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Organization/Affiliation	Chatham Resident
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Organization/Affiliation	Chatham Resident
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CONSULTING

PARTIES

TOWN OF CHATHAM

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

AS
JP

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

Florence Seldin, Chair
Chatham Board of Selectmen

INDIANA HISTORIC SPANS TASK FORCE

NATIONAL TRUST FOR HISTORIC PRESERVATION'

Historic Bridge FOUNDATION

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 [illegible] – LIFE CYCLE COST ANALYSIS SUMMARY

Alt.	Description	Initial Project Cost (ABP Funded)	Overall Life Cycle Cost (Present Value with 8% Discount Rate)		Town of Chatham Responsibility (Present Value with 8% Discount Rate)		Duration (c) Btwn. Bridge Closures (yrs.)	
			Worst Case	Best Case	Worst Case	Best Case	Worst	Best
	Timber Superstr on Timber Substr Timber Bascule Span (a)	$ [illegible]	$ 28,126,[illegible]	$ [illegible]	$ [illegible]	$ [illegible]	[illegible]	20
1A	Timber Superstr on Timber Substr Timber Bascule Span (b)	$ [illegible]	$ [illegible]	$ [illegible]	$ [illegible]	$ [illegible]	[illegible]	20
1B	Timber Superstr on Timber Substr Timber Bascule Span (c)	$ [illegible]	$ [illegible]	$ [illegible]	$ [illegible]	$ [illegible]	[illegible]	20
2	Timber Superstr on Timber Substr Steel Bascule Leaf on Conc Pier (d)	$ [illegible]	$ [illegible]	$ [illegible]	$ [illegible]	$ [illegible]	[illegible]	20
3	Timber Superstr on Conc-Steel Substr Steel Bascule Leaf on Conc Pier (d)	$ [illegible]	$ [illegible]	$ [illegible]	$ [illegible]	$ [illegible]	10	2
4	Timber Deck and Steel Stringer Superstr on Conc-Steel Substr Steel Bascule Leaf on Conc Pier (d)	$ [illegible]	$ [illegible]	$ [illegible]	$ [illegible]	$ [illegible]	10	2
5	Conc Deck and Conc Beam Superstr on Conc-Steel Substr Steel Bascule Leaf on Conc Pier (d)	$ [illegible]	$ [illegible]	$ [illegible]	$ [illegible]	$ [illegible]	10	1

- 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

Alternative	Roadway Function & Safety	Context Sensitivity	Navigation Function & Safety	Initial Cost	Life Cycle Cost	Maintenance & Service Life	Environment
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

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
[illegible] Street, N.W.
Washington, D.C. 20240

R[illegible]ED

RECEIVED

OCT 14 2010

DETERMINATION OF ELIGIBILITY NOTIFICATION

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 X Not Eligible No Response Need More Information

Comments:

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

X Eligible A and C ___Not Eligible
Applicable criteria:

Comment:

See attached for detailed comment

Carol D. Shull
Keeper of the National Register

Date: 10-1-2010

United States Department of the Interior

NATIONAL PARK SERVICE
1849 C 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 (1858, 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.

Carol D. Shull

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

USDA 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: [illegible]
Date: May [illegible], 2011

Mr. Norman Bacon
Friends of the Mitchell River Wooden Drawbridge
[illegible]
Chatham, MA [illegible]

Dear Mr. Bacon:

Thank you for providing me with the opportunity to review the documents titled [illegible] April [illegible] and [illegible] March [illegible]. It is my understanding that both documents were prepared as part of a process to evaluate options for rehabilitation or reconstruction of the historic Mitchell River wooden drawbridge. After reviewing the reports I feel that further information and some clarification may be [illegible] in the decision-making process. There are three topics in particular that warrant further discussion [illegible] the potential use of treated wood in this project, durability, environmental impacts, and the role of improper 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 report [illegible] the service life [illegible] wooden bridge components and much longer estimated service life [illegible] steel components. Naturally, these service life [illegible] impact on the relative rankings of the construction materials. [illegible] for these service life estimates is not documented [illegible] for use in the decision-making process. [illegible] service life estimates for treated wood [illegible] with the [illegible] service life of existing bridge piles [illegible] which have [illegible] since 1975. The earlier report attempts to reconcile this conflict with the statement that [illegible]. This claim that creosote treated wood is more durable than wood treated with other preservatives such as chromated copper arsenate (CCA) [illegible] in the report and warrant further discussion.

