bridges

in similar environments” referred to, the age of such bridges and its timber members, if known, and any other relevant information.

9. On Page 50 of the Report, it is stated that “Recent use of tropical timber on similar bridges and environments in Massachusetts (e.g. Powder Point Bridge, Duxbury) has not demonstrated a significant improvement in the service life of the timber and thus are not considered here.”

Please provide supporting documentation with respect to the “similar bridges and environments” referred to, the age of such bridges and its timber members, if known, and the specific tropical woods used. If any of such similar bridges and environments have shown any improvement in the service life of the timber used, please provide all relevant information with respect thereto.

10. On Page 50 of the Report, it is stated that “Similarly, there is insufficient evidence with Accoya wood, glass infused wood and other recent advances in timber products to support that this material can provide longer service life on bridges in this environment.”

Please provide supporting documentation with respect to the evidence that you have reviewed regarding the types of wood described that has led to your conclusion that such evidence is “insufficient”.

11. On Page 51 of the Report, it is stated that “Although there are many examples of timber bridges where the service life has been extended in excess of 100 years, most of these bridges are covered bridges located in non-coastal locations.”

Please provide supporting documentation with respect to those bridges which are uncovered in coastal locations and whose life has been extended in excess of 100 years, including the age, location, type of timber used, and all other relevant information.

12. On Page 51 of the Report, it is stated that “Although technically feasible, prolonging the service life of a timber bridge beyond 30 years in this environment requires a significant financial investment and maintenance committed by the community and agreements by permitting agencies to support these efforts. Furthermore, now that it has been determined that the existing bridge is historic, the Town has a responsibility to maintain the bridge in a manner that will prevent continued deterioration.”

Please provide supporting documentation setting forth the amount of the “significant financial investment and maintenance” and the specific “agreements by permitting agencies to support these efforts.” Please further provide supporting documentation showing the specific “responsibility” of the Town to “maintain the bridge in a manner that will prevent deterioration” that has been brought about by the determination that the bridge is “historic”.

13. On Page 52 of the Report, it is stated that “funding under the Accelerated Bridge Program only covers the cost of the initial project (not future construction projects)”, so that “the Town would be responsible for the cost of future repair, maintenance, rehabilitation and/or replacement work.” It is further stated that “Even though a timber bridge can have similar overall life cycle costs as a concrete and steel bridge, it is likely that the Town would be responsible for a larger proportion of the life cycle cost.”

Please provide supporting documentation confirming that the Accelerated Bridge Program only covers the cost of the initial project and not future construction projects, and that the Town would solely be responsible for the cost of future repair, maintenance, rehabilitation, and/or replacement. If any waivers or exemptions to this requirement are available, please provide supporting documentation with respect to the same. Please also provide supporting documentation with respect to it being “likely” that the Town would be responsible for a “larger proportion of the life cycle cost”, and the amount of such proportion and the basis for such conclusion.

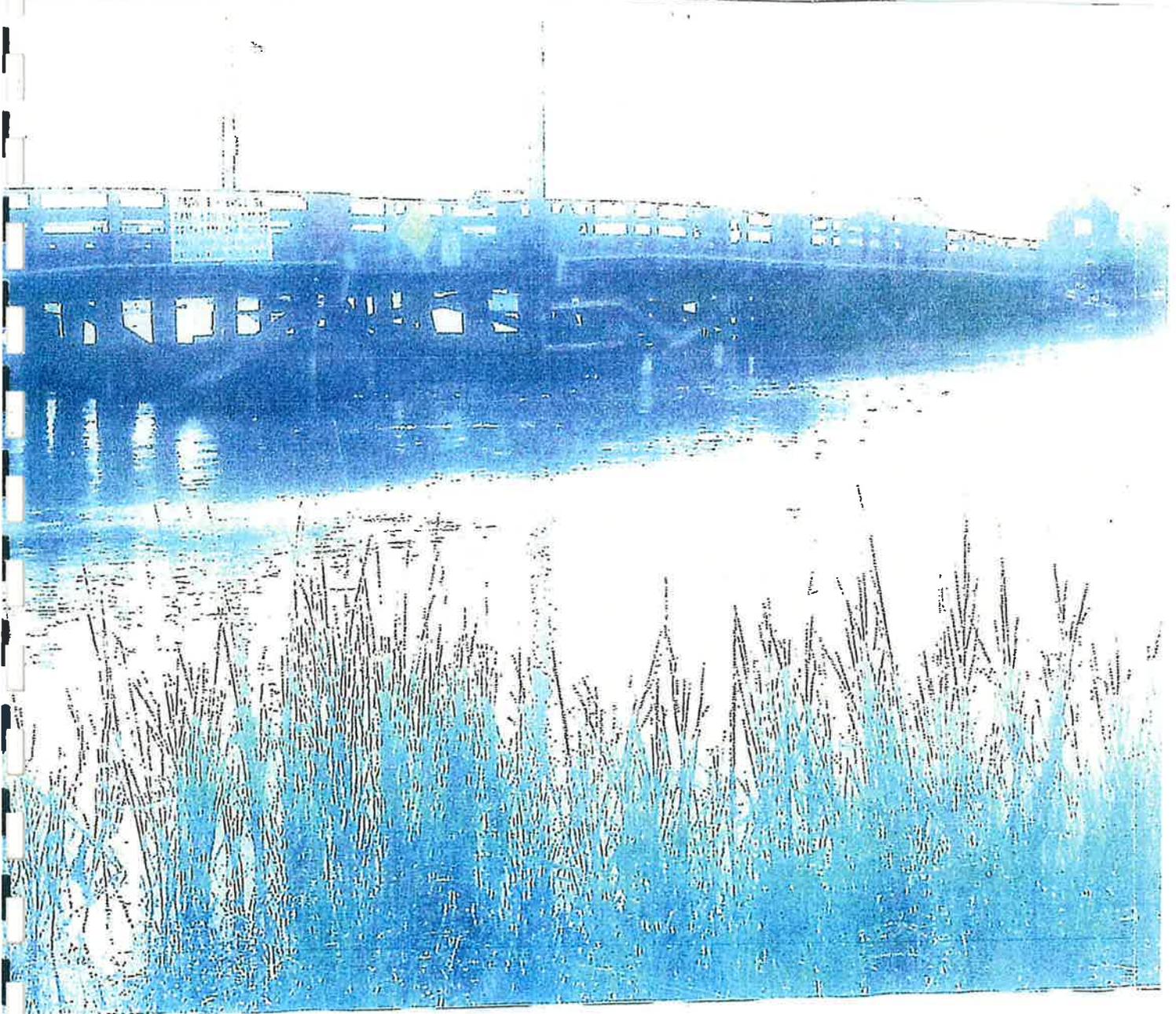
14. On Page 52 of the Report, it is stated that “Funds for the Accelerated Bridge Program are only available through Fall 2016. As such, construction for the bridge must be complete before this date in order for the project to be eligible for these funds.”

Please provide supporting documentation that all funding for the Accelerated Bridge Program must be physically spent and the bridge work must all be completed before the “Fall 2016” for the project to be eligible for these funds. Please provide further supporting documentation that if bridge work is not 100% completed by the “Fall 2016”, notwithstanding the reasons therefore, that no additional funding can legally be paid by either MassDOT or FHWA. Please provide supporting documentation which defines the meaning of “Fall 2016”. If any waivers or exemptions as to this requirement are available, please provide supporting documentation with respect to the same.

SUBMISSION OF THE
FRIENDS OF THE MITCHELL RIVER WOODEN DRAWBRIDGE

IN RESPONSE TO THE MASSDOT
BRIDGE REPAIR/REHABILITATION FEASIBILITY STUDY
AND
BRIDGE ALTERNATIVES EVALUATION AND LIFE CYCLE COST COMPARISON

IN RE
MITCHELL RIVER BRIDGE, CHATHAM, MASSACHUSETTS



Mitchell River Bridge in 2010

TABLE OF CONTENTS

I. SUMMARY OF THE FRIENDS' SUBMISSION

II. THE REQUIREMENTS OF THE SECTION 106 PROCESS AND SECTION 4(F) OF THE TRANSPORTATION ACT, AND THE CONFLICT BETWEEN THE ACCELERATED BRIDGE PROGRAM AND THE REQUIREMENTS OF FEDERAL LAW

III. MASSDOT'S PREJUDICE AGAINST A TIMBER DRAWBRIDGE

IV. COMMENTS REGARDING THE REQUESTS MADE BY THE FRIENDS TO FHWA FOR SUPPORTING DOCUMENTATION OF STATEMENTS MADE BY MASSDOT IN THE 1ST AND 2ND REPORTS

V. DISCREPANCY IN INFORMATION REGARDING A SINGLE LEAF TIMBER BASCULE (ATTACHED CONCEPTUAL SKETCHES OF JOHN SMOLEN, P.E., P.S., OF SMOLEN ENGINEERING, LTD. OF A SINGLE LEAF TIMBER BASCULE)

VI. THE INCORRECT ASSUMPTIONS SET FORTH IN THE 1ST AND 2ND REPORTS ON THE SERVICE LIFE ESTIMATES FOR WOOD VS. CONCRETE AND STEEL AND THE USE OF PRESERVATIVES AND OTHER TREATMENTS FOR WOOD, AND THE OMISSION OF INFORMATION ON THE "STRONG SEAL" ALTERNATIVE (ATTACHED LETTER OF THE FOREST PRODUCTS LABORATORY OF THE U.S. DEPARTMENT OF AGRICULTURE UNDER THE SIGNATURE OF STAN LEBOW, PH.D.)

VII. THE 2ND REPORT CONTAINS EXAGGERATED AND UNFAIR COMPARISONS OF THE RELATIVE SERVICE LIFE (AND LIFE CYCLE COSTS) OF CONCRETE AND STEEL VS. TIMBER, AND FAILS TO INCLUDE THE ELECTROLYSIS PROBLEMS THAT CHATHAM HAS HAD WITH STEEL PILINGS AT THE FISH PIER

VIII. THE REPORT INCORRECTLY CLAIMS THAT THE AVERAGE DAILY TRAFFIC (ADT) ON BRIDGE STREET IS 2,100 VEHICLES PER DAY WHEREAS THE CORRECT AMOUNT IS THE MUCH LOWER 818 VEHICLES PER DAY. THE LESSER TRAFFIC REQUIRES RECONSIDERATION OF THE ROAD DESIGNATION AND THE DESIGN SPEED AS WELL AS THE NEED FOR LOWER SPEEDS IN GENERAL

IX. MISUNDERSTANDING ON THE PART OF MASSDOT IN REGARD TO THE CHATHAM BIKEWAYS COMMITTEE'S DECISIONS ABOUT BIKE LANES ON THE MITCHELL RIVER BRIDGE

X. THE SECTION 106 PROCESS REQUIRES THE FEDERAL AGENCY AND STATE AGENCY TO CONSIDER A BROAD RANGE OF ALTERNATIVE SOLUTIONS INCLUDING A TRUST FUND AND A HISTORIC BRIDGE PRESERVATION EASEMENT

SECTION 1

SUMMARY OF THE FRIENDS' SUBMISSION

The Friends of the Mitchell River Wooden Drawbridge, as a Consulting Party under the Section 106 process with respect to the Bridge, are making this Submission to comment upon and respond to the two Reports (Bridge Alternatives Evaluation and Life Cycle Cost Comparison) that have been prepared by MassDOT as part of this process.

This constitutes a brief introductory Summary of the sections which are contained in our submission:

- The dual requirements of the Section 106 process and of Section 4(f) of the Transportation Act of 1966 establish a strong national policy to protect historic assets such as the Mitchell River Bridge which the Keeper of the National Register has found to be a “rare example” and “of exceptional significance as the last remaining single-leaf wooden drawbridge in Massachusetts (and perhaps the entire United States)” and “an exceptionally important part of the community’s historic identity.” This policy includes a full and fair process which calls for the views of consulting parties and the public in order to avoid, minimize or mitigate adverse effects to the Bridge and to consider a broad range of possible alternatives. This policy also declares that historic sites such as the Bridge are of “paramount importance” and are not to be lost unless truly unusual factors are present or the cost or community disruption resulting from alternatives reaches “extraordinary magnitudes”, neither of which is present here. Taken together, Section 106 and 4(f) give an unfettered measure of protection to the Bridge such as to preempt the State from using or attempting to use the Accelerated Bridge Program provisions as obstacles to the full purposes and objectives of Congress as set forth in these statutes.
- From the outset, MassDOT has exhibited a fixed determination not to rebuild or replace the Mitchell River Bridge with another timber bridge. Senior official(s) of MassDOT: (i) stated that FHWA had a policy against reimbursing the State for a timber drawbridge, which Cong. Delahunt found to be incorrect; (ii) informed the Town that even if the Keeper determined that the Bridge was eligible for the National Register, MassDOT would not build or rebuild a wooden bridge, and that no one could overrule them; (iii) publically stated that historic bridges such as the Mitchell River Bridge should not have been placed under the Accelerated Bridge Program; (iv) wrote, even after the Keeper’s decision, that they would not build a wooden superstructure or put any wooden pilings into the water; (v) stated that they were continuing to favor their own so-called “context sensitive design” for an all concrete and steel bridge with wooden cladding and adornments; and (vi) affirmed that even if it could be shown that a wooden bridge would last 60-80 years, MassDOT would not “consider a timber bridge, no.” The structure and tone of the Reports are skewed in favor of a concrete and steel bridge and against a wooden bridge with respect to initial cost, service life, overall Life Cycle Costs and effect on the environment.
- The request by the Friends to FHWA and MassDOT for extensive supporting documentation of claims and conclusions made in the two Reports in time for the second Consulting Parties meeting of May 17, 2011, has not been responded to fairly as required by the Section 106 Regulations.

- To the extent that the 2nd Report claims that it is not possible to build a single leaf timber bascule that will accommodate a widened span to 25 feet, it is the position of the Friends (and its engineers, Smolen Engineering, which has considerable experience with wooden bridges) that this claim is incorrect.
- The assumptions contained in the 1st and 2nd Reports are incorrect with respect to (i) claims as to the relatively short service life of wood vs. a long service life of concrete and steel; (ii) the use of preservatives and other treatments for wood being harmful in all cases; (iii) the Reports unfairly failing to mention the problems which steel and concrete pilings have with corrosion and possible leaching of chemicals into the salt water; and (iv) not having included information as to the “Strong Seal” alternative for wrapping timber pilings which can limit the leaching of preservatives and lengthen the durability/life of the pilings at a reasonable cost. The position of the Friends as to these assumptions is supported by the attached letter from the Forest Products Laboratory Wood Research Team of the United States Department of Agriculture headed by an eminent authority, Dr. Stan Lebow.
- The 2nd Report contains exaggerated and unfair comparisons of the relative Service Life (and Life Cycle Costs) of concrete and steel vs. timber, and it fails to include the electrolysis problems that Chatham has had with steel pilings at the Fish Pier.
- The 1st Report incorrectly claims that the average daily traffic (ADT) on Bridge Street is 2,100 vehicles per day. This is based on an “in-house estimate” done by MassDOT. The ADT is only 818 vehicles as confirmed by a formal traffic study done by the Cape Cod Commission in May, 2010. The low amount of traffic does not support the proposed design speed of 30mph. Moreover, the Reports specifically recognize that a wider roadway and removal of the timber riding surface in favor of concrete or asphalt will lead to speeding and crashes.
- The 2nd Report incorrectly states that the Town Bikeway Committee requested that the present 24 foot curb-to-curb width (two 12 foot lanes) be widened to two 11 foot lanes and two 2 foot shoulders (a total of 26 feet), whereas the Town DPW Director and the Bikeway Committee actually requested that the present width remain unchanged and that there not be bike lanes on the Bridge.
- The Section 106 process requires the federal agency and state agency to consider a broad range of alternative solutions for the purpose of trying to avoid, minimize or mitigate harm to the historic asset. The Friends have put forth two such alternatives: Use of a Trust Fund to hold sufficient funds to enable the town to repair/replace the Bridge in timber, and the use of a historic bridge preservation easement whereby the Town will continue to own the bridge and maintain it on a day-to-day basis, and the State will be responsible for rehabilitation and restoration.

SECTION II

**THE REQUIREMENTS OF THE SECTION 106 PROCESS AND SECTION 4(f) OF THE
TRANSPORTATION ACT, AND THE CONFLICT BETWEEN THE ACCELERATED BRIDGE
PROGRAM AND THE REQUIREMENTS OF FEDERAL LAW**

I. The National Historic Preservation Act of 1966, is a federal law whose basic intent is to preserve from needless destruction and harm historic structures which are listed on the National Register of Historic Places or are eligible for such listing. Its genesis arose during the post-World War II period when needed rebuilding of infrastructure in the United States, especially highways and bridges, allowed the federal government (together with state governments) to eliminate or often destroy historically important assets which could otherwise be preserved from harm. Accordingly, this statute provides that once a structure, i.e. the Mitchell River Bridge, is listed or found eligible for listing on the National Register, it is given a strong measure of protection pursuant to Section 106 of the Act and the regulations promulgated thereunder, by requiring the federal agency involved in the project to enter into a process whereby designated consulting parties and the public are convened to discuss and consider ways and means to “avoid, minimize or mitigate adverse effects” (i.e., harm) to such historic property. The process is mandatory: it is not subject to claims that the process is difficult to achieve or that it would cost more to comply with the process or that it would somehow delay the project or that it involves a state law that contains restrictions which would inhibit or prevent the full measure of protection to the historic asset under Section 106.

II. The Section 106 process requires the federal agency (here, FHWA) to conduct one or more meetings of designated consulting parties who, along with the public, are given the full opportunity to review the project in question; to discuss with and question the proponent of the project (here, MassDOT) on what steps are being considered to avoid, minimize or mitigate adverse effects (Fn. 1) to the protected historic asset; to offer and consider alternatives (Fn. 2); and to request and receive documentation in support of claims made by the project proponent as to their own proposal (here, a so-called “context-sensitive design for a concrete and steel bridge in place of the existing timber bridge and the previous continuous line of historic timber bridges that have spanned this crossing for approximately 150 years).

III. While the provisions of Section 106 do not compel the federal agency to absolutely refrain from harming the historic asset, any decision to go forward with a project does have to show that the agency has complied fully and fairly with the consultative provisions of the Regulations, and that it has reached agreement with the State Historic Preservation Office and the city or town involved, and that it has also involved the consulting parties in any findings and determinations, and has further provided the federal Advisory Council on Historic Preservation with the opportunity to comment on the proposal, with the obligation that the federal agency must take such comments into account in deciding how to proceed.

IV. There is another federal statute here that is applicable to the instant project, and that is the Transportation Act of 1966 and, in particular, section 4(f). This section, in pertinent part, reads as follows:

“It is hereby declared to be the national policy that special effort should be made to preserve the natural beauty of the countryside

Fn. 1. The Section 106 Regulations (36 CFR Part 800) define “effect” as “alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register.”(Sec. 800.16 (i)).

Fn. 2. The Section 106 Regulations also specifically provide that the process is to be initiated early in the undertaking’s planning, “so that a broad range of alternatives may be considered during the planning process for the undertaking.” (Sec. 800.1(c)).

and public park and recreation lands, wildlife and waterfowl refuges, and historic sites....After August 23, 1968, the Secretary [of Transportation] shall not approve any program or project which requires the use of any publicly owned land from a public park... or any land from an historic site of national, State, or local significance as so determined by such officials unless (1) there is no feasible or prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park...or historic site resulting from such use." (Emphasis Added).

Simply put, this means that no federal funds whatsoever can be authorized by the Secretary of Transportation to finance reconstruction of the Mitchell River Bridge if a "feasible and prudent" alternative exists to rebuild or replace this Bridge as a timber drawbridge. Such alternative does not have to be the best or the most feasible and prudent alternative, but only one which itself is feasible and prudent. In any event, it is incumbent upon the federal agency to present a program which includes "all possible planning" for reducing harm to this historic timber bridge.

V. In the leading case of Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402 (1971), the Supreme Court carefully considered the requirements of Section 4(f). It found that "feasible" means that the Secretary must find that as a matter of "sound engineering", it would not be feasible to rebuild this Bridge in timber. However, MassDOT has already found in its 1st Report that it is technically feasible to build a timber drawbridge. "Prudent" means that while the relative costs of the alternatives can be taken into consideration, the purpose of the statute was that protection of parkland and historic sites were to be given "paramount importance". (At p. 413.) As stated by the Supreme Court with respect to a public park that was proposed to be lost in favor of a new highway (and which language is equally applicable to the historic Mitchell River Bridge):

"The few green havens that are public parks were not to be lost unless there were truly unusual factors present in a particular case or the cost or community disruption resulting from alternative routes reached extraordinary magnitudes." (At p. 413.)

Here, the additional costs, if any, necessary to support replacement of a timber bridge, have not been shown to be of "extraordinary magnitude: (Fn. 3). Community disruption resulting from repairing or replacing timber (over concrete and steel) on this particular street, while perhaps inconvenient every 30 or more years, would not reach "extraordinary magnitudes" under the law.

