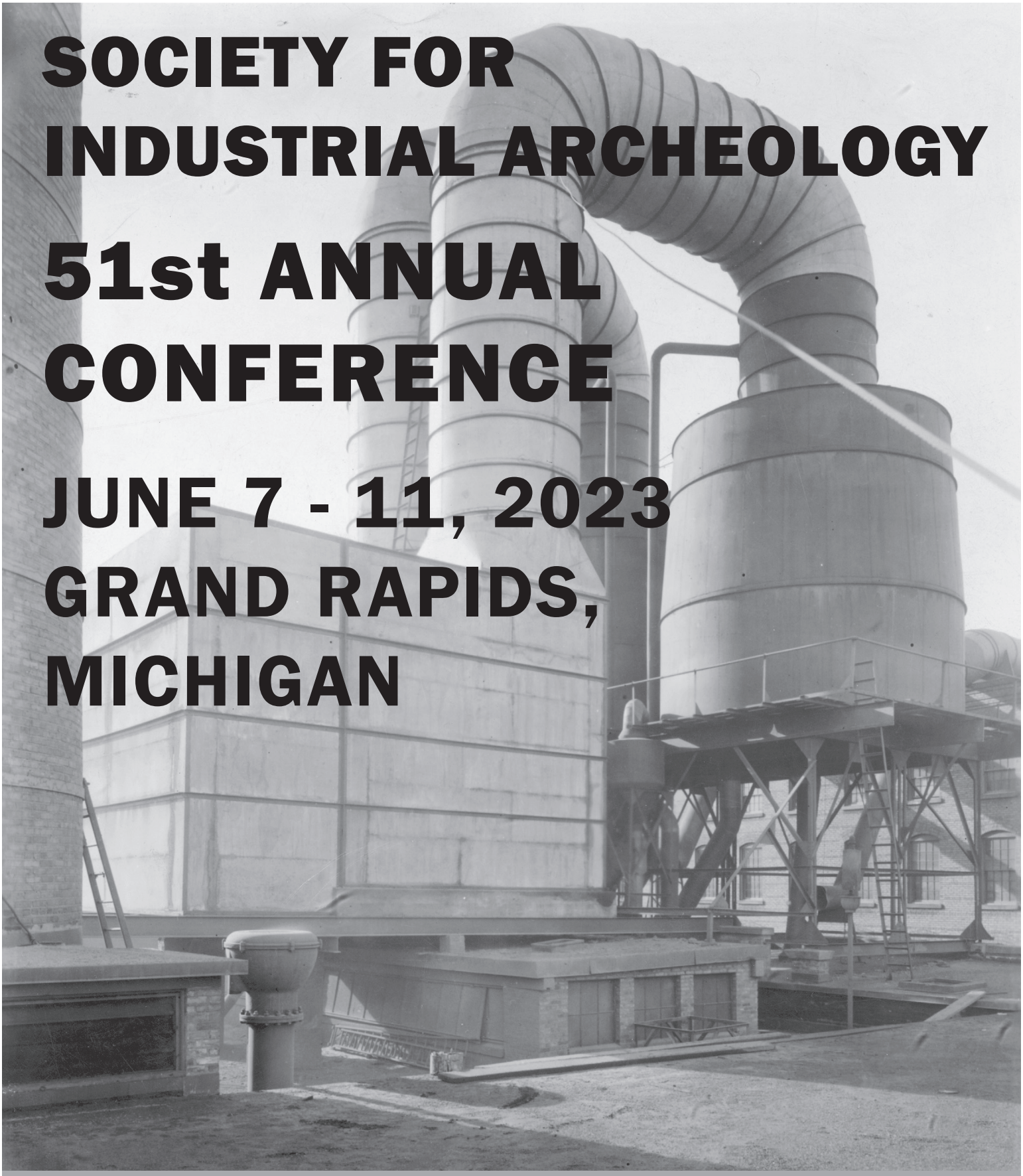
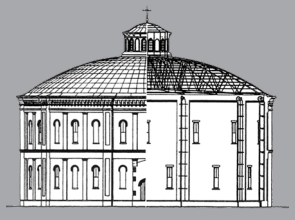
SOCIETY FOR INDUSTRIAL ARCHEOLOGY

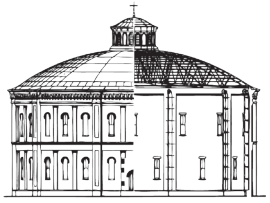
51st ANNUAL CONFERENCE

JUNE 7 - 11, 2023
GRAND RAPIDS, MICHIGAN



CONFERENCE PROGRAM





SOCIETY FOR INDUSTRIAL ARCHEOLOGY
MICHIGAN TECHNOLOGICAL UNIVERSITY
1400 TOWNSEND DRIVE
HOUGHTON, MI 49931-1295

www.sia-web.org

CONTENTS

SCHEDULE

All locations are within the EMBASSY SUITES HOTEL except where noted (*, **)

All tours (►) depart from the hotel lobby

WEDNESDAY, JUNE 7, 2023

7:00 - 8:30 PM **Speaker Event: Preservation in Grand Rapids, 1970s to the Present** ..... **Ryerson Auditorium, Grand Rapids Public Library Main Branch***

THURSDAY, JUNE 8, 2023

7:00 AM - 9:00 AM **Self Check In** ..... **Embassy Suites Lobby**

2:00 - 5:00 PM **► T1 – Walking Tour of Grand River Waterfront and Downtown Grand Rapids**
7:30 AM - 5:00 PM **► T2 – Furniture, Rails, and Mines**

4:00 PM - 6:00 PM **Self Check In** ..... **Embassy Suites Lobby**

6:00 PM–6:30 PM **New Members' Welcome Reception** ..... **Embassy Suites - Widdicomb Ballroom**

6:30 PM–9:00 PM **Opening Reception** ..... **Embassy Suites - Widdicomb Ballroom**

FRIDAY, JUNE 9, 2023

7:30 AM - 9:00 AM **Self Check In** ..... **Embassy Suites Lobby**

8:00 AM - 5:45 PM **► F1 – Traditional Furniture, Water, and Sky**
7:30 AM - 5:00 PM **► F2 – Belts, Dams, and Boats**
8:00 AM - 5:45 PM **► F3 – Preservation, Restoration, and Demonstration**

SATURDAY, JUNE 10, 2023

7:30 AM - 9:00 AM **Self Check In** ..... **Embassy Suites Widdicomb Lobby**

ALL DAY **Exhibits, Posters & Book Sales** ..... **Embassy Suites Widdicomb Lobby**

9:00 - 11:45 AM **Morning Presentation Sessions** ..... **Embassy Suites Meeting Rooms (Haldane, Eames, Nelson)**

NOON - 2:00 PM **Luncheon & Annual Business Meeting** ..... **Embassy Suites Widdicomb Ballroom**

2:15 - 3:30 PM **Afternoon Presentation Sessions** ..... **Embassy Suites Meeting Rooms (Haldane, Eames, Nelson)**

6:00 PM - 9:00 PM **Saturday Banquet** ..... **New Holland Brewing Company - The Knickerbocker****

SUNDAY, JUNE 11, 2023

9:00 - 11:00 AM **► S1 – Walking Tour of Grand River Waterfront and Downtown Grand Rapids**
9:00 - 11:30 AM **► S2 – Walking Tour of Grand Rapids' Heritage Hill and Cherry Hill Districts**

► *Please arrive at least 15 minutes early for tour departures. Departure times are firm. Return times may vary.*

* *Wednesday evening speaker event can be reached by the DASH bus, paid parking is available on site.*

*** New Holland Brewing Co. – The Knickerbocker is located at 415 Bridge St. NW on the west side of the Grand River, north side of the street, approx. .8 miles from Embassy Suites. The DASH bus stops at Seward Avenue 2 blocks west.*

ACKNOWLEDGEMENTS

PRESENTATION COMMITTEE
Patrick Pospisek (Chair)
Matthew Daley
Daniel Schneider

GUIDEBOOK CONTRIBUTORS/ TOUR LEADERS
Matthew Daley
Nan Jackson
Vern Mesler
Patrick Pospisek
Jack L. Hoffman
Rebecca Smith-Hoffman
Gina Bivins
Matthew Schad

SIA TOUR HOSTS
Nucraft: Matthew Schad
Irwin Seating: Andrew Irwin, Win Irwin
Coopersville & Marne Railway: Dennis Hart
Michigan Natural Storage: Ron Kragt
Kindel Grand Rapids: Amy Wolbert
Grand Rapids Water Recovery Resource Facility: Lauren McIntyre, Kayne Ferrier
Saugatuck Gap Filler Radar Annex: Eric Gollannek
Flexco: Doug Saunders
Consumers Energy Hardy Dam: Richard D. Houtteman
Historic Bridge Park of Calhoun County & Riveting Demonstration: Verne Mesler, Nan Jackson

SPONSORS
Grand Rapids Historical Society
Grand Rapids Public Library

OTHERS
Charles K. Hyde
Jennifer Andrew
Julie Tabberer
Michael Gray

SIA EVENTS COORDINATOR
Courtney B. Murtaugh

WELCOME

On behalf of the SIA Grand Rapids 2023 Planning Committee, welcome to Grand Rapids, Michigan for the 51st Annual Conference of the Society for Industrial Archaeology.