CCA is an effective wood preservative and there is published research and [illegible] 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 Gutzmer (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 retention 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 10 years of exposure, the conclusion of the study [illegible] of the panels treated with seawater retention of CCA showed any damage from marine borer attack. [illegible] that the

[illegible] Key West, Florida presents a more severe hazard than the conditions in Massachusetts. Another report, [illegible] was a comparative [illegible] [illegible] Another study was conducted by [illegible] [illegible] [illegible]

generalizations about the toxicity of treated wood or other materials are of little value and should not be used as a means of determining disregarding a construction material. Before a construction material is judged as to environmentally risky for a certain application, specific site parameters should be considered. There has been substantial research on the environmental impacts of ore, site, CCA, and MCA 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/mampages/thescienceworldmacnet.html. These models could be utilized to estimate the impacts associated with pressure-treated wood on 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 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 redried. 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 [illegible]). 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 enhance 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 [illegible]). The report indicates that the wraps could be rigidly 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 wraps may extend the life of treated piles. However, it is clear that a protective barrier might provide some durability benefit. These factory applied wraps are only mentioned [illegible] because they are used, but not appear to be discussed in either of the reports on the Mitchell River Bridge.

In place Supplemental Treatments: The report titled [illegible] 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, [illegible] copper-based preservative on the interior face 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 [illegible] can provide substantial increases in durability with relatively low risk of environmental contamination. The solid phase MCC mentioned in the report is an example of one of these treatments. It is applied in a solid mini 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 [illegible] is [illegible] for the tube and into the surrounding wood. [illegible] application, 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 hereby 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 business cases that offer the service of applying treatments on a period of 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 report *[illegible]* and *[illegible]* 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,

Stan Lebow, Ph.D.
Team Leader, Wood Preservation Research
Durability and Wood Protection Research Group
Phone: 608-231-9417
Fax: 608-231-9592
email: slebow@fs.fed.us

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

[illegible]

Literature Cited

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[illegible]

Preservation
Massachusetts

Old City Hall
45 School Street
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617.723.3383

www.preservationmass.org

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,

James W. Igoe

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.

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 FHWA 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, <u>without reservation of any kind</u>, that it was <u>not</u> 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. 3

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 under-estimated 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 Selecmen 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

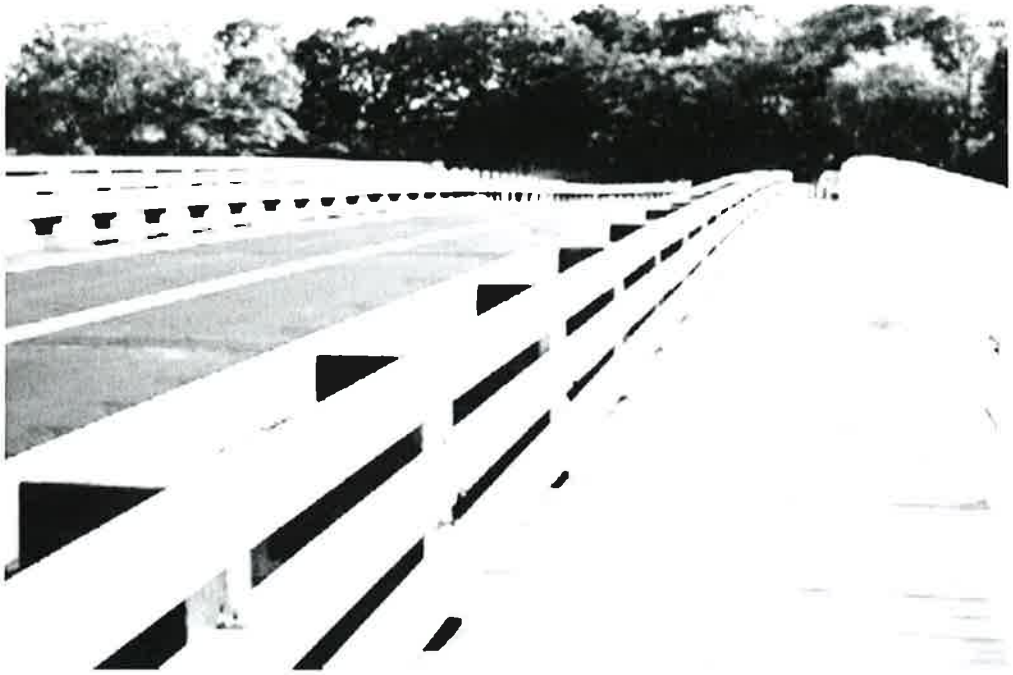
For the reasons set forth above, I continue to support the Alternative 5 design for the MRB. With an appropriate solution to what I perceive to be a potential retained moisture problem with all the remaining alternatives, I would support either one of the Alternative 3 or 4 designs if selected to advance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

