SIA 2026

NORFOLK, VIRGINIA

SOCIETY FOR INDUSTRIAL ARCHEOLOGY 54th ANNUAL CONFERENCE | MAY 28 - 31

DRAFT PROGRAM OF PRESENTATIONS

SIA NORFOLK 2026

PAPER SESSIONS

Caption for Cover Image: Dry Dock No. 1 at the Norfolk Naval Shipyard is the oldest continuously used dry dock in the United States. https://www.dhr.virginia.gov/historic-registers/124-0029/

PRESERVING VIRGINIA'S HYDRAULIC HERITAGE / 8:00 - 8:50 AM

From Pump House to Power Plant: The Industrial Heritage of Richmond's Original Waterworks

Penn Markham

The city of Richmond, Virginia first authorized the construction of a public water system in 1830, having previously relied upon natural springs located throughout the city. Albert Stein was hired to design and construct a waterworks, reservoir, and distribution system. This system marked the first attempt at filtering a municipal water supply in the United States.

Stein's design included a water-powered pump house located on the banks of the James River. Its initial design proved insufficient, and the building was enlarged several times throughout the 19th century to serve the city's growing demand for water.

In 1909, the city decommissioned the pump house and converted it into a hydroelectric and steam-driven power plant that operated for the next 77 years. Increased costs and new environmental regulations led to the plant being shut down in 1986. The building was then sold to the James River Corporation and renovated to become an office building, which it remains today.

Despite its past, the Old Pump House's place in Richmond's industrial history has largely been forgotten. This is notable considering that its replacement, the New Pump House, remains a city landmark that has been extensively documented and interpreted. This presentation will trace the building's remarkable transformations to show how one structure encapsulates nearly two centuries of technological and civic change.

Dr. Penn N. Markham received his B.S. in electrical engineering from Virginia Polytechnic Institute and State University in 2006, and his Ph.D. from the University of Tennessee, Knoxville in 2012. Since joining Dominion Energy in 2017, he has worked in both the Distribution Grid Planning and Electric Transmission System Operations Engineering groups. He is currently an Energy Market Strategic Advisor in the Corporate Strategic Planning organization.

From 2021-2025, he served as president of Friends of Pump House, a volunteer organization devoted to preserving and restoring the historic New Pump House in Richmond, Virginia.

Dr. Markham is a licensed Professional Engineer in the Commonwealth of Virginia and a senior member of the IEEE.

A Change in Direction: Opposing Bevel Gears and their use in Early Tide Mill Waterwheel Control Mechanisms

Charles Parrott

The rare bi-directional running of a waterwheel holds a mythical place in the history of the tide mills that once existed in some numbers on the East Coast of the United States from Maine to Georgia. The very few cryptic mentions in local histories or surveys of any tide mills that operated on both the incoming and outgoing tide along the Eastern seaboard give no information on the mechanics of their dual operability. But there remains one bi-directional tide mill that has been preserved, albeit in in non-operable condition, which contains its complete gear train. Thus, it exhibits the mechanics of how its bevel gear change mechanism made its waterwheel operable on both the incoming and outgoing tide. That unicorn is the Poplar Grove tide mill, located on a tidal river tributary of Chesapeake Bay in Matthews, Virginia.

This paper will discuss the dual tidal configuration and mechanical operation of this remarkably industrial survivor and place the mechanics of its bevel geared change mechanism in the historical context of its known use in a documented lost English tide mill and its conceptually similar 19th century use in other waterwheel feedback control systems.

Until his retirement, Charles Parrott was an historical architect at the Lowell National Historical Park, National Park Service, where he was engaged since the early days of the Park in the rehabilitation and restoration of historic buildings and industrial sites throughout the city, and the development of the greenway system along the Lowell canals called the Canalway. Before his engagement in Lowell, he worked for a time in the National Park Service's preservation programs in Washington, on several early Historic American Engineering Record field teams, and in a private restoration architectural practice where he focused on historic industrial sites. He is the author of Lowell Then and Now: Restoring the Legacy of a Mill City.

FORGE & FURNACE: WORKING BY FLAME / 8:00 – 8:50 AM

Craft Practice in the Delaware Mine Blacksmith Shop

Lucy Gibbs

This paper examines the role of blacksmithing as a form of skilled craft labor within the industrial operations of the Delaware Copper Mine on Michigan's Keweenaw Peninsula. Drawing on evidence from the 2025 Michigan Technological University field school, the study investigates the shop's organization, activities, and operational lifespan of a blacksmith shop that supported daily mining activities. This study combines artifact analysis, spatial reconstruction, limited metallurgical testing, and archival sources, to reconstruct shop functions and patterns of use. This evidence demonstrates how craft labor operated within, rather than outside of, mechanized industrial systems. By focusing on a supporting industrial space often overlooked in mining studies, the paper contributes to broader discussions in industrial archaeology about labor, maintenance, and production beyond extraction itself. It also addressed the interpretive potential of the blacksmith shop at the Delaware Mine Heritage Site, arguing that craft spaces offer valuable insights into the everyday workings of industrial landscapes.

Lucy Gibbs is completing her master's degree in Industrial Heritage and Archaeology at Michigan Technological University. Her current research focuses on industrial landscapes, skilled craft labor, and the material systems that supported extractive industries. This work culminates in her master's thesis on the blacksmith shop at the Delaware Copper Mine on Michigan's Keweenaw Peninsula, based off findings from Michigan Tech's 2025 field school.

In addition to serving as co-field director for the field school, Lucy was worked as a research assistant on a project examining aluminum cans and recyclability, helping lead laboratory work for a garbology study. She also worked on scholarship about the roots of industrial archaeology in Wales and has studied industrial adaptive reuse.

Women's economic activity at Hopewell Furnace

Brian Schmult

This work characterizes the economic activity of women at Hopewell Furnace, mainly as derived from extent account books. Hopewell was a cold-blast charcoal iron furnace near Elverson, Pennsylvania that ran ca. 1771 to 1883, and is now a National Historic Site. As an "iron plantation" it was in a rural area and partially self-contained, hence it was as much an agricultural community as an industrial facility. Women's contributions were hence multi-faceted, including direct furnace work, paid traditional women's work in support of the furnace, and traditional work in the home, which supported family life, and hence the other furnace workers.

This work finds that there were instances of women doing direct furnace work, including chopping cordwood and cleaning castings, at the same fundamental pay rates as men. However, these instances were very limited, both in terms of what women did overall, and against the needs of the furnace. Women were also running ore and cordwood supply businesses, but on a similarly limited scale. Most instances of paid work were traditional women's work, such as sewing, housework, etc. This was done for both the furnace organization and for community members.

The question of whether a woman's earnings from the furnace economy could support a family has proven difficult to answer due to the wide variation in economic activity across various families analyzed. This holds for both male and female householders. The variation and frequent low absolute level of purchases of basics indicates that the era and area provided means of support invisible to the furnace books. A family standard of living fre-

quently cannot be determined from furnace book data. However, analysis of several widows suggests that the stereotype of the destitute widow did not necessarily apply.

The author is an independent researcher concerned with the colonial and early republic era iron industry, particularly in southeast Pennsylvania. The research is focused on both increasing the understanding of the subject and improving the interpretation of Hopewell Furnace National Historic Site to the public. He also volunteers at Hopewell Furnace, explaining furnace operations to visitors and demonstrating sand flask molding and casting. His work in a previous life included research at the former AT&T Bell Laboratories into autonomous robotics, virtual reality and force-feedback interfaces.

