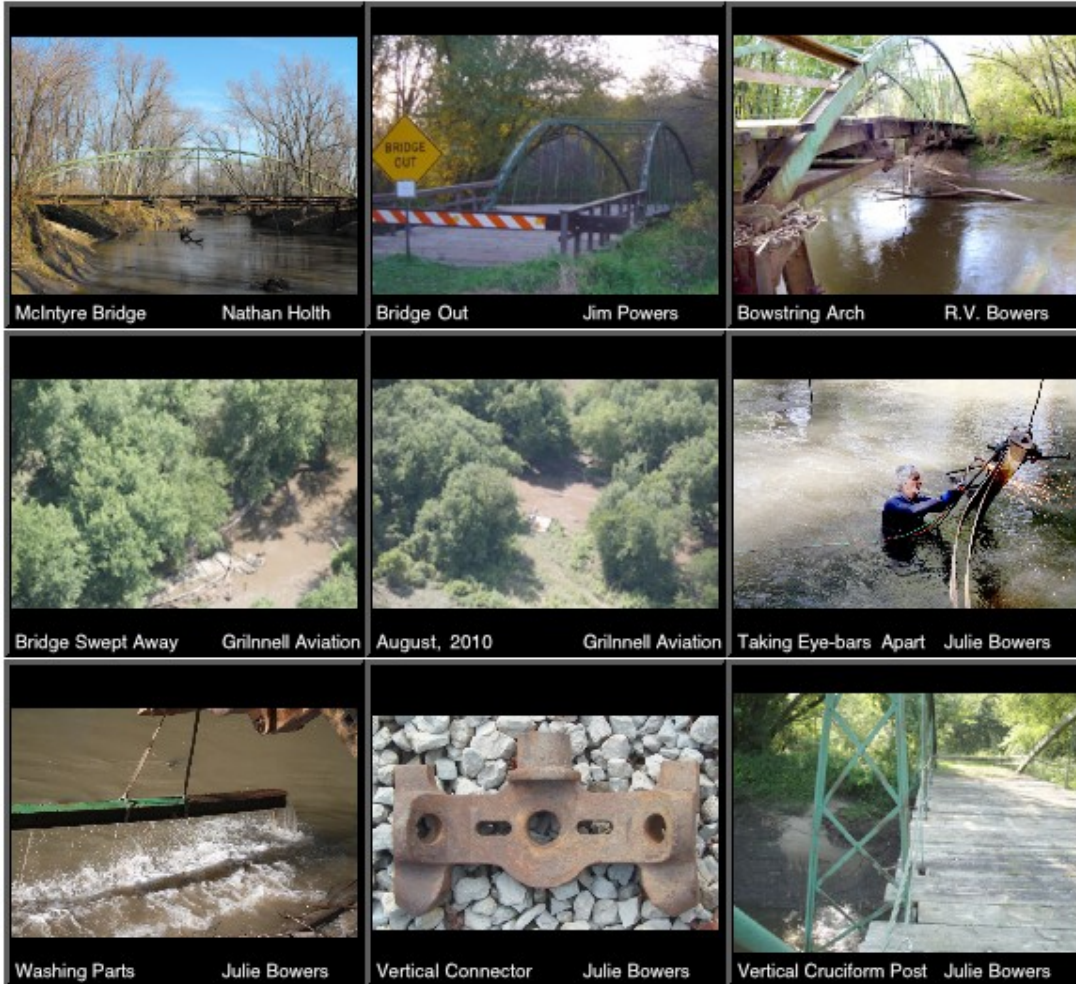


**Society for Industrial Archeology      N. Skunk River Greenbelt Association (NSRGA)**  
**Documentation of Iron Bowstring Bridge Restoration      Julie Bowers - Executive Director**

**The Story Thus Far in Pictures**  
**McIntyre Bridge at Millgrove Access Wildlife Area**  
**Historic Bridge Preservation - Restoration in Process**  
**BACH Structural Steel / Spicer Engineering / PCI / Bushong Construction / Sheets Excavating**  
 N. Skunk River: Poweshiek County, Iowa  
 Bowstring ThroughTruss 1883 By: King Iron Bridge Co., Cleveland, Ohio  
 Main Span Length 120 Feet Approach Spans 47 Feet  
 1200 acres - NSRGA currently owns the bridge and leases 10 acres to the east of the river.



## PROJECT SUMMARY

The North Skunk River Greenbelt Association (NSRGA) was created in response to Poweshiek County's decision to destroy an 1883 King Iron Bridge & Manufacturing Company historic bowstring iron truss bridge in the fall of 2009, The McIntyre Bridge (aka McDowell) which crossed the N. Skunk River at Millgrove Access Wildlife Area in central Iowa. NSRGA owns the McIntyre Bridge and leases the ground around the original piers on the west side of the river, along with the nearly 10 acres to the east of the

river, bordered by the river and private property, for salvage and construction purposes. This area has been designated an emerging partner site with Silos and Smokestacks Heritage Area, part of the national heritage area system. The story that has emerged in the past year is this: before the bridge was built the place was known as McIntyre Crossing and there was a mill and dam over the river with two towns platted, Millgrove and Stillwell, in 1855. The train station at Stillwell (aka Moore's Station) was key to the growth of this area and in 1883 the bridge was built so that no farmer was more than 25 miles away from getting product to market. The McIntyre Bridge remained a working bridge for over a hundred years until 1989 when it was closed to traffic. It has now been salvaged from the N. Skunk River after being swept downstream by flooding in August 2010. The State Historic Preservation Office (SHPO), upon advice of our technical advisor, has declared that 95% of the original fabric of the bridge remains and that it can remain on the National Register of Historic Places, a key to future grant writing. The bridge project is now in Phase 2: Restoration, Rehabilitation and Reset of the bowstring bridge and the protection of the banks upstream from further erosion.