The Grand River Valley and West Michigan emerged during the mid-nineteenth century as a trading and manufacturing center connecting the interior of West Michigan. Located on the Grand River, Michigan's longest, the production of household furniture became Grand Rapids' signature industry by the 1880s. Moving to become dominant players, the city's firms created annual Furniture Exhibitions drawing national and international buyers. This secured the city's place as "Furniture City, U.S.A." until the 1930s. Design, printing, metalworking, gypsum mining, and other supporting industries provided the city a diversified economy. Later automobile parts, precision manufacturing, and more specialized furniture production shape the city's economy into the present. A more recent development is a vibrant brewing and distilling industry throughout the region, giving Grand Rapids the moniker of "Beer City."

The cities along the coast of Lake Michigan further contribute to the manufacturing and shipping activities of the region. This rich maritime culture is readily apparent in cities such as Muskegon, Saugatuck, and South Haven. All of this has contributed to create a rich industrial legacy that the conference will highlight.

During the conference we see the modern furniture industry within the region at sites like Nucraft, Irwin Seating, and Kindel that represent the wide variety of styles and production methods. Suppliers to the furniture industry have also innovated to remain relevant, such as Flexco, formerly Clipper Belt Lacer, with conveyor systems for firms like DHL and Amazon. The region's connection to water such transportation is shown at the Michigan Maritime Museum and the 1904 passenger ship *Milwaukee Clipper*. Older industry sites such as the gypsum mines have new uses as storage as at Michigan Natural Storage.

The conference's offerings go beyond city limits as we travel to see Hardy Dam in Newaygo, one of Michigan's early and still operating hydroelectric dams. Remnants of the Cold War at Saugatuck's Gap Filler Radar Annex, newly opened to the public reflect postwar technology. And preservation at the Historic Bridge Park of Calhoun County and the riveting demonstration at Lansing Community College are key parts of the region's identity.

Though the city struggled in the wake of the Great Depression, the realignment of the furniture industry, and the impact of urban renewal in the 1960s Grand Rapids' residents were resilient. New investments in higher education and healthcare have contributed to municipal investments in public education and infrastructure. Organizations have also worked to draw new industries to the region, helping make it the fastest growing part of Michigan.

We hope that your travels through Grand Rapids and West Michigan offer insights to a region that has a rich cultural and industrial heritage. Please enjoy your time in Michigan's "Second City" and we look forward to seeing you at future SIA events.

Matthew L. Daley

SIA Grand Rapids 2023 Conference Chair

CONFERENCE HOTEL INFORMATION

CONFERENCE HEADQUARTERS

Embassy Suites Grand Rapids Downtown Hotel by Hilton
710 Monroe Avenue NW
Grand Rapids, MI 49503

Embassy Suites Grand Rapids is located at the north end of downtown Grand Rapids, across a park from the Grand River. Numerous dining options are within a five-minute walk. It's half a mile to DeVos Place while Van Andel Arena and the Grand Rapids Public Museum are a mile away. These sites can be reach either by foot or by the no-charge DASH bus system. Enjoy free cooked-to-order breakfast and Evening Reception. Swim in our Michigan-shaped indoor pool.

DOWNTOWN AREA SHUTTLE (DASH)

The Rapid bus system operates two bus routes on behalf of the City of Grand Rapids, called Downtown Area Shuttle, or DASH (See route map, next page).

The route is free to all passengers, operating every fifteen minutes, seven days a week. There is a stop directly in front of the conference hotel. https://www.ridetherapid.org/additional-services/DASH

HOURS OF OPERATION

Wednesday – Friday: 7:00am – 12:00am
Saturday: 11:00am – 1:00am
Sunday: 11am – 5:00pm

DOWNTOWN AREA SHUTTLE

LEGEND / LEYENDA

PARKING LOTS / RAMPS
Estacionamiento Público

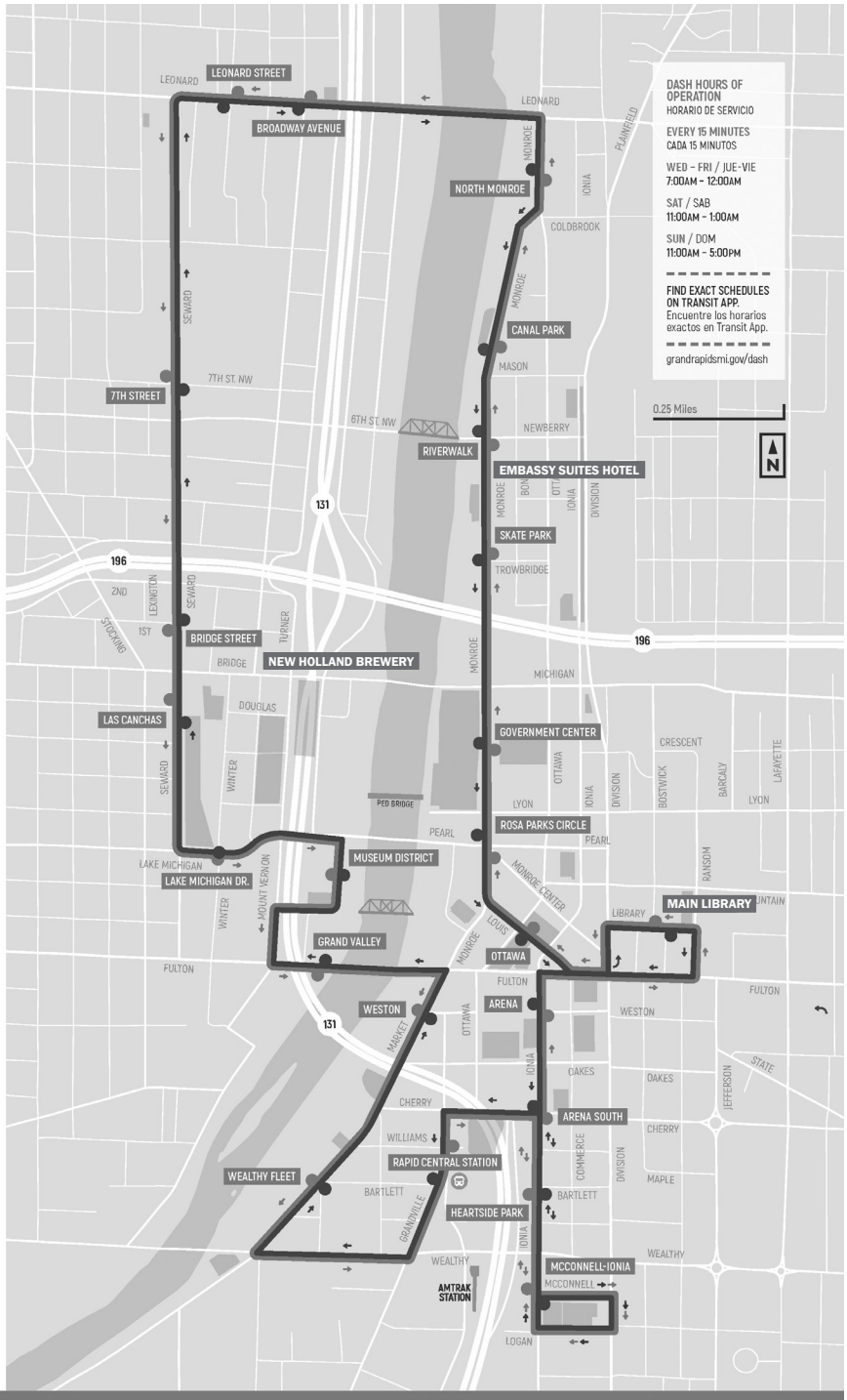
FREE GRATUITO

CLOCKWISE
Paso Del Reloj

COUNTER CLOCKWISE
Contra El Paso Del Reloj

DASH BUS STOPS
PUNTOS DE INTERÉS

RAPID CENTRAL STATION
WEALTHY FLEET
WESTON
GRAND VALLEY
MUSEUM DISTRICT
LAKE MICHIGAN DR.
LAS CANCHAS
BRIDGE STREET
7TH STREET
LEONARD STREET
BROADWAY AVENUE
NORTH MONROE
CANAL PARK
RIVERWALK
SKATE PARK
GOVERNMENT CENTER
ROSA PARKS CIRCLE
OTTAWA
MAIN LIBRARY
ARENA
ARENA SOUTH
HEARTSIDE
IONIA/MCCONNELL



FREE RIDES - IN BOTH DIRECTIONS

VIAJES GRATIS - EN AMBAS DIRECCIONES

The DASH route goes both clockwise and counter clockwise. Make sure you're on the correct side of the street for your destination.

La ruta DASH va en la dirección del reloj y contra la dirección de reloj. Asegúrese de estar en el lado correcto de la calle para su destino.