MINING & MOTOR TOWNS: A GLOBAL VIEW / 8:00 – 8:50 AM

ENACR Ruins in Lota: De-Industrialization, Abandonment, and Potential Risks of a Coal Mining Center in Chile

Josefina de la Barra Rosmanich

Located in the Gulf of Arauco in south-central Chile, the town of Lota served as an important coal mining center for almost 150 years, playing a key role in the industrialization of the country, with the expansion of railway networks and the demand for coal from the nascent copper industry. This mining complex was officially constituted as the "Mining Company of Lota and Coronel" (Compañia Explotadora de Lota y Coronel) in 1869 by private investors, consisting of different exploitation focuses around the area. After 102 years of operation and changing ownership, the company became nationalized under CORFO in 1971 and renamed ENACAR (National Enterprise of Coal/Empresa Nacional del Carbón), and, finally, shut down their operations in April of 1997 because it was no longer profitable.

This now former company town, and deindustrialized city, became a landmark for the country's mining history, and was submitted to be considered an UNESCO world heritage site in 2021. Despite its heritage status and importance, not many of the structures that compose this mining complex have been adapted into heritage sites or landmarks. The Chiflon del Diablo Mine, and the Cousiño-Goyanechea Gardens are the main attractions of the area, open to the public as museums and for guided tours, while the ENACAR ruins in the Lota Alto area are in a state of complete abandonment. The preservation of this area hasn't been a priority focus of the town, resulting in a slow deterioration and negligence. As of now, the preservation of these sites are also threatened by the growing number of wildfires that affect the area every summer, as the forestry companies replaced mining as the biggest industry in the area.

This presentation will look into the history of the mining complex, the research that has been done, it's preservation risks, as well as some heritage and preservation proposals.

Josefina de la Barra Rosmanich is an archaeologist from Chile currently getting their master's in Industrial Heritage and Archaeology at Michigan Technological University. Considering Chile's rich history in mining, and it's relevance as the worlds biggest exporter of copper, Josefina de la Barra Rosmanich's main research focus has been in 19th and 20th century mining contexts ever since she started doing research as an undergraduate (2022). Right now she is writing her thesis on the ENACAR ruins in Lota, Chile, looking into it from a de-industrialization and landscape "scars" perspective, and is planning on doing fieldwork for this during the summer of this year.

Motor towns and the automotive heritage. A comparison of case studies of Detroit and Turin

Rossella Maspoli

The term "Motor Town" originated in the 1910s as a nickname for Detroit, the capital of the American automobile industry. It was later extended to other "national capitals," such as Turin, Italy. This research aims to analyze the common features and differences between these two "Motor Towns" and highlight prospects for urban regeneration, conservation, and enhancement of tangible and intangible heritage linked to automobiles.

The study analyzes two urban case studies according to different sets of factors, including the preconditions for developing the industrial sector, the role in urban transformation, the construction of company town components, factory techniques and architecture, the invention of new typologies, corporate architectural image, decommissioning and deterioration processes, enhancement between conservation and transformation, green options in adaptive reuse, heritage potential for sustainable redevelopment, the role of company archives and museum systems, automotive heritage tourism prospects, and the evolution of the automobile's symbolic meaning.

In summary, the research first highlighted the comparability of the initial conditions. The Highland Park factory model (1910) was emulated and evolved by other European companies, such as Lingotto FIAT in Turin. Furthermore, the construction innovations in reinforced concrete are comparable between American and French patents. The Fordist production model also became dominant in Turin in the 1930s. The territorial development of large horizontal plants marked the innovation of the 1940s and 1960s. Since the 1980s, the Turin model has emerged as more resilient in social, economic, and cultural terms during the decommissioning phase. Recovering some industrial automobile production is significant for higher education, research, and the creative industry. Unlike Detroit, tourism growth in Turin is still limited to automotive heritage branding, despite the presence of museums and archives.

Associate Professor of Technological and Environmental Design at the Polytechnic University of Turin, at the Doctoral School and at the Albertina Academy of Fine Arts in Turin (2021-), visiting professor at the Universidade de Brasilia, Brasil, and at TaiYuan University of Technology, China. She develops research activities in the fields of industrial heritage, construction history, urban regeneration and cultural and tourist enhancement, public art and sustainable technologies for open public spaces.

She is scientific director of TAHN Torino Automotive Heritage Network (2019-), "Lingotto Vive & Rivive" (2020-), and "Sacchi Street. Art in Transit" (2023-). She is a member of the board of AIPAI, TICCIH, and SITDA, and advisor to City Space Architecture. She is the author of more than 170 publications.

PUTTING STEAM OUT OF WORK / 9:05 – 9:55 AM

Running on Air: The Story of Pneumatic Locomotives

Marty Johnston

Since the introduction of steam powered locomotion by Richard Trevithick in 1804, engineers have pursued increasingly specialized forms of railway power for industrial use. While steam locomotives were effective in surface applications, their exhaust, heat, and fire hazards made them unsuitable for mines and enclosed industrial environments. For a brief period before internal combustion engines and electric traction took over, compressed air offered a solution.

This presentation explores the development and use of pneumatic locomotives in North America, from their emergence in the 1870s through their peak in the early twentieth century. It considers the roles of both independent inventors and large manufacturing firms, as well as the technical innovations and patent disputes that shaped the technology. The paper concludes by analyzing the factors that led to the decline of pneumatic locomotives as competing power systems became more efficient and economically viable. Though ultimately displaced, pneumatic locomotives are an interesting and often overlooked chapter in the transition from steam to modern industrial power.

Marty Johnston is a Professor of Physics at the University of St. Thomas in St. Paul MN. In addition to working in nonlinear dynamics he is involved with industrial archeology, teaming with engineers, geologists, and historians in tracing the development of 19th and early 20th century technology. Alongside his students, Marty analyzes patents and photos, builds models, and applies physics, to better understand early technology. His publications, presentations, and grants cover a blend of technical and applied work. He has presented at multiple SIA conferences and served as SIA Presentations Committee Chair. His history of the Iron Mountain Mine in Pardee Montana was published in JSIA, Vol 38, No 2.

Early American Gasoline Locomotives

Dan Quine

Steam locomotives ruled the American rails in the 1880s and 1890s, growing ever larger and faster as traffic boomed. But in the workshops of entrepreneurs and inventors across the country, a new technology was being explored for railroad use: the gasoline engine. These pioneers produced street cars, line inspection speeders and industrial locomotives, powered by a variety of vapor engines and Otto cycle engines. Some of these early vehicles were failures, others found meaningful success.

The gasoline engine turned out to be a dead end as a source of power for railroads - diesel traction was the better solution. But the gasoline experiments showed the potential of the internal combustion engine, and laid the groundwork for the locomotives that would ultimately replace steam in the 20th. Century.

This presentation explores the earliest attempts to use gasoline engines in railroad vehicles by inventors like William Patton in Illinois, Thomas Hoskins and Daniel Best in California and Enoch Prouty of Michigan. They often toiled in obscurity and without knowledge of the parallel paths they were pursuing, but their work is a key part of railroad history and the development of America's industrial might.

Dan Quine is an independent historian specializing in the railroad and hard-rock mining history of the American West and the United Kingdom. He has published more than 25 articles on these subjects, and 2 books with a third in development. He has presented at past SIA conferences on the Yellow Aster gold mine and the mines at Copperopolis, both in California.

He holds a PhD in Artificial Intelligence and is Professor Emeritus of the University of Leeds. He leads the AI Engineering team of Learning Commons, part of Priscilla Chan and Mark Zuckerberg's philanthropy in California.

OBJECTS FROM THE PAST AND THE STORIES THEY TELL / 9:05 – 9:55 AM

The Industry That Kept Rotting Horses off the Streets of NYC

Lia De Feo

Barren Island was a small island off of mainland Brooklyn. In the late 1800s and early 1900s it was dotted with horse rendering plants. When horses (used to power the city—everything from stagecoaches to construction) died, their bodies were put on barges and sent to Barren Island where they were turned into glue, fertilizer, buttons etc. Now, 100+ years later, the bones that were tossed in the bay can be found on the shores of Dead Horse Bay. Interestingly, so can artifacts from the 1950s. When Moses was tearing down the city claiming eminent domain, he used the rubble from buildings where lower-income people lived (they didn't have the means to hire moving trucks and left the majority of their belongings behind) to fill in the marshy land and create Marine Park. Today, the landfill (which wasn't properly cap) is eroding and artifacts from the 1950s dot the shoreline.