We request \$3,000 from the Society for Industrial Archaeology to assist us in our mission to document the McIntyre Bowstring Bridge Restoration Project utilizing digital photography, video, and a comprehensive database of parts and pieces. We have thousands of photographs and hours of video that we have processed since October of 2009, that documents the 1<sup>st</sup> attempt at the big bridge lift, the floods, the subsequent loss of our bridge, and the salvage operations. These images are currently being used for press releases, public awareness, event posters, and to document the process for grant writing. Many images were utilized to prove to the State Historic Preservation Office our case for retention on the Historic Register of Places and for the engineers from Spicer Group of Saginaw, Michigan, who are modeling the bowstring and the piers for the general rehabilitation plan. Spicer will also be conducting the site survey of the Millgrove Access Wildlife Area. We continue to photograph and video the restoration process.

The SIA grant will allow us to begin the process of putting these images together for a video documentary of not only what it takes for a small group of common folk to save an historic bridge but how the experts work with the iron, and what the iron will tell us about the technology of building a bowstring bridge. In the course of another project, planning for an outdoor education center at the site, we have organized a group of professionals ranging from Grinnell College professors, Iowa Valley Community College, and our regional K-12 schools to help with the inventory and planning for the future. With their help our methodologies will be fine tuned for the documentary project, I am looking forward to working with John Whittaker, Department Chair of Anthropology at Grinnell College on standards for all of our documentation.



501(c)(3) Corporation EIN 27 17521257 January 4, 2010.

Our mission: a) enhancing, restoring and preserving the natural bounty of the N. Skunk River located in the state of Iowa; b) erecting, enhancing, restoring and preserving public structures, monuments or works associated with the N. Skunk River; c) lessening the burdens of the government as they relate to the N. Skunk River. d) organized for charitable, educational and scientific purposes.

## **APPLICATION NARRATIVE**

With the help of professional photographers and filmmakers, the story of the McIntyre Bridge has been documented from the opening meeting of the Friends of the Skunk River Bridge. The visit by Vern Mesler, historic metals preservationist, and Nathan Holth of HistoricBridges.org in early November 2009 was key. They encouraged our group by telling us how important it is to save the historic record. They predicted the bureaucracy that we ran into, and told us they could save our bridge even if it fell in the water. All of that happened. The story since then has been documented in local, regional and state newspapers. NSRGA has raised awareness and money through musical events and our annual Skunk River Sunday picnic at the river, this time held near the extraction site.

Our story continues to be told by many now that it has all of the elements of a disaster, including the victims and the heroes. You can read all about it in the following places. Drake Community Library in Grinnell, Iowa has also archived our press clippings and they will house the papers and video that we create in this project for the greater community to access.

**Des Moines Register**

**Grinnell Herald Register**

**Poweshiek Chronicle-Republican**

**Lansing State Journal**

**KGRN – am – Let’s Talk**

**Grinnell Magazine**

**[www.skunkriverbridge.org](http://www.skunkriverbridge.org)**

**Workin’ Bridges on facebook**

**Skunk River Bridge on facebook**

**[www.skunkriverbridge.blogspot.com](http://www.skunkriverbridge.blogspot.com)**

In March 2010 we hired filmmakers were ready to make a movie, before the bridge fell down and just prior to the anticipated big bridge lift that didn’t happen because of rising waters and spring flooding. The movie can be viewed at [www.YouTube.com](http://www.YouTube.com) and is called Skunk River Bridge. Professional filmmaker’s Ken Moehn and Philip Mange spent a few days documenting the site and filming locals and music by Thankful Dirt.

I have also included several pages of photographs that demonstrate our story in pictures and two pages of photos of bridges that have been restored by BACH Steel. Nels Raynor, owner of BACH, has participated in eight bridge restorations in the past twelve years, the most recent is the Bridgeport Pedestrian Bridge that was completed in 2010. On that project he worked with our engineers at Spicer Group. They bring years of expertise to bridge restoration and we have full confidence that they can put our bridge back together again.

I enclose the McIntyre Bridge Phase 2 2011 budget for the restoration of the bridge and the reset on it’s original wrought iron piers over the N. Skunk River. Many different projects and grants comprise the fundraising efforts and construction process. From the beginning, documenting this project was important. What I didn’t know and what I find very interesting are the stories from the locals that round out the picture and define the importance of this bridge in their past. It justifies the preservation by examining the importance of bridges and how they bridged our county, their absolute necessity in building a farm to market economy, and what we have to learn from them today, before they are all gone.

In Iowa, the county engineers have been told to remove all of the truss bridges because they no longer meet those same needs of farm to market. The same equipment that is too big for the roads, is the reason that the farmers continue to tile their fields to prevent the machines from bogging down. That water runoff is causing record flash flooding where none existed before. We can raise awareness of

those actions through our work with the greenbelt and with the education center that we are planning for that area to encourage more research – on historic bridges, regional history, river hydrology, prairies, wetlands and timber.