WEDNESDAY PUBLIC PRESENTATION

PRESERVATION IN GRAND RAPIDS, 1970S TO THE PRESENT

Wednesday, June 7, 7 - 8:30pm at the Grand Rapids Public Library Main Library

111 Library Street NE
Grand Rapids, MI 49503
https://www.grpl.org/

Starting in the late 1950s, Grand Rapids experienced a wave of demolition related to the combination of highway construction and urban renewal in the downtown area. At the same time, the forces of suburbanization and changes to retail seriously impacted neighborhoods across the city. While the efforts to revive the historic east side neighborhood of Heritage Hill is well known, an even greater effort went into the struggle to preserve homes, commercial, and industrial structures. The economic success of Grand Rapids in comparison to other Michigan cities owes a great deal to these efforts. With the Grand Rapids Historical Society, the SIA hosts a public speaker event with Rebecca Smith-Hoffman of Past Perfect, Inc. with over 40 years of experience in the struggle to document and preserve industrial and domestic sites in the area.

This event is free and open to the public in addition to SIA Conference Participants. The venue is the Ryerson Auditorium at the historic Main Branch of the Grand Rapids Public Library.

SIA
GRAND RAPIDS 2023

PAPERS & POSTERS

PAPER ABSTRACTS

GRAND CANYON IA

9:00 – 10:15 AM, Haldane Room

David Vago

Historic Utility Resources at the Grand Canyon

In the first half of the 20th Century, the Santa Fe Railway and its hospitality concession affiliate, the Fred Harvey Company, played a heavy and decisive role in shaping the historic village at Grand Canyon National Park as it appears today. Conducting a remote but busy and fast-growing tourism operation became a challenge in a high-elevation desert environment. Between 1925 and 1927, the Railway and the Fred Harvey Company invested in centralizing and upgrading its utility infrastructure to meet this challenge more effectively. In addition to redesigning railroad yard operations to handle trainloads of park visitors more efficiently, the two companies worked with the park to construct two large new buildings in the center of the village: an electric powerhouse and steam plant, and a centralized hotel laundry facility. Concurrently, about a mile away, they also built a new wastewater reclamation plant.

These buildings were, and are, significant for several reasons. Although no historic records exist to directly attribute the design of the powerhouse and laundry to Mary Jane Colter, Fred Harvey's acclaimed architect and the designer of some of Grand Canyon's most well-known facilities, both buildings demonstrate refined elements of chalet-inspired North American park architecture that helped them to reflect their surroundings. Although currently disused, the powerhouse retains its generating equipment. The water reclamation facility, designed to reduce the number of trains required to supply the village with water, was among the very first facilities of its kind.

This presentation will cover the history, design, and operation of these facilities, and will draw from historic archival materials, previous historical documentation, and existing conditions. It complements Christopher Marston's paper on the wooden Santa Fe Railway culvert in the park, subject to a recent HAER documentation project and installed as part of the same infrastructural investment as the utility buildings.

David Vago is a historian, preservationist, and museum exhibits specialist with 25 years of experience in research, design, planning, and managing organizations and projects. He is currently a historic preservation project manager at Grand Canyon National Park. His previous work includes exhibit design and program management for historic industrial, utility, transportation, agricultural, and military sites and museums around the country, including Michigan, West Virginia, Maryland, Pennsylvania, and California. He has also served on several nonprofit boards, including the SIA. Originally from Philadelphia, he holds a MS in Industrial Archaeology from Michigan Technological University (2005) and a BS in Architecture from the University of Maryland (2001).

Christopher Marston

A Humber Wooden Box Culvert on the Grand Canyon Railway: The History of an Overlooked Structure Type

The Atchison, Topeka & Santa Fe Railway Company built several wooden box culverts for its 65-mile-long Grand Canyon Railway subsidiary during a 1924-26 upgrade, including a realignment of the wye serving its passenger railyard, a major gateway to the recently opened Grand Canyon National Park.

This presentation focuses on a wooden box culvert that the railway called Bridge at Milepost 63.5 (later Bridge No. 82), the subject of a recent HAER documentation project.

The structure crosses Bright Angel Wash on the north wye leg and lies just northwest of the contemporaneous stone-clad powerhouse and Fred Harvey laundry, built by the Santa Fe with local limestone in keeping with the Rustic architecture style envisioned for Grand Canyon National Park, which had been established in 1919.

The skewed, three-bay creosoted wooden box culvert was based on a standard railroad design of the mid-nineteenth to early-twentieth century for short crossings, especially for dry tributaries in western climates.

This talk will examine the history of the Grand Canyon Railway and its importance to the development of Southwest transportation and tourism and demonstrate how this timber culvert is significant as a rare survivor of a once common railroad structure type.

Christopher H. Marston has been an architect and project leader with the Historic American Engineering Record since 1989 and has documented numerous bridges and railroad-related structures. A longtime member and past president and officer of the SIA, his most recent books are *Covered Bridges and the Birth of American Engineering* (2015) and I (2019).

PLASTER AND WATER IN WEST MICHIGAN

9:00 – 10:15 AM, Eames Room

Stan Vitton

From 1854 to 1990: The History of the Grand Rapids Plaster Company

While Grand Rapids is known for the manufacturing of furniture, it was first known for the mining and milling of gypsum. As early as 1827 it was known that gypsum existed near the mouth of Plaster Creek in Grand Rapids, MI. In 1842 the first mill was established near Plaster Creek. The mill products, known as Land Plaster, were shipped down the Grand River and around the lakes to Detroit. While several small mining and milling operations developed following 1841, the largest and longest surviving gypsum mining and milling operations was the Grand Rapids Plaster Company that operated between 1854 and 1976 when it closed. The mine was subsequently purchased by Domtar Industries, Inc. and reopened in 1982 closing in 1990 when most of the high quality reserved were exhausted and the mining of the lower quality gypsum seams could not compete against cheaper flue gas desulfurization (FGD) synthetic gypsum, produced from gas captured within emission control systems at coal fired electric utilities. Today, approximately half of all gypsum used in the manufacture of gypsum board in the United States is produced by FGD. The presentation will review and discuss the history and mining operations of the Grand Rapids Plaster Company Mine, later known as the Domtar Mine.

Stan Vitton, Ph.D., P.E., retired from the Civil & Environmental Engineering Department at Michigan Technological University in 2022. Before his academic position, he worked for the Shell Oil Company in their mining subsidiary, the Shell Mining Company, for eight years. While at Shell, he was the Engineering Manager of Shell's R&F Coal Company and a senior mining engineer on mining projects across the United States. His undergraduate and master's degrees are in Geological Engineering and Mining Engineering, respectively, from Michigan Tech, and his Ph.D. was in Civil Engineering from the University of Michigan.

Patrick R. Hudson

The Hydroelectric Generators of Allegan

Water power was the foundation for the 1835 Plan of Allegan. By the 1880s there were 15 water powered mills along the mill race in Allegan, forming the basis for the community's prosperity. Several local entrepreneurs were seeking new avenues for development and to keep up with the times.

Thomas Edison's development of the direct current hydroelectric generator led to the construction of hydroelectric plants across the nation, the earliest example being in Grand Rapids, Michigan, in 1887. The 1888 plant in Allegan was among the first generation of hydroelectric plants in the country. The Allegan Light and Power Company was a typical example of small to mid-size hydroelectric power plants. The Allegan example is a jury-rigged affair combining an early type of turbine with a direct current generator, using a belt and wooden gear system.

The formation of the Consumers Power Company in 1915, with Allegan's power plant as a component of that consolidation, was the beginnings of a major electric power supply corporation. Nicola Tesla's development of alternating current for the Westinghouse Company in 1888 paved the way for even greater use of hydroelectric power. The 1925 hydro turbine installed in Allegan was manufactured by S. Morgan Smith Company, now part of Allis-Chalmers Corporation, the umbrella mounted Westinghouse generator is also dated 1925 and this configuration is an example of the second generation of hydroelectric turbines and generators.

The Sanborn maps, plus the size and configuration of the turbine well and the labeling of the Westinghouse generator as Number 4 indicates that there were originally two other General Electric generators and Leffel turbine sited here. The numbering system would seem to indicate that the two missing General Electric generators were removed sometime after 1926.

By 2000 Allegan's mill district had long since been abandoned. Plans to remove the dam have been proposed.

Patrick R. Hudson is a Historian and Architectural Historian with master's degrees in historic preservation from Eastern Michigan University and geography from Western Michigan University. He has worked as Historic District Administrator for the City of Allegan, Michigan, as well as a zoning administrator for the Michigan communities of Lowell, Saugatuck, and Allegan. He served an additional 43 years as a professional community planner primarily with rural communities throughout southwest Michigan.