Lia is a native New Yorker, a licensed tour guide and amateur historian. She has been accepted to the NYC Trash Academy and will graduate in March 2026. She is a graduate of Duke University and an executive who has worked at Martha Stewart, Food Network, Getty Images and more.

The Legacy of Indirect Costs: Artifacts from Coal Piers and Nuclear Submarine Development

J. Tyler Turpin

There are artifacts of indirect cost that were part of the unit price charged to every customer of the coal loaded aboard ships in Hampton Roads and the contracts for the construction and maintenance of submarines. These artifacts transcend mere historical records of indirect costs related to the facilities they served; they are pivotal elements in the nation's history. My presentation will be a brief history of the coal complexes and submarine sites in Hampton Roads. I will discuss the introduction of indirect costs, and detail significant machinery, including locomotives, tugboats, fire engines, and industrial fire brigades. Among the locomotives, one played a crucial role in transporting railcars carrying materials for the construction of ICBM launching submarines, while two others were configured for both passenger and freight service, handling some of the last passenger trains operated by Pullman porters. A fourth locomotive is the only large artifact ashore that will likely be preserved involving the sinking of the MV Marine Electric—an incident that prompted significant reforms in Coast Guard policies and led to the establishment of the Coast Guard's AST (Aviation Survival Technician) "rescue swimmer program".

It is likely neither of the two coal shipping pier sites of Hampton Roads area will have any piers or machinery on them be preserved. Four locomotives that were used in the area are preserved and one fire apparatus is preserved. There are four preserved diesel locomotives and two tugboats that were involved in the Navy nuclear submarine program. Sites of the program are Newport News Shipyard, Norfolk Naval Shipyard, and Naval Station Norfolk.

A full-time buyer of goods and services for a state agency, J. Tyler Turpin writes business history and procurement training articles along with an occasional poem. When not at work, he enjoys birdwatching, tending a vegetable garden, giving two cats attention, visiting museums, attending poetry readings, and spending time with friends. For business history he has been published in WarHistoryOnline, Strategy and Tactics, the newsletters of the Society for Industrial Archeology, Staunton River Battlefield Association, Cold War Museum, Historic Naval Ships Association, National Association of State Agencies for Surplus Property, and Army Ordnance Corps Association. For procurement articles he has been published by the National Contract Management Association, the Department of Defense, and the Virginia Association of Governmental Purchasing. A few business-history based poems have been published. Areas of IA study are industrial and institutional site rail and firefighting operations, nonpublic utility electricity plants, and the reuse of government surplus property.

Rising from the Rubble: Fire, Failure, & Redevelopment / 9:05 – 9:55 AM

First to Flight but Lost to Fire: The Dream, Decline, and Destruction of the Wright Company Factory in Dayton, Ohio

Lurita Blank

In 1903, Orville and Wilbur Wright made history with their first controlled flight. Looking to capitalize financially on their worldwide fame – and hopefully boost the weak commercial demand for machine-powered flyers, the brothers began early plans to construct the first purpose-built and dedicated airplane factory in their hometown of Dayton, Ohio. Building 1 of the Wright Company Factory opened its doors in 1910, then underwent its first major expansion in 1911 to add Building 2, which nearly doubled the size of the facility.

The one-story buildings from 1910-11 were conceived in the "daylight factory" style, with large, unobstructed interiors, tall windows, and skylights to advantage of natural light. Each step of the Wright Flyer manufacturing process was performed on site, including assembly of the engines, through a curious mix of shaft-and-belt powered assembly lines and bespoke hand finishing. Despite an intense publicity campaign, the company was not a financial success, and airplane manufacturing ended at the site by 1916.

After dissolution of the Wright Company, the buildings continued in operation by General Motors for automotive manufacturing until 2008. The site exponentially expanded, with the historic buildings somehow surviving inside a 54-acre industrial complex. When General Motors closed the plant in 2008, the surrounding buildings were systematically demolished, leaving only Buildings 1 through 5. The buildings were listed on the National Register for Historic Places but mothballed pending rehabilitation proposals. In 2023, during feasibility planning for redeveloping the site, the buildings were critically damaged by fire, with the historic Buildings 1 and 2 reduced almost to rubble.

This presentation will discuss the Wright Company Factory, with a focus on the design and construction of the original factory buildings, the evolution of the site over 90 years under General Motors, challenges with "brownfield" developments, and the future fate of the fire-damaged structures.

Lurita McIntosh Blank, NCARB, RBEC, APT RP, is a Principal with Raths, Raths, & Johnson, where she leads the historic preservation and federal services. She specializes in materials conservation, façade restoration, roofing and waterproofing, and enclosure consulting. She has provided restoration services for dozens of National Register and National Historic Landmark properties across the nation, balancing material and performance needs for complex building issues. Lurita is a Registered Architect in 15+ states, a Registered Building Enclosure Consultant through IIBEC, and a Recognized Professional through the Association for Preservation Technology. She is also the 2023 Fellow for the Richard Morris Hunt Prize, under which she is studying traditional timber construction and conservation in Northern France.

After Designation: Redevelopment Conditions at the American Viscose Plant

Armin Firouzi

This paper examines the conditions surrounding redevelopment at the American Viscose Plant in Roanoke, Virginia, following its designation as a National Register Historic District in 2019, with attention to the institutional and regulatory landscape present in the immediate aftermath of listing. Constructed between 1916 and 1955 along the Roanoke River, the American Viscose Plant was once the world's largest rayon-producing facility and a major center of industrial employment, particularly for women workers. After its closure in 1958, the site experienced a prolonged period of fragmented reuse as a light-industrial park.

Although the 2019 National Register designation recognized the site's industrial, architectural, and social significance, it did not consolidate management in the face of redevelopment. Instead, responsibility remained dispersed across multiple actors and regulatory domains—a condition common to many large industrial heritage sites in the United States. Drawing on analysis of the National Register nomination, municipal planning and zoning documents, environmental assessments, redevelopment proposals, and public meeting records produced after listing, this paper documents the configuration of instruments, actors, and constraints present during the early post-designation period.

The analysis shows that redevelopment discussions at the American Viscose Plant were shaped by the simultaneous operation of multiple imperatives, including environmental remediation requirements, local planning and zoning considerations, preservation incentives, and private redevelopment initiatives. Heritage recognition functioned as an important point of reference within this landscape, but it operated alongside other regulatory considerations rather than restructuring them as a bounding framework. By foregrounding this condition of simultaneity without presuming coordination, prioritization, or integration, the paper situates the American Viscose Plant within the institutional context characteristic of post-industrial redevelopment in American industrial towns.

Armin Firouzi is a PhD student in Planning, Governance, and Globalization (Urban and Environmental Design and Planning) at Virginia Tech. His research engages critical heritage studies and urban studies, with interests in heritage governance, urban identity, and the relationship between cultural heritage and contemporary urban change. His work spans multiple heritage contexts, including industrial heritage, historic urban landscapes, and questions of inclusion, memory, and recognition in cities. His doctoral research examines the redevelopment of the former American Viscose Plant in Roanoke, Virginia, focusing on the institutional and regulatory conditions shaping a large industrial heritage site following historic designation. Armin holds an MSc in Cultural Heritage Studies from Eastern Mediterranean University and a BSc in Architecture from the Cultural Heritage Education Center in Tehran. He has been the instructor of record for undergraduate courses, including urban history and qualitative research methods, at Virginia Tech.