Our project is understandable because the parts are easy to understand – a bow and a string, a river and a road. The documentation of the project that will be the result of this grant, will shine light for other committed pontists, preservationists, new bridge lovers or elected officials to follow if they find themselves in our shoes, with a bridge underwater.

The documentation on how to put a bridge back together should serve the preservation community in the future as we document heat straightening, riveting, welding, pack rust removal and maintenance of iron for this historic structure.

Thank you for your consideration.

## McIntyre Bridge & Millgrove Access Greenbelt - Phase 2 Budget – 2011

<b>Expenses:</b>		<b>Income:</b>	
Executive Director	18,000	Balance	250 secured
Engineering	10,000	McFarlin Family	10,000 secured <b>R</b> bridge
Rehabilitation:		PowCo Alliance	10,000 unsecured <b>R</b> cruciform
Top Chord		Dr. Landes Fund	2,000 unsecured <b>R</b> site survey
Vertical Posts	22,400	GC Mini Grant	5,900 unsecured <b>R</b> computers
Arches	33,600	Wall Alumni	25,000 unsecured outdoor class
Bottom Chord		SHPO	70,000 unsecured <b>R</b> rehab
Eye-bars, Floor beams	18,000	Other Bridges	4,500 secured, administrative
Const. Mgt	12,000	King Foundation	1,500 unsecured <b>R</b>
Reset	25,000	Volunteers	25,000 equipment/time donations
Decking	5,000	Merchandising	5,000 unsecured unrestricted
Finish	2,250	Music	2,500 unsecured unrestricted
Site work rip-rap	38,000	Capital Campaign	40,000 unsecured unrestricted
Maintenance	10,000	S&S Heritage	6,000 unsecured, <b>R</b> story
Pay it Forward	2,200	Society for Ind.	
Outdoor &		Architecture	3,000 unsecured <b>R</b> film
Virtual Classroom	11,000		
Documentation	6,000	SHPO - HDRP	13,000 unsecured <b>R</b> hard armor
Signage (S&S)	<u>6,000</u>		
	<b>\$219,450</b>		<b>\$223,400</b> <b>R = Restricted</b>

### Budget Additional Information

There are more grants to be discovered and applications to be written. Our SHPO grant application in May is key for funding.

### Documentation Project - Budget - \$6,000

\$ 3,000	Professional Photographer and Filming
\$ 1,500	In-kind donation for photography & video
\$ 1,500	Website Video & Print Publishing

*We understand that if this documentation is compiled in such a way that it generates income, that the income must be applied to the project costs or shared on a 50/50 basis with the SIA-IHPG program. My understanding of this requirement is that if we made \$4,000 because someone wanted to use the content that we would repay SIA-IHPG the \$3,000 that was the grant. The remaining \$1,000 would stay with our group to pay for our portion of the costs. If we benefited by \$2500 on the project, then \$1250 would repay SIA-IHPG for their participation.*



be

Opportunities for documentation are as follows.

April – Start research on cruciform fabrication –General Rehabilitation Plan Finished

May – Final estimate generated with schedule for restoration – SHPO grant due -

July - Begin rehabilitation of upper chord, eye-bars – Order all iron/steel required for the project

August – Rivet bracing to vertical posts - transverse tubes and floor bleams

September –Erect and test on site in Holt, Michiganbridge and the site. These models and drawings will be utilized in other areas.

October / November – Transport to Iowa and erect – Reset on piers over the river – load testing – dedication

## 2011 Time Line - All Projects

Our goal is to have the bridge rehabilitation complete, all engineering testing performed and the bridge reset by the fall of 2011. We are in the process of purchasing the hardware and software that will allow us to proceed with the documentary and photo editing. The bulk of the \$6,000 Project Budget will go towards professional photography and filmmaker to help with the editing.

Other benefits of the entire project include all of the engineering models and architectural drawings for the

January	Grant writing, general rehabilitation plan and engineer contract
February	Grant writing, research cruciform
March	Historic Metals Workshop – Workin’ Bridges Mobile Office
April	Silos & Smokestacks – grant writing Finalize members of the Master Plan Committee Ed Center
May	SHPO grants due for bulk of the rehabilitation
June	Start working on Master Plan for Ed Center Start Building Outdoor Classroom Web Site Hire Photographer – Begin photo/video site documentation
July	Start rehabilitation of the bridge Finish Master Plan for Ed Center Start Oral Histories
August	Bank Protection Awareness of Area – Back to School Month Video and Photo Editing
September	Continue to build Online Presence School Field Trips
October	Bridge Reset School Field Trips Publish student reports etc.
November	Ribbon Cutting – outdoor classroom & bridge reset
December	Finalize Video for Distribution Follow up – reporting Continue Outreach Gather Feedback from Participants
2012 -2012	Research and publishing
2013	Return Bridge and Area to County for management
2020	Lifelong learning continues

**Julie K. Bowers**  
**Po Box 332**  
**Grinnell, IA 50112**  
**641.260.1262**

Executive Director: NSRGA  
Chief Project Resarcher/ Photography/Writer/Press Management

**Professional Skills**

- Grant writing and reporting, fund raising
- Internet skills – HTML using DreamWeaver, BBEdit, JavaScript, database enabled web sites and photographic imaging.
- Graphic design including InDesign/PageMaker, Photoshop
- Skilled in database administration and graphic production management
- FileMaker Pro professional consultant
- AR/AP using Quicken or Quickbooks