VI. Taken together, Section 106 and Section 4(f) constitute the strongest possible federal statutory protection to avoid harm to the Mitchell River Bridge and to use all efforts to design and rebuild a working timber drawbridge so that it can be one of the series of continuous wooden bridges that have existed at this historic site for over 150 years.

Fn. 3. In the case of Stop H-3 Association v. Dole, 740 F. 2d 1442 (9th Cir. 1984), cert. denied, 471 U.S. 1108 (1985), an alternative that would increase a project's cost by over \$40 million (or ten percent) did not represent a cost of "extraordinary magnitude" justifying rejection of the alternative under section 4(f).

VII. There are times, however, when provisions of federal law and those of state law may clash with each other, and in such case, the supremacy clause of the United States Constitution (Art. VI, Cl. 2) provides that federal law is the supreme law of the land, and that provisions of state law are “pre-empted” or trumped by the federal law or statute. Such a conflict arises when it is impossible to comply with both federal and state law, or when state law (or policy) interposes an obstacle to the achievement of Congress’ discernible objectives. This can be either where there is an actual conflict (where state law forbids something that federal law requires) or where there is an obstacle (where state law hinders or stands in the way of the accomplishment and execution of the full purposes and objectives of Congress).

VIII. Here, the clear intent of federal law (Sections 106 and 4(f)) is to give the strongest measure of protection to the Mitchell River Bridge as a National Register eligible structure and thereby to require MassDOT to use all possible efforts to avoid, minimize or mitigate adverse effects (i.e., harm) to this historic bridge as part of this project which seeks to allow the state to reconstruct or replace structurally deficient bridges. However, the State Accelerated Bridge Program (“APB”)— we are told— contains two rigid requirements (Fn. 4) which are binding upon MassDOT, regardless of whether these requirements constitute a conflict or an obstacle to the accomplishment and execution of the full purposes and objectives of Congress as set forth in the two 1966 Acts. The first such requirement is that unless the 106 process and 4(f) actions and actual reconstruction of the bridge are completed in time for the state to finish ALL work on this project by the fall of 2016, MassDOT is forbidden from spending any sums from the ABP on this project. Thus, the efforts of the Friends and the public to avail themselves of this process, according to , MassDOT, cause the Town to “fall out of the queue” entirely, thereby losing this source of funding for reconstruction of the Bridge and having to rely entirely on the uncertainty of alternative funding from the State, both as to actual amounts and when it might, if ever, be available.

The second such requirement is that funding under the ABP is supposedly allowed to cover the cost of the initial repair or replacement (but not any “future” costs), so that the town would be entirely responsible for the cost of all subsequent work (repair, maintenance, rehabilitation or replacement) whenever it had to be done. This is claimed to be so notwithstanding that the replacement cost for a timber bridge is initially much less (more than \$2.5 million) than a concrete and steel bridge, but that (according to MassDOT) over the full life cycle cost of the bridge, the cost of timber (with its supposed shorter service life) would be more than concrete and steel on a “worst case scenario” (\$28.1 million vs. \$23.5 million) and almost the same on a “best case scenario” (\$22.5 million vs. \$22.4 million) (Fn. 5.) Based on the costs set forth in the 2nd Report, coupled with the estimated life of wood (as calculated by MassDOT) at between 10-30 years vs. the estimated cost of concrete and steel (as calculated by MassDOT) at between 75 and 100 years, this means that the town would be expected within 30 years to literally pay twice to rebuild a historic timber drawbridge even though the State would end up saving money (at least the initial \$2.5 million) by avoiding the requirements of Section 106 and 4f).

Fn. 4. On April 25, 2011, the Friends requested FHWA for a copy of the provisions of the Accelerated Bridge Program statute, regulation or policy which contained these requirements. This request was submitted pursuant to the Sec. 106 regulations which require the proponent to supply such supporting documentation to the other parties to the proceeding. Sec. 800.11(a). As of May13, the request has gone unanswered.

Fn. 5. See 2nd Report, App. B. p. 2.

We believe that the clear and obvious effect of these requirements of the ABP would constitute an obstacle to the accomplishment and execution of the full purposes and objectives of both of these laws which seek to protect federally-designated historic assets. As such, these requirements must give way to the policy of Congress which has pre-empted a state from artificially or unfairly blocking the fair enforcement of federal law and the regulations adopted hereunder (Fn. 6.)

Fn. 6. Since 80% of the funding for this Project will ultimately be reimbursed by FHWA, it would seem to be without question that funding for a timber bridge replacement should not be penalized in favor of concrete and steel design that MassDOT, by its own admission, rates as "POOR" from the standpoint of "minimization and mitigation of adverse effect to the National Register eligible resource." 2nd Report, p. 3.

LIST OF CASES AND CITATIONS

Article VI, Clause 2, United States Constitution

National Historic Preservation Act of 1966, Sec. 106, and National Transportation Act, Section 4(f) (1966):

Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402 (1971)

Stop H-3 Association v. Dole, 740 F. 2nd 1442 (1984), cert. denied, 471 U.S. 1108 (1985)

Preemption Doctrine:

Altria Group v. Good, 555 U.S. 70 (2008)

Maryland v. Louisiana, 451 U.S. 725 (1981)

Retail Clerks v. Schermerhorn, 375 U.S. 96 (1963)

Gade v. National Solid Wastes Mgmt. Ass'n., 505 U.S. (1992)

Crosby v. National Foreign Trade Council, 530 U.S. 363 (2000)

SECTION III

MASSDOT'S PREJUDICE AGAINST A TIMBER DRAWBRIDGE

I. From the outset of the Section 106 process, MassDOT has exhibited a fixed determination not to rebuild or replace the Mitchell River Bridge with another timber bridge. Statements were made to the citizens of Chatham that were clearly incorrect but were intended to influence the decisions of the Board of Selectmen in favor of a concrete and steel bridge with a so-called "context-sensitive design". Senior officials of MassDOT stated quite specifically, during the pendency of the decision-making process by the Keeper of the National Register, that they would not build a timber bridge regardless of whether the Keeper determined that the Bridge was eligible for the National Register and that nobody could overrule them. Even after the Keeper's decision, MassDOT continued to claim that its own so-called "context-sensitive design" was superior to any other alternative and that they were not really pursuing other alternatives, especially those that involved wooden pilings. Finally, as shown in other portions of this submission, the 1st and 2nd MassDOT Reports are skewed in favor of a concrete and steel bridge and against a wooden bridge with respect to initial cost, service life, overall Life Cycle Cost, and effect on the environment. All of this is specifically set forth below:

II. A. At the initial informational meeting held in Chatham on September 3, 2009, the Director of the Accelerated Bridge Program, Mr. Shoukry Elnahal, stated that FHWA had informed him that they would not approve the design for a timber bridge, and that their approval was needed because FHWA would reimburse 80% of the cost of the bridge. The Friends asked for substantiation of this statement, but it was never received. Thereafter, on March 30, 2010, Cong. William Delahunt wrote to the FHWA Massachusetts Division Administrator confirming his concerns that local officials were operating under an incorrect assumption that the federal government would not fund an important preservation project. On that same day, the staff of Cong. Delahunt were told by Mr. John McVann of the FHWA Massachusetts office that there were no such restrictions on the use of such funds for a timber bridge (see attachments).

B. On August 17, 2010, after the Advisory Council on Historic Preservation had asked the Keeper to rule on the eligibility of the Bridge for the National Register but before the decision was rendered, the Board of Selectmen held a meeting in Chatham with officials of MassDOT and FHWA. Mr. Elnahal spoke for MassDOT and in response to a number of questions made the following statements with respect to both their proposed "context-sensitive design" and a timber bridge:

1. "Even if the Keeper decides that this is eligible, I am planning to pursue this project— if we actually have the time to pursue this project. I am planning to pursue the project so that at the end I will end up with what I am proposing today. So the idea of changing to a timber bridge, I personally am not planning to do that." (At 1:38:06 of the televised meeting.)
2. That he was personally disappointed that historic bridges such as the Mitchell River Bridge were placed on the Accelerated Bridge Program; that this was done before he came to head the program; and that he would have restricted the list to primarily interstate highways and high volume roads. (At 1:38:38)
3. "But what I am promising here is we will move forward with this project regardless of the Keeper's decision to try to---- at the end— end with the bridge we are proposing to you today." (At 1:40:30.)

4. When asked “If a company could prove to you that a wooden bridge could be built to last 60-80 years, would you reconsider your decision”, Mr. Elnahal replied, “What I said is that the mitigation efforts that we have already implemented in this structure are enough for us to overcome the adverse effect of removing this bridge. Being part of the Accelerated Bridge Program, that is the path I’m going to take.....No, I am not going to consider a timber bridge, no.” (At 1:50:40.)

5. When asked, “Are there any circumstances that your agency would approve and fund a wooden bridge?”, Mr. Elnahal replied, “I want to say no.....And if the Keepers were to reverse the [MassHistoric] decision, I think what we can do.....We will have to assign a team that... by the end of the process that we can prove that what we are proposing here today with all the mitigation measures that we have used today are enough to overcome the adverse effect of building a bridge that is not timber on that site.” (At 18:56.)

6. “So I’m thinking that even if we have to go that route it will be several years from now and we will end up with the same bridge again.” (At 21:15.)

7. When Mr. Elnahal was asked by the Chairman of the Board of Selectmen if there was anyone in the Department of Transportation who has the authority to countermand or overrule his determination about the eligibility of this design, Mr. Elnahal replied, “I can’t think of anybody who could overrule my....” (At 21:20.)

C. Following the Keeper’s decision on October 1st that the Bridge was eligible for the National Register, the new Project Manager met in a private meeting with the Chairman of the Board of Selectmen and the town staff on October 29th to discuss the Bridge and the project. In an email memo from Mr. Pavao to the Chatham Town Planner, Mr. Whalen, Mr. Pavao confirmed that:

“It is important to note that MassDOT will not pursue any options that involve wooden substructures in the water. We believe we can achieve a 75 year design life using modern materials and still design a context sensitive bridge that will successfully mitigate the replacement of the existing NR eligible timber bridge. Please keep in mind that the replacement structure will be turned over by MassDOT to the Town for maintenance and therefore we are striving for a 75 year life with minimal maintenance over the life of the structure.”
(Copy attached.) (Emphasis Added.)

D. On January 12, 2011, the Board of Selectmen wrote to Ms. Luisa Paiewonsky, the Administrator of the Highway Division of MassDOT, asking for clarification of the position of MassDOT with respect to the design of the Bridge, The letter stated, in part:

“In these discussions it became apparent the current bridge design proposed by MassDOT apparently has not changed and remains essentially identical to the concrete-and-steel design proposed many months prior to the Keeper’s landmark decision. What is more, your representatives have again stated that they have no intention of rebuilding a timber superstructure or to place wooden pilings in the water— i.e., rebuild a wooden substructure— thus making it clear that, as of this date, they are rejecting a timber drawbridge.

These statements appear to differ from your own positive assurances, as reported in the Boston Globe of October 22, 2010.....

We infer this to mean that you will use your best efforts to rebuild the existing bridge as a timber drawbridge, in accordance with Section 106 and Section 4(f) of the Transportation Act, and trust that you will confirm this to us. Should you believe, however, that a wooden drawbridge need not be rebuilt, then we would ask you to provide us with the scientific evidence and engineering data upon which this decision is being made.”

On February 8, 2011, Ms. Paiewonsky responded to the above letter by saying, in part:

“However, MassDOT continues to have very serious reservations regarding the proposed use of wood piles in the water. We are confident that as the evaluations are completed, we can confirm our position regarding use of wood in water.....(Emphasis Added.)

In addition, at the request of the Town and other interested parties that have attended the public information meetings to date, MassDOT is evaluating several superstructure options, including cladding over steel and concrete and use of wood for the railings, sidewalks and the riding surface...” (Copies attached.)

The letter of Ms. Paiewonsky and the email memorandum of Mr. Pavao fully confirm that MassDOT has continued from the outset, even before the first consulting parties’ meeting, to reject consideration of the use of wood pilings and to denigrate a wooden superstructure or substructure. Even though the Keeper’s decision was supposed to provide for a full and fair process whereby preservation of this historic bridge would be avoided, minimized or mitigated unless it could reasonably be shown to be required, MassDOT has approached the process as if the burden of proof is on those wishing to preserve the last remaining timber drawbridge. What we are saying, in simple parlance, is that MassDOT has made up its mind beforehand to do everything possible to try and reject a timber drawbridge, no matter what the facts demonstrate. While Alternative 1 includes a timber drawbridge, the service life, costs, life cycle cost analysis and environmental references are not accurate especially in its comparisons with concrete and steel. We believe that this is wrong and not in accordance with the requirements of Section 106 and 4(f).

*Friends of the Mitchell River Wooden Drawbridge
c/o 14 Sunset Lane, Chatham, MA 02633*

Mr. Shoukry Elnahal
Director, Accelerated Bridge Program
Mass DOT

November 19, 2009

Re: Mitchell River Wooden
Drawbridge
Bridge No. C-07-0001
Bridge Street over Mitchell River
(MHD Project Number 603690)

Dear Mr. Elnahal:

I am speaking on behalf of the Friends of the Mitchell River Wooden Drawbridge to express the continuing concerns of the citizens of Chatham with respect to the revised design for a metal and concrete bridge which will apparently be presented to the town at the second informational meeting to be held at the Community Center on November 19th.

As you are aware, our existing bridge is the last remaining wooden drawbridge in the Commonwealth of Massachusetts and only one of two in the entire United States. The original bridge was erected at this site in 1858, and while the bridge has been repaired and rebuilt many times since then, essentially the same wooden drawbridge has remained in place for over 150 years. Of paramount importance is that the surrounding site---- which includes one or more historic homes, fishing shacks, and boat landings---- has also remained relatively unchanged, so that the aesthetic appearance of the wooden drawbridge and the site as a whole constitute one of the most historically significant assets of our Town and of all of Cape Cod.

You have advised the town that the Mitchell River Bridge has been included within the Massachusetts Accelerated Bridge Program and that you and your consultants URS Corporation have designed a steel and concrete drawbridge which would totally replace the existing wooden bridge. At the initial informational meeting held on September 3rd, you heard from over sixty citizens as to their deep concerns over

*Friends of the Mitchell River Wooden Drawbridge
c/o 14 Sunset Lane, Chatham, MA 02633*

the proposed design and their belief that a wooden drawbridge should remain at this site, and you agreed to take these comments into consideration and return with a redesign. At a project meeting held under the auspices of the Cape Cod Commission last Friday, you provided us with certain changes and discussed others which you agreed to review; however, you also made it clear that for a number of reasons that it is not your intent to rebuild a wooden drawbridge at this site.

The Chatham Historical Commission has reaffirmed its determination that the existing Bridge is worthy of National Register consideration and that they will be going forward to seek a ruling that the Bridge is eligible for placement on the Register. As part of their submission, they can be expected to refer to the passage of time and changing perceptions of significance which have occurred since the Bridge was last rebuilt in 1980.

However, whether or not such a ruling is obtained within due course, we believe that federal law protects this historic site from harm and misuse; that replacing a wooden drawbridge with a steel and concrete structure would substantially impair and diminish the value and aesthetic enjoyment of the surrounding properties; and that it is incumbent upon you to go forward with an appropriate preservation alternative unless one is not both feasible and prudent; and further, that the project must include all possible planning to minimize harm to this historic resource, given that protection of the existing wooden bridge can not be expected to cause community disruption or additional cost of any extraordinary magnitude.

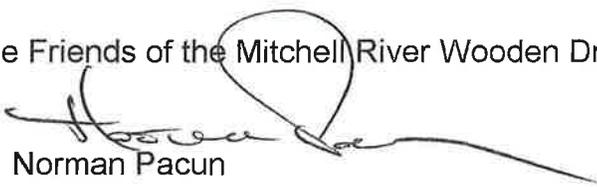
You have advised us that a wooden drawbridge can not be designed or built by you at this site because (1) you are required under the Accelerated Bridge Program to follow the AASHTO Guidelines which mandate a 75-year life for the new bridge and (2) that the AASHTO Guidelines do not contain a standard for a wooden drawspan that you can properly follow. We respectfully disagree with these conclusions. It is our understanding from the law that the Guidelines are not to be interpreted mandatorily or inflexibly, and that there also are exceptions contained within them for bridges of lower traffic and which might allow the use of wood whose life could be less than 75 years, especially if the final cost of a wooden bridge would be proportionately less than a steel and concrete span. It is also our understanding that you do not disagree that a wooden drawbridge can be designed for this site---- even one where the drawspan is slightly larger in width than the present drawspan--- but that it would require you to do this without benefit of an existing AASHTO standard. We believe that given that the existing wooden drawbridge was rebuilt by MHD in 1980 and that those plans can be materially relied upon today, that it would not be technically infeasible for you to create such a new design for this site.

*Friends of the Mitchell River Wooden Drawbridge
c/o 14 Sunset Lane, Chatham, MA 02633*

We respectfully request, therefore, that you continue to use further efforts to find a way whereby the existing wooden drawbridge can be rebuilt as a wooden structure and thereby protect what is, in effect, an "endangered species whose last remaining member is now at risk." Indeed, when something is the last of anything, every possible effort to save it must be made by all of us.

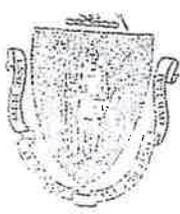
Thank you for hearing our concerns, and we look forward to working with you on this project.

For the Friends of the Mitchell River Wooden Drawbridge



Norman Pacun

cc: Stephen Soma, Project Mgr., MassDOT
Bernard McCourt, District Hwy. Director, MassDOT
Pamela Haznar, P.E., Projects, MassDOT
John Rempelakis, Environmental Unit, MassDOT
URS, Design Consultants
Ronald Bergstrom, Ch. Board of Selectmen
and Ch. Cape Cod Regional Transit Authority
Jeff Colby, Chatham DPW
Stuart Smith, Chatham Harbormaster
Terry Whalen, Chatham Principal Planner
Paul Lagg, Chatham Dept. Comm. Development
Donald Aikman, Ch. Chatham Hist. Comm.
Old Village Association
B. Simon, SHPO, Mass. Hist. Comm.
Priscilla LeClerc, Sr. Transportation Planner, Cape Cod Comm.
Patricia Daley, Ch. of Staff, Cape Cod Comm.
Dorr Fox, Pres. Mass/National Trust of Hist. Pres.



DEVAL L. PATRICK
GOVERNOR
TIMOTHY P. MURRAY
LT. GOVERNOR
JEFFREY B. MULLAN
SECRETARY & CEO



March 12, 2010

SUBJECT: Chatham – Bridge Street over the Mitchell River
Bridge No.: C-07-001 (437)
Project File No. 603690
Contract No. 57466

Friends of the Mitchell Wooden Drawbridge
14 Sunset Lane
Chatham, Ma: 02633

Attention: Mr. Norman Pacun-

Dear Mr. Pacun:

I would like to take this opportunity to provide a response to your letter dated November 19, 2009. MassDOT is aware of your and the Friends of the Mitchell Wooden Drawbridge desires for a wooden structure to be built as a replacement for the existing bridge.

We also understand that you have made several pleas to the Massachusetts Historical Commission in seeking recognition of the Mitchell River Bridge as eligible for listing on the National Register of Historic Places. It is our understanding that, in a recent response letter from the Massachusetts Historical Commission dated February 26, 2010, your request was denied.

Regardless of the MHC's findings, we have made great efforts in providing a design that incorporates as much timber as possible, including timber clad piers, pier caps, timber sidewalks and timber rails, which replicates the look of the existing bridge, preserves the historic character of the site and results with a bridge that fits nicely in the environment.

The chosen design also follows the AASHTO Guidelines which mandates a 75-year life for new bridges. In addition, the alternative chosen is believed to be one which will be fully supported by Federal Highway Administration.

I thank you for this opportunity to respond to your letter.

If you have any questions regarding this submittal, please contact Stephen Soma, Project Manager, at (617) 973-8176.

Sincerely,

M. Shoukry A. Elnahal, P.E.
Director, Accelerated Bridge Program

SAE/ss
cc: William Egan, URS; 603690 files

www.mass.gov/massdot

TEN PARK PLAZA • BOSTON, MA 02116-3969 • PHONE: 617.973.7000 • FAX: 617.973.8031 • TDD: 617.973.7306

BILL DELAHUNT
TENTH DISTRICT, MASSACHUSETTS

2454 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-3111
www.house.gov/delahunt

SOUTH SHORE
1-800-794-9911

1250 HANCOCK STREET
SUITE 902 N
QUINCY, MA 02169

CAPE COD & ISLANDS
1-800-370-2626

145 WASH STREET
HYANNIS, MA 02601

Congress of the United States
House of Representatives
Washington, DC 20515-2110

March 30, 2010

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CO-CHAIR:

CONGRESSIONAL COAST GUARD CAUCUS
OLDER AMERICANS CAUCUS

Ms. Lucy Garliauskas
Division Administrator
Federal Highway Administration
55 Broadway, 10th Floor
Cambridge, MA 02142

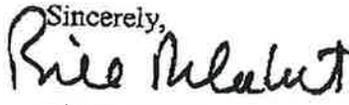
Dear Ms. Garliauskas:

I am writing to request your assistance in clarifying the federal government's role in the controversy concerning the Massachusetts Highway Department's plans to replace the Mitchell River Wooden Drawbridge in Chatham, Massachusetts.