BRIDGE INNOVATIONS: REHABILITATION, RESEARCH, & REGULATION / 10:15 – 11:30 AM

Dunlap Creek Bridge: Completing Rehabilitation of America's First Cast Iron Bridge

Keith Heinrich

Constructed between the summer of 1836 and July 4, 1839, Dunlap's Creek Bridge, also known as the Cast Iron Bridge, is the first cast iron bridge built in the United States. Built by the Army Corps of Engineers under Captain Richard Delafield, the bridge spanned Dunlap's Creek along the National Road, also known as the Cumberland Road, and was the fourth known bridge at this location. In 1922, the bridge deck was replaced and cantilevered support brackets and sidewalks were installed. Over the years, this work, along with commercial development along the banks of Dunlap Creek obscured the original design of the bridge. PennDOT District 12-0 has undertaken a rehabilitation of the bridge that has disassembled the structure, repaired its abutments, repaired the cast iron bridge members, and reassembled the bridge on the repaired abutments, all while maintaining the bridge's historic character. As part of the project, a sensitively designed pedestrian bridge has been placed just upstream of the rehabilitated bridge, allowing everyone to see the bridge structure and understand how the bridge would have appeared when it was completed in 1839.

A presentation at the 2025 SIA meeting in Buffalo, NY, recounted the process of disassembling the bridge. After disassembly, the bridge was taken for off-site repairs that lasted from the spring of 2025 to the spring of 2026. This presentation will briefly recap the history of the bridge and the process of disassembly. The presentation will then focus on the challenges of repairing and reconstructing a nearly 187-year old structure and reconstructing it on its repaired abutments. As part of the presentation, consultation on the project under Section 106 of the National Historic Preservation Act of 1966 will be discussed.

Keith Heinrich is the aboveground Cultural Resource Professional (CRP) for PennDOT districts 9-0 and 12-0 and has served in that role since September of 2020. Prior to his time at PennDOT, Keith spent 13 years as a reviewer for the National Register of Historic Places (NRHP) program at the State Historic Preservation Office, as well as stints at numerous consulting firms, working as an archaeologist early in his consulting career and as an architectural historian later on.

Roebling Before the Brooklyn Bridge – 3D printed Studies

Paul King

The Brooklyn Bridge is arguably the most significant engineering achievement of the 19th century, and the name Roebling is inextricably tied to its creation. Today when we see a Roebling bridge – it looks familiar, in part as our modern methods are Roebling's legacy. They are noted by large cables of parallel wires, tightly wrapped with an outer protective wire, secured to large anchor chains. While his innovations built upon the early work of British and French Engineers, it was Roebling who mastered the aerial spinning of large suspension cables, wrapped them tightly to form one large and protected cable and developed a means of anchoring, when the security of natural bedrock was not available.

My research methods rely on primary sources of Roebling's drawings and writings. I was quick to learn that comprehensive drawing sets common today, were not part of 19th century engineering. Roebling drew only enough to develop his ideas, complete his calculations, finalize dimensions and provide details of components, he needed cast of iron. Determined to better understand his bridges and knowing that those elusive comprehensive drawings did not exist, I began to draw my own. I would benefit from the many hours spent reviewing the finer details of Roebling's drawings and specifications, piecing together the parts of his bridges, gaining insight into his methods, as I produced my drawings.

In 2025 I extended this process with the help of 3D printer. My 2D AutoCAD drawings were imported to Rhino and modeled in 3D, so that models of his bridge components could be printed. As this added the step of assembly, it provided greater insight into Roebling's own methods.

This presentation will focus on the value of 3D printing as a historical research method and will feature models of many of Roebling's bridges.

Professor King is a scholar and historian who specializes in the early work of John A. Roebling, engineer of the Brooklyn Bridge. He is particularly interested in how Roebling's early ideas evolved and influenced the development of 19th century suspension bridges. He has published papers on the subject, including Roebling's Hudson Valley Aqueducts for the Huson River Valley Review and Roebling's Niagara Railway Suspension Bridge for the NY History Journal.

In demand as lecturer, he serves as a historical consultant to the National Park Service, providing tours of Roebling's Delaware Aqueduct and returning each spring to introduce summer staff to the history of its construction. His technical addendum of Roebling's cast iron roller saddles is part of the Historic American Engineering Record published by the Library of Congress. In 2024, he received the Cultural Achievement Award from the Upper Delaware Council in recognition of his support of Roebling's Delaware Aqueduct.

Moving Towards the Future. Case Studies in the Rehabilitation of Chicago's Bascule Bridges and the SOI Standards for Working Industrial Structures

Meg Kindelin

This presentation will seek to highlight the need to regularize the application of the Secretary of the Interior Standards to industrial elements, especially structures where the working structure is itself the historic element. A bridge is not a building, but in my work I see many cases where historic structures are subject to typical historic preservation standards which were written with buildings in mind. I will outline problem with that approach and then illustrate via three bridge rehabilitation projects with different preservation outcomes and methods: The Wells Street Bridge over the Main Branch of the Chicago River, and the 92nd Street Bridge over the Calumet River in Chicago, the California Street Bridge over the Sanitary and Ship Canal.

While the standards can and are applied to structures successfully, as a working preservation architect I see a need for a standard approach for the application of SOI Standards to working bridges, and certainly to working movable structures such as bascule bridges. Entities like the NPS have not addressed this issue: we need a Preservation Brief on the application of standards industrial infrastructure. With a lack of guidance there is danger of uneven application of the standards, which can produce flawed preservation work, unlisted projects, and more

We need to review standards of eligibility and critically examine how these can to be interpreted to allow a complex structure to maintain integrity in spite of being subject to the necessary repairs or replacements in kind that keep it in operation. A new standards application must consider the question of material integrity and authenticity for working structures. How can a structure be authentic but also be substantially rehabilitated, and how can regularized interpretation help in this cause?

Meg Kindelin, AIA, is the president of JLK Architects in Chicago. She has worked to restore historic buildings and infrastructure for 26 years, with a focus on bascule bridges, steel and concrete fixed bridges, canals, viaducts, aqueducts, locks, transit stations, and industrial buildings. She has a BS in Cultural Anthropology from the University of Illinois, and both an MA in Architectural History and an M Arch in Architectural Design from the University of Texas at Austin. She is a member of the AIA, the Association for Preservation Technology International, Landmarks Illinois, and Chicago Women in Architecture. She is the founder of the Chicago Big Shoulders Chapter! She lives in Chicago with her family.

NUCLEAR TESTING DURING THE COLD WAR ON THE NEVADA NATIONAL SECURITY SITE / 10:15 – 11:30 AM

"Atomic Weapons Effects on AD Type Aircraft in Flight", Identifying a Douglas Skyraider Crash Site in Nevada

Jeffrey Wedding

While conducting fieldwork at the Nevada National Security Site, Desert Research Institute (DRI) archaeologists encountered an undocumented aircraft crash site. The wreckage clearly predated the 1985 establishment of a nearby storage yard. The initial impression was that the wreckage represented a World War II military training mishap since the land was once part of the U.S. Army Air Corps' Las Vegas Gunnery Range. However, components observed in the debris field revealed the airframe was a post-war U.S. Navy Douglas AD-2 Skyraider rather than an Army aircraft. The Skyraider had been modified with remote control apparatus and was lost while participating in military effects studies as part of Shot Simon in 1953, an aboveground nuclear detonation in the Operation Upshot-Knothole test series.

To reveal the specific history of the wreckage, DRI obtained reference materials from the U.S. Department of Energy's Nuclear Testing Archive in Las Vegas. Repository holdings outside of Nevada—including newspaper archives and internet searches—were also investigated to supplement the story of the unmanned airframe, the nuclear effects tests, and how it came to rest on desert sands.