**Raindance Publishing - Owner**

March 1989 – June 1996 June 1998 – present

Partial project list includes:

- TravelWizard.com - Developed web engine to work with travel agency booking system. Agency had only off-site consultants and needed a way to process all required documentation from the corporate office.
- Travel Advisors - Developed a booking system for a travel agent that allowed processing and paperwork for all travel related booking including international travel and cruising. Added an exotic travel processing database that allowed the company to pick up over 100 leads per day from the TravelWizard.com site and process them, allowing the company to track exactly how many leads turned into sales and what the average sale was per budgeted lead.
- JD Construction - Developed estimating/invoicing system, ordered products, coordinated design work, and ran the office for a small construction company.
- 10SpeedPro - Publicity Manager for 10 Speed Press. This set of related files manages contact information, press releases and followup so that the history of a particular contact is within easy reach of the team.
- Developed the "Daily Tripper", a fully integrated personal information manager with a licensed Grateful Dead twist. Utilized FileMaker Pro as the engine for this calendar.
- Redesigned mail order system for Acoustic Disc, speeding up the process from order to delivery. Incorporated a relational royalty reporting system for quarterly payments to artists.
- Project Consultant, Grateful Dead Vault Project -Upgraded initial archive database and added information for 30 years and thousands of recordings produced on a variety of mediums. Taught administration, basic computer skills, and upper level database organization for vault crew. Published tape lists, song lists and venue information.
- Other clients and projects include:
  - Bond Tracker - ABAG
  - Ticket sales tracker to help stop ticket fraud - GDTS
  - Database to track printing/estimating requests - Paris Printing
  - Furniture Sales - Inside Source
  - Itinerary Planner - Travel Quest
  - Contact Manager & Purchasing System - UltraSound
  - Production Manager & Budget Tracker - Grinnell College P.R.
  - Stocks & Bonds Tracker - G. Bailey
  - Damage Tracker "Hurricane Andrew" - FEMA
  - Training Scheduler – Macromind (now Macromedia)
  - Contacts & Donations Handler - Bay Institute
  - Contact Manager - Bread & Roses
  - Radio Collection - Classic Radio Service

Project Manager/Database Administrator /Office Manager  
TERRA Design Group  
December 2000 - June 2001

- Planned and coordinated the purchase of Macintosh computers and network, set up communications and maintained all files. This required evaluation and review of all systems and networks before purchase. Moved on to marketing and brand identification for the company including setting up the format for marketing all kinds of projects. Implemented a project management system built in FileMaker that manages real time cost over proposal allowing instant knowledge costs associated with a project, plus document retrieval for field reports and transmittals/faxes. Set up initial web site and ran the office. Benefits to the company were many, but the project management system cost me the title of project manager as the architects were able to do there own analysis on a daily basis.

Web Editor/Database Administrator  
National Center for Atmospheric Research (NCAR)  
June 1997 – on-going maintenance

- UCAR Communications - Created an online database for scientists and members of the Atmospheric Technology community to connect and share information.
- NCAR - Redesigned and implemented a web-based graduate fellowship application system. Planned and coordinated the redesign of computerized databases into a relational database system. This required evaluation and review of all search and retrieval systems, developing a logo and a brand identification for the program, and implementing application processing and document verification procedures. Benefits include reduced errors, processing costs, and processing time, as well as instant access to timely and accurate information.
- Joint Office for Scientific - Responsible for redesigning office systems to coordinate event management and associated travel requests for the Program Support Group.

## Education

- Historic Metals Workshop – fundamentals of working with iron, heat straightening, riveting
- UCAR – classes in Technical Writing, HTML - Basic, Intermediate, and Advanced, Introduction to JavaScript
- San Francisco State - HTML, Web Design
- University of Colorado - Denver, CO. Classes toward Master's of Architecture degree, 1981-1983
- Grinnell College - Grinnell, IA. B.A. Major: Art & Liberal Arts, 1976-1980
- Art Institute of Chicago - Art history and design classes, 1978 Fall Semester
- Istituto d'Arte - Mosaics & Studio Art - Ravenna, Italy. AFS 1975-1976

## URL Portfolio

- [www.depotcrossing.com](http://www.depotcrossing.com) - restaurant site design & digital photography 2004
- [www.terradesigngroup.com](http://www.terradesigngroup.com) - initial site design
- [www.vsp.ucar.edu](http://www.vsp.ucar.edu) - total site design including logo (as always - design recommendations are subject to change and whims of web administrator)
- [www.cosmic.ucar.edu](http://www.cosmic.ucar.edu) - (all design recommendations subjected to change – site reflects new management)
- [www.communications.ucar.edu](http://www.communications.ucar.edu) - inhouse experts database - FileMaker database enabled web site that allows scientific experts to log in and quickly choose from over 150 atmospheric related sciences- for use by communications as an internal resource. (currently not accessible outside UCAR firewall)
- [www.joss\\_psg.ucar.edu](http://www.joss_psg.ucar.edu) -. Style guide provided for site. Travel based web site located at [orc.joss.ucar.edu/joss\\_psg/newtravreq.htm](http://orc.joss.ucar.edu/joss_psg/newtravreq.htm)



**From: Brion Klopf <klopfb@michigan.gov>  
To: bachsteel@aol.com  
Sent: Tue, Dec 7, 2010 9:01 am  
Subject: Letter of Recommendation**

