

# Evaluation of Hybrid-Composite Beam for Use in Tide Mill Bridge

Shainur Ahsan

Thesis submitted to the faculty of the Virginia  
Polytechnic Institute and State University in partial fulfillment of the requirements for the  
degree of

Master of Science

in

Civil Engineering

Thomas E. Cousins, Co-Chair

Carin L. Roberts-Wollmann, Co-Chair

Cristopher D. Moen

September 10, 2012

Blacksburg, Virginia

Keywords: Hybrid-Composite Beam, Tide Mill Bridge, Skewed Bridge, Distribution Factors



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## Thesis Defense Announcement

5 messages

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**Shainur Ahsan** <ahsansh88@gmail.com>

Thu, Sep 6, 2012 at 10:21 PM

To: John Hillman &lt;hillmanjr@hcbridge.com&gt;, Michael Zicko &lt;mzicko@gmail.com&gt;

Cc: Tommy Cousins &lt;tcousins@vt.edu&gt;, Carin Wollmann &lt;wollmann@vt.edu&gt;, "Dr. Cris Moen" &lt;cmoen@vt.edu&gt;

John and Mike,

I am planning on defending my thesis at 12:30 p.m. on Monday, September 10, 2012. Please see the attached flyer. I will be discussing the results for tests conducted on the individual beams and the skewed three-beam system. I understand if you are not able to make it to the defense as this is a last minute notice. I can possibly email a copy of the presentation afterwards if you are interested.

John, I also wanted to ask you about permission to use some of the figures from the past publications in my thesis. Particularly, I was wondering about the 3D cut section of the HCB (i am attaching a copy for reference) and the some of the load-displacement and load-strain plots in the publications for the IDEA program. Do you have ownership of these figures? If not, do you know who I can contact about using them?

Sincerely,

Shainur Ahsan

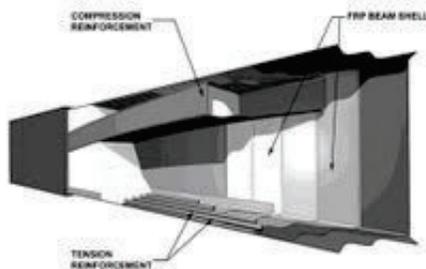
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*Shainur Ahsan*

*Structural Engineering M.S. Candidate  
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Virginia Polytechnic Institute & State University*

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### 2 attachments



**HC Beam scematic.jpg**  
18K



**Ahsan\_Defense\_Announcement.pdf**  
312K

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**John Hillman** <hillmanjr@hcbridge.com>

Fri, Sep 7, 2012 at 9:18 AM

To: Shainur Ahsan &lt;ahsansh88@gmail.com&gt;

Cc: Michael Zicko &lt;mzicko@gmail.com&gt;, Tommy Cousins &lt;tcousins@vt.edu&gt;, Carin Wollmann

<wollmann@vt.edu>, "Dr. Cris Moen" <cmoen@vt.edu>, Roy Eriksson <eriksson@lrfd.com>

Shainur

First of all, best of luck on your defense and thanks for all your hard work on the HCB testing. Unfortunately I won't be able to make it, but I will be at VT in a couple of weeks for the Alumni Board meeting. If you're still around we should get together. I'd like to hear about your experience.

As far as use of figures and photos from past HCB research and publications, you have my full permission to use anything of value to you. You could just note "courtesy of HC Bridge Company" (there's no bad press). Let me know if you need any first generation copies of anything.

Regarding the results of the experimental work, we are now under contract for the design and fabrication of the HCB's for the Colonial Beach project with VDOT. Roy Eriksson from Eriksson Technologies is actually providing the calculations and shop drawings for the HCB's. Coincidentally, we were just discussing the research at VT yesterday and Roy asked if there are any recommendations, particularly regarding skew effects, that we should consider in the design of this structure. I've copied Roy on this e-mail and anything you can share with us at this point, would at least be insightful.

Again, best of luck with your defense, and let me know if I can ever be of assistance as you embark on your professional career as a Structural Engineer.

Kindest regards,  
John

**John R. Hillman, P.E., S.E.**

President

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<Ahsan\_Defense\_Announcement.pdf><HC Beam schematic.jpg>

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**Shainur Ahsan** <ahsansh88@gmail.com>

Fri, Sep 7, 2012 at 10:33 PM

To: John Hillman <hillmanjr@hcbridge.com>

Cc: Michael Zicko <mzicko@gmail.com>, Tommy Cousins <tcousins@vt.edu>, Carin Wollmann <wollmann@vt.edu>, "Dr. Cris Moen" <cmoen@vt.edu>, Roy Eriksson <eriksson@lrfd.com>

Hello John,

Sorry for the late reply. I will talk to the professors after my defense on Monday and start to come up with a final list of recommendations and send it to you and Mr. Eriksson.