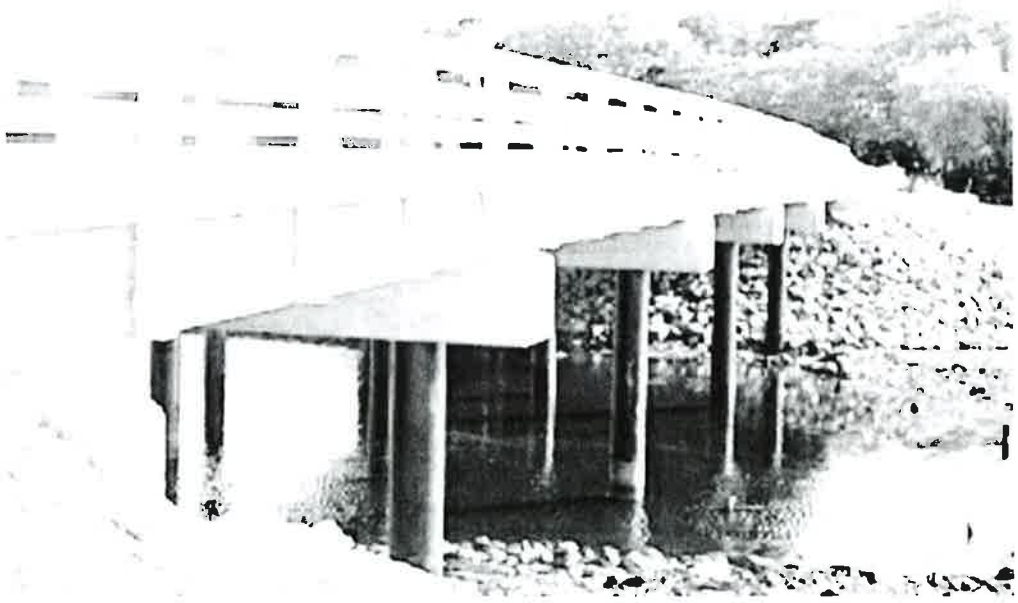
including the Alternative 1, 1A, 1B and 2 designs, that has a timber substructure in the water. I also do not support any of the Alternatives 1, 1A and 1B for the further reason that those designs incorporate a weather-exposed cable/pulley operating system rather than a weather-protected direct drive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

43 Eliphamets Lane, Chatham, MA 02633
(508) 945-7800 • Fax (508) 945-2285 info@peaseboatworks.com

629 East Seminary Street
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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,

James S. Cooper

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

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[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

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[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

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[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.

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[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.