The state of Massachusetts is working with Chatham officials to design and construct a replacement bridge. This bridge is one of the last remaining single leaf wooden drawbridges in the state. Consequently, the work that has been proposed has generated considerable local interest. Cape residents have expressed a desire to see the new bridge replicate the existing one. However, in recent discussions with state highway officials, Chatham residents and officials have been informed that a new timber bridge would not be eligible for federal assistance. In the meantime, the Advisory Council for Historic Preservation has weighed in on the dispute. They too are interested in participating in the process and seeing the concerns of local residents addressed and historic values of the bridge preserved.

I am very concerned that state and local officials are operating under the impression that the federal government is unlikely to fund an important local historic preservation project. I would appreciate your assistance in clarifying the questions over federal funding, and your assistance in making sure the new improvements protect the historic values and assets represented in the current facility. If you have any question, please contact Mark Forest or Chris Adams of my staff at 508-771-0666.

Thank you for your assistance.

Sincerely,

Bill Delahunt

PRINTED ON RECYCLED PAPER

Linda Smulligan

From: Adams, Chris [Chris.Adams@mail.house.gov]
Sent: Tuesday, March 30, 2010 12:46 PM
To: Linda Smulligan
Subject: Mitchell River Bridge

Hi Bill,

Following up on the letter I sent you earlier today from Mr. Delahunt to Federal Highway, I received a phone call from their regional office (John McVann) who reiterated that there are no federal restrictions on the use of funds for a timber bridge.

I am sure the town has concerns over losing funding for this replacement project of a town owned bridge and the costs of maintaining a timber bridge in the future. If there is any way you see the Congressman's office being helpful, please do not hesitate to contact me.

Regards,

Chris

R. Christopher Adams

Cape & Islands Director

Congressman Bill Delahunt

146 Main Street

Hyannis, MA 02601

ofc: 508-771-0666

fax: 508-790-1959

chris.adams@mail.house.gov

3/30/2010

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508 945 6457

FREEANNIE
NORTH BAY

May 10 11 08:30
1000108

Norman Pacun

From: "Terry Whalen" <twhalen@chatham-ma.gov>
To: "Leonard Sussman" <lmsarch@comcast.net>
Cc: "Linda Smulligan" <lsmulligan@chatham-ma.gov>; "Norman Pacun" <clamknife@comcast.net>; "Sam Streibert" <tp.streibert@verizon.net>; "Jeff Colby" <jcolby@chatham-ma.gov>
Sent: Tuesday, November 02, 2010 1:20 PM
Subject: FW: Chatham Update
 Len,

Below please find an email from Joe Pavao, the Mitchell River Bridge's new project manager serving as an update on MassDOT's project status/approach in light of the eligibility determination.

Talk to you soon,
 Terry

From: Pavao, Jr., Joseph (DOT) [mailto:Joseph.Pavao.Jr@state.ma.us]
Sent: Tuesday, November 02, 2010 12:32 PM
To: Terry Whalen
Cc: Paiewonsky, Luisa (DOT); Tramontozzi, Frank (DOT); Walsh, Kevin M. (DOT); Shrimpton, Jeffrey (DOT); Boundy, Stephanie (DOT); Bardow, Alexander (DOT); Elnahal, Shoukry (DOT); Mark_Shamon@URSCorp.com; Donald, Thomas (DOT); Haznar, Pamela (DOT); Crovo, Daniel S. (DOT); Louis-Jacques, Harry (DOT)
Subject: Chatham Update

Terry,
 Thank you for hosting MassDOT last Friday to provide the Town with an update on the project status for the Bridge Street/Mitchell River Bridge replacement in Chatham.

To summarize a few key points from the meeting we had. MassDOT is fully committed to moving forward with a replacement bridge as part of the Accelerated Bridge Program (ABP). It is important to recognize that the ABP is an 8yr program with a defined start and end date and that there are limited funds available for this bridge within the program. The Keeper's determination that the bridge is National Register (NR) eligible does not change our commitment to complete this project on time and on budget. It appears from going over the meeting minutes and design changes, that MassDOT has been proceeding in a context sensitive manner even prior to this designation. MassDOT has been investigating several mitigation measures that have been proposed at our public meetings in Chatham. As a result of the NR eligibility determination, MassDOT will complete a formal Section 106 process to document the mitigation for the adverse effect of the bridge removal with the ultimate goal of having a Memorandum Of Agreement (MOA) signed by the Section 106 consulting parties.

It is important to note that MassDOT will not pursue any options that involve wooden substructures in the water. We believe we can achieve a 75 year design life using modern materials and still design a context sensitive bridge that will successfully mitigate the replacement of the existing NR eligible timber bridge. Please keep in mind that the replacement structure will be turned over by MassDOT to the Town for maintenance and therefore we are striving for a 75 year life with minimal maintenance over the life of the structure.

The following is a list of goals and mitigation measures discussed to date and how we intend to proceed:

- Provide a structure that will last 75 years with minor maintenance through the use of modern materials while creating a context sensitive design that will be appropriate for this setting.

- o Continue to investigate wood cladding for the concrete caps (substructure) as part of the design.
- o Document and provide explanation for choosing a concrete/steel substructure to the Section 106 consulting parties.
- o Incorporate comments for the type of stone cladding for the pier structure.
- o Evaluate alternative of a crash tested timber traffic rail as opposed to a standard concrete/steel BR2 crash rail.
- o Evaluate the possible re-use of the existing (or parts of the existing) pedestrian railing. This can only be accomplished with a crash tested timber traffic rail or keeping the BR2 as proposed.
- o Confirm the size of the pier (minimized) to house the moveable components as requested by the Town.
- o Evaluate an alternative swing traffic safety gate as opposed to the vertical swing gates as requested by the Town.
- o MassDOT will propose a 30mph design based on comments received at previous meetings. This will allow for a similar vertical profile to what exists today.
- o MassDOT will pursue a 2' shoulder (reduced from 4'), as requested by public comment to match the existing structure width. (Town has already provided a letter from the local bike advocates supporting this decision)
- o MassDOT intends to propose a timber deck for the sidewalk, but has reservations regarding the use of wood timbers for the main bridge deck.
- o MassDOT will evaluate three superstructures for life cycle costs; a full wooden superstructure, a wood deck on steel girders, and concrete deck beams with a poured concrete surface. These results will be discussed at the next meeting.
- o There was some discussion regarding the available treatments for concrete finishes. MassDOT will provide and evaluate concrete coloring and texturing that looks like a wood deck. The Town suggested that maybe the sidewalk should match if we pursue this option. MassDOT agrees that this would be the preferred option, if desired by the Section 106 consulting parties.
- o MassDOT is in the process of scheduling a full underwater investigation of the piers in order to evaluate the cost and extent of work necessary to rehabilitate the substructure. This will be required as part of the Section 106 and preparation of 4(f).
- o The next step will be to hold a meeting with the local consulting parties outlining the results of the deck study and justification of a steel/concrete substructure.
- o MassDOT will need to revise the 25% plans and intends on holding another public hearing. This will only be scheduled once there appears to be a consensus from the Section 106 consulting parties regarding the mitigation measures to be included in the MOA.

In summary, MassDOT is hopeful that we can complete an MOA in a timely manner that will be acceptable not only to the bridge preservation advocates, but also to the Town, the public and ultimately FHWA. Getting support from these interested parties will be critical to the schedule and our ability to meet the requirements of the accelerated bridge program, and therefore, I will be asking for your assistance in working with the local interested parties to find an acceptable mitigation package. As I mentioned at the opening of the meeting, our goal is to work with the Section 106 consulting parties to provide a replacement structure that is first and foremost safe for all users; can be permitted; will provide the most cost effective use of tax payer dollars; and will satisfy the Section 106 requirements.

If I left anything out, please let me know. I did not have everyone's email so please forward to the other attendees. We look forward to working with the Town and other interested parties towards an acceptable design for this location.

Joseph A. Pavao, Jr., P.E.

MassDot - Highway Division
Accelerated Bridge Program
10 Park Plaza, Rm 6500
Boston, MA 02116
Tel: (617) 973-8178
Fax: (617) 973-7554

Joseph.pavao@state.ma.us
www.mass.gov/massdot



Deval L. Patrick, Governor
 Timothy P. Murray, Lt. Governor
 Jeffrey B. Mullan, Secretary & CEO
 Luisa Paiewonsky, Administrator



February 8, 2011

Leonard M. Sussman, Chairman
 Chatham Board of Selectmen
 549 Main Street
 Chatham, MA 02633

Dear Mr. Sussman:

I am responding to your letter of January 12, 2011, regarding the status of the Mitchell River Bridge in Chatham. I wish to reiterate to you that this project remains programmed for funding under our Accelerated Bridge Program. As you know, the ABP is an eight-year program with funding available through June 2016. Therefore, all ABP projects must be permitted, designed, and fully constructed during that time frame. The determination by the Keeper of National Register of Historic Places that the Mitchell River Bridge is eligible for the National Register does not have any bearing on the availability of funds for this project.

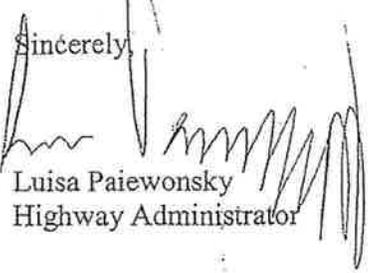
On October 29, 2010, my staff met with several members of the Board of Selectmen to provide a project update, assure the Town that MassDOT and Federal Highway Administration is fully committed to this project, and to completing a full review under Section 106 of the National Historic Preservation Act of 1966, as amended. As part of our continuing compliance with Section 106, MassDOT is investigating whether or not the existing wooden bridge can be repaired or rehabilitated. We anticipate that a rehabilitation feasibility report will be completed by the end of February and the results made available to all stakeholders.

In the event that we determine that the bridge cannot be rehabilitated, MassDOT is confident that we can mitigate the adverse effect of removing the bridge by working with the Town and the consulting parties to come up with a design that will honor the historic character of the existing bridge. However, MassDOT continues to have very serious reservations regarding the proposed use of wood piles in the water. We are confident that as the evaluations are completed, we can confirm our position regarding use of wood in water. As referenced in your letter regarding my remarks to the Boston Globe, we take the determination by the Keeper seriously. However, the Keeper's determination does not obligate the Commonwealth to fund or replace the existing structure with a full wooden structure, but only to show that we have fully avoided, minimized or mitigated the removal of the structure.

In addition, at the request of the Town and other interested parties that have attended the public information meetings to date, MassDOT is evaluating several superstructure options, including riding over steel and concrete and the use of wood for the railings, sidewalks and the riding surface. Once these evaluations are complete and acceptable to both MassDOT and the Federal Highway Administration, MassDOT will meet with the consulting parties to present the results and make the results available to the Town.

I hope this adequately answers your questions and I thank you for your continued support for this project. If you have any further questions, please contact Joseph A. Pavao, Jr., Project Manager, at (617) 973-8178.

Sincerely,



Luisa Paiewonsky
Highway Administrator

cc: Frank A. Tramontozzi, P.E., Chief Engineer
Shoukry Elanhai, P.E., Deputy Chief of Bridges and Tunnels
Thomas Donald, P.E., Director Project Development
Joseph A. Pavao, Jr. P.E., Project Manager

SECTION IV

**COMMENTS REGARDING THE REQUESTS MADE BY THE FRIENDS
TO FHWA FOR SUPPORTING DOCUMENTATION OF STATEMENTS MADE BY
MASS DOT IN THE 1ST AND 2ND REPORTS**

On April 25, 2011, the Friends, as a Consulting Party, submitted an email to Ms. Damaris Santiago of FHWA requesting supporting documentation with respect to information and statements made by MassDOT in its 1st Report. Attached to the email was a 4-page Schedule containing 14 separate requests for such documentation. The email specifically stated as follows:

“Also, we request that responses to individual requests for documentation be forwarded to us as soon as they are available, rather than as a single package upon your completion of the entire request.”

On April 25th, Ms. Santiago acknowledged receipt of the above request and stated that it had been forwarded to MassDOT “so that they work on a response to your request.”

On May 2, 2011, the Friends submitted a second email to Ms. Santiago requesting supporting documentation with respect to certain information and statements made by MassDOT in its 2nd Report. Our email included the following statement:

“We believe this information is important to receive as soon as possible prior to the next scheduled meeting of the Consulting Parties on May 17th.”

On May 9th, the following response was received from Ms. Santiago of FHWA:

“Dear Mr. Pacun,

Thank you for your comments on both the Rehab Feasibility Report and the Life Cycle Cost/Alternative Analysis. Both reports were made available to you and all consulting parties for the Mitchell River Bridge Project, as part of the ongoing Section 106 process. I have provided those comments to MassDOT’s project manager to address them.

Your comments will be addressed during the consulting parties meeting to be held on May 17, 2011 at the Chatham’s town hall. We considered that the meeting will provide the appropriate forum to have a discussion about the contents of both reports. In addition, it will also provide the forum to address your comments, giving also the opportunity for the other consulting parties to get the same information.

Sincerely,

Damaris Santiago

Environmental Engineer”

On May 11th, the Friends responded to Ms. Santiago by email reiterating its earlier request and noting that some of the items asked for were as simple as a copy of the FHWA 75 year service policy. On May 12th, Ms. Santiago sent by email a brief one-paragraph reference to the FHWA 75 year policy with electronic links to other documents and a reference to the Code of Federal Regulations and to certain AASHTO Guidelines. This was received only five days before the consulting parties' meeting which is clearly insufficient time to review and understand these interrelated and complex documents.

Under the Section 106 Regulations, 36 CFR Part 800, the Consulting Parties are entitled to receive supporting documentation to establish the correctness or source materials for statements made by the federal or state agencies involved in this process. Without such supporting documentation, the Consulting Parties are unable to verify the correctness of such statements and whether the source materials fairly support the agencies' conclusions. Since the second meeting of the Consulting Parties is scheduled to take place on May 17th, the non-receipt of any or all of the information requested will materially prejudice the ability of the Friends to fairly participate in the process and to reasonably respond to the conclusions reached by MassDOT in their two Reports. The inability to obtain and review such supporting documents will taint the process itself because it will, in effect, allow such conclusions to stand without objection.

SCHEDULE A TO LETTER OF APRIL 25, 2011

1. On Page 2 of the Report, it is stated that "Although the bridge is currently safe, anticipated deterioration in the near future is expected to reduce the load carrying capacity to a threshold where load restrictions will be required." On Page 13 of the Report, it is acknowledged that in January 2011, the Town reduced the posted speed across the Bridge to 15 mph; however, the Report omits reference to the decision of the Town, at the same time, to reduce the posted load over the Bridge to automobiles and light trucks. (As of April 21, 2011, signs have been posted by the Town with respect to both speed and loads.)

Given the reduced speed and loads as referred to above, please provide supporting documentation for the following statements:

A. That further speed and load reductions "will be required" in the "near future".

B. The specific dates or estimated range of dates that are referenced as being in the "near future".

C. The specific dates or estimated range of dates that are referenced in the statement that "Without corrective action, the condition of the timber is ultimately expected to reach a level where the bridge will be unsafe to carry traffic." (Page 2.)

2. On Page 3 of the Report, it is stated that "...some of the consequences and deficiencies individually may be considered minor,..."

Please identify which of the alleged deficiencies shown "individually may be considered minor".

3. On Page 3 of the Report, it is stated that "Modern strengthening methods such as fiber reinforced polymer (FRP) sheets or pile jackets are expensive relative to the cost of the timber, do not have a long-term performance history for use in salt water environments, and may introduce visual impacts."

Please provide supporting documentation that "FRP sheets or pile jackets are expensive relative to the cost of the timber", including specific dollar amounts known or estimated as to the individual and total cost of such jackets; the performance history that is relied on in the Report that is not "long-term", as well as any other performance history for such pile jackets; and the "visual impacts" which are referred to, whether favorable or unfavorable.

4. On Page 52 of the Report, it is stated that "The FHWA has a policy that bridges replaced using federal funding be designed with a minimum service life of 75 years."

Please provide supporting documentation of such FHWA policy and any FHWA Regulations or other written authority to which this policy refers or which is referred to by this policy.

5. On Page 52 of the Report, it is also stated that “Currently, it is not practical to design a timber bridge in this environment for a minimum 75 year service life.”

Please provide supporting documentation for this statement and also the minimum year service life that a timber bridge in this environment can be designed for and the supporting documentation for same.

6. On Page 52 of the Report, it is stated that “...it is anticipated that the [timber] bridge will need to be replaced two or three times over a 75 year life cycle period.”

Please provide supporting documentation for this statement.

Please also provide supporting documentation with respect to the claimed 20-30 year minimum service life of a timber bridge, as follows:

A. The species of timber being used.

B. The pressure-treating and/or other preservative treatment being used with respect to such species.

C. The documentation supporting the claim that timber will only have a 20-30 year minimum service life, giving effect to the statement at page 53 of the Report that “the anticipated service life associated with each scope of work is shown as a range that envelopes the likely best case to the worst case scenario.

7. On Page 52 of the Report, it is stated that “...it is possible for a timber bridge with a 20 to 30 year minimum service life (following major repair, rehabilitation or replacement) to have an overall life cycle cost that is similar to a concrete and steel bridge with a 75 year service life.”

Please provide supporting documentation for the statement that a concrete and steel bridge has a 75 year service life. If such 75 year period is based on estimates, please provide the estimated range of service life, both minimum and maximum, including the likely best case and worst case scenario for concrete and steel, as well as any documentation which disputes or questions such service life. Please also provide supporting documentation as to any warranties or guaranties which are to be given by MassDOT and/or FHWA to the Town of Chatham with respect to such 75 year service life.

8. On Page 50 of the Report, it is stated that “Due to a wide variety of factors that contribute to deterioration, it is difficult to estimate with accuracy the remaining service life of timber members. However, experience with similar bridges in similar environments in Massachusetts provides some guidance in this area.” Following this on Page 51 is a chart entitled “Summary of Timber Elements Service Life”.

Please provide supporting documentation for this statement, including the “similar bridges in similar environments” referred to, the age of such bridges and its timber members, if known, and any other relevant information.

9. On Page 50 of the Report, it is stated that “Recent use of tropical timber on similar bridges and environments in Massachusetts (e.g. Powder Point Bridge, Duxbury) has not demonstrated a significant improvement in the service life of the timber and thus are not considered here.”

Please provide supporting documentation with respect to the “similar bridges and environments” referred to, the age of such bridges and its timber members, if known, and the specific tropical woods used. If any of such similar bridges and environments have shown any improvement in the service life of the timber used, please provide all relevant information with respect thereto.

10. On Page 50 of the Report, it is stated that “Similarly, there is insufficient evidence with Accoya wood, glass infused wood and other recent advances in timber products to support that this material can provide longer service life on bridges in this environment.”

Please provide supporting documentation with respect to the evidence that you have reviewed regarding the types of wood described that has led to your conclusion that such evidence is “insufficient”.

11. On Page 51 of the Report, it is stated that “Although there are many examples of timber bridges where the service life has been extended in excess of 100 years, most of these bridges are covered bridges located in non-coastal locations.”

Please provide supporting documentation with respect to those bridges which are uncovered in coastal locations and whose life has been extended in excess of 100 years, including the age, location, type of timber used, and all other relevant information.

12. On Page 51 of the Report, it is stated that “Although technically feasible, prolonging the service life of a timber bridge beyond 30 years in this environment requires a significant financial investment and maintenance committed by the community and agreements by permitting agencies to support these efforts. Furthermore, now that it has been determined that the existing bridge is historic, the Town has a responsibility to maintain the bridge in a manner that will prevent continued deterioration.”

Please provide supporting documentation setting forth the amount of the “significant financial investment and maintenance” and the specific “agreements by permitting agencies to support these efforts.” Please further provide supporting documentation showing the specific “responsibility” of the Town to “maintain the bridge in a manner that will prevent deterioration” that has been brought about by the determination that the bridge is “historic”.

13. On Page 52 of the Report, it is stated that “funding under the Accelerated Bridge Program only covers the cost of the initial project (not future construction projects)”, so that “the Town would be responsible for the cost of future repair, maintenance, rehabilitation and/or replacement work.” It is further stated that “Even though a timber bridge can have similar overall life cycle costs as a concrete and steel bridge, it is likely that the Town would be responsible for a larger proportion of the life cycle cost.”

Please provide supporting documentation confirming that the Accelerated Bridge Program only covers the cost of the initial project and not future construction projects, and that the Town would solely be responsible for the cost of future repair, maintenance, rehabilitation, and/or replacement. If any waivers or exemptions to this requirement are available, please provide supporting documentation with respect to the same. Please also provide supporting documentation with respect to it being "likely" that the Town would be responsible for a "larger proportion of the life cycle cost", and the amount of such proportion and the basis for such conclusion.