**To whom it may concern:**

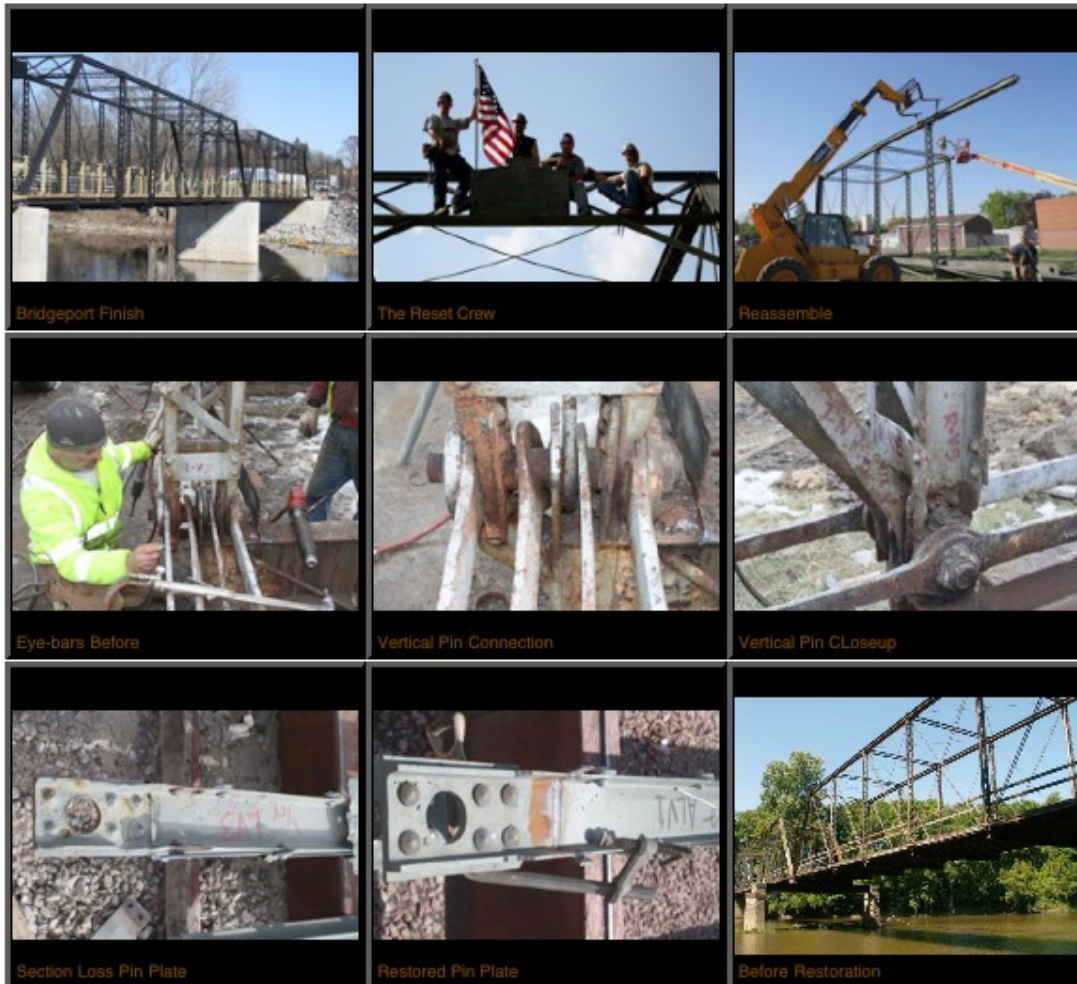
**I have worked with Nels Raynor on numerous Michigan Department of Transportation projects. He has shown that he has an excellent working knowledge of structural steel, particularly in the preservation of historic bridges. He has disassembled, repaired, and reassembled multiple historic bridges for the Department of Transportation with a superb quality of workmanship which is hard to find. He is a craftsman in the sense of having the ability to restore antique components with modern equipment meeting today's standards and specifications. He has an unlimited all position welding qualification with the Michigan Department of Transportation and has shown an expertise in all the tools required for this type of construction including torch and saw cutting, rivet removal and installation, and repair of section loss. He has my recommendation for any type of structural steel work which you may require.**

**If you have any questions feel free to contact me at the number listed below or by E-mail at: klopfb@michigan.gov  
My working title is "Steel Fabrication Specialist".**

**Thank you;  
Brion Klopf  
Bridge Operations  
(517) 204-6701**

**Bridgeport Bridge - Historic Bridge Preservation Completed by BACH Structural Steel  
Rehabilitation Plan through MIDOT/Spicer Engineering/Davis Contracting**

Over Cass River, Bridgeport, Saginaw County, Michigan  
Metal Pinned Pratt Through Truss Stationary  
1906 by Joliet Bridge and Iron Company of Joliet, Illinois  
Structure Length (Excluding Approach) 262 Feet (76.8 Meters)  
Main Span Length 126 Feet (38.4 Meters) Main Spans  
Approach Spans 2 Steel Stringer



**Sterling Road Bridge - Historic Bridge Restoration**  
Completed by BACH Structural Steel  
Lenawee County Michigan  
Pratt Through Truss  
1897 Toledo Bridge Company