PRESERVATION AND RESTORATION

9:00 – 10:15 AM, Nelson Room

Richard Rediske

Using the Past to Restore Muskegon Lake

Muskegon Lake is a 4,150 acre waterbody located in Muskegon County, Michigan and part of the 2,350-square-mile-Muskegon River watershed. The Muskegon River was formed by the retreat of the Lake Michigan and Saginaw Lobes, of the Laurentide Ice Sheet, during the Late Pleistocene. Muskegon Lake is drowned river mouth system with a deep center channel (~78 ft) that outlets to Lake Michigan. The lake has a rich history dating back to pre-colonial times when it was used by the native Ottawa and Ojibwe tribes for fishing and transportation. European settlers arrived in the area in the 1700s and began using the lake for commercial purposes because it provided a protected port with an extensive shoreline and channel access to the Great Lakes. The lake became an important transportation hub for lumber, which was harvested from the surrounding forests and transported to sawmills by the river and shipping. The lumber industry thrived in Muskegon until the late 1800s when the forests were depleted, and the industry declined. During the latter part of the lumbering era, Muskegon Lake became an important tourist destination. With the economic crash of the Great Depression and the industrial expansion during WWII, Muskegon again became and manufacturing hub for heavy industry. The abundance of sand for castings and the deep water port resulted an expansion of factory jobs and the creation of large amounts of hazardous waste materials. These wastes along with wood from the lumbering era created a legacy of pollution that required extensive remediation. The use of historical records played a critical role in guiding the restoration process. Case studies will be presented concerning the restoration of foundry and lumbering areas and how the community focused its efforts on retaining access to water along the shoreline.

Richard R Rediske is a Distinguished Research Fellow at the Annis Water Resources Institute at Grand Valley State University. Dr. Rediske has coauthored 52 scientific articles concerning environmental issues and was awarded over $10 million in Federal and State grants for research projects involving contaminated sediments, harmful algal blooms, environmental monitoring and restoration, contaminant fate and transport, and environmental assessment. He is involved with restoration and remediation programs in White Lake and Muskegon Lake. Dr. Rediske has a Ph.D. degree in Environmental Health Sciences (Toxicology) from the University of Michigan.

John L. Bowditch

Industrial Archeology Without the Building

The idea that major industrial artifacts should be preserved and displayed is not new. For example, the Science Museum in London preserved the 1788 Boulton & Watt “Lapp Engine” in the late 19th century. Similarly, in the early 20th Century, great technical museums such as the Deutsches Museum or the Henry Ford Museum were founded to preserve and display large engines and other industrial artifacts along with other industrial items.

But which items should be preserved and why? What is involved in moving and conserving these massive devices? How should they be displayed? Should they be operational or statically exhibited? This lecture explores these questions while also exploring the “nuts and bolts” aspects of accomplishing these goals.

Since 1972, the author has been involved with the installation and at times operation of large steam engines and similar artifacts in several museums around the country including the Public Museum of Grand Rapids and most recently the National Mississippi River Museum and Aquarium in Dubuque, Iowa.

John L. Bowditch began his career in 1969 at the Boston Museum of Science. In 1972, he, along with the help of William Houghton, moved and installed a 1906 Rollins horizontal 4-valve steam engine on the lower level of the museum. This was (at the time) a unique installation in that this engine ran every day on live steam which being unattended. It continued in daily operation until the early 1980s when the steam supply was cut off. Bowditch became the Curator of Industry at the Henry ford Museum and Greenfield Village in 1977. While there he reactivated several steam operated mills in Greenfield Village and was also in charge of the renovation of the Edison Menlo Park Laboratory. In 1999, he became the Director of Exhibits at the Ann Arbor Hands-On Museum where he was responsible for the design and fabrication of numerous interactive exhibits. He held this position until 2012 where he reduced his hours while continuing in an emeritus capacity, while still designing and building exhibits until 2022. During his overall career, he has Done consulting work with many museums, most recently with the installation of an operation historic machine shop at the National Mississippi River Museum and Aquarium.

IA IN EDUCATION

10:30 – 11:45 AM, Haldane Room

Judith McIntosh White

Using Historical Fiction to Enhance STEM Education

Research in fields such as communication and public health has established the feasibility and efficacy of using entertainment education methodologies to enhance public sphere discussions and formal education. Further experiences during the recent COVID pandemic suggests that entertainment education delivered through online modalities can be also be effective for teaching basic principals and fundamentals in the STEM fields. To further extend the reach of EE methodologies and to test their effectiveness, the authors are engaged in writing a series of YA historical novels featuring the science of the Enlightenment and the Industrial Revolution in the United States. Plans are in place for up to 10 such novels, with appendices consisting of primers and workbooks to further add to the novels' presentation of historic scientific events and the fundamentals and principles behind them. The first novel (at present half finished) will deal with the construction of the Middlesex Canal in Massachusetts and the concurrent development of steam power in the United States.

The authors see this endeavor as existing at the crossroads of research and creative scholarship. They have targeted the YA audience of readers from 12 to 18 years of age. They consider it essential to reach this demographic in order to spark their interest and to give them the historical and technical background tools to pursue further STEM education. The first novel represents a trial of these research assumptions, and SIA seems the perfect audience to offer feedback on the idea. This presentation will consist of a talk and PowerPoint slides presenting the ideas behind and the main topics addressed by the first novel in the planned series. The authors' intention in presenting at the SIA conference is to spark a public sphere discussion on the ideas and execution methods presented.

PRESENTER

Judith M. White (Ph.D. – agricultural communications, 2006) is associate professor in the Department of Communication and Journalism at the University of New Mexico. She received her BSJ in journalism from Medill School of Journalism at Northwestern University, her M.S. in science and technology journalism from the School of Veterinary Medicine & Biomedical Sciences at Texas A&M University, and her Ph.D. in Agricultural Leadership, Education, and Communications, College of Agriculture and Life Sciences at Texas A&M University. Her research focuses on the communication of health and science and on science journalism, as well as using creative scholarship to enhance initiatives for science in the public sphere.

CO-AUTHOR

Jeffrey C. White (MS, EET) is an educational consultant and independent researcher in the history of science and technology. He is based in New Mexico. He has worked for more than 40 years as an encyclopedia editor, a creator of technical educational materials, a machinist, a computer programmer, and an electronics designer, reverse engineer, and troubleshooter.

Barret Wessel

Industrial Archeology in a Soil and Water Science Course to Spur Activism

Landforms, minerals, water, and other resources influence the development and distribution of industrial sites, and the industry at those sites often reshapes the surrounding landscape and impacts soil and water quality long after industrial activity has ceased. A course in Industrial Archeology and the Environment presents a transdisciplinary opportunity to teach soil and water science concepts to archeology, history, and preservation students while teaching concepts in preservation, history, and archeology to agricultural and environmental science students. The course opens with an introduction to soil and water science, focusing on land degradation and contamination because of

industrial processes. Discussion of these impacts will be followed by a unit on remediation, preservation, and adaptive reuse of industrial sites and landscapes. Student projects and presentations will make up the remainder of the course. Project-based learning will be used to provide students with considerable flexibility in case study assignments on adaptive reuse. Students will select an industrial site of their choice and develop a proposal for adaptive reuse of the site that includes aspects of historic preservation, interpretation, soil and water remediation, and consideration of the broader community around the project. The course closes with a section on advocacy, teaching students how to identify elected officials and how to contact them to express their opinions on industrial sites in their own communities.

Barret M. Wessel earned his PhD in Soil and Watershed Science concurrent with a graduate-level Certificate in Historic Preservation from the University of Maryland in 2020. His research focuses on soil formation and change, with interests in historical land use, future land use trajectories, and environmental remediation and adaptive reuse of industrial sites. He has published over 15 peer-reviewed articles in multiple journals and received national awards including the National Science Foundation Graduate Research Fellowship and a Fulbright Fellowship. Dr. Wessel has presented his work dozens of times at professional meetings, including presentations on three continents. He presently works as an Assistant Professor of Soil Science at Michigan State University and has taught soil and environmental science to hundreds of students.

James Juip

Using HSDI's to Support Community Engaged Interdisciplinary Education and Industrial Heritage Interpretation

The use of industrial heritage is a profoundly important factor in the process of creating a sustainable economic, social, and political future for many communities occupying industrial heritage landscapes. More than ever we recognize the need for such communities to be capable of shaping and expressing their heritage in different forms in the context of current events and issues, and in doing so to inform both contemporary decision-making as well as the way their industrial heritage is represented to the broader world.

Big data – based digital approaches to the representation, communication, and study of industrial heritage promise important contributions to this process, including: offering new ways for communities to discover, visualize, and explore their industrial heritage; fostering public access to archival data and virtual access to heritage sites; supporting genuine collaboration between communities and heritage researchers and professionals; and providing new ways for communities to share knowledge and express their heritage values in a data-rich environment. In this session we present interactive web-based digital heritage projects developed by MTU's Industrial Heritage and Archaeology program. The presentation will include a discussion exploring the applications of digital, geospatial approaches using historical big data to improve public engagement with industrial heritage and better support heritage efforts in communities.

James Juip is a senior research associate for the Geospatial Research Facility, community and education outreach specialist for the Historical Environments Spatial Analytics Lab, and PhD Candidate in the Industrial Archaeology and Heritage program at Michigan Technological University. James is also an educator for Gidakiimanaaniwigamig S.T.E.M. camp for Indigenous youth sponsored by Fond du Lac Tribal College. He has 12 years of public engagement experience in the fields of heritage interpretation and education outreach. He earned the Commissioner Recognition Award for his exceptional work in heritage interpretation and community outreach for the Minnesota Department of Natural Resources in 2018. His current research focuses on the integration of community based participatory research, historic geospatial data, and modern interpretation methods to create a more holistic and inclusive narrative of past and present industrial communities.