14. On Page 52 of the Report, it is stated that "Funds for the Accelerated Bridge Program are only available through Fall 2016. As such, construction for the bridge must be complete before this date in order for the project to be eligible for these funds."

Please provide supporting documentation that all funding for the Accelerated Bridge Program must be physically spent and the bridge work must all be completed before the "Fall 2016" for the project to be eligible for these funds. Please provide further supporting documentation that if bridge work is not 100% completed by the "Fall 2016", notwithstanding the reasons therefore, that no additional funding can legally be paid by either MassDOT or FHWA. Please provide supporting documentation which defines the meaning of "Fall 2016". If any waivers or exemptions as to this requirement are available, please provide supporting documentation with respect to the same.

Norman Pacun

From: "Norman Pacun" <clamknife@comcast.net>
To: <Damaris.Santiago@dot.gov>
Sent: Monday, May 02, 2011 4:19 PM
Subject: Mitchell River Bridge - Section 106 Proceeding
Dear Ms. Santiago:

With reference to the Bridge Alternatives Evaluation and Life Cycle Cost Comparison Report which was received by us on April 30th, we are requesting further clarification of the statements contained on pages 3 and 4 and on page 33 (Section 3.5.1 Navigation Opening). These statements can be interpreted as meaning that the MassDOT/URS evaluation of the bascule span geometry for a single-leaf timber span limits the maximum navigation opening with unlimited vertical clearance to 19'4" under any and all circumstances, or that it is not possible to provide an opening of 25'0", but that an opening between 19'4" and 25'0" is possible to engineer using a single-leaf timber span.

In providing us with this clarification, we also hereby request as supporting documentation under Section 106 the full bascule span geometry which MassDOT and/or URS has utilized in reaching its conclusions.

We believe this information is important to receive as soon as possible prior to the next scheduled meeting of the Consulting Parties on May 17th.

Thank you.

Norman Pacun
For the Friends of the Mitchell River Wooden Drawbridge

SECTION V

DISCREPANCY IN INFORMATION REGARDING A SINGLE LEAF TIMBER BASCULE

In the MassDOT 2nd Report regarding full replacement of the existing bridge, it is stated as follows:

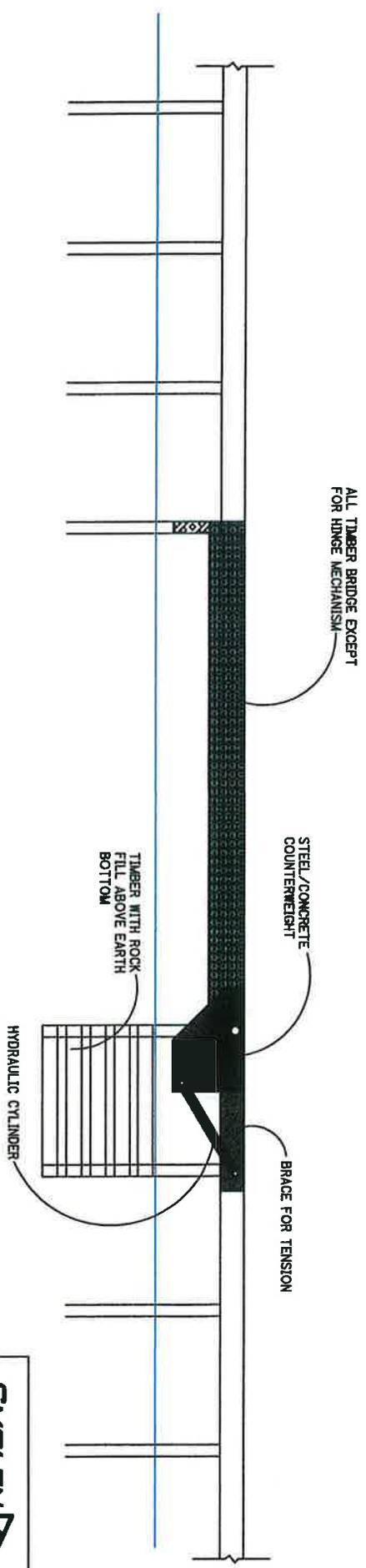
“Evaluation of the bascule span geometry confirmed that it is feasible to improve the navigation opening with a single-leaf all timber bascule span, similar in appearance to the existing bridge (Alternative 1.) However, the maximum navigation opening with unlimited vertical clearance that can be achieved is 19’4”. Improvements over the existing bridge design can be accomplished by shifting the pivot point back slightly, rotating the leaf to a steeper opening angle, shifting the sheave pole back, and providing a counterweight fabricated using only stainless steel plate (i.e. no concrete) to prevent the counterweight from dipping in the water. Based on comments received, it appears that a navigation opening width less than 25’0” will not adequately serve the boating community in the long term and as a result, the US Coast Guard may be hesitant to permit a bridge with this opening width.” (At p. 33 and see p. 4.) (Emphasis Added.)

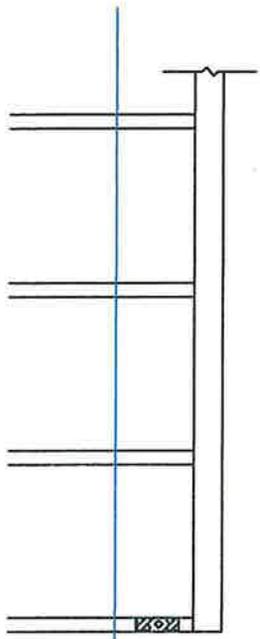
Unfortunately, the bascule geometry which is referred to is not included within the Appendices so that the apparent conclusion reached by MassDOT that it is not possible for a timber bascule to support the proposed 25’0” opening can not be reviewed or verified. For this reason, the Friends— immediately upon receipt of the 2nd Report— wrote to FHWA asking for supporting documentation for such statement and conclusion, including the specific geometry involved. As of this date, such information has not been received, although an email from Ms. Damaris Santiago of FHWA to the Friends states that our “comments” will be considered at the Consulting Parties meeting on May 17th. Because of the importance of this information which has a very material effect on the viability of Alternative 1, it is very troublesome that the material has been withheld from us and all of the other consulting parties.

In the interim, however, the Friends have reviewed this conclusion with the engineering firm, Smolen Engineering, Ltd., that is assisting us in this matter. It is their belief that a working timber drawbridge can be constructed to support a navigation opening of 25’0”, and their conceptual sketches are included as part of this submission (copies attached). While they, too, have requested the opportunity to review the bascule geometry which is referred to in the MassDOT Report, it is the existing view of John W. Smolen, P.E., P.S., the principal of Smolen Engineering, Ltd., that from his knowledge and experience, he is confident that a timber bascule bridge is feasible and can be designed to geometric, navigational, mechanical, and structural capacity standards for this site. Mr. Smolen’s background is historic bridge rehabilitation, and he is responsible for designing 200 bridges located in 12 Ohio counties. A copy of his curriculum vitae is attached.

FROM MY KNOWLEDGE AND EXPERIENCE, I AM CONFIDENT A TIMBER BASCULE BRIDGE IS FEASIBLE AND CAN BE DESIGNED TO GEOMETRIC, NAVIGATIONAL, MECHANICAL, AND STRUCTURAL CAPACITY STANDARDS FOR THIS SITE.

JOHN W. SMOLEN, P.E., P.S.

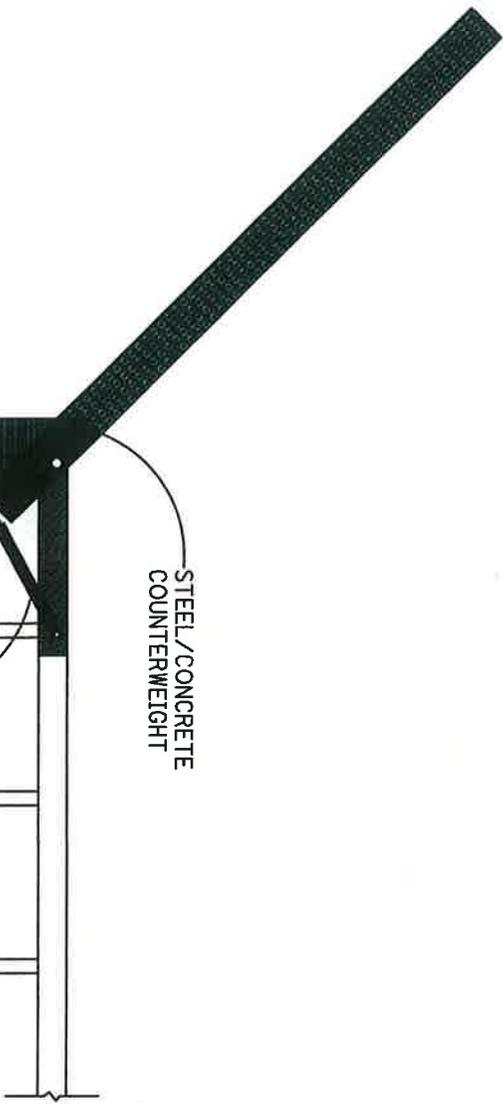


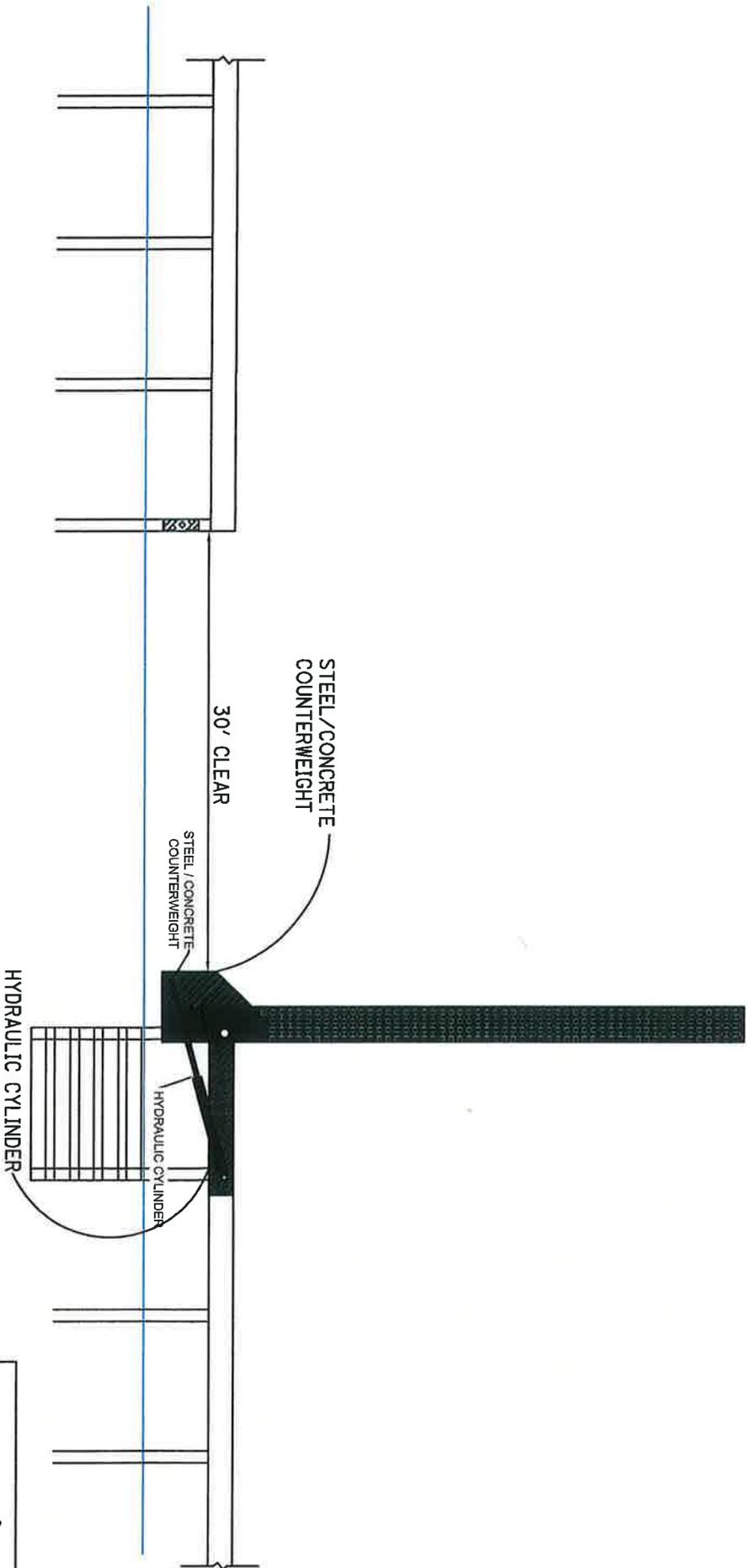


HYDRAULIC CYLINDER



STEEL / CONCRETE
COUNTERWEIGHT







EDUCATION

The Ohio State University
Columbus, Ohio
Engineering Degree, 1969

CERTIFICATIONS

Ohio Registered Professional Engineer
Ohio Registered Professional Surveyor

ACCOMPLISHMENTS

Responsible for designing 200 bridges, located in 12 Ohio counties.

Designer of the longest and shortest authentic timber covered bridges in the U.S.A.

Was responsible for the daily operation and maintenance of the historic Bascule Lift Bridge in Ashtabula, Ohio for 30 years.

CONTACT

Smolen Engineering, Ltd.
1876 State Route 46 North
Jefferson, Oh 44047

Phone: (440) 576-0505
Fax: (440) 576-0808

Email:
JSmolen@Smolen.com

SPECIALIZATIONS

- Historic Bridge Rehabilitation
- Timber Covered Bridges
- Galvanized Steel Truss Bridges
- Steel Stringer Bridges
- Pre-stressed and Post-tensioned Concrete Structures

EXPERIENCE

- Ashtabula County Bridge Engineer, 1970-1976
- Ashtabula County Engineer, 1976-2002
- Owner and Principal Engineer, Smolen Engineering, Ltd., 2002-Present

BRIDGE EXPERIENCE

Rehabilitation Projects

Ashtabula County, Ohio

<u>Name</u>	<u>Built</u>	<u>Rehab</u>
▪ Root Road Covered Bridge <i>97' Town Lattice Truss</i>	1868	1983
▪ Middle Road Covered Bridge <i>136' Howe Truss</i>	1868	1984
▪ Benetka Road Covered Bridge <i>127' Town Lattice Truss with Arch Rehabilitation</i>	c 1900	1985
▪ Doyle Road Covered Bridge <i>94' Town Lattice Truss with Arch Rehabilitation</i>	1876	1988
▪ Harpersfield Covered Bridge <i>228' Howe Truss</i>	1867	1991
▪ Dewey Road Covered Bridge <i>136' Howe Truss</i>	1873	1993
▪ Creek Road Covered Bridge <i>110' Town Lattice Truss</i>	c 1875	1995
▪ Wiswell Road Covered Bridge <i>110' Town Lattice Truss</i>	1867	2002
▪ Mechanicsville Covered Bridge <i>154' Howe Truss with Arch</i>	1867	2003

Other Locations

<u>Name</u>	<u>Built</u>	<u>Rehab</u>
▪ Martinsville Road Covered Bridge <i>78' Multi-Kingpost Truss</i>	1871	2006 <i>Clinton County, Ohio</i>
▪ Buckskin Covered Bridge <i>98' Smith Truss</i>	1873	2006 <i>Ross County, Ohio</i>
▪ Shaeffer/Campbell Covered Bridge <i>68' Multi-Kingpost Truss</i>	1875	2005 <i>Belmont County, Ohio</i>
▪ Helmick Mill Covered Bridge <i>74' Multi-Kingpost Truss</i>	1867	2008 <i>Morgan County, Ohio</i>
▪ McCleery Covered Bridge <i>52' Multi-Kingpost</i>	1864	2006 <i>Fairfield County, Ohio</i>



"Timber covered bridges are important to American culture. They are a window to our past and should be preserved for our future generations."

John W. Smolen

BRIDGE EXPERIENCE

Rehabilitation Projects

Other Locations

<u>Name</u>	<u>Built</u>	<u>Rehab</u>
▪ Brubaker Covered Bridge 85' Childs Truss	1887 Preble County, Ohio	2006

New Timber Truss Covered Bridge Projects

Ashtabula County, Ohio

<u>Name</u>	<u>Built</u>
▪ State Road Covered Bridge 140' Town Lattice Truss	1983
▪ Caine Road Covered Bridge 100' Pratt Truss	1986
▪ Giddings Road Covered Bridge 110' Pratt Truss	1995
▪ Netcher Road Covered Bridge 150' Pratt Truss	1999

Other Location

Built

▪ Williams County Fairgrounds Covered Bridge 120' Pratt Truss	2003 Williams County, Ohio
▪ Geauga County Park Covered Bridge 50' Howe Truss	2004 Gauga County, Ohio
▪ Buck Run Road (TR146) Covered Bridge 160' Pratt Truss	2007 Union County, Ohio
▪ Lewisburg Road (CR164) Covered Bridge 135' Pratt Truss	2007 Union County, Ohio
▪ HAN-TR241 Covered Bridge over Blanchard River 120' Pratt Truss	2009 Hancock County, Ohio
▪ UNI-TR99 Covered Bridge over Mill Creek, 125' Pratt Truss	2010 Union County, Ohio
▪ Liberty Street Covered Bridge 18' King Post Truss	2011 Ashtabula County, Ohio
▪ PRE-CR24 Hueston Woods Covered Bridge 108' Burr Arch Truss	TBD Preble County, Ohio
▪ Card Road Covered Bridge over Clinton River 156' Pratt Truss	TBD Macomb County, Michigan
▪ MAD-CR14 Covered Bridge over Little Darby Creek 156' Pratt Truss	TBD Madison County, Ohio

Honors

- A regular speaker at bridge and historic bridge conferences throughout the United States.
- Referenced and interviewed for numerous bridge books by acclaimed authors David Simmons, Miriam Wood and others.



JOHN SMOLEN, P.E., P.S.
Principal Engineer

Authored a chapter in the
Second Ohio Historic Bridge
Inventory, Evaluation and
Preservation Plan 1990

Spoke at the First Historic
Bridge Conference 1985
Columbus Ohio

Was chosen to serve on the
advisory committee for the
FHWA Historic Covered
Bridge Restoration Manual
1999

SECTION VI

**THE INCORRECT ASSUMPTIONS SET FORTH IN THE 1ST AND 2ND REPORTS ON
THE SERVICE LIFE ESTIMATES FOR WOOD VS. CONCRETE AND STEEL AND
THE USE OF PRESERVATIVES AND OTHER TREATMENTS FOR WOOD
AND
THE OMISSION OF INFORMATION ON THE “STRONG SEAL ALTERNATIVE**

The 1st and 2nd MassDOT Reports estimate a very short service life for various wooden bridge components and compare these with a much longer estimated service life of concrete and steel components. This automatically results in higher overall Life Cycle Cost for wood and a lower cost for concrete and steel which drives the conclusions contained in the Reports in favor of a concrete and steel replacement.(Fn. 1). However, background information and supporting documentation is lacking to support these assumptions. Instead, we are given what is essentially anecdotal information (almost all negative) as to the service life of wood, but little, if any, information as to the service life of concrete and steel (Fn. 2).

The Reports take a similar exaggerated approach with respect to the treatment of wood and the use of preservatives. The overall tone of the Reports is decidedly negative as to the allowable use of any preservatives, implying in many cases that they all are harmful to the environment and to human health and that their use in this project would constitute an uncertain but definite risk. Many of these statements made with respect to specific preservatives are either wrong or unsubstantiated. Conversely, the Reports are completely absent as to information on the known use of chemicals in concrete and steel and how they react and leach into the salt water and their own effect on the environment.

In recent years, there has been substantial progress with respect to using treated wood in a marine environment, along with new products that can enhance the durability and service life of wood (a lower cost product) and effectively minimize the amount of preservatives. While some of these are mentioned in these Reports, others are not, so that the overall negative conclusions drawn in these Reports as to the use of wood are misleading.

For these reasons, the Friends decided to contact the Forest Products Laboratory (FPL) of the United States Department of Agriculture, a well-respected government agency, and to furnish these Reports to them for their review. FPL accepted our request without any preconditions or compensation of any kind whatsoever. Their own detailed letter of May 10, 2011, under the signature of Dr. Stan Lebow, Ph.D, the Team Leader for the Wood Preservation Research Group, and author of over one hundred papers and documents, is attached hereto.

The FPL letter confirms that the conclusions drawn in these Reports as to the service life and treatment of wood vs. concrete and steel are often wrong and unsubstantiated; that the assumptions with respect to the service life of wood vs. concrete and steel have worked to inflate the cost of wood and decrease the cost of concrete and steel; that further discussion is needed with respect to the potential use of treated wood, its durability and environmental impacts, along with the role of in-place supplemental preservative treatments. The FPL letter sees the need for further information to substantiate the service life estimates for both wood and concrete and steel that are made in the Reports. With respect to specific preservatives, the FPL letter points out that models have been developed that limit the amount of such preservatives and the possible risks

Fn. 1. The estimated short service life of wood is compounded by the claim that under the Accelerated Bridge Program all subsequent repairs/replacement must be borne by the town even where the overall life cycle cost of wood is no higher than concrete and steel.