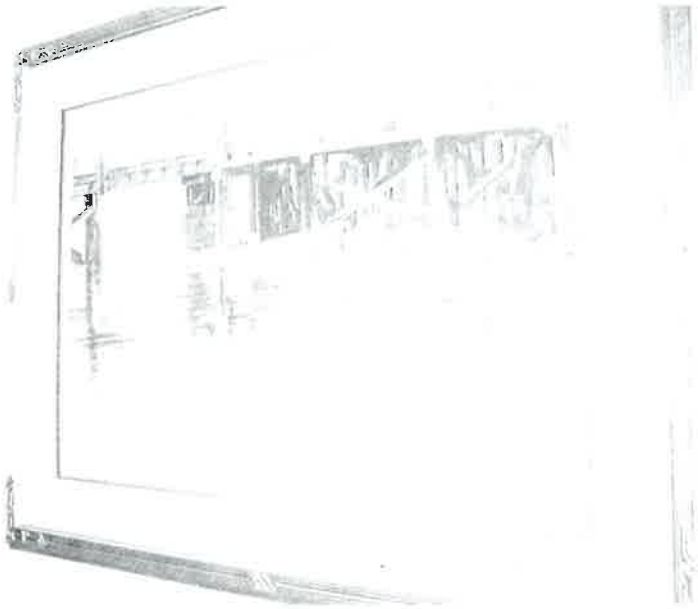
circa 1900 | 2009 photos

[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

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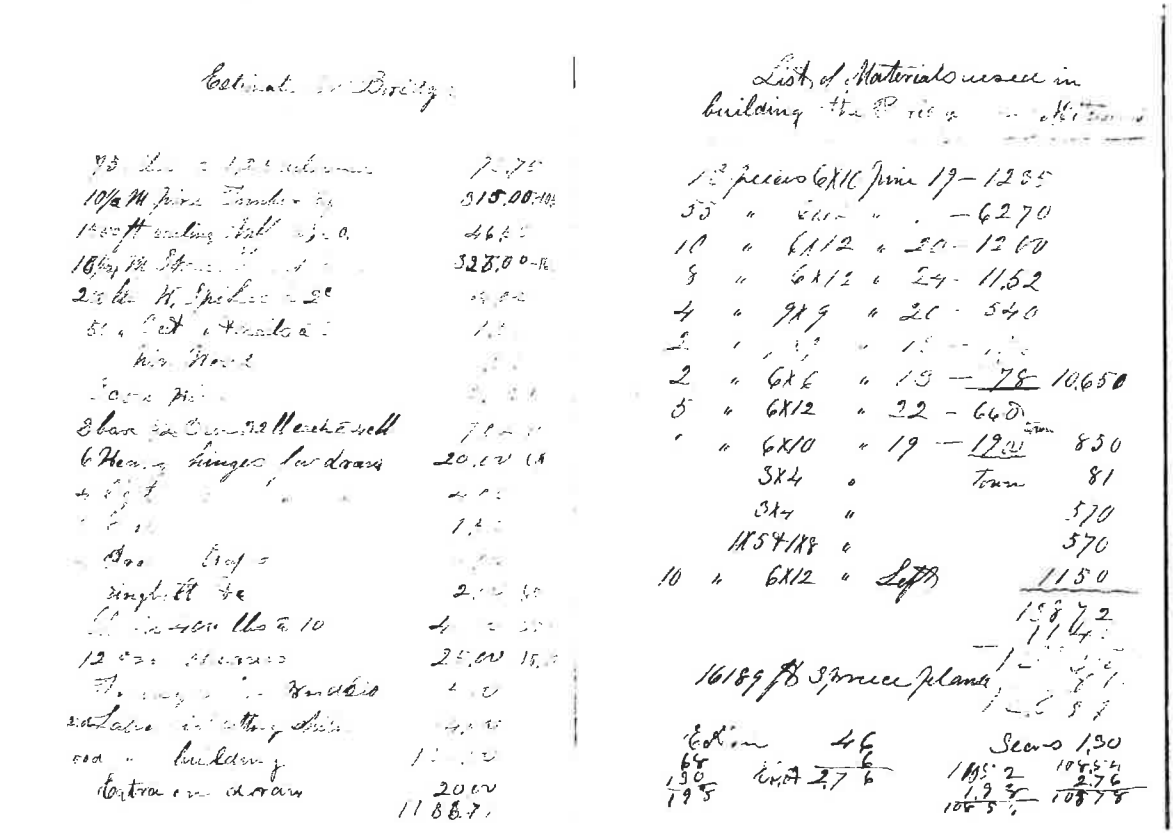
[3] Robert McCullough, *Timber Crossings*, 24, 32. [<http://www.uvm.edu/coveredbridges/papers/McCulloughpaper>].

(b) Design Pattern and function

As with any uncovered timber structure – especially one in a coastal environment – repair was ongoing and frequently discussed in Chatham town meetings. Sometimes the repairs which skilled carpenters made were extensive enough to touch elements of the bridge's design pattern and reveal an evolving structure. Community members at the time took a lot of this development for granted and insisted that change did not jeopardize the continuity of "style."[4]

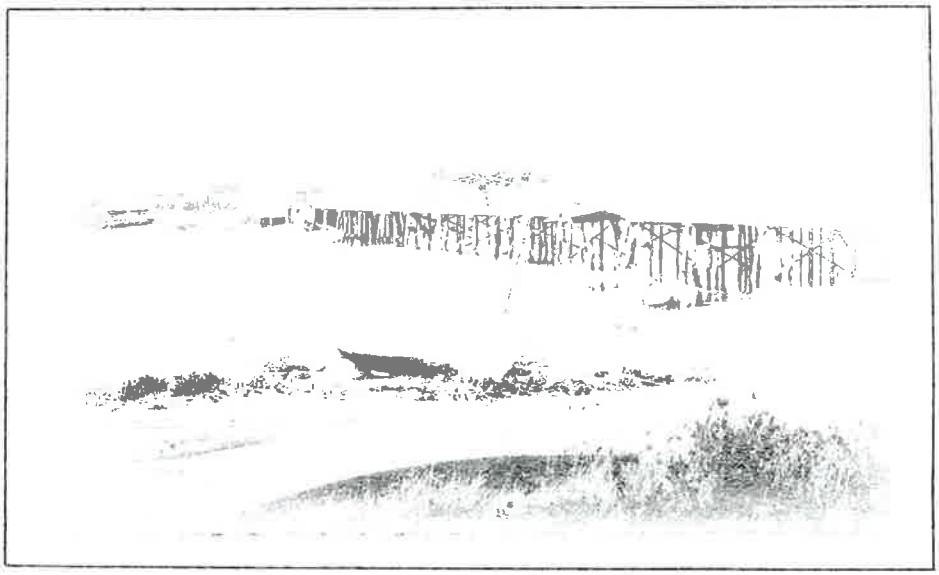
For today's analyst to assess the effects of this evolutionary process on the design pattern requires some careful teasing of the extant written records and observation of period photographs.