Jeffrey Wedding has 30 years of experience in archaeological and historical research in the western United States. His current research focus is on archaeological sites associated with World War II and Cold War era military test and training resources in the desert regions of southwestern California, southern Nevada, and western Arizona. Other areas of interest include the historical archaeology of mining, transportation (particularly aviation and railroading), and ranching during the 19th and early 20th Century. Although principally an historical archaeologist, Mr. Wedding also has considerable experience recording, excavating, and interpreting prehistoric archaeological sites in the Great Basin and Mojave Desert regions.

G-Tunnel: An Underground Testing Complex at the Nevada National Security Site

Tatianna Menocal, Jeffrey Wedding, Nicole Brannan and Laura O'Neill

The Nevada National Security Site (NNSS), formerly the Nevada Test Site, is well-known as the primary location of U.S. nuclear weapons testing during the Cold War. Recognized in the public's eye for atmospheric tests conducted from 1951 to 1962, most nuclear tests were actually conducted underground following the ratification of the Limited Test Ban Treaty in 1963, which banned all nuclear test detonations in the air, underwater, and in outer space. Different underground testing methods, including vertical shafts and horizontal tunnels, were explored to solve the engineering challenges tied to radioactive containment while ensuring successful data collection from a nuclear test. One horizontal tunnel complex: the U12g Tunnel Complex (commonly referred to as G-Tunnel), was used to conduct five nuclear tests between 1962 and 1971 on Rainier Mesa. For its use as a nuclear testing facility, G-Tunnel was excavated at a specific depth from the caprock of Rainier Mesa to contain and prevent radioactive release, as well as allow for the recovery of experimental equipment afterward to evaluate the effects of radiation from a nuclear explosion on military hardware and systems.

G-Tunnel was recently recorded as a historic district and is defined by the tunnel's main drift and multiple offshoot drifts, and its various support buildings, structure, and infrastructure. While the tunnel is inaccessible, numerous support buildings and specialized structures and infrastructure at its entrance, the surrounding area, and high above on the mesa top remain as indicators of the elaborate, specialized layout required for the success of nuclear experiments conducted therein.

This paper explores the history and development of G-Tunnel and discusses the function of the built environment that stands as surface reminders of this nuclear testing tunnel complex.

Tatianna Menocal is an archaeologist with over 14 years of professional experience in cultural resources management in the Great Basin and the American Southwest. She holds a Master of Arts in Anthropology/Archaeology from the University of Nevada, Las Vegas.

She has extensive experience with Sections 106 and 110 of the National Preservation Act (NHPA), has directed numerous cultural resources inventories and architectural surveys, and has prepared dozens of Sections 106 and 110 reports and associated resource forms. She has documented diverse types of cultural resources ranging from prehistoric, ethnohistoric, historic ranching and mining, military, and Cold War resources. She co-manages an American Indian Consultation Program to sustain effective government-to-government interactions between the U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office, and 16 American Indian tribes that are culturally and historically affiliated with NNSS lands.

Jeffrey Wedding has 30 years of experience in archaeological and historical research in the western United States. His current research focus is on archaeological sites associated with World War II and Cold War era military test and training resources in the desert regions of southwestern California, southern Nevada, and western Arizona. Other areas of interest include the historical archaeology of mining, transportation (particularly aviation and railroading), and ranching during the 19th and early 20th Century. Although principally an historical archaeologist, Mr. Wedding also has considerable experience recording, excavating, and interpreting prehistoric archaeological sites in the Great Basin and Mojave Desert regions.

Nicole Brannan meets the Secretary of Interior's Professional Qualifications Standards for Architectural History. Ms. Brannan has worked for over 20 years in the cultural resources field, both in archaeology and historic preservation. She holds a Bachelor of Arts Degree in Anthropology/Archaeology from Mercyhurst College in Erie, PA and a Master of Historic Preservation from Goucher College in Baltimore, MD. Ms. Brannan currently works as an Architectural Historian at the Desert Research Institute in Las Vegas in the Cultural Resources Management Program, primarily on resources associated with nuclear testing on the Nevada National Security Site.

Laura O'Neill meets the Secretary of Interior's Professional Qualifications Standards for Architectural History and Historic Architecture. She has been professionally involved in the field of historic preservation since 2006. She holds a Bachelor of Arts degree in Political Science from Lehigh University in Bethlehem, PA, and a Master of Architecture degree from California State Polytechnic University in Pomona, CA.

The Huron King Test Chamber: A Specialized Cold War-era Property on the Nevada National Security Site

Gregory Haynes, Jeffrey Wedding and Laura O'Neill

Nuclear weapons testing is a major and important theme in the history of Nevada and played a vital role in the national defense of the United States during the Cold War. Much of this activity revolved around the Nevada National Security Site (NNSS), located about 65 miles northwest of Las Vegas, where most nuclear weapons experiments for the nation took place. The purpose of this paper is to discuss one unique and specialized Cold War-era historic property on the NNSS, the Huron King Test Chamber. This 50-ton mobile test chamber, which resembles a steampunk locomotive or a Jawa Sandcrawler from the Star Wars movies, housed a defense communications satellite and was used to evaluate the effects of a nuclear electromagnetic pulse on satellite hardening technology and instrumentation.

The Huron King experiment took place on the floor of Yucca Flat, a nuclear testing landscape, and the test chamber was connected to a 1,050-foot-deep shaft with a nuclear device at its bottom. When the device exploded, an electromagnetic pulse and associated radiation traveled up the shaft into the test chamber, exposing the satellite to its effects. However, before debris from the detonation reached the satellite, the test chamber had to be separated from the shaft. It also had to be winched 500 feet away from ground zero before a subsidence crater formed on the surface, a result of the detonation.

This paper tells the story of the Huron King nuclear test and how the Huron King Test Chamber was designed to obtain the requisite scientific data without being destroyed in the process.

Greg Haynes is an Associate Research Professor and archaeologist at Desert Research Institute in Las Vegas, Nevada. His research interests are focused on precontact Native American mobile foragers in the Great Basin (Ancestral Numic, Ancestral Yuman) and village agriculturalists in the American Southwest (Ancestral Puebloan). His current research involves pictographs in the central coastal region of California and plainware ceramics from the Lower Colorado River and Salton Trough. He also conducts historic preservation work supporting the National Nuclear Security Administration's mission on the Nevada National Security Site (NNSS) northwest of Las Vegas.

Jeffrey Wedding has 30 years of experience in archaeological and historical research in the western United States. His current research focus is on archaeological sites associated with World War II and Cold War era military test and training resources in the desert regions of southwestern California, southern Nevada, and western Arizona. Other areas of interest include the historical archaeology of mining, transportation (particularly aviation and railroading), and ranching during the 19th and early 20th Century. Although principally an historical archaeologist, Mr. Wedding also has considerable experience recording, excavating, and interpreting prehistoric archaeological sites in the Great Basin and Mojave Desert regions.

Laura O'Neill meets the Secretary of Interior's Professional Qualifications Standards for Architectural History and Historic Architecture. She has been professionally involved in the field of historic preservation since 2006. She holds a Bachelor of Arts degree in Political Science from Lehigh University in Bethlehem, PA, and a Master of Architecture degree from California State Polytechnic University in Pomona, CA.

INDUSTRIAL AFTERLIVES: FROM ACTIVE SITE TO HERITAGE ASSET / 10:15 – 11:30 AM

Tracing Copper Extraction at the Delaware Mine: A Landscape Archaeological Approach

Jamie Fidler

This paper presents a landscape-scale analysis of the Delaware Mine on Michigan's Keweenaw Peninsula, examining the site as a long-term extractive landscape shaped by Indigenous copper mining, nineteenth-century industrial development, and modern heritage tourism. While archaeological surveys and excavations have documented Indigenous mining pits and industrial features, these have not been fully integrated to explain how the landscape functioned and changed over time. This study synthesizes archaeological, archival, spatial, and ecological evidence to address that gap.