Fn. 2. While the 2nd Report (p. 25) does state that concrete and steel are subject to “periodic” repair, strengthening, painting and patching due to corrosive deterioration or fatigue and corrosive expansion and freeze-thaw, the Report still claims that the overall replacement service life of concrete and steel is 80 to 100 years.

associated with them, and that in-place low cost supplemental treatments with approved solid phase chemicals such as MITC can be used every 5 to 10 years as part of a regular maintenance program which will inhibit decay and deterioration of wood members.

Lastly, the FPL letter confirms that the use of fiberglass pile wrappings (in a process called “Strong Seal”) can be highly effective in minimizing leaching from treated piles and that it is logical to believe that such a protective barrier might also provide a durability benefit. However, this process is not referred to at all in these Reports, even though it has received approval from both federal and state authorities in the northeast. (See description and information of the Strong Seal alternative below.)

The pre-installation/replacement method and technique known as “Strong Seal”, a product of Wood Preservers, Inc. of Warsaw, Virginia, consists of wrapping treated douglas fir pilings with filament wind individual strands of fiberglass using a fiberglass resin designed for use in corrosive saltwater environment. This technique allows for wrapping of the entire piling or only that portion of the piling that extends from roughly the mud line to approximately above the high water mark, thereby reducing the overall cost and also retaining the aesthetics of the natural wood surfacing (photos attached). (Fn. 3).

The use of Strong Seal has been approved by the U.S. Fish and Wildlife Service, the New Jersey DEP, and other federal agencies for use in sensitive aquatic areas of New Jersey. As set forth in the attached email of May 2, 2011 received by the Friends from Wood Preservers, Inc., the estimated cost, as delivered, of 120 treated pilings of southern yellow pine (\$144,000) compares with the estimated cost of 120 Strong Seal wrapped pilings to a length of 30 feet (\$264,000) or 60 feet (\$396,000). These amounts are nowhere even close to the claim in the 2nd Report (which refers to a product called FRP Pile Jackets as costing “approximately 10 times the cost of new piles”. FRP Pile Jackets are an entirely different product that are used to extend the service life of deteriorated pilings, which is an in-place repair/rehabilitation method and not a full replacement that is being considered here.

Fn. 3. The 2nd Report (p. 4) states that the relatively short service life of the all-timber bridge (Alternative 1) is because of the need to replace the timber piles. The FPL letter referred to above states that the wrapped piles might provide a durability benefit, in which case the service life of Alternative 1 and Alternative 2 would be extended, thereby reducing its overall Life Cycle Cost.



United States
Department of
Agriculture

Forest
Service

Forest Products Laboratory

One Gifford Pinchot Drive
Madison, WI 53726-2398
Phone: 608 231-9200
Fax: 608 231-9592
TDD: 608 231-9544

File Code: 2400

Date: May 10, 2011

Mr. Norman Pacun
Friends of the Mitchell River Wooden Drawbridge
14 Sunset Lane
Chatham, MA 02633,

Dear Mr. Pacun:

Thank you for providing me with the opportunity to review the documents titled "*Bridge Alternatives Evaluation and Life Cycle Cost Comparison* (April 28, 2011)" and "*Bridge Repair/Rehabilitation Feasibility Study for Bridge Street over Mitchell River* (March 10, 2011). It is my understanding that both documents were prepared as part of a process to evaluate options for rehabilitating or reconstructing the historic Mitchell River wooden drawbridge. After reviewing the reports I feel that further information, and some clarification, may be of value in the decision-making process. There are three topics in particular that warrant further discussion in regards to the potential use of treated wood in this project: durability, environmental impacts, and the role of in-place supplemental preservative treatments.

Durability of pressure treated wood: Durability (service life) is a key component in the evaluation of the alternative construction materials in this project. The reports utilize relatively low (short) estimates of the service life of various wooden bridge components, and much longer estimated service lives for concrete and steel components. Naturally, these service life assumptions have a large impact on the relative rankings of the construction materials. The basis for these service life estimates is not documented, making it difficult to establish their credibility for use in the decision-making process. These short service life estimates for treated wood are at odds with the demonstrated service life of existing bridge piles, many of which have remained in service since 1925. The earlier report attempts to reconcile this conflict with the statement that "*The long service life of many of the existing piles is due to the use of heavy creosote oil-based preservative not permitted for use today.*" This claim that creosote treated wood is more durable than wood treated with other preservatives such as chromated copper arsenate (CCA) is not substantiated in the report, and warrants further discussion.

CCA is an effective wood preservative, and there is published research indicating that wood treated with CCA is at least as durable as wood treated with creosote in both marine and terrestrial exposures. A report by Johnson and Guztmer (1990) provides data on the comparative durability of test panels treated with marine grade creosote (refer to Table A-3 in that report) and marine retentions of CCA (refer to Table B-2 in that report). This data indicates that the marine durability of CCA-treated wood compares favorably to that of creosote treated wood. After 19 years of exposure (the conclusion of the study) none of the panels treated with seawater retentions of CCA showed any damage from marine borer attack. It is notable that the



test site for that report (Key West, Florida) presents a more severe hazard than the cooler waters of Massachusetts. Another report (Bigelow, et al, 2007) provides comparative data on the relative durability of CCA and creosote treated wood in ground contact. Durability was compared for the equivalent retentions of CCA or creosote used for terrestrial poles (refer to Figure 4-62 in that report) or piles (refer to Figure 4-63 in that report). In both cases, the performance of CCA-treated wood compares favorably to that of creosote treated wood. The same report provides service life estimates for posts treated with either creosote or ammoniacal copper arsenate (ACA, a precursor to the ammoniacal copper zinc arsenate (ACZA) in use today). It is noteworthy that for both types of preservatives the posts were under-treated (treated to below the standard retention specified for ground-contact use). However, even these under-treated posts in ground-contact provided service lives greater than those estimated for the above-ground members of the Mitchell River Bridge (see section 3.4.3 of the report *Bridge Alternatives Evaluation and Life Cycle Cost Comparison*). Again, the exposure site for this study (southern Mississippi) presents a more severe decay hazard than that in Massachusetts, and in all climates ground contact exposure presents a more severe decay hazard than above-ground applications. The ACA treated posts also had a slightly longer service life than the creosote treated posts. In light of evidence to the contrary, the reports' claim that alternatives to creosote treated wood are much less durable should be substantiated.

All construction materials can occasionally experience early failures. When wood has been pressure-treated with creosote, CCA or ACZA this type of failure is almost always associated with poor treatment quality (substandard retention or penetration). This problem can be avoided by requiring that the wood be treated in accordance with the standards of the American Wood Protection Association, and subsequently inspected by an accredited independent inspection agency. Early failures also occur with concrete and steel structures. Premature deterioration of concrete (within 20 years or less) is frequently reported, especially in structures exposed to de-icing chemicals or seawater (Mehta, 2001, 2002), and there are recently reported occurrences of accelerated corrosion at the low-water line of steel piles used in marine environments (Fleming, et al, 2009). This is not to suggest that premature failure is likely in the Mitchell River Bridge or that concrete and steel are problematic construction materials. The point is that comparisons of the life cycle of costs of all these construction materials are not useful unless based on realistic and documented service-life estimates.

Environmental Impacts: Both reports frequently refer to the potential negative environmental impacts associated with preservative treated wood, but do not mention this possibility with other construction materials. In fact, all common bridge construction materials are potentially toxic to aquatic organisms at some level. This includes both concrete and steel. A recent study from Environment Canada noted that concrete, steel and pressure-treated wood all have toxicity towards a variety of aquatic organisms, and that in some cases concrete, and even steel, were more toxic than pressure-treated wood (Lalonde, et al, 2010). Concrete in particular may contain metals such as cadmium and lead, in addition to resin acids, that can leach into the aquatic environment (Lalonde, et al, 2010). So why don't we observe zones of environmental destruction around wood, concrete or steel structures? The answer, of course, is dilution and environmental decomposition. In most cases the very small releases from construction materials do not result in environmental concentrations that are sufficient to cause harm in the environment. Because of the importance of this dilution and environmental breakdown,

generalizations about the toxicity of treated wood or other materials are of little value, and should not be used as a means of categorically discrediting a construction material. Before a construction material is judged as too environmentally risky for a certain application, specific site parameters should be considered. There has been substantial research on the environmental impacts of creosote, CCA, and ACZA treated wood, and models have been developed to evaluate potential aquatic impacts. These models are freely available at the following website: <http://www.wwpinstitute.org/mainpages/thesciencewoodinaquat.shtml>

These models could be utilized to estimate the impacts associated with pressure-treated wood in this project rather than simply assuming that problems will occur. I am not aware of similar models for concrete or steel, but the absence of such models should not be taken as evidence that these other materials have zero risk.

Durability and Environmental Concerns; Pile wraps: In recent years it has become more common for pole and pile providers to offer the optional addition of a wrap applied at the pressure-treatment plant. These wraps are applied under controlled conditions after the pile has been pressure-treated and subsequently re-dried. Because they are applied to dry wood in a factory-setting, this type of wrap achieves a tight bond to the wood. (Note, this differs from the types of reinforcement wraps applied on-site to in-service piles as referred to in the report titled *Bridge Repair/Rehabilitation Feasibility Study for Bridge Street over Mitchell River*). They can be applied to the entire pile or only to the area below the mean high tide. These factory-applied wraps are intended to lengthen service life and minimize environmental releases. A study of the environmental releases from CCA treated marine piles wrapped in fiberglass filament and resin found that leaching of copper, chromium and arsenic from the wrapped piles was not statistically different from that released from wrapped untreated piles (see attached report, "*Metal Loss Rates from Strong-Seal Fiberglass Wrapped CCA Treated Wood*"). This report indicates that the wraps could be highly effective in minimizing leaching from treated piles. Because even unwrapped treated piles have a long service life (AWPI, 2002; Graham, 1996), there are not yet any studies to show that wrapping extends the life of treated pile. However, it is logical that a protective barrier might provide some durability benefit. These factory-applied wraps are only mentioned here as a consideration because their use did not appear to be discussed in either of the reports on the Mitchell River Bridge.

In-place Supplemental Treatments: The report titled *Bridge Repair/Rehabilitation Feasibility Study for Bridge Street over Mitchell River* seems to suggest that in-place treatments are not effective and/or pose a significant risk to the environment. In some situations this claim has validity. For example, spraying a liquid copper-based preservative on the outer surface of large pressure-treated bridge timbers does relatively little to improve durability and poses a substantial risk of environmental contamination. In contrast, the solid internal treatments, and especially the solid fumigants, can provide substantial increases in durability with relatively low risk of environmental contamination. The solid phase MITC mentioned in the report is an example of one of these treatments. It is applied in an aluminum tube, with the cap removed at the time of installation. A hole is drilled into the wood and the opened tube is placed into the hole. The hole is then sealed with a removable threaded plug. The fumigant gradually moves, as a gas, out of the tube and into the surrounding wood. For reapplication, the old tube is simply removed and replaced with a fresh tube. These treatments have been routinely used for decades to extend the life of railroad bridges and utility poles. Because they are solids rather than liquids, they can be

applied from below bridge members into upward sloping treatment holes. This largely alleviates the concern expressed in the report that most members will not be accessible for in-place treatments after construction was completed. For maximum benefit, these treatments should be started before decay becomes established and repeated every 5 to 10 years; there are businesses that offer the service of applying treatments on a periodic basis. There is a maintenance cost associated with this type of treatment program, but concrete and steel bridge components also require routine maintenance, especially in salt water applications. It is also worth noting that maintenance activities associated with steel and concrete bridge components are not completely free of risk to the environment. Painting and the associated surface preparation is probably the bridge maintenance activity with the greatest potential for adverse impacts on surrounding waters (Dupuis, 2002). Paint chips and abrasive particles are deposited directly into the water, and there is also potential contamination from solvent and paint overspray (Dupuis, 2002).

Summary: The purpose of this letter is to provide more detail, and perhaps greater clarity, regarding the relative durability and environmental concerns associated with preservative treated wood. It appears that the reports "*Bridge Alternatives Evaluation and Life Cycle Cost Comparison*" and "*Bridge Repair/Rehabilitation Feasibility Study for Bridge Street over Mitchell River*" have a tendency to underestimate the relative service life, and overestimate the environmental impact, of treated wood in comparison to other construction materials. The service-life estimates used for treated wood in these reports should be substantiated to provide greater confidence in their value as part of the decision-making process. This letter is intended to provide assistance in making a more informed decision; it is not intended to endorse or recommend any construction material for the Mitchell River Bridge.

Again, thank you for the opportunity to review the reports on the Mitchell River Bridge project. I frequently provide advice to state, local and federal agencies on the properties, selection, and specification of preservative treated wood for bridges. Although some of the issues concerning the Mitchell River Bridge are relatively common, this is the only historic wooden drawbridge that I have encountered.

Sincerely,



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Durability and Wood Protection Research Group
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Fax: 608-231-9592
e-mail: slebow@fs.fed.us

cc:
Michael Ritter, USDA, Forest Products Laboratory
John Smolen, Smolen Engineering

Attachment: *Metal Loss Rates from Strong-Seal Fiberglass Wrapped CCA Treated Wood*

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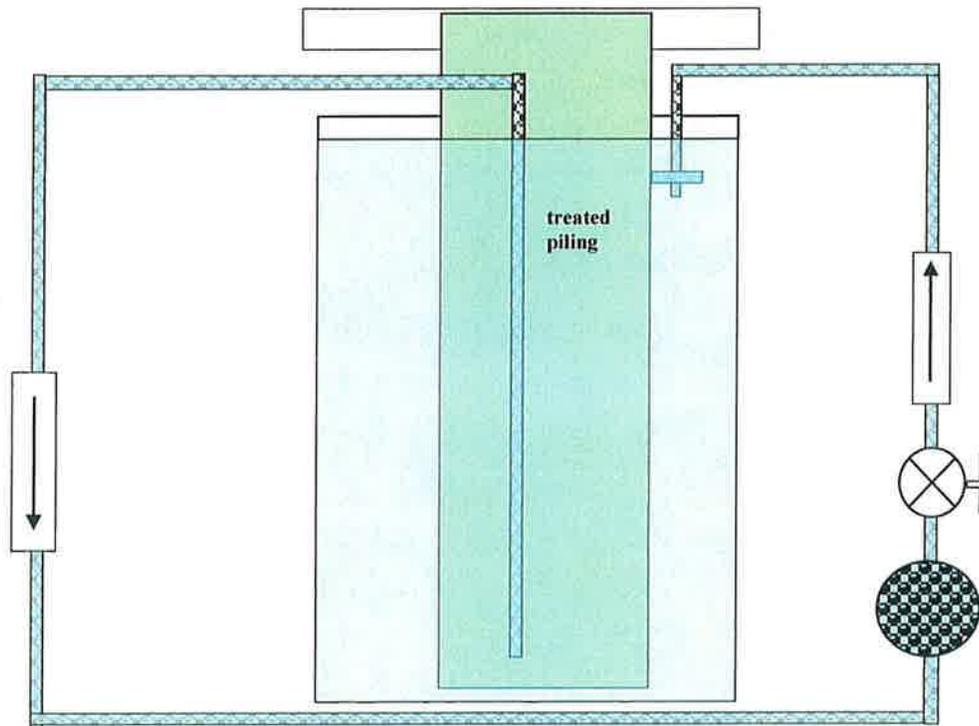
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Metal loss rates from Strong-Seal™ Fiberglass Wrapped CCA Treated Wood



Recirculating leaching apparatus used to measure metal loss rates from pressure treated wood

Produced for:

Mr. Morgan Wright, President
Wood Preservers Inc.
P.O. Box 158
Warsaw, Virginia 22572

Produced by:

Dr. Kenneth M. Brooks
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June 7, 2004

Metal loss rates from Strong-Seal Fiberglass Wrapped CCA Treated Wood

1.0. Materials and methods. This study has evaluated the migration of copper, chromium and arsenic from southern yellow pine treated to a nominal retention of 2.5 *pcf* with CCA-C in the treated zone and wrapped and sealed in Wood Preservers' Incorporated Strong Seal™ fiberglass system (Figure 1). Because few metal ions are expected to penetrate the fiberglass casing, this test is being conducted under static conditions to optimize the potential to observe even small amounts of metal that might accumulate over the course of the 30.5 day study.

1.1. *Determination of the leaching surface area.* The dimensions of each piece of treated wood were measured to the nearest 0.1 cm. Measurements were made at the top and bottom of each sample and the mean of these two measurements used to calculate the leaching surface area. The depth of immersion was determined by measuring the length from the bottom of each sample to the water line on each sample at the end of the study. Dimensions of the commodity size piling described in Figure 1 are provided in Table 1.



Figure 1. Three Strong-Seal Fiberglass Wrapped CCA Treated Wood piling and a similarly wrapped control.

Table 1. Dimensions of sections of southern yellow pine piling treated to 2.5 *pcf* with CCA-C and wrapped and sealed in fiberglass. All dimensions are in centimeters.

Replicate	Total length	Immersed length	Mean diameter	Leaching surface area (cm ²)
T1	63.0	48.0	15.43	2328.0
T2	62.3	48.0	16.07	2424.0
T3	60.5	48.5	15.44	2352.2
Control 1	65.3	50.2	15.22	2399.6

1.2. *Leaching tanks.* 40-liter polypropylene tanks (Ryan Herco Industrial Plastics), were configured as described in Figure 2 and randomly arranged on 121 x 242 cm wet tables (Figure 3). As previously noted, very low metal loss rates were expected through the fiberglass coating and the tests were conducted in static conditions to enhance detection of any metal accumulation in the dilution water. However, water was continuously circulated within each tank at a rate of 120 gallons/hour (gph) using Aquatic Ecosystems epoxy-sealed magnetic drive pumps (MD-2). The purpose of this is to disrupt any diffusion gradients immediately adjacent to the wood that would reduce the migration of metal ions from the product. Recirculating water was taken from the bottom of the tank and reintroduced at the top of the tank through a PVC "T" to avoid cells in the circulation. One pump was used for each tank. Recirculating flows were regulated with a PVC ball valve and monitored using 0.4 to 5.0 gallon/minute Cole-Parmer acrylic flow meters installed with each pump and valve. Tanks and associated plumbing were washed with Alconox™; soaked in 10% reagent grade hydrochloric acid overnight; and rinsed with distilled water immediately prior to initiating the study.

1.3. *Dilution water.* Sea water filtered to 10 µm was hauled from the Taylor Resources Shellfish Hatchery on Dabob Bay in Washington State in detergent cleaned and 10% HCl acid washed carboys. Dilution water was initially measured and added to the leaching tanks using graduated beakers and/or cylinders. Make-up water was added and recorded to restore the original volume following collection of the samples on each day. Three dilution water samples were collected prior to adding treated wood to the tanks to determine starting concentrations of each of the metals and the salinity of the water determined using a calibrated YSI SCT meter. The temperature of the dilution water was measured in each tank on each day.

1.4. *Sample collection timing.* 250 ml samples were collected on Days 0.5, 2.5, 4.5, 7.5, 14.5, 21.5 and 30.5. Samples collected on Days 0.5, 14.5 and 30.5 were initially analyzed at Battelle and the remaining samples were acidified and archived. The three remaining samples will not be analyzed unless statistically significant increases in the concentration of any one of the three metals are observed on subsequent days.

1.5. *Collection, storage and shipment of samples.* 250 ml samples for copper, chromium and arsenic analyses were collected in new HDPE bottles supplied by the Battelle Marine Science Laboratory. Sample bottles were grouped by sample day in Ziploc™ bags and stored in a refrigerator at 4 °C until shipped on phase change ice packs to Battelle for analysis.

1.6. *Copper, chromium and arsenic analyses.* The samples were analyzed by Dr. Eric Crecelius' group at the Battelle Marine Science Center in Sequim, Washington for copper (Cu), chromium (Cr) and arsenic (As). Samples collected during the initial 30.5 day leaching study were acidified to pH <2.0 with reagent grade nitric acid upon receipt at Battelle. The samples were preconcentrated using iron (Fe) and palladium (Pd) in accordance with Battelle SOP MSL-I-025 (*Methods of Sample Preconcentration*), which is derived from EPA Method 1640. The preconcentrated analyzed directly for copper and chromium by ICP MS using EPA Method 1640. Arsenic was determined by hydride generation using flow injection atomic spectroscopy (FIAS-HGAA) following MSL SOP-I-030 (*Determination of Metals in Aqueous and Digestate Samples by HGAA/FIAS*), which is based on EPA 7062 (SW-846 9/94). Battelle's analytical report is included as Appendix 2.