# STAFF EDUCATION and EXPERIENCE REPORT

STAFF EDUCATION and EXPERIENCE REPORT		
<b>NAME:</b> Mark A. Latsch, P.E.	<b>TITLE:</b> Sr. Project Manager	<b>ROLE ON THIS PROJECT:</b> Project Manager
<b>COMPANY NAME:</b> Spicer Group, Inc.		<b>YEARS OF EXPERIENCE</b> 25 with company      2 with other firms
<b>EDUCATION (degrees, year, specialization, school w/location)</b> Bachelor of Science in Civil Engineering with Structural Specialty, Michigan Technological University, 1984		
<b>LICENSES/REGISTRATION (type, year, state, number)</b> Professional Engineer, 1988, Michigan #33631		
<b>GENERAL EXPERIENCE AND QUALIFICATIONS (relevant to classification group):</b> Mr. Latsch is a principal and project manager responsible for all structural and bridge projects at Spicer. The bridge projects include a full range of services including bi-annual inspections, scoping, and design of new and rehabilitated steel and concrete highway and pedestrian bridges. He has working experience with AASHTO, MDOT, and AREMA specifications and manuals.		
SPECIFIC EXPERIENCE		
YEAR(S)	PROJECT I.D.	PROJECT DESCRIPTION AND ACTIVITY
2010 - Present	<b>CS 77023 JN 108622A I-69 over Pine River and South Branch Pine River</b>	1. Underpinning and Scour Revetment Design 2. Project Manager 3. \$257,000 4. Ongoing 5. Michigan Department of Transportaion, Lansing 6. Primary Vendor 7. Ken Tiffany, P.E. (517) 373-2625 8. \$1.4million. Revetment construction will include installation of riprap, underpinning and other countermeasures at the piers of I-69 over Pine River and South Branch Pine River.
2010 - Present	<b>City of Saginaw Scour Plan of Action and Revetment Design</b>	1. Bridge Scour Action Plan and Revetment Design 2. Project Manager 3. \$9,000 4. Ongoing 5. City of Saginaw 6. Primary Vendor 7. Phil Karwat, P.E. City Engineer (989) 754-1418 8. \$95,000. Revetment construction will include installation of riprap and other countermeasures at main piers of Genesee Avenue bridge over Saginaw River. Spicer was also responsible for developing Plans of Action for all other scour critical City bridges.
2009 - Present	<b>CS BRT 73006 JN 105294A Dixie Highway Over Cass River</b>	1. Bridge Replacement and Approach Design 2. Project Manager 3. \$82,000 4. Ongoing 5. Saginaw County Road Commission 6. Primary Vendor 7. Brian Wendling, Manager, (989) 752-6140 8. \$4,000,000. Construction will include a 265' long, three span, prestressed concrete I beam structure, HMA approach reconstruction and guardrail installation. The vertical alignment was revised to improve the bridge geometrics in accordance with AASHTO and MDOT standards. Traffic was designed to be maintained through a detour route over existing roadways.

2008 - 2009	<b>CS BRT 73006 JN 89692A Fort Road Over Cass River</b>	1. Bridge Replacement and Approach Design 2. Project Manager, QA/QC 3. \$73,000 4.2009 5.Saginaw County Road Commission 6. Primary Vendor 7. Brian Wendling, Manager, (989) 752-6140 8. \$2,000,000. Construction included a 259' long, three span, prestressed concrete I beam structure, HMA approach reconstruction and guardrail installation. The vertical alignment was revised to improve the bridge geometrics in accordance with AASHTO and MDOT standards. Traffic was designed to be maintained through a detour route over existing roadways.
2006 - 2008	<b>CS 73999 JN 101875AENH 200700075 State St Historic Bridge Renovation, Bridgeport, MI</b>	1. Bridge Substructure replacement, Truss Restoration. 2. Lead Engineer, QA/QC 3. \$140,000. 4. 2008. 5. Bridgeport Township. 6. Primary Vendor. 7. Rose Licht (989) 777-0940. 8. State St over the Cass River \$2,300,000; historic bridge restoration included new substructure, repair/replacement of steel channels, stringer beams, bearings and bridge deck, approach and structural plan development, including painting, guardrails and slope stabilization.
2006-2007	<b>CS 09101,09033 JN 84909D M-13 over Johnson Drain M-47 over US-10 Bay County</b>	1. Bridge Rehabilitation Design 2. Project Manager 3. \$212,000 4. 2007 5. Michigan Department of Transportation, Lansing 6. Primary Vendor 7. Ken Tiffany, P.E. (517) 373-2625 8. M-13 over Johnson Drain was designed as a superstructure replacement. Due to Hydraulic and scour issues it is now slated for replacement at a future date. The dual M-47 Northbound and southbound structures over US-10 were designed as a deck overlay with a partial deck replacement. Due to issues involving vertical underclearance and the adjacent interchange ramps this project has been postponed.
2006-2007	<b>MCS 77004 JN 86337A Division Road over Belle River St. Clair County</b>	1. Bridge Replacement and Approach Design 2. Project Manager 3. \$33,000 4.2007 5. St. Clair County Road Commission 6. Primary Vendor 7. Michael Clark, P.E. (810) 364-5720 8. \$1,300,000. Construction includes a 160' long, two span, prestressed concrete box beam structure, HMA approach reconstruction and guardrail installation. The vertical alignment was revised to improve the bridge geometrics in accordance with AASHTO and MDOT standards. Traffic was designed to be maintained through a detour route over existing roadways.
2005-2008	<b>MCS 36007 JN 59709A Forest Road 157 (Old US-2) over Tamarack River Iron County</b>	1. Bridge Replacement and Approach Design 2. Project Engineer 3. \$40,000 4. 2008 5. Iron County Road Commission 6. Primary Vendor 7. Doug Tomaszoski, P.E. (906) 265-6686 8. \$500,000. Construction includes a 76' long single span, pre-stressed concrete box structure, HMA approaches and guardrail installation. The overall bridge approach design was in accordance w/ MDOT specs and AASHTO Guidelines for Geometric Design of Very Low - Volume Local Roads (ADT <= 400). Traffic was maintained through a detour over existing roadways.