The analysis draws on survey and excavation data, historic maps and photographs, GIS-based spatial analysis, and ecological data to identify patterns of extraction, circulation, and land use across multiple periods. Ecological data is used to model past landscape conditions during periods of Indigenous use, providing context for understanding accessibility, movement, and land-use choices.

By emphasizing spatial relationships and changing environmental conditions rather than isolated features, this paper interprets the Delaware Mine as a connected system shaped by labor, technology, and human–environment interaction. The paper highlights how landscape-scale synthesis can highlight priority areas for further archaeological investigation and support conservation planning, improve interpretation, and inform long-term management at active heritage sites.

Jamie Fidler is a master's student in Industrial Heritage and Archaeology at Michigan Technological University, with a focus on industrial archaeology, landscape archaeology, and heritage management. Their research examines long-term human–environment relationships within copper mining landscapes of Michigan's Keweenaw Peninsula. Jamie has participated in multiple field schools at the Delaware Mine, serving as a graduate field supervisor and contributing to survey, excavation, GIS documentation, and archival research. They have also conducted independent research on the Delaware Mine and Isle Royale, including work with the National Park Service.

In addition to academic research, Jamie has experience in public interpretation as a tour guide at the Delaware Mine. Their interests include applied archaeology in post-industrial landscapes, historical ecology, and using landscape-scale approaches to inform research design, interpretation, and site stewardship.

Mapping Industry Through Form: The Vernacular Architecture and Industrial Archeology of Louisiana's Salt Mining Landscape

Robert McKinney

Louisiana's coastal salt domes have sustained extractive industries whose architecture embodies a rare intersection of vernacular form and industrial function. This paper presents ongoing research into the endangered mining landscape of Avery Island, where salt extraction has persisted since the 1860s and concluded with Cargill's closure in 2022. As one of the Gulf South's longest-operating industrial sites, Avery Island offers a unique case for investigating how architectural form both reflects and records the industrial processes that are fundamental to regional identity and material culture.

Drawing upon Historic American Engineering Record (HAER) documentation, original mining records, and fieldwork conducted between 2023 and 2025, this study analyzes key structures—the break house, steam hoist, engine house, and warehouse complex—as material expressions of industrial logic and vernacular adaptation. The analysis expands upon earlier documentation by Dan Branch (1980s) and situates Avery Island within comparative frameworks of extractive landscapes studied by Palmer & Neaverson (1998) and Cossons (2012).

The paper advances two parallel objectives: first, to develop a typology of vernacular industrial buildings in South Louisiana that illuminates how form and function mutually evolve; and second, to highlight the pedagogical and

preservation implications of documenting such sites before they are lost. With nearly four decades in higher education as an architecture faculty member, director, and academic administrator, I approach this research from the vantage of both practitioner and educator—linking documentary methodology to architectural history, preservation advocacy, and student documentation practices such as those within the Historic American Building Survey (HABS) tradition.

In the context of the U.S. Semiquincentennial, this project reframes Avery Island's salt works as a lens for understanding how vernacular industrial landscapes contribute to the broader narrative of American technological and architectural heritage.

Robert McKinney is a licensed architect and professor in the School of Architecture and Design at the University of Louisiana at Lafayette, where he has taught for over 35 years and previously served as director and assistant vice president for academic affairs. He holds terminal degrees in architecture (M.Arch, Virginia Tech) and in higher education administration (Ed.D., University of Louisiana at Lafayette), with research and teaching centered on Louisiana architectural history, vernacular and industrial landscapes, and the integration of liberal education and professional preparation. His work includes leading multiple Historic American Buildings Survey–oriented documentation projects with students, conducting over one million dollars in funded research as an investigator, and receiving national recognition, including an NEH Summer Research Fellowship and a Charles E. Peterson Prize honorable mention. Recent presentations address Avery Island's cultural and industrial landscape, A. Hays Town's architectural legacy, and the role of documentation and design pedagogy in shaping architectural education and practice.

Revisiting and Analyzing Inventories of Industrial Sites in Michigan

Makenna M Long

This paper reports on a project to create an updated inventory of Michigan's industrial sites to revisit the current status of these places and how industrial sites get recorded and remembered. Michigan has a rich and complex history of industrialism spanning back to before the founding of the United States with fur processing on Mackinac Island. In the 1970s, a survey was conducted by the Historic American Engineering Record to document industrial and engineering sites in Michigan with the aim of eventual designation on the National Register of Historic Places. Other lists have been made for Michigan, including the Society for Industrial Archaeology's 1980 Detroit conference list of Industrial sites in Wayne County, and Peter Stott's recommendations for industrial sites to be listed on the Online Inventory of World Industrial Sites in 2010.

By consolidating and updating the statuses of the sites that have been coded as "industrial" across different databases, I hope to make a concise and complete database for Michigan industrial sites that will be more available to the public. Throughout this process, I will analyze patterns in which sites have gotten National Register recognition since initial recognition, which sites continue to be used and/or revered by the public, and which sites have been neglected. This analysis can give insights into contemporary American, and more specifically, Midwestern, values in regards to industrial heritage.

Makenna Long is a master's student at Michigan Technological University in her first year of study in the Industrial Heritage and Archaeology program. She completed her bachelor's degree at the University of Illinois at Urbana-Champaign in anthropology with a focus in archaeology. She has contributed to multiple archaeological excavations, including a 2024 summer season at the Delaware Mine's Compressor House in Michigan's Upper Peninsula. Her research interests include deindustrialization, company towns, organization of labor, and Midwest industry.

PERSPECTIVES ON MARITIME INNOVATION AND CHANGE: 3D MODELING SHIPS & SHIPWRECKS (1845-1917) / 2:15 – 3:30 PM

A Wreck in a Wreck: Using 3-D Modeling to Decipher USS Picket, 1845-1862

Rebecca Kelley

When General Ambrose E. Burnside sailed from Annapolis, Maryland in January of 1862, he did so on an unusual vessel. For the voyage to the North Carolina coast, Burnside had chosen for his flagship the army gunboat, USS Picket, the smallest ship in his fleet. Picket was initially John F. Winslow, an iron-hulled canal barge built in New York City in 1845. Sold to the Army in 1861 to supplement a riverine and costal fleet the Union was developing, John F. Winslow's iron hull was planked over and extended to support deck guns and cabins, and the ship was renamed Picket. Picket is the only known extant example of this wood-over-iron conversion method and there are few records of other ships having been converted the same way.

This project uses Rhino CAD software to create 3-D models of the barge and the converted gunboat. The resulting models will demonstrate technological development in commercial and naval marine engineering across the middle of the 19th century. The models will be used to examine the construction as well as the technological, social, and economic factors that influenced the design choices that went into each vessel.

Rebecca Kelley is second-year graduate student at East Carolina University.

"This new craft will be a monitor…": Constructing a Digital Model of the USS Monitor

Matthew Pawelski

Launched at the Continental Iron Works in Brooklyn, NY on 30 January 1862, the Union ironclad USS Monitor was revolutionary for its time, the product of technical innovation in a time of war. Famously dueling the Confederate ironclad CSS Virginia at the Battle of Hampton Roads on 9 March, Monitor was not to see out the year, sinking with the loss of 16 of its crew off Cape Hatteras on 31 December 1862. Despite having only spent under a year as a part of the Union fleet, the USS Monitor symbolized a remarkable step forward in ship design and construction. The product of an innovative design from Swedish-American engineer John Ericsson, Monitor was constructed in just 118 days with over 40 patentable inventions. Since being rediscovered in 1974, Monitor has been the focus of long-term research and preservation. Portions of Monitor, such as its famous turret, have been raised from the ocean floor, undergoing long-term conservation at The Mariners' Museum and Park.