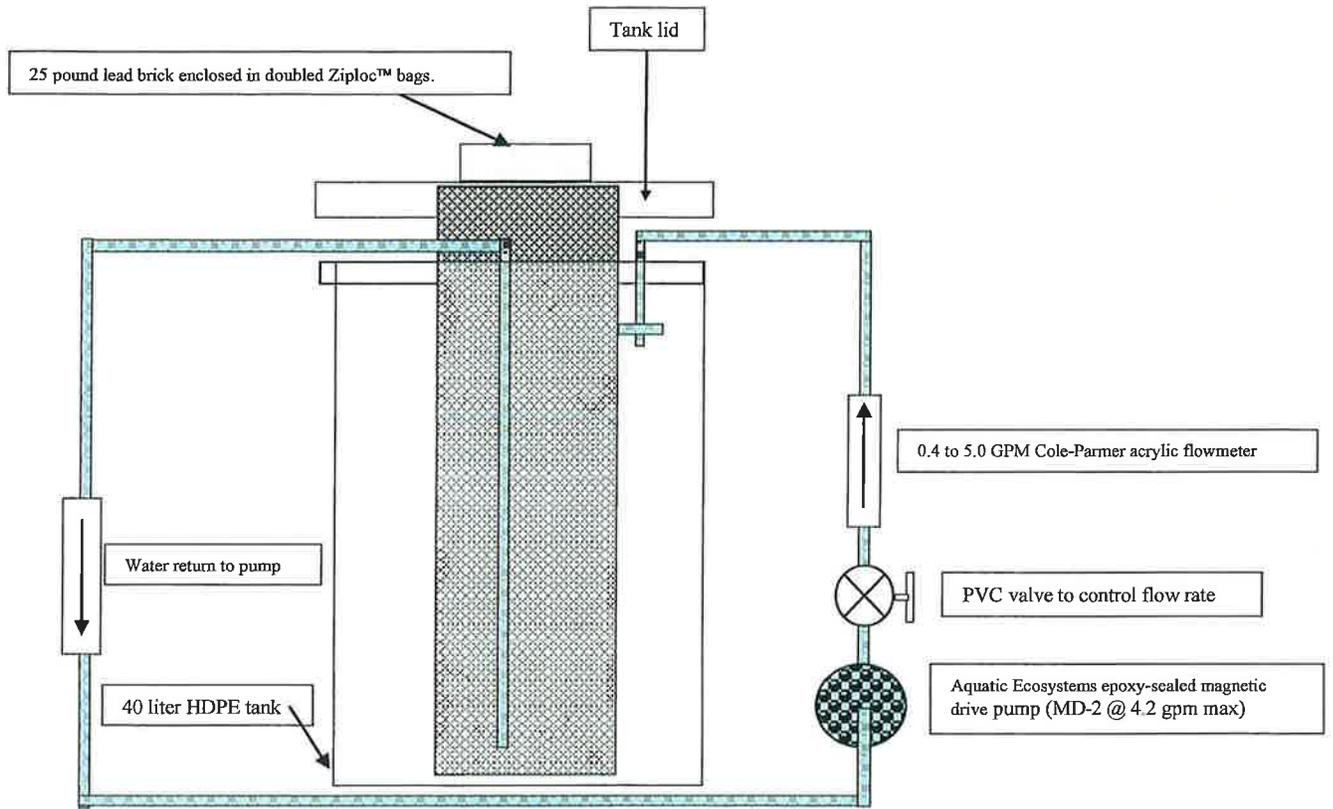


Figure 2. Forty liter leaching tank Configuration with mechanical water recirculation.



Figure 3. Leaching apparatus used at Aquatic Environmental Sciences to evaluate metal loss rates from Strong-Seal Fiberglass Wrapped CCA-C treated piling.

1.7. *Quality control program.* Quality assurance included the following analyses. Battelle's QA/QC report is included as Appendix 3.

- **Method blanks.** One blank was analyzed for As, Cr and Cu.
- **Laboratory control samples.** One laboratory control sample (LCS) was run with the 15 analyzed samples. Data quality limits are $\pm 25\%$.
- **Duplicate precision.** One duplicate sample was analyzed.
- **Matrix spike.** One sample was randomly selected for a matrix spike test.
- **Standard Reference Material Accuracy.** The SRM CASS-4 used in this analysis is a low-level seawater reference material.

1.8. *Temperature monitoring.* The temperature in each leaching tank was measured at 0830 on each sample day using the temperature feature on a YSI Model 33 SCT meter. Temperature measurements were made after collecting water samples for analysis. The meter/probe was calibrated against an NIST certified and calibrated mercury thermometer once every 30 days. Temperature data is included in the datasheet provided as Appendix 1.

1.9. *Data analysis.* Calculation of metal loss rates ($\mu\text{g Cu, As or Cr/cm}^2\text{-day}$) were accomplished in an Excel™ spreadsheet (Appendix 1). The concentrations of copper, chromium and arsenic determined in the leachate were corrected for the amount of metal in the diluent, including metal in makeup water added on each sample day. The resulting metal content in the leachate was then divided by the leaching surface area of each piling and the number of days in the interval since the last analysis. The data were analyzed in a Statistica™ Version. 6.

Results. Mean $\pm 95\%$ confidence levels for copper, chromium and arsenic loss rates in $\mu\text{g metal/cm}^2\text{-day}$ are provided in Table 2 for samples collected on days 0.5, 14.5 and 30.5. Samples from other days have been acidified and archived at Battelle. The non-significant loss rates observed in the analyzed samples indicates no need to analyze additional samples. However, they are available should a requirement be determined in the future. Details of the analysis of the leachate water, including quality assurance tests, are provided in Appendices 2 and 3.

Table 2. Copper, chromium and arsenic loss rates ($\mu\text{g/cm}^2\text{-day}$) from CCA-C preserved southern yellow pine encased in Strong-Seal fiberglass and resin.

Breakdown Table of Descriptive Statistics (CCA-C Strong Seal Leaching Results)								
N=12 (No missing data in dep. var. list)								
Treatment code	Day Code	Copper Loss Rate Means	Confidence +95.000%	Chromium Loss Rate Means	Confidence +95.000%	Arsenic Loss Rate Means	Confidence +95.000%	N
T	0.5	0.230	0.844	0.006	0.017	0.006	0.007	3
T	14.5	0.107	0.313	0.000	0.000	0.006	0.014	3
T	30.5	0.095	0.248	0.000	0.000	0.006	0.016	3
C	0.5	0.249		-0.001		0.003		1
C	14.5	-0.004		-0.000		0.000		1
C	30.5	0.001		0.000		0.000		1
All Groups		0.128	0.220	0.001	0.004	0.005	0.007	12

Consistent with metal loss rates from CCA-C observed in other leaching studies, chromium losses were so low as to be undetected. Copper and arsenic losses were detected at

very low rates from both treated and untreated piling samples. The initial copper and arsenic loss from both treatment and control samples was likely due to minor surface contamination during shipping or handling. No loss of copper or arsenic was observed from the control following the first sample day. Small amounts of copper ($0.10 \mu\text{g Cu/cm}^2\text{-day}$) and arsenic ($0.006 \mu\text{g As/cm}^2\text{-day}$) continued to be lost from the Strong Seal product through the remainder of the study. A Factorial ANOVA (Table 3), with time and treatment as independent variables, indicated that the copper losses were not significantly ($\alpha = 0.05$) different as a function of either time or treatment. Arsenic and chromium losses were similarly not significant. Therefore the small differences could have been due to chance. Only the intercept (constant term) was significant.

Table 3. Results of a Factorial ANOVA assessing differences in copper loss rates from CCA-C preserved southern yellow pine encased in the Strong Seal process.

Effect	Univariate Tests of Significance for Copper Loss Rate (CCA-C Strong Seal Leaching Results) Sigma-restricted parameterization Effective hypothesis decomposition				
	SS	Degr. of Freedom	MS	F	p
Intercept	0.115	1.000	0.115	6.080	0.039
Treatment code	0.009	1.000	0.009	0.459	0.517
Day Code	0.068	2.000	0.034	1.799	0.226
Error	0.151	8.000	0.019		

Loss rates for the three replicate samples of treated piling on Day 0.5 are summarized in Figure 4 for copper. Data for the control is not included in these statistics. The high variability between samples during the first 12 hours of emersion supports the hypothesis that surface contamination caused the small but statistically insignificant increase in copper loss rate. Figures 5 and 6 describe chromium and arsenic loss rates as a function of time and internal variation.

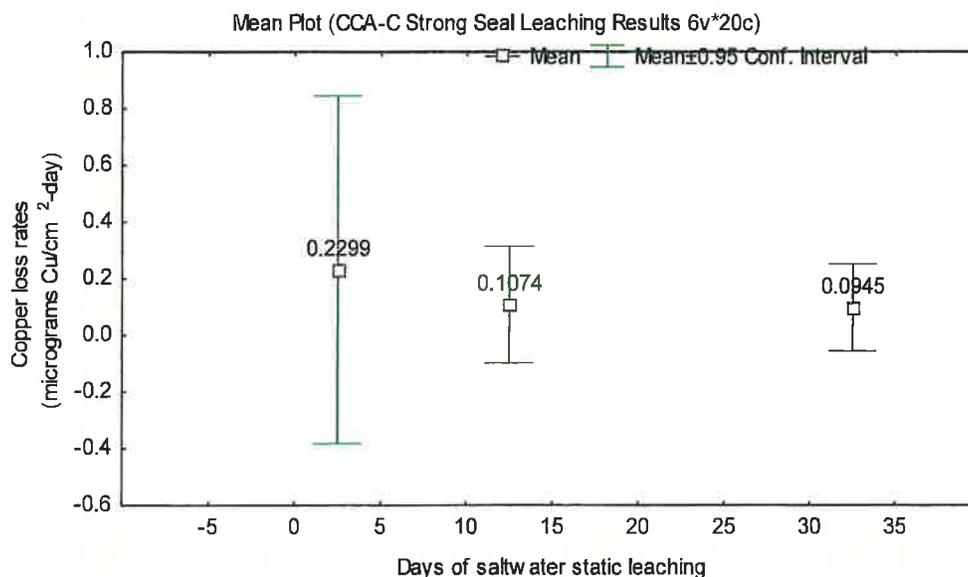


Figure 4. Copper loss rates from three replicate sections of southern yellow pine piling treated to 2.5 pcf with CCA-C and encased in Wood Preserver's Inc. Strong Seal system.

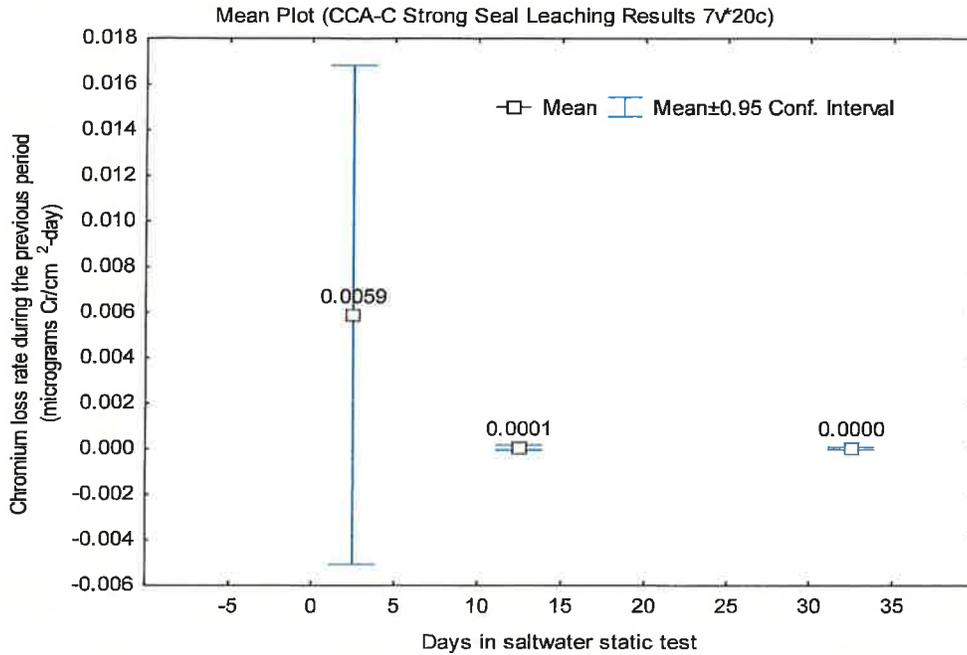


Figure 5. Chromium loss rates from three replicate sections of southern yellow pine piling treated to 2.5 pcf with CCA-C and encased in Wood Preserver's Inc. Strong Seal system.

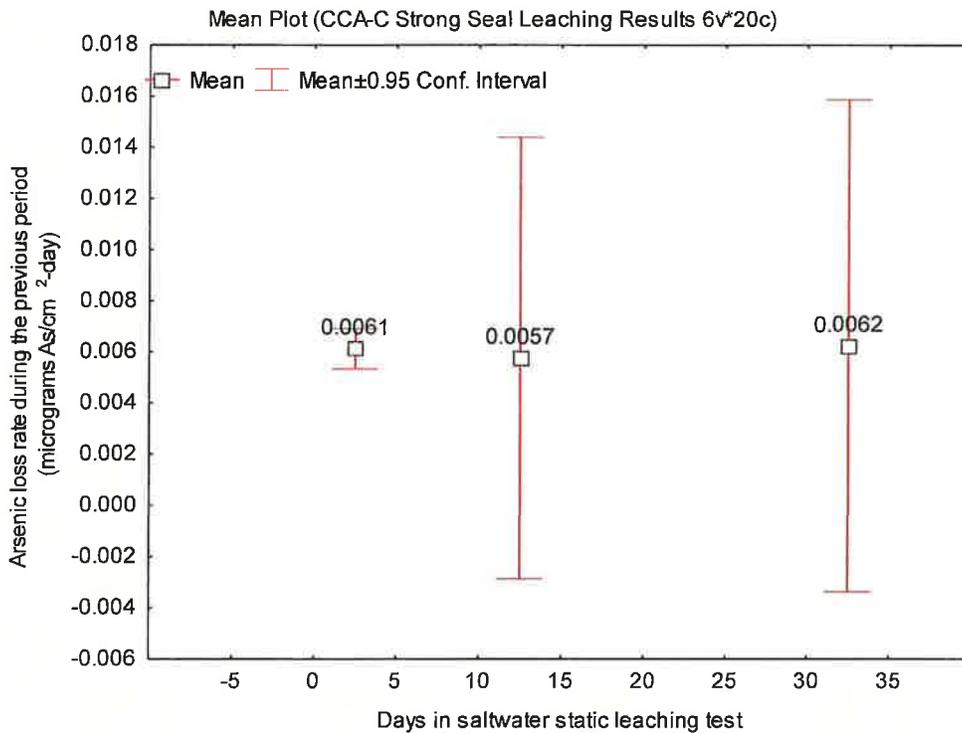


Figure 6. Arsenic loss rates from three replicate sections of southern yellow pine piling treated to 2.5 pcf with CCA-C and encased in Wood Preserver's Inc. Strong Seal system.

It should be emphasized that differences in metal loss rates between control and treatment samples were not significant in this study. However, assuming that the copper loss during the first 0.5 days of emersion was real, Brooks (1996) provides a method for predicting environmental concentrations of dissolved copper in the vicinity of a structure constructed with this material. Assume a very slow steady state marine flow of 0.5 cm/sec orthogonal to a pier having 8 bents of four 30 cm diameter piling each (32 piling). The bents are assumed to be spaced 2 meters apart and the total width of the box would be 16 m or 1600 cm. During the first day, the dilution volume would be $(0.5 \text{ cm/sec} \times 86,400 \text{ sec/day} \times 1,600 \text{ cm wide})/1000 \text{ cm}^3/\text{L} = 68,120 \text{ L}$. Unprotected CCA-C piling would lose $2.82 \mu\text{g Cu/cm}^2\text{-day}$ and this box model predicts that a one cm high section of the wood in the box would contribute a total of 32 piling $\times 3.14 \times 30 \text{ cm} \times 2.82 \mu\text{g/cm}^2\text{-day} = 8,500.6 \mu\text{g Cu/day}$. This would increase the water's copper concentration by $8,500 \mu\text{g Cu}/68,120 \text{ L} = 0.125 \mu\text{g/L}$. In contrast, the Strong-Seal™ product will contribute $0.23 \mu\text{g Cu/cm}^2\text{-day}$ resulting in an increase of $0.010 \mu\text{g Cu/L}$. Either of these increases lies within the natural variability of seawater and the increase associated with Strong-Seal™ (10 parts per trillion) would not be detectable using the best analytical methods currently available. Losses of arsenic were lower by a factor of four and no chromium loss was observed.

Summary. Metal losses from southern yellow pine treated to a retention of 2.5 pcf with CCA-C preservative and encased in fiberglass and resin (Strong-Seal™) were not significantly different from the losses measured from untreated syp encased in Strong Seal™. If the small losses are assumed to be real, the increases in dissolved copper associated with the installation of 32 of these piling in a small footprint spanning exceedingly slow flowing seawater would be too small to measure (10 parts Cu per trillion parts water). The lack of statistically significant increases in metal loss rates from Strong Seal™ encased CCA-C preserved wood indicates that this material has no potential to significantly increase water column or sediment concentrations of copper, chromium or arsenic.

Sincerely,

Dr. Kenneth M. Brooks
Aquatic Environmental Sciences

Appendix (1) Microsoft Excel™ spreadsheet for converting metal concentrations in leachate to loss rates in $\mu\text{g metal/cm}^2\text{-d}$

Appendix (2) Analytical results from the Battelle Marine Science Laboratory

Appendix (3) Quality assurance report from the Battelle Marine Science Laboratory

References.

Brooks, K.M. 1996. Evaluating the environmental risks associated with the use of chromated copper arsenate-treated wood products in aquatic environments. *Estuaries* Vol. 19, No. 2A, p. 296-305.

Norman Pacun

From: "Morgan Wright" <MWright@woodpreservers.com>
To: <clamknife@comcast.net>
Sent: Monday, May 02, 2011 12:05 PM
Attach: IMG00039-20110217-1706.jpg; IMG00040-20110217-1707.jpg; IMG00042-20110217-1709.jpg; MVC-003F.JPG; IMG00004.jpg
Subject: Strong-Seal Fiberglass Wrap of Chatham Bridge Piling
Norm,

I was good talking to you earlier today. Per our conversation, and your fax, I have the following comments.

- 1- NOAA's study on the aquatic effects of CCA piling used in the marine environment can be found at the Western Wood Preservers Institute's web-site under the guidance document section. <http://wwpinstitute.org/> The Strong-Seal® leach test data, that you have a copy of, is environmental protection that is above and beyond the NOAA report. The NOAA report was done on 2.50 CCA piling. The American Wood Protection Association specifications allow for 1.50 CCA piling in Massachusetts salt water. I would highly recommend the 2.50 piling, produced to best Management Practices, and with it you should get a greater level of marine borer protection.
- 2- Attached are some photographs of both 100% wrapped piling, and sectional wrapped piling. The sectional wrapped pilings are the ones that I believe will give you the appearance that you are looking to maintain on this project.
- 3- A budget estimate for Strong Seal® versus regular 2.50 CCA, Southern Yellow Pine, preserved wooden piling. Estimated delivered cost of a regular 60' 2.50 marine piling that is 12" diameter on the large end, at \$1,200.00 per each, and the same piling with a 30 foot section of the piling wrapped is \$2,200.00 per each. If you went with 100% wrapped a budget number would be \$3,300.00 per each. (Note that wooden piling are much less expensive than competitive products, especially on an installed basis.) (120 piling x \$3,300.00, maximum, is \$396,000, plus installation, not \$8,000,000.00. I cannot imagine how they got to 8 million?)
- 4- Your fax discusses plastic pile wraps. The partial sectional wrap that I have suggested would still allow for soundings
- 5- Your fax also discusses FRP pile Jackets. I am not familiar with this technology. Wrapping the in place piling with a jacket, and then adding grout, is not at all related to our Strong-Seal® product. This appears to be a repair technology not a pre-installation process.

I hope that my comments are of benefit, and if I can be of further assistance do not hesitate to ask.

Morgan

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SECTION VII

**THE 2ND REPORT CONTAINS EXAGGERATED AND UNFAIR
COMPARISONS OF THE RELATIVE SERVICE LIFE (AND LIFE
CYCLE COSTS) OF CONCRETE AND STEEL vs. TIMBER
AND
FAILS TO INCLUDE THE ELECTROLYSIS PROBLEMS
THAT CHATHAM HAS HAD WITH STEEL PILINGS AT THE FISH PIER**

The comparison of initial replacement costs for timber vs. concrete and steel confirms what we have long known: that replacing a bridge in timber will cost less initially than replacing it in concrete and steel (Fn. 1). The amount of the difference estimated by MassDOT is substantial— \$8,147,000 for timber and \$10,676,000 for concrete and steel (Fn. 2)— or almost 25%.

However, the Report then refers to Life Cycle Costs to try and demonstrate, that over the long term, the cost of timber will be more than concrete and steel because the service life of wood is that much less than the service life of concrete and steel. For example, MassDOT estimates the service life of a wooden piling as no more than 30 years, (a wooden stringer could last up to 50 years)---- whereas the life of concrete and steel claimed by MassDOT is much higher (steel piles supposedly will last from 80 to 100 years). (According to MassDOT, the primary reason for the full replacement of a timber bridge every 30 years is “due to the need to replace the pilings.” (At. page 4.))