INFRASTRUCTURE AND DRY DOCKS

10:30 – 11:45 AM, Eames Room

Robert Chidester

The Armory Park Gasometer: Documenting Toledo's 19th-Century Utility Infrastructure

The Armory Park Gasometer site (33LU0905) was discovered in the fall of 2021 when a brick structure was unexpectedly exposed during construction activity associated with the expansion of the Ashley Federal Courthouse in downtown Toledo, Ohio. Upon further examination, the structure was identified as a gasometer built and operated by the Toledo Gas Light and Coke Company in the late 19th century. Built before 1875, operated until ca. 1890, and likely dismantled sometime between 1910 and 1917, the gasometer was part of one of Toledo's earliest utilities and an integral piece of the city's first gasworks. The gasometer's primary function was to store manufactured gas, also called town gas, a fuel commonly used during the mid- to late 19th century. This paper explores the history of manufactured gas technology, the development and decline of the manufactured gas industry in Toledo, and the place of the Armory Park Gasometer within this early form of networked utility infrastructure in the city. Rapid innovation in Ohio's natural gas industry quickly supplanted the use of manufactured gas in the late 19th century, ultimately rendering the Armory Park Gasometer obsolete by the 1890s.

PRESENTERS

Dr. Robert Chidester, RPA, is the Cultural Resources Group Manager at The Mannik & Smith Group, Inc. in Maumee, Ohio and an Adjunct Professor of Anthropology at Heidelberg University in Tiffin, Ohio. He holds a Master of Applied Anthropology degree from the University of Maryland – College Park and a Ph.D. in Anthropology and History from the University of Michigan. Dr. Chidester's areas of expertise include urban archaeology in U.S. "Rust Belt" states; African-American archaeology; military sites archaeology; community-based archaeology; labor and working-class history; and Cultural Resources Management. He has published articles in the journals Historical Archaeology, Archaeology of Eastern North America, CRM: The Journal of Heritage Stewardship, and International Journal of Labor and Working-Class History, as well as several chapters in edited volumes.

CO-AUTHORS

Daniel Hershberger; dhershberger@manniksmithgroup.com; Daniel Hershberger, B.F.A., is a Staff Historian at The Mannik & Smith Group, Inc. in Maumee, Ohio. He is an expert in American transportation history, and particularly the study of roadside Americana.

Meagan Bell; mbell@manniksmithgroup.com; Meagan Bell, B.A., is the Archaeological Laboratory Director at The Mannik & Smith Group, Inc. in Maumee, Ohio. She holds a Bacherlor's degree from the University of Toledo and is currently enrolled in the Master of Professional Studies program in Cultural Heritage Resource Management at the University of Maryland – College Park.

Daria Jagiełło

Torun's Water Supply Pump Station "Nowe Bielany" ("New Bielandy"): Brief History, Current Status, and Little Glimpse to the Future

The most significant changes in Toruń's urban network date back to the turn of the 20th century. Significant development of the city and a marked increase in population, forced measures to build new water intakes.

The subject of the study is a small complex of buildings of the former water intake "New Bielany" dating back to 1917, which includes a pump station, engineer's house and outbuilding along with underground infrastructure. The engine room and the engineer's house were connected by an underground corridor.

Water was drawn from 7 masonry drilled wells (the initial design called for 9), about 12 meters deep, and a collection well (almost 8 meters deep). The station was equipped with 2 high-pressure centrifugal pumps driven by electric motors. In theory, the capacity of its pumps allowed it to supply the city with water on its own.

Thanks to architectural and stratigraphic analysis and archival research, the history of the complex and the history of architectural transformations of its various elements were recognized. At a further stage, its state of preservation was determined, an assessment of its historic value was carried out and, based on this, conservation guidelines were formulated for the planned adaptation project.

The complex, especially the pump station, is a virtually untransformed building, preserved in its original shape, with unpreserved but documented furnishings. The primary goal should be to strive for the maximum preservation of the historic substance, while at the same time acting to enable the effective use of the buildings.

Daria Jagiello graduated in Polish Philology and Protection of Cultural Heritage at the Nicolaus Copernicus University in Torun. Doctor of art sciences in the field of conservation (title of dissertation: "Water mills in the cultural landscape of the Bzura Basin and their conservation issues"). In 2015-2016 employee of the Provincial Office for Historic Preservation in Torun, from 2019 assistant at the Faculty of Fine Arts of the Nicolaus Copernicus University. Areas of scientific interest: historical milling, technical heritage, cultural landscape. Researcher of the National Science Centre Poland grant "Water mills in the lower Vistula river basin from the beginning of the 18th to the beginning of the 21st century" (2015-2018). Consultant of the concept of the "Mill-Machine" exhibition in Bydgoszcz's Rother Mills. Author of Polish- and English-language publications in scientific journals and collective works, as well as numerous conservation documentation from her area of interest.

Robert J. Dermody

The Historic Dry Docks at Charlestown Navy Yard

Some of the first large-scale dry docks in the United States were constructed in the early 1800's at the Charlestown Navy Yard in Boston, MA. The granite lined, ship sized berths were, and still are, remarkable feats of engineering design and construction. These innovative basins were "sophisticated maritime structures" crucial to the maintenance and development of the young nation's naval fleet. A talented, young, local engineer, named Loammi Baldwin, was chosen by the Secretary of the Navy to oversee the project, which required great technical and mechanical expertise. Dry docks are basically long narrow basins open to the water at one end, with a moveable caisson to close it off. A large system of pumps then drains the basin so ships can be repaired, or built, while resting on blocks at the bottom of the basin. The granite material used for the Charlestown dry docks was locally sourced in Quincy, MA just south of Boston. Dry Dock Number 1 has been extended twice since it opened in 1833. In 1860, the length was increased by 16 feet to 357 feet. The last extension project added another 58 feet to make the dock 415 feet in length in 1948. The Charlestown Dry Docks represent state of the art early 19th century civil engineering and maritime infrastructure projects. This presentation will discuss the design and construction of the dry docks at the Charlestown Navy Yard, with a special focus on Dry Dock Number 1 which is still in use today. In fact, in 2017, Dry Dock Number 1 was used for a major restoration the USS *Constitution*, the world's oldest commissioned naval vessel. Their continued use is a testament to their quality design and construction, and careful maintenance for over 190 years.

Robert J. Dermody, AIA is a Professor in the School of Architecture, Art and Historic Preservation, at Roger Williams University where he teaches architectural design studios and courses on structural design. Mr. Dermody has a B.S. in Civil Engineering from the University of Massachusetts at Amherst, and a Master of Architecture, with a concentration in Structures, from the University of Illinois at Urbana Champaign. He is a founding member of the Building Technology Educators Society and is a licensed architect in Massachusetts.

AGRICULTURAL INNOVATIONS AND LEGACIES

10:30 – 11:45 AM, Nelson Room

Eric Gollanek

Models of Agricultural Innovation: Michigan State College Engineering Models, Farm Modernization, and the Changing Rural Landscape, 1920s–1950s

A collection of fifty mid-twentieth century wooden models hand built by engineering students and faculty at Michigan State College (now University) provide evidence for the development and popularization of new building types and technological processes across Michigan's rural landscape from the 1920s through the 1950s. Through a material culture approach, this paper offers new insights into the role of the land-grant university in leading agricultural modernization through the New Deal and post-World War II eras.

Agricultural models brought together hands-on, project-based learning and farm demonstration in Michigan. Students fabricated these scale models of working farm buildings with individual structural elements and joined them together much as they would in leading demonstration projects in rural communities across the state. Both model makers and farmers used recycled materials or "timber which had been cut for pulp wood" to build modern wind-resistant structures in an era of wartime scarcity and ecological depletion of upper Midwest forestlands.

Mechanization and scientific methods transformed the agricultural landscape in the mid-twentieth century and the models embody these complexities. Cut-away sections offered anatomical views of these new structures, revealing new spatial arrangements and systems for ventilation, insulation, and roofing. Structurally the development of laminated arch roof buildings parallels the work of wartime industrial designers Charles and Ray Eames and R. Buckminster Fuller.

Cooperative projects led by extension agents brought these new types of barns, poultry houses, and machinery sheds from the university to communities across the region. This evidence demonstrates the importance of collaborative public outreach, bringing together students and faculty with farmers and builders to develop innovative engineering solutions to the challenges of agriculture. This study provides insight into the ways the handcrafted model served as an essential step in the modernization of agriculture and changes in rural landscape in the mid-twentieth century.

PRESENTER

Eric Gollannek (Ph.D., University of Delaware) is Executive Director of the Saugatuck-Douglas History Center in Douglas, MI. He worked at the Michigan State University Museum (2016-2018) where he conducted an assessment of Agriculture and Rural Life collections. In addition to museum practice, Gollannek has taught history, art and architectural history, and material culture studies at Kendall College of Art and Design and Grand Valley State University in the Honors College. Gollannek has also worked on numerous public history projects in the Mid-Atlantic and Midwest including historic highway projects in Delaware and cultural resource surveys on Michigan's Mackinac Island and across Michigan's Copper Country in connection with Keweenaw National Historic Park.