This presentation focuses on one such aspect of this ongoing research. Between 2023 and 2024, with funding from NOAA's Monitor National Marine Sanctuary and in partnership with The Mariners' Museum and Park, a CAD modeling project brought the USS Monitor into the digital world. Utilizing new insights found throughout the conservation process, details regarding potential departures from Ericsson's plans were considered, allowing for a more accurate portrait of the vessel as built. This model not only traces the construction of the vessel but places an emphasis on the lived environment within the ship, allowing us to interpret the living spaces of the ship as the crew may have seen them. This presentation will bring viewers through the USS Monitor as it was in 1862, highlighting new methodologies in maritime research and cultural resource analysis and interpretation.

After studying history at the College of William & Mary, Matthew Pawelski graduated from East Carolina University's Maritime Studies Program in 2023. Relying on historical records, construction plans when available, and archaeological data from shipwreck sites, Matthew's work focuses on 3D reconstruction of vessels as they were in their historic context and as they exist in their archaeological context. Specifically, he is interested in creating 3D models of historic vessels with an eye towards how historic vessels may depart from intended techniques or construction plans in order to reconstruct these vessels as accurately as possible.

With projects such as the Monitor reconstruction, Matthew hopes to illustrate the value of 3D ship reconstruction for both analysis and public outreach, allowing both researchers and members of the general public to interpret and interact with historic vessels and shipwreck sites in new and exciting ways.

From Sealer to Cutter to Icebreaker: Charting Maritime Technological Adaptation through the 3D Reconstruction of Bear (1874-1963)

Raymond Phipps

The United States Revenue Cutter (USRC) Bear (1874–1963) was a rare example of a vessel whose long service life demanded ongoing technological reinvention. Built in Dundee, Scotland, as a Newfoundland sealing ship, Bear was extensively modified as it assumed new roles as a U.S. Navy (USN) Arctic rescue vessel, a USRC for the Bering Sea Patrol, a museum ship, an Antarctic exploration vessel, and a World War II patrol craft.

This presentation details a series of 3D digital reconstructions, created using computer-aided design (CAD), analysis of historic ship plans, and photographic documentation, which together trace the vessel's transformation across five major phases. These models make Bear's physical and functional changes clear. Viewers can see hull strengthening, ice reinforcement, redesigned decks and living areas, shifts from steam to diesel, the addition of aviation equipment, and the integration of artillery and radar. Analyzing these changes in their historical and institutional context shows how technology, mission needs, budgets, and evolving cultural values influenced the ship's life. The digital reconstructions allow for the "deconstruction" of Bear's context. They show how one hull served very different industrial and operational purposes from the late nineteenth to mid-twentieth century.

This research presents Bear as a key case study in long-term maritime innovation. It demonstrates how reuse, refit, and repurpose drove technological change. Overall, this work highlights how immersive 3D modeling illuminates past shipbuilding, helps interpret shipwrecks, and deepens our understanding of the forces that shaped maritime history.

Raymond Phipps earned his master's degree from East Carolina University's Maritime Studies Program in 2024. As a maritime archaeologist and historian, his work focuses on the long-term use, adaptations, and interpretation of maritime technologies and vessels. His research integrates archival sources, archaeological records, and digital documentation methods to better understand how vessels and maritime infrastructure change over time in response to shifting economic, environmental, and cultural conditions. He has a particular interest in reconstructing vessels using applications such as 3D modeling and photogrammetry to better understand their service life. Through his work, Raymond seeks to bridge the historical record and the archaeological record in order to emphasize an interdisciplinary approach to the study of maritime heritage. In doing this, he hopes to make maritime archaeological research accessible to both academic audiences and the public.

Blueprint to Vessel: Comparing Hough-Type Construction Plans to North Bend's Archaeological Evidence

Ian R Shoemaker

In 2024 the East Carolina University (ECU) conducted an archaeological investigation of the World War I wooden steamship North Bend in NOAA's Mallows Bay Potomac River National Marine Sanctuary (MPNMS), the first Hough-type vessel constructed under the U.S. Shipping Board and Emergency Fleet Corporation program. Using a 3D CAD model developed from Hough-type design plans and archeological investigations as a baseline to visualize the ship and shipwreck, project documentation was used to assess where the surviving hull and structural elements align with and diverge from expected Hough-type construction. Combined, these datasets provide an opportunity to examine how wartime innovation and standardization were executed in the first iteration of the type and departures from the idealized type.

Ian R. Shoemaker is a graduate student in the Maritime Studies Program in the Department of History at East Carolina University. His thesis focuses on the site formation process affecting the wreck of North Bend located in the Mallows Bay-Potomac River National Marine Sanctuary. His research interests focus on 20th century historical contexts, technological change, public outreach and education. He can be reached by email at shoemakerianresearch@gmail.com.

BOMBS TO PLOWSHARES: PEACEFUL APPLICATIONS OF NUCLEAR POWER / 2:15 – 3:30 PM

The Pluto Program and its Test Facilities at the Nevada National Security Site

Nicole Brannan, Tatianna Menocal and Laura O'Neill

The Nevada National Security Site (NNSS), formerly the Nevada Test Site, is well-known as the primary location of U.S. nuclear weapons testing during the Cold War, but weapons testing is only part of its unique history. Several other nuclear testing programs worked within the bounds of the NNSS and left their marks on its built environment. One such program was the Pluto Program, created to produce a nuclear-powered ramjet engine for missiles. A traditional ramjet engine is a simple air-breathing engine but requires large amounts of fuel and therefore only available for short or limited-range use. In contrast, a ramjet engine that utilizes a nuclear reactor to heat the air allows for long-range use. The United States government wanted to test the feasibility of such technology to determine if it would be a useful tool in military applications.

Construction of facilities for the Pluto Program began in 1958 on the NNSS with various buildings and infrastructure needed for the testing of nuclear reactors. Three main locales were developed to support the Pluto Program: The Control Facility Area, the Disassembly Building Area, and the Test Bunker or Test Cell B Area. Over the next six years these facilities were used to put nuclear ramjet engines through a series of tests known as the Tory tests. These tests demonstrated the technical feasibility for the linking of a nuclear reactor with a ramjet engine. The Pluto Program was abruptly cancelled in 1964 due to safety concerns. This paper will look in depth at the Pluto Program and the technical facilities designed and constructed to test the nuclear ramjet engines.

Nicole Brannan meets the Secretary of Interior's Professional Qualifications Standards for Architectural History. Ms. Brannan has worked for over 20 years in the cultural resources field, both in archaeology and historic preservation. She holds a Bachelor of Arts Degree in Anthropology/Archaeology from Mercyhurst College in Erie, PA and a Master of Historic Preservation from Goucher College in Baltimore, MD. Ms. Brannan currently works as an Architectural Historian at the Desert Research Institute in Las Vegas in the Cultural Resources Management Program, primarily on resources associated with nuclear testing on the Nevada National Security Site.

Tatianna Menocal is an archaeologist with over 14 years of professional experience in cultural resources management in the Great Basin and the American Southwest. She holds a Master of Arts in Anthropology/Archaeology from the University of Nevada, Las Vegas. She has extensive experience with Sections 106 and 110 of the National Preservation Act (NHPA), has directed numerous cultural resources inventories and architectural surveys, and has prepared dozens of Sections 106 and 110 reports and associated resource forms. She has documented diverse types of cultural resources ranging from prehistoric, ethnohistoric, historic ranching and mining, military, and Cold War resources. She co-manages an American Indian Consultation Program to sustain effective government-to-government interactions between the U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office, and 16 American Indian tribes that are culturally and historically affiliated with NNSS lands.