2005-2006	<p style="text-align: center;"><b>MCS 36005 JN 59708A Old 69 Road over Michigamme River Iron County</b></p>	<p>1. Bridge and Approach Design 2. Project Manager 3. \$50,000 4.2006 5. Iron County Road Commission 6. Primary Vendor 7. Doug Tomasoski, P.E. (906) 265-6686 8. \$1,100,000. Construction included a 100' long, single span, prestressed concrete bridge with a decorative façade, HMA approaches and guardrail installation. SHPO and Utility coordination were imperative due to the historic nature of the existing bridge and the close proximity of power poles to the proposed substructure as well as overhead lines. The horizontal and vertical alignments were revised to improve the bridge geometrics. The overall bridge and approach design was in accordance with MDOT specifications and AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT≤400). A detour was used to maintain traffic over existing roadways.</p>
2005	<p style="text-align: center;"><b>CS BRO 73024 JN 78954ABurt Road over Flint River Saginaw County</b></p>	<p>1. Bridge and Approach Design 2. Project Manager 3. \$83,000 4. 2005 5. Saginaw County Road Commission 6. Primary Vendor 7. Brian Wendling, (989) 752-8934 8. \$2,200,000 Construction including a 330', 3 span prestressed concrete box beam structure on hammerhead piers. Due to the historical significance of the existing bridge it is to remain in place, requiring a 1/4 mile of roadway re-alignment in a new ROW. The nearby intersection was also realigned due to inadequate sight distance and intersecting angles. The design of this project was in accordance with AASHTO and MDOT standards and procedures.</p>
2005	<p style="text-align: center;"><b>MCS 73007 JN 83812A Portsmouth Road over Cheboyganing Creek Saginaw County</b></p>	<p>1. Bridge Replacement and Approach Design 2. Project Manager 3. \$50,000 4. 2005 5. Saginaw County Road Commission 6. Primary Vendor 7. Brian Wendling, (989) 752-8934 8. \$1,000,000. Construction included a 160', 2-span, prestressed concrete box beam structure, HMA approach reconstruction, guardrail installation and roadway drainage improvements. The vertical alignment was revised in order to improve geometrics in accordance with AASHTO and MDOT standards and procedures. Traffic was maintained through a detour over existing roadways.</p>
2003-2005	<p style="text-align: center;"><b>CS 82123, JN 59284A I-96 under W. Grand Blvd. and Tireman</b></p>	<p>1. Bridge Rehabilitation design 2. Project Manager 3. \$40,000 4. 2005 5. Michigan Department of Transportation, Lansing &amp; Detroit TSC 6. Primary Vendor 7. Phil Grotenhuis (517) 335-6778 8. \$600,000 Initially designed as a deep overlay and substructure repair for this 180 ft., 2-span, 4-lane bridge, construction phase issues led to a complete deck replacement. The horizontal and vertical alignments were revised in order to improve the geometrics taking into account site restrictions and intersections at each end of the bridge that had to be matched.</p>
2004	<p style="text-align: center;"><b>CS Various, JN 77387 Bay Region Culvert Scour Remediation</b></p>	<p>1. Structure Scour Remediation. Detailed structure scour inspection, scoping, scour analysis, and detailed countermeasure design.2. Principal in Charge / QC Reviews 3. \$100,000 4. 2004 5. MDOT, Bay Region 6. Culvert Scour Inspection and Scoping 7. Selena Friend, P.E., (989) 754-0878 8. N/A</p>