CO-AUTHOR

Shirley Wajda -- shirley@shirleywajda.com -- (Ph.D., University of Pennsylvania) is Curator of Collections at Canterbury Shaker Village, Canterbury, NH. She is the former Curator of History at the Michigan State University Museum (2014-2018), where she worked on a number of varied collection-based research and exhibition projects, from the cultural and political meaning of women's cloche hats in the 1920s, the history of the selfie, and World War I propaganda. Among the projects was one based on the Museum's collection of agricultural building models created by the University's agricultural engineering students and featuring industrial materials.

Wajda has taught at universities in the Corn Belt, the Rust Belt, and the Eastern Seaboard. In 2008 she published, with Helen Sheumaker, Material Culture in America: Understanding Everyday Life, the first ever encyclopedia of American material life and its

study. She has also published scholarly essays on women's clothing, Martha Stewart, secondhand shopping, children's cabinets of curiosities, and nineteenth-century commercial portrait photography and photographic studios. She currently serves on the editorial board of American Studies.

William Cleveland

Locating the Sugar Crushing Windmills of St. Croix

The sugar industry had an outsized influence on human history. Driving colonial expansion, trade globalization, chattel slavery, and changes in food consumption, the sugar industry shaped our current world. As the first industry to broadly combine agriculture and manufacturing, the sugar industry demanded both capital and management skill.

St. Croix in the Virgin Islands played an interesting role in the sugar industry, ramping into full scale production relatively late in the 1740s. The mapping of St. Croix documents the first jurisdiction ever surveyed using a completely rectilinear survey. This settlement pattern facilitated exploring historic maps to compare windmill locations between maps and then finding them in the field.

Core to this exploration are the windmills built to crush sugar cane. The masonry towers remain dotting the island and have become a cultural icon. In research starting in the late 1980s, of the estimated 155 windmill towers ever built on St. Croix, 119 have been located in the field.

Launched in March 2023, the website https://www.stcroixwindmills.org/ locates all of the windmills with an individual page highlighting each of the 147 plantations that had a windmill. This presentation discusses the website and its usefulness in promoting understanding of the past as well as a tool for guiding future archaeological research.

Bill Cleveland lived in St. Croix from 1987-1991. During this time, he grew to love the island and its history. With the encouragement of Dr. Arnold Highfield, Bill completed the first known modern reconnaissance of all the windmill ruins on St. Croix. He started this in 1988 and, with the assistance of Hurricane Hugo, was able to find more ruins that had been obscured by foliage. The 2020 COVID cleanout dusted off the 30-year old research that was never published. Dr. Cleveland has a PhD from Indiana University and teaches courses at the University of Wisconsin Milwaukee. He created the website https://www.stcroixwindmills.org/ to further understanding of the history of St. Croix.

MINING HISTORY AND DOCUMENTATION

2:15 – 3:30 PM, Haldane Room

Fredric Quivik

Residual Hazardous Materials at a Popular Ski Area: The Mining History of Park City, Utah

Park City, Utah, is a popular ski area that has gained renown as well for its Sundance Film Festival. Park City's ski areas and mountain condominiums have been developed on private property that was originally acquired as mining claims in the nineteenth century as the Park City mining district grew to be one of the most important silver producers in the United States. A facet of Park City's environment that is little known by today's vacationers and recreationists is the large volume of tailings that remain from those decades in the late nineteenth century and early twentieth century, when mills processed millions of tons of ore and discharged tailings into Silver Creek and its tributaries. This paper will provide an overview of Park City's mining and milling history, summarize the environmental controversies that arose around the turn of the twentieth century over tailings pollution, and describe the physical remains of that pollution. The surviving tailings created the need for remediation under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). Such remediation projects are overseen by the U.S. Environmental Protection Agency (EPA), in the process of which the EPA usually declares remediation areas to be Superfund sites. The Park City example is interesting because the economic interests of Park City did not want the Superfund label. The economic interests therefore negotiated with the EPA to call the area to be remediated the Richardson Flat Tailings Site, rather than the Richardson Flat Superfund Site. The presentation will show how perceived ideas of public relations can shape the course of environmental remediation.

Fred Quivik retired in 2015 from teaching in the Department of Social Sciences at Michigan Tech, where he was affiliated with the grad program in Industrial Heritage and Archaeology. He served a six-year stint as editor of IA: The Journal of the Society for Industrial Archeology. Now living in Saint Paul, MN, he continues working as an expert witness in environmental litigation. One of his recent cases involved the Park City mining district.

Dan Trepal

Underground Remote Sensing Documentation at the Adventure Mine, Greenland, Michigan

The archaeological documentation of the subsurface portions of abandoned mines remains an underdeveloped niche within archaeology due to the obvious hazards, logistical challenges, and expense associated with such fieldwork. As a result, the vast majority of abandoned underground working have not been surveyed or documented, even though they represent an obviously central component of any historical mining site. The ongoing and accelerating adoption of increasingly affordable and compact remote sensing equipment promises to make the documentation of underground mine workings more feasible for archaeologists. This paper summarizes recent digital documentation efforts at the 1850-1920 Adventure Mine in Greenland, MI, a historic hard rock copper mine currently run as a heritage tourist site in Michigan's Upper Peninsula. Using a combination of terrestrial LiDAR and digital photogrammetry, we demonstrate how remote sensing approaches may be applied to rapidly document fragile archaeological remains within a hazardous subterranean archaeological site. Like all archaeological resources, abandoned mine workings face threats and impacts ranging from trespass and looting, to redevelopment, to adaptive reuse; more documentation of these sites will help us better understand their historical and archaeological significance as well as raise their profile amongst heritage / land management professionals and the public alike.

Dr. Dan Trepal is Senior Geospatial Research Scientist and Adjunct Assistant Professor at Michigan Technological University. An MTU Industrial Archaeology program alumnus, Dr. Trepal has previously served as an archaeologist for the National Park Service in Alaska as well as working in the cultural resource management industry across the US. More recently specializing in the applications of geospatial information systems and remote sensing to archaeological research, his research interests include historical cast iron technology, the archaeology of mining, the industrial archaeology of the American Rust Belt, public archaeology, and the application of geospatial and remote sensing technologies to archaeology.

ARTISANS AND EXPLORATION

2:15 – 3:30 PM, Eames Room

Gary Frost

Evaluation of Artisanal and Industrial Development

What Gutenberg could not fully realize were limitations of movable metal type used as a page printing matrix and other complications and inefficiencies emerging from flat-bed press printing of duplexed impressions. Lock-up was serious business required to make movable type immovable and using the flat bed press there were endless impositions of "inner' and "outer" type forms producing the alternating odd and even numbered pages. These complexities imposed industrial complications, instability and economic risk. For example, risks of movable type redistribution could result in inequities of numbers of gatherings limiting the final edition size. Industrial management may well have been Gutenberg's most lasting innovations as he managed an early modern version of interchangeable parts manufacturing inherent in movable metal type printing. Perhaps what Gutenberg really invented was the Industrial Revolution.

The interchangeability of types is a side-effect of language inscription in which characters adjoin uniformly but in variable sequences. So movable metal type required an early industrial version of interchangeable parts alien to fifteenth century artisanal crafts. Johannes Gutenberg and the calligrapher Peter Schöeffer had to visualize a manufacturing method that regimented the ductile variability of writing into gauge conforming cast metal parts.

The paged paper book provided the platform for considering early printing as an origin of the industrial revolution. Although each printing operation still required hand skills the subdivision of labor became its own industrial skill. As the CEO of a 3-D printing plant recently remarked; "The factory is the product." The smart hand craft specialists of the Gutenberg shop perceived the underlying industrial project and soon set up their own shops.

Gary Frost, Conservator Emeritus of Libraries, University of Iowa, is a researcher if book history. He has parsed the triad of "paged paper book" across global cultures.

Phil Buehler

Histories Uncovered: 50 Years of Urban Exploration

Photographer Phil Buehler gives a tour of some of the abandoned places has been documenting since 1974, many of which serve to illuminate our country's history of marginalizing certain groups of people:

- Greystone Park State Psychiatric Hospital, deliberately demolished because of associations with the mentally ill once warehoused there.
- Dangerous low-income housing projects for poor and often black resident.
- Ellis Island, which became obsolete after the Immigration Act of 1924 limited Eastern and Southern European immigrants that were deemed undesirable. - Abandoned piers lining the Hudson River where gay New Yorkers found a place where they could gather undisturbed by police.
- Catskills resorts where Jews were welcomed and not excluded. - Factories in Newark closed with business moved south after the 1967 race riots fomented by police brutality, leaving an inner city to decay.
- A rusting jail where drug addicts were incarcerated instead of treated.
- Other examples include Cape Canaveral, the Airplane Graveyard, the 1964/64 New York World's Fair, the S.S. United States, and, of course, some in Detroit and Flint Michigan.

This presentation is a sequel to Buehler's well-received slide presentation at the 1984 SIA annual conference in Newark, NJ and the subject of his next book.

Phil Buehler has been exploring and photographing abandoned places for fifty years, first rowing out to then-abandoned Ellis Island in 1974 when he was 17. He is considered by many to be the founder of Urbex, or Urban Exploration, photography. Much like a time traveler, he visits the past and returns with a piece of endangered history, often one step ahead of the wrecking ball.