Thanks,

Shainur



Shainur Ahsan &lt;ahsansh88@gmail.com&gt;

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## Conclusions and Calculation Sheet

3 messages

**Shainur Ahsan** <ahsansh88@gmail.com>

Thu, Sep 13, 2012 at 12:06 AM

To: John Hillman &lt;hillmanjr@hcbridge.com&gt;

Cc: Tommy Cousins &lt;tcousins@vt.edu&gt;, Carin Wollmann &lt;wollmann@vt.edu&gt;, "Dr. Cris Moen" &lt;cmoen@vt.edu&gt;, Roy Eriksson &lt;eriksson@lrfd.com&gt;

John,

I am attaching the conclusions and recommendations section from my thesis. My complete thesis is about to be submitted to the grad school for approval and should be available online in a few weeks. Unfortunately, I will not be in Blacksburg during your visit. However, you may be able to get an electronic copy of my thesis directly from Dr. Cousins at that time if you don't want to wait for it to get posted online.

Another question I had was about a MathCAD calculation sheet that I had for the IDEA program which I believe was developed by Mr. Eriksson. I included a modified sheet based off of the original in the appendices of my thesis (also attached to this email) to provide an illustration of the design process. However, I did not know if you wanted sample HCB calculations to be available publicly or if you wanted to keep them private. It would not greatly change my thesis layout if I left the calculations out. In fact, I have already created an alternate version without the sample calcs. What is your recommendation for this?

Thanks,

Shainur

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Shainur Ahsan

*Structural Engineering M.S. Candidate  
Charles E. Via Jr. Department of Civil & Environmental Engineering  
Virginia Polytechnic Institute & State University*

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### 2 attachments

 **Appendix Pt. 2.PDF**  
340K **Conclusions and Recommendations.pdf**  
81K

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**John Hillman** <John.Hillman@exp.com>

Thu, Sep 13, 2012 at 5:06 PM

To: Shainur Ahsan &lt;ahsansh88@gmail.com&gt;, John Hillman &lt;hillmanjr@hcbridge.com&gt;

Cc: Tommy Cousins &lt;tcousins@vt.edu&gt;, Carin Wollmann &lt;wollmann@vt.edu&gt;, "Dr. Cris Moen" &lt;cmoen@vt.edu&gt;, Roy Eriksson &lt;eriksson@lrfd.com&gt;

Shainur,

I have no problem with you publishing calculations for HCB. We have already provided these to MoDOT in the form of a design & maintenance manual. The calculations themselves are not patented, only the construction and sale of the beam. That being said, don't publish anything with Eriksson Technologies written on it without Roy's permission.

Thanks,

john

**From:** Shainur Ahsan [mailto:[ahsansh88@gmail.com](mailto:ahsansh88@gmail.com)]  
**Sent:** Wednesday, September 12, 2012 11:07 PM  
**To:** John Hillman  
**Cc:** Tommy Cousins; Carin Wollmann; Dr. Cris Moen; Roy Eriksson  
**Subject:** Conclusions and Calculation Sheet

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**Roy Eriksson** <[eriksson@lrfd.com](mailto:eriksson@lrfd.com)> Thu, Sep 13, 2012 at 5:17 PM  
To: John Hillman <[John.Hillman@exp.com](mailto:John.Hillman@exp.com)>, Shainur Ahsan <[ahsansh88@gmail.com](mailto:ahsansh88@gmail.com)>, John Hillman <[hillmanjr@hcbbridge.com](mailto:hillmanjr@hcbbridge.com)>  
Cc: Tommy Cousins <[tcousins@vt.edu](mailto:tcousins@vt.edu)>, Carin Wollmann <[wollmann@vt.edu](mailto:wollmann@vt.edu)>, "Dr. Cris Moen" <[cmoen@vt.edu](mailto:cmoen@vt.edu)>

John,

It is fine to publish the Mathcad template I created. Note the spelling of my last name.

Thanks,

Roy

Roy L. Eriksson, P.E.  
**Eriksson Technologies, Inc.**  
PO Box 16396, Tampa, FL 33687  
office: 813.989.3317, cell: 813.841.3267

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**From:** John Hillman [mailto:[John.Hillman@exp.com](mailto:John.Hillman@exp.com)]  
**Sent:** Thursday, September 13, 2012 5:07 PM  
**To:** 'Shainur Ahsan'; John Hillman  
**Cc:** Tommy Cousins; Carin Wollmann; Dr. Cris Moen; Roy Eriksson  
**Subject:** RE: Conclusions and Calculation Sheet

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