Unfortunately, while the 1st and 2nd MassDOT Reports discuss the estimated life of timber at length, the Reports admit that the estimates vary widely dependent upon species and environment, and much of the evidence or information given is mostly anecdotal. With respect to concrete and steel, there is simply no substantiation at all with respect to its claimed service life of 80 to 100 years, either overall or in a salt water environment. (Fn. 2.) A request by the Friends for supporting documentation has been met with the response from FHWA only that it will be “discussed” at the Consulting Parties’ meeting of May 17th.

The only small reference in these Reports to the problems of placing steel pilings in a salt water environment omits any mention of the severe problems that we have had here in Chatham with respect to the extreme electrolysis of the steel pilings which has taken place at the Fish Pier almost from the inception approximately 30 years ago. The cause of this is often difficult to locate, but there is every reason to believe that the nearby presence of other boats and of a marina could mean a similar problem at the bridge if concrete and steel pilings were used in place of wood. The cost and complexity to repair and eliminate such electrolysis is very substantial (perhaps in excess of \$100,000), including the need for elaborate safeguards to prevent rust and chemicals from going into the water. Since work could obviously not be done in the summer and shoulder months when boating and vehicular traffic is at its highest, it would mean doing much of the work in the winter when it would be more difficult and costly.

In summary, simply by overestimating the service life of concrete and steel, its Life Cycle Cost is unfairly reduced. And by underestimating the service life of wood, its Life Cycle Cost is unfairly increased. This dual effect is to skew the conclusions of the Reports in the direction that MassDOT has always wanted to go, and that is toward the claim that a concrete and steel replacement is “more prudent” than an all-timber replacement. When this is coupled with the failure to even consider the costly problems caused by electrolysis of the steel pilings, one has to question the accuracy and validity of the conclusions reached in these Reports. (See also attached letter from the Forest Products Laboratory of the US Dept. of Agriculture.)

Fn. 1. See Table 1 - Life Cycle Cost Analysis Summary, App. B.

Fn. 2. On page 33 of the 2nd Report, it is stated only that “Steel Stringers and concrete beams have a longer service life than timber stringers, but are not completely maintenance free. Steel stringers require periodically cleaning and painting and repair including strengthening, due to corrosive deterioration or fatigue. Concrete beams require patching of cracks and spalls caused by corrosive expansion of the reinforcing steel and freeze-thaw. The timber sidewalk obscures the steel stringers and concrete beams and thus these members are not readily visible.” (Emphasis Added.)

SECTION VIII

THE REPORT INCORRECTLY CLAIMS THAT THE AVERAGE DAILY TRAFFIC (ADT) ON BRIDGE STREET IS 2,100 VEHICLES PER DAY WHEREAS THE CORRECT AMOUNT IS THE MUCH LOWER 818 VEHICLES PER DAY. THE LESSER TRAFFIC REQUIRES RECONSIDERATION OF THE ROAD DESIGNATION AND THE DESIGN SPEED AS WELL AS THE NEED FOR LOWER SPEEDS IN GENERAL

I. Average Daily Traffic

The 1st MassDOT Report states that Bridge Street is classified as an Urban Collector Road with an Average Daily Traffic (“ADT”) of 2,100 vehicles of which approximately 6% are trucks (at page 6). This amount---- 2,100 vehicles per day— appeared to the Friends and others as being grossly exaggerated. While traffic in the summer months only may approximate or exceed that number, it is substantially less during the remaining eight or nine months of the year.

Accordingly, in April, 2010, the Friends asked MassDOT for a copy of the traffic study that was made to support this claim. In the interim, we also requested that the Cape Cod Commission complete such a study, which was then done between May 3 and May 7. The study confirmed that the raw average daily traffic was only 861 vehicles, with a truck percentage of 7.9%, and that the average annual daily traffic was 818 vehicles.

On May 18th, we received the following email from Stephen Soma, the then Project Manager for the Mitchell River Bridge:

“In regards to your inquiry

.....

2. The ADT for this particular project most likely came from an in the field count during the inspection of the bridge extrapolated to estimate the ADT. The figure is an order of magnitude ADT determination. A formal traffic study was not done.” (See attached.)

It is clear that the ADT of 2,100 used by MassDOT to support this Design Designation was not based on a proper traffic study and is far in excess of the actual average daily traffic (818) found by the Cape Cod Commission in May of 2010. Therefore, the Reports need to consider and account for this discrepancy and the extent to which it affects the proper functional road classification for Bridge Street and the proper design speed for the road and bridge traffic.

II. The Speed of Vehicles Over the Bridge

The 1st Report (at p. 4) openly acknowledges that replacing the timber riding surface with concrete or asphalt and widening the roadway will be hazardous to the public by causing greater vehicular speeds and increasing the likelihood of crashes:

“...With the narrow roadway width, it is advisable to maintain low traffic speed across the bridge. The current significant wear of timber wearing surface promotes lower traffic speeds, which reduces the likelihood of crashes. However, with the replacement of the timber wearing surface and corresponding improvement in the smoothness of the riding surface, traffic speeds are anticipated to increase, which increases the concerns with the narrow roadway width.”

Aren't lower speeds what all of us in town want for Bridge Street and the Bridge? Is there anyone who is intentionally designing a scenic bridge roadway that will increase vehicular speeds and the possibility of crashes at this historic location? Here, MassDOT has itself recognized that replacing the timber deck with concrete and/or widening the roadway will inevitably lead to faster traffic and the real possibility of accidents. Yet, the design speed of the roadway over the Bridge is shown at 30mph in the official design documents, which means that traffic can be expected to go much faster than that. If the public truly wants to prevent this from happening, they will join with the Friends in its opposition to a concrete or asphalt roadway across the Bridge and to the proposed 30 mph design speed. By retaining the timber deck, MassDOT will be promoting lower traffic speeds and reducing the likelihood of crashes.

Norman Pacun

From: "Norman Pacun" <clamknife@comcast.net>
To: "Boundy, Stephanie (DOT)" <Stephanie.Boundy@state.ma.us>; "Soma, Stephen (DOT)" <Stephen.Soma@state.ma.us>
Sent: Thursday, May 20, 2010 10:42 AM
Subject: Re: Mitchell River Bridge
Dear Ms. Boundy:

This is in reply to Mr. Soma's email of May18th (below). I am sending this to you at his request so that a prompt response can be developed by you.

With specific reference to Paragraph 2 of his email, please forward me all of the documents, memoranda, and correspondence which refer to or deal with, in any way, the ADT for this particular project. My request includes all estimates or informal analyses of any kind, since Mr. Soma concludes that a formal traffic study was not done.

Please treat this request as being made under the State Public Records Law. Upon my review of these documents, I will ask for copies of those which I need and will make payment for same as required.

If you have any questions regarding my request, please get back to me promptly.

Norman Pacun
c/o Friends of the Mitchell River Wooden Drawbridge
14 Sunset Lane
Chatham, MA 02633

----- Original Message -----

From: Soma, Stephen (DOT)
To: Norman Pacun
Cc: Boundy, Stephanie (DOT) ; Partington, Eliza (DOT) ; Elnahal, Shoukry (DOT) ; Donald, Thomas (DOT) ; Louis-Jacques, Harry (DOT)
Sent: Tuesday, May 18, 2010 12:10 PM
Subject: RE: Mitchell River Bridge

Mr. Pacun,

Sorry for not getting back to you sooner. It took a while to find out where the ADT came from. In the future please go through Ms. Boundy. That way letters can be properly logged in and tracked. She will make sure a prompt response will be developed.

In regards to your inquiry.

1. The Life Cycle Cost Analysis report is in the draft stage.
2. The ADT for this particular project most likely came from an in the field count during the inspection of the bridge extrapolated to estimate the ADT. This figure is an order of magnitude ADT determination. A formal traffic study was not done.

Note: I see from a previous e-mail that you had received a copy of a formal study done recently by the Cape Cod Commission.

If I can be of further assistance, please let me know.

Regards,

Stephen Soma, P.E.
MassDOT; Highway Division
Accelerated Bridges Program
10 Park Plaza
Boston, Ma. 02116
Phone: (617) 973-8176

From: Norman Pacun [mailto:clamknife@comcast.net]
Sent: Friday, April 16, 2010 12:01 PM
To: Soma, Stephen (DOT)
Subject: Mitchell River Bridge

Dear Mr. Soma:

May I have your response to the following questions:

1. Are the cost estimates which you prepared for the different alternates, as referred to in Mr. Elnahal's email to me of April 5, still in draft form or have they been reviewed? If so, would you please send me a copy of any or all of the alternates involved.
2. Can you forward to me by return email or fax a copy of the Traffic Study that was done to support the ADT of 2100 for the Mitchell River Bridge. I believe this was done some time ago, so that it is available as a public record.

Thank you for your email reply.

Norman Pacun
Friends of the Mitchell River Wooden Drawbridge



DEVAL L. PATRICK
GOVERNOR
TIMOTHY P. MURRAY
LT. GOVERNOR
JEFFREY B. MULLAN
SECRETARY & CEO

Moving Massachusetts Forward.
massDOT
Massachusetts Department of Transportation

June 2, 2010

Mr. Norman Pacun
c/o Friends of the Mitchell River Wooden Drawbridge
14 Sunset Lane
Chatham, Massachusetts 02633

Re: Public Records Request
ADT

Dear Mr. Pacun:

The Massachusetts Department of Transportation has received your e-mail dated May 20, 2010 in which you requested that you be provided with copies of all the documents, memoranda and correspondence which refer to or deal with, in any way, the ADT for the Mitchell River Bridge Project.

In accordance with your request, I have enclosed a copy of a document that was prepared by Stephen Soma, P.E., Massachusetts Department of Transportation Highway Division Accelerated Bridge Program, who indicated that the ADT formula was set forth in pen on the bottom of the enclosed document. It is my understanding that your previous question was answered by Mr. Soma in an e-mail to you dated mat 18, 2010 (12:10 PM).

I trust that the enclosed document provides you with the desired assistance.

Sincerely,

Ulysses Jacks
Deputy Chief Counsel

Enclosure
cc: Stephen Soma, P.E.,
Accelerated Bridge Program

Refer to No. 10-0419

www.mass.gov/massdot

TEN PARK PLAZA • BOSTON, MA 02116-3969 • PHONE: 617.973.7000 • FAX: 617.973.8031 • TDD: 617.973.7306

September 13, 2006

State Information
 Agency Br.No. (112) NBIS Bridge Length Y
 AASHTO= 048.7 (104) Highway System N
 FHWA Select List= Y (26) Functional Class - Urban Collector 17
 Identification
 Structure Number CO7001437MUNNBI (100) Defense Highway 0
 County Route 151000000 (101) Parallel Structure N
 State Highway Department District 05 (102) Direction of Traffic - 2-way traffic 2
 County Code 001 (4) Place code 12995 (103) Temporary Structure N
 Features Intersected WATER MITCHELL RIVER (105) Federal Lands Highways 0
 Facility Carried HWY BRIDGE ST (110) Designated National Network N
 Location .9 MI S OF RTE 28 (20) Toll - On free road 3
 Kilometerpoint 0000.322 (21) Maintain - Town Agency 03
 Base Highway Network N (22) Owner - Town Agency 03
 LRS Inventory Route & Subroute 00000000000 (37) Historical Significance not eligible N
 Latitude 41 DEG 40 MIN 12.00 SEC (58) Deck 6 ✓
 Longitude 69 DEG 57 MIN 39.60 SEC (59) Superstructure 6 ✓
 Border Bridge State Code Share % (60) Substructure 4 ✓
 Border Bridge Structure No. # (61) Channel & Channel Protection 5 ✓
 Structure Type and Material
 Structure Type Main: Timber Code 716 (62) Culverts N
 Movable - Basicule Jointless bridge type: Not applicable
 Structure Type Appr. Code 702
 Stringer/Girder Code 702
 Number of spans in main unit 001
 Number of approach spans 0013
 Deck Structure Type - Timber Code 8
 Wearing Surface / Protective System
 A) Type of wearing surface - Timber Code 7
 B) Type of membrane - None Code 0
 C) Type of deck protection - Other Code 9
 Age and Service
 Year Built 1936
 Year Reconstructed 1980
 Type of Service: On - Highway-Pad
 Under - Waterway Code 55
 Lanes: On Structure 02 Under structure 00
 Average Daily Traffic 2006 002100 ~~002000~~
 Year of ADT 2004 (109) Truck ADT 06 %
 Bypass, detour length 005 KM
 Geometric Data
 Length of maximum span 0006.7M
 Structure Length 00069.1M
 Curb or sidewalk: Left 01.0 M Right 01.0M
 Bridge Roadway Width Curb to Curb 007.4M
 Deck Width Out to Out 011.4M
 Approach Roadway Width (w/shoulders) 007.3M
 Bridge Median - No median Code 0
 Skew 00 DEG (35) Structure Flared N
 Inventory Route MIN Vert Clear 99.99M
 Inventory Route Total Horiz Clear 07.4M
 Min Vert Clear Over Bridge Rdwy 99.99M
 Min Vert Underclear ref N 00.00M
 Min Lat Underclear RT ref N 00.00M
 Min Lat Underclear LT 00.00M

Classification
 Condition
 Load Rating and Posting
 Appraisal
 Inspections
 Rating Loads
 Field Posting
 Misc.
 Accessibility (Needed/Used)

500 ✓
 ✓
 ✓
 ✓

10/10/06

Navigation Data
 Navigation Control - Navigation control on waterway Code 1
 Pier Protection Code 1
 Navigation Vertical Clearance ADT Data 002.4M
 Vert-lift Bridge Nav Min Vert Clear M
 Navigation Horizontal Clearance 15 mi. limit 0004.0M
 10:45 AM

Report Date 02/01/97 H20 Type 3 Type 3S2 Type HS
 Operating 27.0 37.0 56.0 40.0
 Inventory 19.0 25.0 39.0 28.0
 Status WAIVED Posting Date 03/26/97
 2 Axle 3 Axle 5 Axle
 Actual Recommended
 Bridge Name
 N Anti-missile fence N Acrow Panel N Jointless Bridge
 N/N Liftbucket N/N Rigging Inspection
 Y/Y Ladder N/N Staging Hours: 041
 Y/Y Boat ✓ N/N Traffic Control
 N/N Wader N/N RR Flagperson
 Y/Y Inspector 50 Y/Y Police
 N/N N/N

24 CWS, 3 trucks; ADT = 27/0.013 = 2078 SAY 2100 2/27 = 11.1% say 6% OK

Norman Pacun

From: "Andy Koziol" <akoziol@capecodcommission.org>
To: <clamknife@comcast.net>
Cc: "Priscilla Leclerc" <pleclerc@capecodcommission.org>; "Paul Lagg" <plagg@chatham-ma.gov>
Sent: Friday, May 07, 2010 1:02 PM
Attach: image001.jpg; Bridge_Eof_Gammy_05032010_VOL.pdf; Bridge_Eof_Gammy_05032010_CLASS.pdf;
Bridge_Eof_Gammy_05032010_SPD.pdf
Subject: Bridge Street Chatham Traffic Count
Hi Norm Pacun,

Attached you will find three (3) PDF documents relevant to the recent automatic traffic count in Chatham:

Location: Bridge Street east of Gammy's Lane.
Dates: May 3, 2010 – May 7, 2010

- Bridge_Eof_Gammy_05032010_VOL.pdf – provides volume data
- Bridge_Eof_Gammy_05032010_CLASS.pdf – provides vehicle classification
- Bridge_Eof_Gammy_05032010_SPD.pdf – provides speed data

Salient points:

- Raw average daily traffic (ADT) for May count is 861 vehicles per day.
- Average Annual Daily Traffic is 818 vehicles (861 x 0.95). 0.95 is 2010 May seasonal adjustment factor.
- Truck percentage is 7.9%.
- Westbound 85th percentile speed = 34 mph, Eastbound 85th percentile speed = 37 mph

****Note:** it is not necessary to apply an axle adjustment factor to the raw data because our setup allowed for the automatic adjustment.

Andrew Koziol
Transportation Analyst
t. 508-362-3828
f. 508-362-3136

CAPE COD
COMMISSION

Cape Cod Commission

Location: Bridge St E of Gammys Ln
 Town: Chatham
 Counted By: AK/LM
 Counter: AP-3

3225 Main St., PO Box 226
 Barnstable, MA, 02630
 508-362-3828

Site Code: 20531
 Date Start: 03-May-10

Start Time	03-May-10		Tue		Wed		Thu		Fri		Sat		Sun		Weekday Ave	
	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB
12:00 AM	*	*	1	0	0	0	0	0	0	0	*	*	*	*	0	0
01:00	*	*	0	0	1	0	3	2	1	0	*	*	*	*	1	0
02:00	*	*	0	0	0	0	0	0	0	0	*	*	*	*	0	0
03:00	*	*	1	0	0	1	2	2	1	0	*	*	*	*	1	1
04:00	*	*	0	0	3	0	1	1	1	0	*	*	*	*	1	0
05:00	*	*	3	0	2	2	5	2	3	4	*	*	*	*	3	2
06:00	*	*	3	10	7	14	8	18	12	17	*	*	*	*	8	15
07:00	*	*	14	24	18	31	15	28	24	31	*	*	*	*	18	28
08:00	*	*	16	22	20	29	24	18	34	30	*	*	*	*	24	25
09:00	*	*	32	21	23	31	30	39	42	38	*	*	*	*	32	32
10:00	*	*	26	34	23	26	38	32	*	*	*	*	*	*	29	31
11:00	*	*	38	44	36	39	39	28	*	*	*	*	*	*	38	37
12:00 PM	*	*	42	42	53	53	45	46	*	*	*	*	*	*	47	47
01:00	*	*	43	33	43	30	34	46	*	*	*	*	*	*	40	36
02:00	*	*	38	31	46	45	38	20	*	*	*	*	*	*	41	32
03:00	*	*	45	46	43	31	44	40	*	*	*	*	*	*	44	39
04:00	*	*	40	34	38	36	31	29	*	*	*	*	*	*	36	33
05:00	34	26	32	25	28	21	35	23	*	*	*	*	*	*	32	24
06:00	17	17	15	16	30	21	18	12	*	*	*	*	*	*	20	16
07:00	8	11	18	13	18	14	20	12	*	*	*	*	*	*	16	12
08:00	10	6	10	15	14	7	15	5	*	*	*	*	*	*	12	8
09:00	4	2	2	2	2	9	7	4	*	*	*	*	*	*	4	4
10:00	2	0	4	1	0	0	4	4	*	*	*	*	*	*	2	1
11:00	1	2	1	1	2	1	1	2	*	*	*	*	*	*	1	2
Total	76	64	424	414	450	441	457	413	118	120	0	0	0	0	450	425
Day	140		838		891		870		238		0		0		875	
AM Peak			11:00	11:00	11:00	11:00	11:00	09:00	09:00						11:00	11:00
Vol.			38	44	36	39	39	39	42	38					38	37
PM Peak	17:00	17:00	15:00	15:00	12:00	12:00	12:00	12:00							12:00	12:00
Vol.	34	26	45	46	53	53	45	46							47	47

Comb. Total	140	838	891	870	238	0	0	875
ADT	ADT 866	AADT 866						

SECTION IX

**MISUNDERSTANDING ON THE PART OF MASSDOT IN REGARD TO THE
CHATHAM BIKEWAYS COMMITTEE'S DECISIONS ABOUT BIKE LANES
ON THE MITCHELL RIVER BRIDGE**

In its 2nd Report, MassDOT states that "The 26'0" roadway accommodates two 11'0" lanes with 2'0" shoulders (on) each side. The 2'0" shoulders were reduced from previous 4'0" bike lanes at the request of the Town of Chatham and supported by the Chatham Bikeways Committee. Currently there are no bike lanes along Bridge Street." (At p. 10.)

Since the Bikeways Committee and the Town of Chatham does not wish to have shoulders or bike lanes or a wider roadway, there appears to be a misunderstanding on the part of MassDOT.

The facts are these:

- 1) There were no bike lanes on the first MassDOT plans, which stipulated a 24' roadway, the same as there is now. At the August 17, 2010 meeting of the Board of Selectmen, and according to Mr. Shoukry Elnahal, the senior MassDOT official involved, bike lanes were added to the plans at a later time, purportedly at the request of the public.
- 2) In a letter to MassDOT dated March 31, 2010 (attached), Jeff Colby, Chatham D.P.W. Superintendent, states that "The Chatham Bikeways Committee has taken the position that segregated bike lanes should not be a part of the proposed bridge. It was felt that bikes should proceed as part of the general traffic, particularly since Bridge Street does not have dedicated bike lanes." He further requested, "Please consider a bridge design that does not include bike lanes, but rather includes two 12 foot lanes for bicycle and automobile traffic, similar to what exists on the bridge today."
- 3) At a meeting with the Chatham Board of Selectmen on August 17, 2010, Mr. Elnahal assured the Selectmen that the bridge roadway width would be reduced to 24'. (At 2:14:07 of the televised broadcast.)
- 4) In response to an individual who has been advocating for bike lanes on the Bridge, the Chairman of the Bikeways Committee sent an email dated March 11, 2011 that replied in part that "Shortsighted or not, we simply don't see the need for bike lanes on the bridge and do not favor them being included. Nor do we see the likelihood and/or the need for bike lanes on Bridge Street in the future." According to the Bikeways Committee Chairman in an email dated May 11, 2011 (attached), the position of the Committee "...has not changed and we have taken no further action on the subject since the March 11th email."
- 5) In consideration of the above, why would MassDOT now be considering narrowing the roadway from two 12' lanes to two 11' lanes and adding 2' shoulders on each side?