2003-2004	<b>CS 82124, JN 51502A I-96 under Warren Avenue</b>	1. Superstructure Replacement Design 2. Project Manager 3. \$180,000 4. 2004 5. Michigan Department of Transportation, Lansing & Detroit TSC 6. Primary Vendor 7. Phil Grotenhuis (517) 335-6778 8. This \$2,400,000 project included the design of the spread box beam superstructure replacement of a 256 ft., 4-span, 7-lane bridge and involved extensive utility coordination with Detroit PLD. Also included was replacement of the approach intersection with concrete pavement. MDOT and AASHTO standards and procedures were followed.
2003-2004	<b>CS 02041, JN 76023DM-28 over Laughing Whitefish River</b>	1. Bridge Scoping and Rehabilitation design. 2. Project Manager 3. \$50,000 4. 2004 5. MDOT, Lansing & Escanaba TSC 6. Primary Vendor 7. Phil Grotenhuis (517) 335-6778 8. \$330,000 This project included detailed scoping, structure study and design of scour revetment, substructure repairs, and spread box beam superstructure replacement for a 40 ft., 1-span bridge. Approach work included guardrail installation, HMA widening and maintaining traffic plans for part-width construction. MDOT and AASHTO standards and procedures were followed in the design of this project.
2003-2004	<b>CS 82123, JN 59284D I-96 under Roosevelt Walkover/Pedestrian Bridge</b>	1. Pedestrian Bridge Rehabilitation Design 2. Project Manager 3. \$20,000 4. 2004 5. Michigan Department of Transportation, Lansing & Detroit TSC 6. Primary Vendor 7. Phil Grotenhuis (517) 335-6778 8. \$300,000. Construction included superstructure and substructure repairs as well as painting of this 200 ft. long, 2-span pedestrian bridge. Handicap accessible ramps were also included in the rehabilitation design.
2003	<b>CS63101, JN 58525 I-696 Ped Bridge Study</b>	1. Scoping and Structure Study. Performed a scoping study and evaluated rehabilitation and replacement strategies. Performed a detailed maintaining traffic study and construction sequence to minimize and quantify expressing closure time. Approach ramp geometric study was performed and issues such as R.O.W. were quantified. 2. Project Manager 3. \$14,330.00 4. 2003 5. MDOT-Lansing Design Unit 6. Primary Vendor 7. Ken Tiffany, P.E. (517) 373-2628 8. N/A.
2001	<b>CS 73021, JN 53713A M-57 over Bear Creek</b>	1. M-57 over Bear Creek 2. Project Manger 3. \$34,000 4. 2001 5. MDOT - Lansing Design Unit 6. Bridge Replacement and Design 7. Sam Guerrazzi, P.E., (517) 373-0737 8. Project included a replacement structure of 34 ft. span precast 3-sided bridge. Project also included bridge and hydraulic surveys, coordination with MDEQ and hydraulic/hydrology unit. Traffic was maintained through part width and temporary signals.
2000	<b>CS 73111, JN 74264A I-75 from M-46 to I-675 Pump Station</b>	1. Storm water pump station design including mechanical, structural, electrical, hydraulic and hydrological design for station and detention pond. 2. Structural Engineer 3. \$235,000 4. 2000 5. MDOT Bay City TSC 6. Pump station retrofit design 7. Kim Zimmer (989) 671-1555 8. \$1,500,000 road construction including the addition of auxiliary lane, removal of railroad bridge and relocation of pump house. Pump station retrofit design included cutting off the top of the existing pump station, replacement of pumps, piping and electrical equipment, controls upgrade, design of detention basin and associated site work. The pump station was sized to handle the additional flows

		generated by the additional lanes and paved shoulders.
2009	<b>Close Drain Improvements Berrien County</b>	1. Agricultural Drain Improvements involving Roadway and Railroad Crossings 2. Project Manager 3. \$320,000 4. 2009 5. Berrien County Drain Commissioner 6. Primary Vendor 7. Roger Zilke, Drain Commissioner (269) 983-7111 8. \$905,000. The Close Drain improvements involved a 6-mile segment of agricultural drain in rural Berrien County. The project included lowering of the existing channel underneath an existing Amtrak-owned bridge on an active high-speed rail route as well as a crossing under US-12. Various best management practices were used and a structural solution to the channel lowering was designed.
2000 - 2005	<b>43849A, ENH 97027 Saginaw Valley Rail Trail Rehabilitation and Replacement, Saginaw County, Michigan</b>	1. Design of a new multi-use pathway. 2. Bridge Engineer. 3. \$27,850. 4. Phase I: 2001, Phase II: 2004, Phase III: 2005. 5. Saginaw County. 6. Primary Vendor. 7. John Schmude (989) 790-5280. 8. Rehabilitated two existing bridges for multi-use path and design of substructures and coordinated pre-engineered bridge over Cass River.
6/2000 to 10/2001	<b>CS HPP-73404, JN 50180A PARTS 1&amp;2 Tittabawassee Road over Tittabawassee River</b>	1. 7-span steel beam bridge widening and rehabilitation design, pin & hanger replacement, approach design, and survey. 2. Project Manager/Lead Design Engineer 3. \$120,000 4. 2001 5. Saginaw County Road Commission 6. Detailed scope, inspection, and study, prepared maintaining traffic plans. Coordinated with Bay City TSC for adjacent M-47 intersection. Performed CPM for schedule. Reviewed constructability and pier footings. 7. Brian Wendling, Manager, (989) 752-6140 8. Tittabawassee Rd. over Tittabawassee River Hacket Rd. to River Rd., \$1,500,000, 7-span steel beam bridge widening deck replacement, pin & hanger replacement, substructure rehabilitation, and approach work with storm sewer.
3/1999 to 1/2000	<b>CS BRT 73007, JN 59701A Holland Avenue over Saginaw River</b>	1. Bridge superstructure replacement, substructure rehabilitation, approaches, study, survey, and lighting design and construction engineering. 2. Performed detailed project scope study, constructability reviews, approach design, prepared special provisions and detailed cost estimate, oversaw construction engineering. 3. \$150,000 4. 2000 5. City of Saginaw 6. Performed detailed project scope study,



		constructability reviews, approach design, prepared special provisions and detailed cost estimate, oversaw construction engineering. 7. Phillip Karwat, P.E. (989) 759-1418 8. Holland Ave., Water St. to Hamilton St., \$2,000,000, 6-span bridge superstructure replacement with MI 1800 prestressed concrete girders, concrete deck, substructure strengthening, scour revetment, and approach work with railroad crossing.
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