Whether the Edwards and Atwood 1858 Mitchell River Bridge had a draw span is not clear, although likely. It is clear, however, from 1871 estimates found among miscellaneous town records filed at the Atwood House Museum of the Chatham Historical Society that a draw span did exist in the early 1870s:



[4] Town records report "repairs," for example, in 1883, 1893 ($300), 1894, 1896 ($800), 1897 ($500), 1900, 1902 ($50), 1903, 1925. C. L. Baisley, "A Chronology of Chatham - IX," *Cape Cod Chronicle*, 23 January 1974.

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]

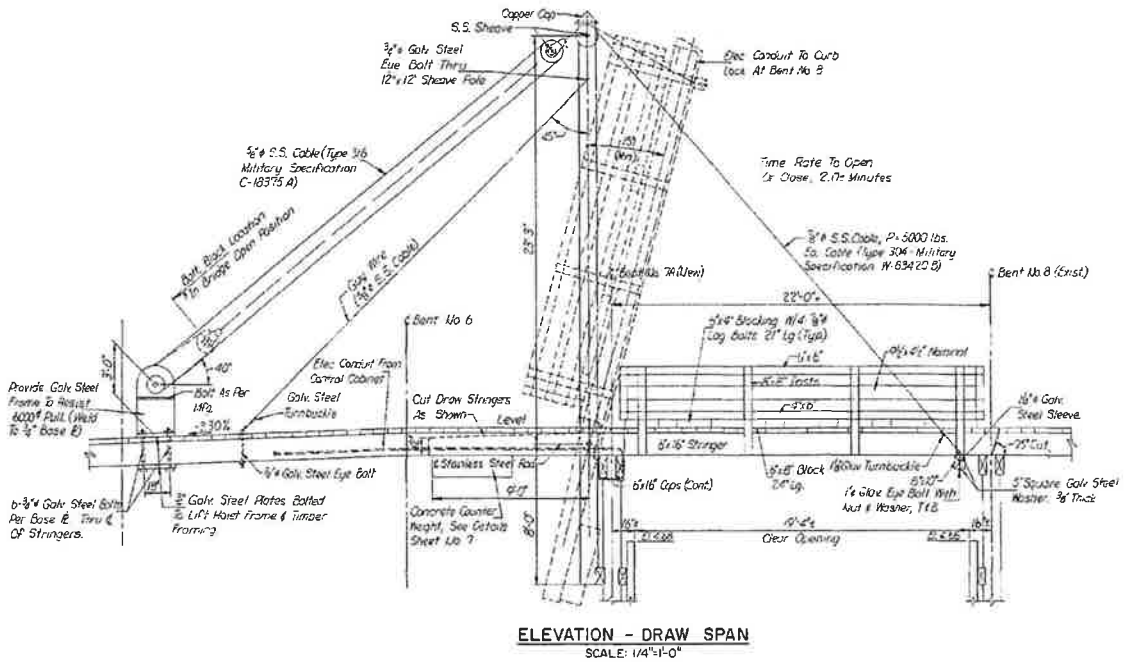
Chatham undoubtedly undertook some other periodic repairs between 1926 and the 1980s rehabilitation of the bridge. As has reoccurred in the recent discussions over the Mitchell River Bridge, the state of Massachusetts had also proposed in the 1970s to replace the extant timber structure with a concrete 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 Moniter*, 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.

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[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 S. Cooper

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 Horrocks
William C. Horrocks, Jr.

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 shear 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,

Sal Gionfriddo
Polly Gionfriddo

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

Jennifer J. Buck

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