His work has been exhibited in galleries and museums and appeared in the NY Times, Popular Photography, American Photography, Art News and other publications. His award-winning book, "Woody Guthrie's Wardy Forty: Greystone Park Hospital Revisited," tells the story of the singer, songwriter and activist's life while suffering from Huntington's Disease by juxtaposing images of the abandoned hospital with archival material from the Woody and interviews he conducted. His recent photo essay in the Guardian last November of a dead shopping mall garnered millions of views.

TRANSPORTATION: DREDGING, CRISIS, AND PRESERVATION

2:15 – 3:30 PM, Nelson Room

Duncan Hay

Digging a Ditch Through the Mire: Dredging Across New York State, 1905-1918

The Erie Canal opened In October 1825, establishing the first navigable connection between the Atlantic Ocean and the upper Great Lakes. Ten years after it opened the Erie Canal was choked with traffic and New York started an enlargement campaign that lasted from 1836-62. The Enlarged Erie was wider, deeper, and had 71 pairs of side-by-side locks, each capable of passing 240-ton vessels. New York's canals were enlarged again during the 1870s and 1890s.

The Erie Canal carried its peak tonnage in 1880 but continued to lose share to railroads and new canals along the St. Lawrence River. To preserve the primacy of the ports of New York and Buffalo, New York constructed the Barge Canal system between 1905 and 1918 along the routes of the Erie, Champlain, Oswego, and Cayuga-Seneca canals. That system remains in full operation today with more than 450 miles of constructed channel, and 57 locks.

Unlike its "towpath-era" predecessors, the Barge Canal was designed for self-propelled vessels. Freed from the need for a towpath, early 20th century canal engineers altered the alignment to utilize canalized rivers and lakes. Towpath-era canals were built using human and animal muscle - it was mostly pick & shovel work, aided by some ingenious but simple mechanical equipment. Contractors engaged in Barge Canal construction made extensive use of steam powered machinery: rail-mounted steam shovels, material transfer bridges, derrick boats, and a dizzying array of dipper, hydraulic, and ladder dredges.

This presentation will use a selection of the thousands of Barge Canal construction progress photos housed at the NYS Archives to highlight work by dredging machinery during the 1905-18 project. It will also show some of the measures used by canal designers to limit sediment accumulation in navigation channels.

Duncan Hay is a hydropower licensing specialist with the National Park Service and was historian with Erie Canalway National Heritage Corridor where he wrote the National Historic Landmark nomination for the NYS Barge Canal. He previously worked at NYS Museum in Albany and at the National Building Museum in Washington. Duncan has a BS in Geography from SUNY Oneonta and a MA and PhD in the History of Technology from the University of Delaware.

Timothy Arron Kotlensky

Before and After the Collapse: The Three Lives of Pittsburgh's Fern Hollow Bridge

On January 28, 2022, the Fern Hollow Bridge collapsed in the City of Pittsburgh's East End, quickly garnering major national attention. The batter-post and K-frame weathering steel bridge had carried Forbes Avenue over Frick Park and Fern Hollow Creek since its completion in 1973, the award-winning bridge itself a replacement for a steel arch bridge built in 1901, also named the "Fern Hollow Bridge." Investigations by the National Transportation Safety Board (NTSB) continue into 2023 and the publication of a final determination of the cause for the collapse is pending. Fortunately, the collapse of the bridge did not result in any fatalities and under expedited measures put into place by federal and state authorities, the Federal Highway Administration (FHWA) and the Pennsylvania Department of Transportation (PennDOT) were able to coordinate the replacement of the bridge within one year from the anniversary of the bridge's collapse. Despite the constraints of a compressed schedule and nationwide supply chain issues, PennDOT replaced the bridge while fulfilling its obligations to Section 106 of the National Historic Preservation Act and coordinating with consulting parties who expressed an interest in avoiding any impacts the project may have on historic resources. Consequently, the replacement of the Fern Hollow Bridge became an unusual spur to understand the history of connecting the dissected neighborhoods of Pittsburgh while deploying a rapid and considered historic preservation response when replacement is the only available option. Expanding on these points, this presentation offers an outline of the history of the three bridges that have spanned Fern Hollow, a brief overview of the January 2022 collapse and the construction of the replacement bridge, and how PennDOT's District 11-0 cultural resource professionals navigated the project through the Section 106 process with lessons learned for responses to unforeseen future events that impact historic resources.

Arron Kotlensky completed an MS in Industrial Archaeology at Michigan Tech in 2006 and has worked in a variety of roles in cultural resources consulting before joining PennDOT in 2021. Since that time, he has served as the Cultural Resource Professional archaeologist for PennDOT Districts 11-0 and 1-0 in Western Pennsylvania. Apart from his professional service, Arron has been an active member of the SIA since 2004, receiving the Robert M. Vogel Prize in 2014, organizing the annual conference in Houston, Texas in 2017, and the Fall Tour in 2022 in Northwestern Pennsylvania. He lives in the Brighton Heights neighborhood of Pittsburgh and currently serves as president of the SIA.

Dean Pyers

Preserving Steam Railroading Equipment in the 21st Century

People still enjoy riding steam powered excursion trains, and there are many museums around the country that preserve historic railroad equipment and the skills needed to restore these relics of 19th century technology. But what does the future hold for coal-burning steam operations? What new technologies are being applied to maintenance practices, machining and restoration techniques, and operations that ensure the next few generations will also be able to experience steam power?

The Steam Railroading Institute is located in mid-Michigan, roughly 90 miles east of Grand Rapids. We operate one steam locomotive, Pere Marquette #1225 (which was animated for the "Polar Express" motion picture) and we are in the process of restoring a second locomotive. Our presentation can cover how the FRA works with the museums; the current regulations that apply to steam operators; the interest we see from younger volunteers and employees; and how other groups have converted locomotives from coal to other fuels.

Dean Pyers volunteered at the Steam Railroading Institute for 25 years before becoming the Executive Director of SRI in April, 2022. He holds Bachelors and Masters degrees in Industrial Engineering from Toledo and Purdue respectively, and previously worked as a Manufacturing Engineer in vehicle assembly plants for General Motors.

POSTERS

Arthur Townend

Barree Forge: A Pennsylvanian Forge Town

This thesis proposal considers the Barree Forge and Furnace site located at the Greene Hills Methodist Camp near Alexandria, a town in Huntingdon County, Pennsylvania. The manufacturing structure participated in Pennsylvania's Juniata Iron District as one of the top producers of iron throughout the 19th century, reaching peak production during the 1860s and 1870s before petering out during the 1880s. While the ruins of the furnace feature prominently, my archaeological work sought the location of other structural remains near the prominent ruin. This thesis seeks to answer questions addressing the livelihood of workers in nearby tenement housing as evidenced by their material culture as opposed to the manufacturing of iron in the nearby forge, adopting a Marxist theoretical framework to interpret the archaeological record. As such, research will take place to the west of the forge to uncover potential structure foundations beneath the current landscape. Ground-penetrating radar (GPR) is utilized to locate cultural anomalies, followed by ground-truthing those anomalies to determine the presence and function of potential structures. Artifacts will be catalogued and analyzed to address the social implications: what was the relationship between the workers and the management and why did labor movements common within mining and steel communities not start here?

Caroline Bassett

3-D Modeling of the Byrd Park Pump House Generators and Steam Engine

The Byrd Park Pump House served as Richmond, Virginia's waterworks from 1883 until 1924. While it originally only used the hydraulic power provided by the James River & Kanawha Canal, both hydroelectric and steam-driven generating equipment were later added. After the Pump House was decommissioned, its machinery was sold for scrap, leaving behind virtually nothing for historical interpretation. This paper describes the task of creating 3-D models and developing an augmented reality (AR) experience to allow visitors to see the inner workings of the building as it once was. Based upon a single newspaper article from 1905 that contains a drawing of the generator room and a brief description of its machinery, the project team used historical records, including patent drawings and reports from the American Society of Mechanical Engineers (ASME), to develop 3-D models of the Babcock and Wilcox boiler, the Corliss steam engine, the hydroelectric turbine, and the two generators. A second part of this work involves using LiDAR technology to map what remains of the Pump House to set the background for augmented reality. Using Blender, an open source 3-D creation space, and Unity, an AR platform, to transform 3-D models from SolidWorks into objects in the AR space, the team created an immersive experience that will be enjoyed by visitors for years to come. This project is part of a larger effort by the Friends of Pump House to restore the building and see it once again become a community space while preserving an important piece of Richmond's industrial and social history.

PRESENTERS

Caroline Bassett is a senior mechanical engineering student at Virginia Commonwealth University. Caroline has experience in hydroponics, including electrical and plumbing systems. She has worked with SolidWorks, Ansys, MatLAB and python for data analysis. She is also a member of the Reserve Officer Training Corps and serves as the treasurer of the Society of Women Engineers.

CO-AUTHORS

Blue Arevalo: Email: arevaloh@vcu.edu Blue is a senior computer science student at Virginia Commonwealth University. Blue has experience in virtual reality and game development. Blue also works with python, C and Java coding. He also serves as the vice president of the Triangle Club.