In accordance with the above facts, it is clear that the reference in the 2nd Report that the Bikeways Committee supports the two 2' shoulders/bike lanes and a wider roadway to 26'0" is incorrect. The width of the Bridge should remain at 24' as desired by the Bikeways Committee, the DPW Director, and the Board of Selectmen.



Town of Chatham
DEPARTMENT OF PUBLIC WORKS
221 Crowell Road
Chatham, MA 02633

(508) 945-5155 - office

(508) 945-5157 - fax

March 31, 2010

Alexander Bardow, P.E.
Director of Bridges and Structures
Massachusetts Department of Transportation
10 Park Plaza
Boston, MA. 02116-3969

Re: Mitchell River Wooden Drawbridge, Chatham
Bridge No. C-07-001, Bridge Street over Mitchell River
MHD Project Number 603690

Dear Mr. Bardow:

I am writing to you regarding the on-going design for the replacement of the Mitchell River drawbridge in Chatham. A number of residents have expressed their concern that the proposed bridge over the Mitchell River is substantially wider than the existing bridge.

I met with the Chatham Bikeways Committee, on March 29, 2010, to discuss the bridge width and the need for dedicated bike lanes.

The Chatham Bikeways Committee has taken the position that segregated bike lanes should not be a part of the proposed bridge. It was felt that bikes should proceed as a part of the general traffic, particularly since Bridge Street does not have dedicated bike lanes.

Please consider a bridge design that does not include bike lanes, but rather includes two 12 foot lanes for bicycle and automobile traffic, similar to what exists on the bridge today.

Thank you for your continued assistance and that of your Accelerated Bridge Program staff in helping the Town of Chatham replace the Mitchell River drawbridge.

Sincerely,

Jeffrey S. Colby
D.P.W. Superintendent

Cc: Bikeways Committee

Gloria Freeman

From: "Ronald Holmes" <ron.holmes@verizon.net>
To: "'Jeff Colby'" <jcolby@chatham-ma.gov>; "'Gloria Freeman'" <freeannie@comcast.net>
Sent: Wednesday, May 11, 2011 3:11 PM
Subject: RE: Mitchell River Bridge
 Gloria,

I can confirm that, (1) the Bikeways Committee has had no direct contact with Mass DOT regarding the width or any other aspect of the re-designed Mitchell River Bridge and our only input on the project, made through Jeff Colby, was that we didn't see the need for bike lanes; and (2) our position regarding the bike lanes has not changed and we have taken no further action on the subject since the 3/11/11 email to George Meyers that you reference.

Ron Holmes, Chair
 Bikeways Committee

From: Jeff Colby [mailto:jcolby@chatham-ma.gov]
Sent: Tuesday, May 10, 2011 9:52 AM
To: Gloria Freeman
Cc: Ronald Holmes
Subject: RE: Mitchell River Bridge

Gloria,
 I am probably not the best person to comment on the correspondence between Mr. Holmes and Mr. Meyers, therefore I have copied Ron Holmes on this email.
 I do believe that the Bikeways Committees last position was not to pursue the dedicated bike lanes for the Mitchell River Bridge.
 Perhaps Mr. Holmes would like to comment further.
 Thanks,
 Jeff

From: Gloria Freeman [mailto:freeannie@comcast.net]
Sent: Monday, May 09, 2011 1:56 PM
To: Jeff Colby
Subject: Mitchell River Bridge

Sorry to bother you, Jeff, but I would like to confirm that the last word the Bikeways Committee had to say relative to bike lanes on the Bridge was Ron Holmes' note to George Myers, dated 3-11-11, in which Mr. Holmes reported that the Committee does "not see the need for bike lanes on the bridge and do not favor them being included. Nor do we see the likelihood and or need for bike lanes on Bridge Street in the future."

This question arose in reading MassDOT's Second Draft Report, April 28, 2011, in which under 3.2.3, Typical Section, the state reports:

The bridge will have an overall width of 40'11". The 26'-0" roadway accommodates two 11'-0" lanes with 2'-0" shoulders on each side. The 2'-0" shoulders were reduced from previous 4'-0" bike lanes at the request of the Town of Chatham and supported by the Bikeways Committee. Currently there are no bike lanes along Bridge Street.

This could be read that the Bikeways Committee requested 2' shoulders. I don't think they did,

5/11/2011

but I would like to confirm that, as well as whether the Bikeways Committee has taken any further action in regard to the Bridge since the March 11th email.

Thank you very much.

gloria

SECTION X

**THE SECTION 106 PROCESS REQUIRES THE FEDERAL AGENCY
AND STATE AGENCY TO CONSIDER A BROAD RANGE OF ALTERNATIVE SOLUTIONS**

The primary purpose of the Section 106 process is to avoid, minimize or mitigate adverse effects to the federally protected historic asset which is the subject of the specified project. This means that consideration must be given not only to solutions proposed by the federal and state agencies involved (here, FHWA and MassDOT), but also to a broad range of other solutions which may be proposed by the Consulting Parties or by the public itself.

As set forth in Section 800.1(c) of the Regulations:

“The agency official shall ensure that the Section 106 process is initiated early in the undertaking’s planning, so that a broad range of alternatives may be considered during the planning process for the undertaking.”
(Emphasis Added).

The Friends are hereby requesting consideration of the following two alternatives at this time:

I. ESTABLISHMENT OF A TRUST FUND OR ESCROW ACCOUNT TO CONTAIN SUFFICIENT FUNDS TO ENABLE THE TOWN TO FURTHER REPAIR/REPLACE THE BRIDGE IN TIMBER, WITH SUCH AMOUNT TO BE AT LEAST THE DIFFERENCE STATED BY MASSDOT BETWEEN THE INITIAL COST OF TIMBER (\$8.1 MILLION) AND THE INITIAL COST OF CONCRETE AND STEEL (\$10.6 MILLION)

A. The 2nd MassDOT Report states that the initial cost of replacing the existing bridge with another timber bridge would be \$8.1 million dollars. This compares favorably with the initial cost for a concrete and steel bridge, as stated by MassDOT at \$10.6 million dollars. Thus, the State will be saving the difference of \$2.5 million dollars if an all-timber bridge is reconstructed, one whose design and character is most in keeping with its National Register eligible status in accordance with the purpose of Section 106.

B. Establishment of a trust fund or escrow account with sufficient funds (at least \$2.5 million dollars) to enable the Town to subsequently repair or replace the bridge in timber would further the purposes and policies of Section 106 to avoid harm to the federally protected asset. Of equal importance, it would level the playing field by eliminating the penalty against timber that is being encouraged by the Accelerated Bridge Program in favoring replacement with concrete and steel.

C. Since both timber and concrete are shown to have similar overall life cycle costs (\$22.5 million for timber and \$22.4 million for concrete and steel, in a best case scenario) the state will not have been harmed in accepting this alternative to protect the last wooden drawbridge in the entire state.

D. It is stated in these Reports, however, that there are two restrictions contained in the Accelerated Bridge Program which would inhibit such an alternative, as follows:

“As funding under the Accelerated Bridge Program only covers the cost of initial project (not future construction projects) the Town would be responsible for the cost of future repair, maintenance, rehabilitation and/or replacement work. Even though a timber bridge can have similar overall life cycle costs as a concrete and steel bridge, it is likely that the Town would be responsible for a larger proportion of the life cycle cost.

Funds for the Accelerated Bridge Program are only available through Fall 2016. As such, construction for the bridge must be complete before this date in order for the project to be eligible for these funds.” (At. p. 52). (Fn. 1).

E. The Friends are not aware of any provision of the Accelerated Bridge Program which would preclude the establishment of such a trust fund or escrow account. Nor are we aware of any provision of the law or regulations which provide that such a trust fund or escrow account would violate the requirement that construction must be complete before the Fall 2016. (See Fn. 1.) To the extent, however, that such a restriction(s) does exist, then we submit that the provisions of Section 106 and of 4(f) of the Transportation Act and the policies thereunder of protecting historical assets on or eligible for the National Register of Historic Places constitute federal law which pre-empts any such contrary provisions of the Accelerated Bridge Program. Consequently, these limitations must give way to the requirements of Section 106 and 4(f), as set forth elsewhere in this Submission.

II. THE CREATION OF A PRESERVATION EASEMENT WHEREIN THE TOWN WOULD RETAIN OWNERSHIP OF THE BRIDGE AND BE RESPONSIBLE FOR ITS INITIAL MAINTENANCE, BUT WHERE THE STATE WOULD BE RESPONSIBLE FOR ALL FURTHER REHABILITATION AND RESTORATION COSTS.

A. In 2008, as part of the Section 106 process involving preservation of the historic Bridge No. 31 which crosses the Winooski River in Richmond, Vermont, the State of Vermont (Agency of Transportation) and the Town of Richmond entered into a Historic Bridge Preservation Easement Agreement.

B. The parties recognized the aesthetic value and significance of the Bridge which is listed on or eligible for the National Register and that the preservation easement will assist in preserving and maintaining the bridge, its historic engineering and architectural features.

C. Pursuant to the Agreement, the Town agreed to preserve the bridge in perpetuity and keep it in a good state of repair, and the State agreed to be responsible for all substantial rehabilitation or restoration costs for the Bridge after the date of the Agreement.

D. This Agreement is an example of the type of alternative that is encouraged to be considered as part of the Section 106 process, and a copy of the Agreement is attached hereto.

Fn. 1. On April 25, 2011, the Friends made a formal request by email to FHWA for supporting documentation with respect to the provisions of the Accelerated Bridge Program that are so referenced in the 1st MastDOT Report. On that same day, Ms. Damaris Santiago of FHWA replied that the request had been forwarded to MassDOT and that they are working on a response.. On May 9th, Ms. Santiago advised the Friends by email only that the request would be “discussed” and “commented” upon at the Consulting Parties meeting of May 17th.

**HISTORIC BRIDGE PRESERVATION
EASEMENT AGREEMENT
BETWEEN
STATE OF VERMONT
AGENCY OF TRANSPORTATION
AND
TOWN OF RICHMOND**

Bridge No. 31 Town Highway No. 1/ FAS 209

THIS AGREEMENT, made this 23rd day of October, 2008, by and between the Town of Richmond, a municipal corporation created by and existing under the laws of the State of Vermont (MUNICIPALITY), and the State of Vermont, a sovereign state, acting through its Agency of Transportation (AGENCY).

WITNESSETH :

WHEREAS, MUNICIPALITY is the owner of Bridge No. 31 (Bridge) on Town Highway No. 1/FAS 209, which crosses the Winooski River; and

WHEREAS, AGENCY, for the purpose of facilitating compliance with section 106 of the National Historic Preservation Act, as amended (now codified at 16 U.S.C. § 470f), is authorized by 19 V.S.A. § 1513 to enter into preservation easements with cooperating municipalities; and

WHEREAS, MUNICIPALITY and AGENCY jointly recognize the historical, cultural, and aesthetic value and significance of the Bridge, which is listed on or eligible for listing on the National Register of Historic Places; and

WHEREAS, MUNICIPALITY's grant to STATE of a preservation easement enveloping the Bridge will assist in preserving and maintaining the Bridge, its historic engineering and architectural features, its contribution to the state's rural landscape or, as applicable, urban setting, and its value and significance to the people of Vermont;

WHEREAS, The MUNICIPALITY and AGENCY will be entering into a project agreement for the Bridge under Highway Project No. BHF 0209(5) (Project);

NOW, THEREFORE, in consideration of the premises and the mutual covenants and agreements hereinafter set forth, the MUNICIPALITY and AGENCY hereby agree as follows:

1. Grant of Preservation Easement. MUNICIPALITY, on behalf of itself, its successors and assigns, does hereby irrevocably give, grant, sell, bargain, and convey unto AGENCY, its successors and assigns, a perpetual preservation easement in gross enveloping the following described structure and all its superstructural, substructural, protective, or ornamental elements, as well as the land to which it is attached:

Bridge No.: 31
Common Name: Bridge Street Bridge
Town Highway No.: 1/ FAS 209
Street Name: Bridge Street
Feature Crossed: Winooski River

This easement, to be of a nature and character specified in further detail in this Agreement, shall constitute a binding servitude upon the Bridge and the land to which the Bridge is attached.

2. Vermont Historic Bridge Program. MUNICIPALITY hereby agrees to enroll the Bridge in the Vermont Historic Bridge Program. In so doing, MUNICIPALITY formalizes its commitment to continued highway use for this historic structure and, further, authorizes AGENCY to proceed with nomination of the Bridge for listing on the National Register of Historic Places if not already listed. If applicable, MUNICIPALITY agrees to sign this nomination upon its completion and to take any other measures that reasonably may be requested by AGENCY in connection with the nomination process.

3. Municipality's Covenants. MUNICIPALITY, for itself, its successors, and assigns, covenants with AGENCY, its successors, and assigns, as follows:

(a) MUNICIPALITY will preserve the Bridge in perpetuity. It is agreed and understood that the appearance and character of the Bridge at the time of the execution of this Agreement have been documented by AGENCY and that any changes made to the Bridge will be compatible with the historic, engineering and architectural features of the Bridge.

(b) MUNICIPALITY shall not alter, modify, enlarge, demolish, remove or raze the Bridge without the express written consent of the AGENCY. MUNICIPALITY may be given written consent if, in the written opinion of the AGENCY, the requested action would be in keeping with the historic character of the Bridge or area transportation needs.

(c) **MUNICIPALITY** will at all times keep the Bridge in a good state of repair, as necessary to maintain its structural soundness and safety. Unless otherwise agreed by the AGENCY, the MUNICIPALITY will be solely responsible for any and all repairs to the Bridge that may be necessary before the Bridge has been rehabilitated or restored by Highway Project No. BHF 0209(5). The MUNICIPALITY's responsibilities include but are not limited to conducting the following tasks as required but in no event less frequently than once each year:

(i) Cleaning bridge components with water or compressed air and removing with hand tools any deposits of debris;

(ii) Keeping drainage areas free of debris and grading deck drains and approach run-off away from Bridge elements beneath;

(iii) Removing all small trees and shrubs growing in, on, or near substructure units or under the Bridge;

(iv) Removing all debris that accumulates in the channel beneath the structure;

(v) Maintaining proper load posting and advance warning signs and keeping all such signs visible;

(vi) Maintaining a smooth transition between the approach roadway and bridge deck; and

(vii) Maintaining a straight and continuous guardrail, including repairs of minor damage caused by accidents.

(d) MUNICIPALITY will provide AGENCY with yearly certification that the tasks listed above have been performed. Should the MUNICIPALITY fail to provide this certification or to perform the listed tasks to the reasonable satisfaction of the AGENCY, the AGENCY covenants listed in paragraph 4 will be voided and the MUNICIPALITY will reimburse the AGENCY five percent (5%) of that portion of Project costs spent for rehabilitation or restoration of the Bridge. It is agreed and understood that should the MUNICIPALITY fail to provide either the required certification or reimbursement, then it may not be eligible for future state aid.

(e) MUNICIPALITY will not, without the express written consent of the AGENCY, place or allow the placement of any signs, billboards, or advertisements on the Bridge.

(f) MUNICIPALITY will not obstruct the regular opportunity of the public to view the bridge and agrees not to construct or move anything onto land or across any body of water that would interfere with significant views of the Bridge or be incompatible with the historic, engineering or architectural features of the Bridge.

4. **Agency's Covenants.** Subject to availability of appropriated funds, AGENCY, for itself, its successors, and assigns, covenants with MUNICIPALITY, its successors, and assigns, as follows:

(a) AGENCY will be responsible for all substantial rehabilitation or restoration costs for the Bridge incurred after the date of this agreement as long as the Bridge remains in highway use and the MUNICIPALITY fully discharges its responsibilities under paragraph 3, above. This will be accomplished through projects which will be initiated as necessary. Should MUNICIPALITY fail to fully discharge its responsibilities under paragraph 3, then AGENCY will be responsible for 95% of rehabilitation or restoration costs, with MUNICIPALITY responsible for the remaining five percent.

(b) AGENCY, contingent on MUNICIPALITY's full performance of its responsibilities under paragraph 3, above, will supplement MUNICIPALITY's efforts by periodically removing spot rust, applying suitable primer and paint, and coating steel at bearing points and joints with grease.

5. **Review Standards.** AGENCY, in exercising any authority vested in it under this Agreement to review any construction, alteration, repair, maintenance, or casualty damage, or to reconstruct or approve reconstruction of the Bridge following casualty damage, will apply the Secretary of the Interior's "Standards for Treatment of Historic Properties," 36 C.F.R. Part 68, as from time to time amended (Standards), and/or state or local guidelines or standards considered appropriate by AGENCY for review of work affecting historic bridges.

6. **Casualty Damage or Destruction.** In the event that the Bridge is damaged or destroyed by casualty, the MUNICIPALITY shall promptly notify the AGENCY. No repairs or reconstruction of any type, other than temporary emergency work to prevent further damage to the Bridge and to protect public safety, shall be undertaken by MUNICIPALITY without the AGENCY's prior written approval. Any and all repairs undertaken by the MUNICIPALITY will be done in a sensitive manner that is compatible with the historic, engineering and architectural features of the Bridge. At its option, AGENCY may elect to reconstruct the Bridge.

7. **Inspection and Access.** MUNICIPALITY will permit representatives of AGENCY, at all reasonable times, access to inspect the Bridge.

8. **Recording and Indexing.** In accordance with 32 V.S.A. § 1671 (Town Clerk), the Municipality shall record this agreement in the Land Records of the Municipal Clerk in which the Bridge is located. This Agreement will be indexed with the name of the MUNICIPALITY as grantor and the name of the State of Vermont as grantee.

9. **Recourse for Non-Compliance.** MUNICIPALITY and AGENCY specifically acknowledge that events and circumstances of non-compliance would constitute immediate and

irreparable injury, loss, and damage to the Bridge and, accordingly, would entitle AGENCY to such equitable relief, including but not limited to injunctive relief, as a court might determine. Any damages recovered may be applied by AGENCY to corrective action on the Bridge. No delay or omission by AGENCY in the exercise of any right or remedy upon any breach by MUNICIPALITY shall impair AGENCY's rights or remedies or be construed as a waiver.

IN WITNESS WHEREOF, the State of Vermont has caused its name to be subscribed
this 23rd day of October 2008, by David C. Dill, its Secretary of
Transportation and duly authorized agent.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
(AGENCY)

By: David C. Dill
David C. Dill, its Secretary of
Transportation and Duly Authorized Agent

STATE OF VERMONT)
WASHINGTON COUNTY, ss.)

At Montpelier, this 23 day of October, 2008, personally
appeared David C. Dill and he acknowledged the foregoing instrument by him as Secretary of
Transportation and duly authorized agent of the State of Vermont subscribed, to be his free act
and deed and the free act and deed of the State of Vermont.

Eileen Beake-Sayers
Notary Public

(My commission expires February 10, 2011)

APPROVED AS TO FORM:

DATED: 10/14/2008
[Signature]
ASSISTANT ATTORNEY GENERAL

IN WITNESS WHEREOF, the Town of Richmond has caused its name to be
subscribed this 20th day of October 2008 by Robert Marquis
K. Peter Parent, Mary Hauke, Jon Kart + ERIC Filkorn
[the members of its legislative body and its duly authorized agents] [its Selectboard
and duly authorized agent].

(notary on next page)

TOWN OF RICHMOND
By: [Signature]
K. Peter Parent
Mary Hauke, Chair
[Signature]
Eric W. Filkorn

Its Duly Authorized Agent(s)

RICHMOND, VT TOWN CLERK'S OFFICE
Received for record
December 10 AD. 2008
At 4 o'clock — minutes PM
and recorded in Book 186 Page 161
of LAW Records.
Attest
Mary Hauke Ass't
Town Clerk

668
21677

STATE OF VERMONT
CHITTENDEN COUNTY, ss.

At Richmond town hall, this 20th day of October 2008,

personally appeared Robert Marquis, K. Pete Parent,
Mary Houle, Jon Kart, Erik Filkorn

and he/she/they acknowledged the foregoing instrument by him/her/them, as

Selectboard and duly authorized agent(s) of the Town of Richmond
subscribed, to be his/her/their free act and deed and the free act and deed of the Town of
Richmond.


Notary Public

(My commission expires February 10, 2011)

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