Haley Currence: Email: currencehp@vcu.edu Haley is a senior computer science student at Virginia Commonwealth University. She has experience in virtual reality, augmented reality and mixed reality. Haley also has experience as a research assistant.

Javon McKinney: Email: mckinneyjs@vcu.edu Javon is a senior mechanical engineering student at Virginia Commonwealth University. He has experience in 3-D modeling on various platforms.

Darriel McLaurin: Email: mclaurindd@vcu.edu Darriel is a senior student at Virginia Commonwealth University, she is majoring in both computer science in art. She has experience in virtual reality, game development, backend development, java, javascript and 3-D modeling. Darriel is a game design instructor and a software engineer intern.

Barret Wessel

IA*, Indexing, and Impact Factors: A Consideration of the Reach of Our Flagship Journal*

IA: The Journal of the Society for Industrial Archeology has been a flagship journal in industrial archeology since it was established in 1975 and it remains one of the only published journals whose scope broadly focuses on industrial archeology; however, journal publishing has changed considerably over the past half-century and the Society for Industrial Archeology (SIA) should evaluate how IA fits into the modern publishing landscape. Past issues are available on JSTOR and Google Scholar, but IA has never been registered with a citation index like Scopus or Web of Science. These citation indexes track the impact of authors and publications by generating citation-derived metrics including citation counts for articles, the h-index for authors, and the impact factor for journals. These metrics, while imperfect, are frequently considered in government and academic hiring and promotion decisions because they reflect the reach and impact of professional writing. Because these metrics are unavailable for IA, there is limited incentive for government and academic authors to publish there. Fortunately, references to IA articles that appear in indexed journals, as well as in the notes of articles previously published in IA, allow limited data collection and calculation of some citation metrics for IA. The most-cited IA authors and articles are identified, highlighting some of SIA's most impactful work. Citation metrics for this work and IA are compared to citation metrics for similar indexed journals. Pitfalls and limits of citation metrics will be discussed, and general requirements for journal indexing will be explained. Punctuation and spelling variants of how the title of IA has been referenced are common and will be presented along with how often each variant occurs, highlighting longstanding confusion about how the journal should be referenced. This presentation will provide new data and context to SIA as it considers the future of IA.

Barret M. Wessel earned his PhD in Soil and Watershed Science concurrent with a graduate-level Certificate in Historic Preservation from the University of Maryland in 2020. His research focuses on soil formation and change, with interests in historical land use, future land use trajectories, and environmental remediation and adaptive reuse of industrial sites. He has published over 15 peer-reviewed articles in multiple journals and received national awards including the National Science Foundation Graduate Research Fellowship and a Fulbright Fellowship. Dr. Wessel has presented his work dozens of times at professional meetings, including presentations on three continents. He presently works as an Assistant Professor of Soil Science at Michigan State University and has taught soil and environmental science to hundreds of students.

Matthew Lawrence Daley

The Interurban in the Street: Preserving and Documenting the Mt. Vernon Avenue Tracks, Grand Rapids, Michigan

The Mt. Vernon Avenue interurban tracks are the remnants of the 1915 creation of a new interurban line – Michigan Railways – Western Division – otherwise informally known as the "Kalamazoo Interurban" and its consolidation/lease of the Grand Rapids, Holland, and Chicago Railway – informally called the "Holland Interurban." The Holland Interurban dated from 1901 running to the resorts and amusement parks around Lake Macatawa and steamship connections to Chicago. The 1915 consolidated company built two bridges across the Grand River to reach a new downtown terminal shared with the Muskegon Interurban. Next to the tracks preserved here, the company built its main service and freight buildings. Loss of business from automobiles forced the Kalamazoo and Holland Interurbans to close in 1926, with final service in 1932. This poster discusses the effort to document and preserve the tracks that remained embedded in the street and to create an exhibit that discusses not only the role of the interurban, but also the impact on the surrounding community. Grand Valley State University's downtown campus is situated along Fulton Street and the riverfront on formerly industrial and residential areas that date from the city's founding. The project to create the exhibit involved a collaboration between the GVSU Art Gallery, a design firm, and the author, an historian. A major goal of the work was in considering the spatial changes to the area and how the surviving pieces of industrial, residential, and waterfront interacted with this statewide electric transport system. The resulting piece is a public commemoration of both a neighborhood and industrial network using the surviving tracks to interpret that history.

Matthew Lawrence Daley is Professor of History at Grand Valley State University in Allendale, Michigan where he teaches Michigan, Great Lakes, and urban history, along with industrial archaeology. He works with a variety of historical groups throughout

West Michigan, has contributed to museum exhibits throughout the Great Lakes region, and serves on the boards of both the Grand Rapids Historical Society and Grand Rapids Historical Commission. His scholarly and popular publications have appeared in publications including the *Michigan Historical Review*, *Minnesota History*, the *Wisconsin Magazine of History*, *Michigan History*, and *The Northern Mariner*.

Shawn Schrotenboer

Owens-Ames-Kimball Co.: 130 Years of Building in Grand Rapids and Michigan

This poster presentation draws on the vast archival wealth of the Owens-Ames-Kimball Co., formed in 1891. The company has been involved in the construction of a range of building types from industrial sites, bridges, churches, railroad structures, and infrastructure projects. These projects are spread throughout the Grand Rapids and West Michigan region, both peninsulas of Michigan, and increasingly throughout the United States. The holdings of the company's archival holdings demonstrate this legacy of excellence in construction and innovation.

Shawn Schrotenboer, a native of Hamilton, Michigan, holds a degree in Architectural Technology from Grand Rapids Community College and has worked at Owens-Ames-Kimball Co. for over seven years. His responsibilities have come to include being the keeper of the firm's archival holdings which brings him to the SIA.

NOTES

Society for Industrial Archeology 51st Annual Conference - Schedule of Paper Sessions for Saturday, June 10, 2023

TIME	HALDANE ROOM	EAMES ROOM	NELSON ROOM
9:00 - 10:15 AM	**GRAND CANYON IA** David Vago - "Historic Utility Resources at the Grand Canyon" Christopher Marston - "A Humber Wooden Box Culvert on the Grand Canyon Railway: The History of an Overlooked Structure Type"	**PLASTER AND WATER IN WEST MICHIGAN** Stan Vitton - "From 1854 to 1990: The History of the Grand Rapids Plaster Company" Patrick R. Hudson - "The Hydroelectric Generators of Allegan"	**PRESERVATION AND RESTORATION** Richard Rediske - "Using the Past to Restore Muskegon Lake" John L. Bowditch - "Industrial Archeology Without the Building"
	MORNING BREAK & POSTER SESSION		
10:30 - 11:45 AM	**IA IN EDUCATION** Judith McIntosh White - "Using Historical Fiction to Enhance STEM Education" Barret Wessel - "Industrial Archeology in a Soil and Water Science Course to Spur Activism" James Juip - "Using HSDI's to Support Community Engaged Interdisciplinary Education and Industrial Heritage Interpretation"	**INFRASTRUCTURE AND DRY DOCKS** Robert Chidester - "The Armory Park Gasometer: Documenting Toledo's 19th-Century Utility Infrastructure" Daria Jagiełło - "Torun's Water Supply Pump Station "Nowe Bielany" ("New Bielandy"): Brief History, Current Status, and Little Glimpse to the Future" Robert J. Dermody - "The Historic Dry Docks at Charlestown Navy Yard"	**Agricultural Innovations and Legacies** Eric Gollanek - "Models of Agricultural Innovation: Michigan State College Engineering Models, Farm Modernization, and the Changing Rural Landscape, 1920s-1950s" William Cleveland - "Locating the Sugar Crushing Windmills of St. Croix"
	BUSINESS LUNCH		
2:15 - 3:30 PM	**Mining History and Documentation** Fredric Quivik - "Residual Hazardous Materials at a Popular Ski Area: The Mining History of Park City, Utah" Dan Trepal - "Underground Remote Sensing Documentation at the Adventure Mine, Greenland, Michigan"	**Artisans and Exploration** Gary Frost - "Evaluation of Artisanal and Industrial Development" Phil Buehler - "Histories Uncovered: 50 Years of Urban Exploration"	**Transportation: Dredging, Crisis, and Preservation** Duncan Hay - "Digging a Ditch Through the Mire: Dredging Across New York State, 1905-1918" Timothy Arron Kotlensky - "Before and After the Collapse: The Three Lives of Pittsburgh's Fern Hollow Bridge" Dean Pyers - "Preserving Steam Railroading Equipment in the 21st Century"
	POSTER SESSION (WITH CASH BAR)		
3:30 - 4:30 PM	**Posters** Arthur Townend - "Barree Forge: A Pennsylvanian Forge Town" Caroline Bassett - "3-D Modeling of the Byrd Park Pump House Generators and Steam Engine" Barret Wessel - "*IA*, Indexing, and Impact Factors: A Consideration of the Reach of Our Flagship Journal" Matthew Lawrence Daley - "The Interurban in the Street: Preserving and Documenting the Mt. Vernon Avenue Tracks, Grand Rapids, Michigan" Shawn Schrotenboer - "Owens-Ames-Kimball Co.: 130 Years of Building in Grand Rapids and Michigan"		