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Exploring Space at the Nuclear Rocket Development Station

Laura O'Neill

The Nevada National Security Site, formerly the Nevada Test Site, is well-known as the primary location of U.S. nuclear weapons testing during the Cold War, but weapons testing is only part of its unique history. Several other nuclear testing programs worked within the bounds of the NNSS and left their marks on its built environment. In typical military-industrial fashion, many of the programs utilized prefabricated buildings and temporary trailers for their work rather than customized scientific environments. One program, however, required an entire complex of customized facilities and, as a result, created one of the most fascinating built environments of the atomic era: the Nuclear Rocket Development Station (NRDS).

In 1955, the U.S. Atomic Energy Commission (AEC) and the National Advisory Committee for Aeronautics initiated the Rover program to design, develop, and test nuclear rocket engines for journeys to Mars and beyond. The need for specialized research and design facilities was immediately apparent. In 1957, the AEC and NASA broke ground on the first three facilities at the NRDS. Over an 18-year period, the NRDS supported experiments in nuclear rocketry and expanded to meet the changing needs of the engineers and scientists tasked with advancing the U.S. space program. The complex would ultimately include maintenance, assembly, and disassembly plants for both reactors and engines; numerous test cells and test stands; administrative facilities; warehouses and support buildings; and even its own dedicated railroad with railcars specially designed to transport radioactive components. The result was a built environment unlike any other that merits contemporary scholarly inquiry.

The proposed paper will explore how architects and engineers solved the many problems inherent in designing spaces for such specialized nuclear research and development. Consider, as just one example, the challenge of designing for the safe remote handling of devices in the analog age.

Laura O'Neill meets the Secretary of Interior's Professional Qualifications Standards for Architectural History and Historic Architecture. She has been professionally involved in the field of historic preservation since 2006. She holds a Bachelor of Arts degree in Political Science from Lehigh University in Bethlehem, PA, and a Master of Architecture degree from California State Polytechnic University in Pomona, CA.

Virginia and Nuclear Ship Savannah, the World's First Nuclear-powered Merchant Ship

Erhard Koehler

NS Savannah is the world's first nuclear-powered merchant ship, built and operated by the Maritime Administration (MARAD) as part of President Eisenhower's Atoms for Peace program. In service from 1962-70, the passenger-cargo ship served as a floating ambassador promoting the safe and peaceful use of nuclear power, visiting 32 domestic and 45 international ports. Powered by a nuclear reactor constructed by Lynchburg-based Babcock and Wilcox, with the ship's operators training at their offices and Lynchburg College, Savannah has been linked to Virginia since its earliest days. These ties continued when Yorktown's USCG training center was selected as the base for the ship's sea trials in 1962. Savannah routinely called in Norfolk/Hampton Roads during her operational period. After successfully completing its programmatic goals and objectives, Savannah was removed from service in 1970, and Virginia continued to play a significant role in the ship's post-operational history. Savannah was placed in the James River Reserve Fleet from 1994 until 2006. To prepare the ship for decommissioning, MARAD took advantage of the area's major shipyards, with topside and interior repairs at Colonna's Shipyard and drydocking at BAE-NORSHIPCO, before being towed to Baltimore in 2008. Virginia played key roles at the beginning and middle of the ship's history – a story which does not yet have an ending. Virginia then made significant contributions at the beginning of the decommissioning process – a process that has left Savannah as a museum in all but name and ready for its next act. This presentation will showcase the history of the ship, with a focus on its history in Virginia, in particular its connections with the maritime industry in Hampton Roads and describe what is in store for Savannah once decommissioning is complete, anticipated in 2026.

Erhard Koehler is a 1987 graduate of the State University of New York Maritime College, with a BE degree in Naval Architecture. After 3-1/2 years as a structural and field-support engineer with the Philadelphia Naval Shipyard, he joined MARAD's Office of Ship Operations in Washington, DC in 1991. An avid amateur maritime historian, Erhard enthusiastically jumped at the assignment in late 1992 to oversee Savannah's return to MARAD custody from the Patriots Point Naval and Maritime Museum, and her subsequent 1994 drydocking and relocation to the agency's reserve fleet site near Newport News, Virginia. He remained with the ship as a project engineer and member of the licensee organization during its protective storage period. In 2004 he succeeded to the agency's senior Savannah management positions and is responsible for all program activities related to licensed operations, maintenance, repair, custody and preservation of the Savannah.

NUTS, BOLTS, & NARRATIVES: THE AMERICAN TEXTILE STORY / 2:15 – 3:30 PM

The Roots of American Power Loom Weaving - Part I

L. McKay Whatley

The Roots of American Power Loom Weaving - Part II

Patrick Malone

Francis Cabot Lowell introduced power loom weaving to the United State in 1815, but his original patent was destroyed in 1836 and no illustrations or specifications of it are known. After Lowell's untimely death in 1818 his Waltham factory manager, Paul Moody, gradually upgraded the Lowell machines with the unpatented technology of a Rhode Island competitor, William Gilmour. This hybrid machine eventually evolved into our American standard loom design. Which machine should be credited as the true ancestor of American mechanical weaving? Lowell's design, using cams, springs and weights, grew out of his extended trip to Great Britain in 1810-12, where relatively few factories engaged in power loom production weaving. Gilmour's 1817 alternative loom used crank motions based his machine on the British patents of William Horrocks.

Contemporary descriptions of Lowell's machine indicate that it was nothing like the Gilmour loom. Analysis of weaving mills in Scotland and Lancashire and the types of looms then in use argues that Lowell was influenced more by the power loom technology used in Scotland than that developed by Horrocks in Stockport. Using the methods of experimental archeology to "reverse engineer" both the Lowell and Gilmour prototypes - analyzing contemporary illustrations, anecdotal material and patent records and comparing that information with surviving museum artifacts- illuminates the sources of power loom technology and allows us to recognize the forgotten contributions of British and Scottish industry to the birth of American mechanical engineering.

L. McKay (Mac) Whatley is a 1977 graduate of Harvard College, the University of North Carolina School of Library and Information Science, and the NC Central School of Law. He has worked as an architectural historian for the State of North Carolina, and served as Chair of the Collections Committee for the American Textile History Museum in Lowell, Mass. until its closure. He is now Director of Local History and Genealogy Services at the Randolph County (N.C.) Public Library, and a curator of the proposed North Carolina Textile Museum.

Dr. Patrick Malone, Professor Emeritus, Brown University patrick_malone@brown.edu. Suffice it to say, Dr. Malone is among the foremost practitioners and scholars in the field of industrial archeology.

Power Looms and Incremental Innovation on the Shop Floor: The Unexamined Role of Loom Fixers and Weavers

Gregory Fitzsimons

Historians of textile technology have focused largely on major innovations such as the advent of ring spinning, the introduction of the automatic loom, and the emergence of shuttleless weaving. These studies have typically concentrated on individual inventors and textile machine makers. Far less attention has been given to the numerous contributions of many smaller but important incremental innovations from textile workers on the shop floor. In this presentation we focus on improvements in weaving technology and the role of loom fixers and weavers in creating these various, often minor, but creative technological advancements. Few of these were patented, however, their significance lies in adapting looms for particular market demands or for aiding in more efficient weaving operations and, by extension, easing the tasks of textile factory workers.

In this illustrated presentation on technological change, we point out the importance of research using written sources in conjunction with examining artifacts. In addition, we highlight the critical role oral histories play in uncovering and analyzing incremental innovations, without which a majority, lacking any substantive documentary evidence, would be overlooked and completely omitted from the historical record.

Dr. Fitzsimons is former historian at Lowell National Historical Park and currently Research Associate at the Saab Center for Portuguese Studies, University of Massachusetts Lowell. He was worked and published in the fields of labor, environmental, and technological history and is currently writing a book on Lowell's Portuguese, a social and labor history with an emphasis on the city's immigrant textile workers.

PERSPECTIVES ON MARITIME INNOVATION AND CHANGE: 3D MODELING SHIPS & SHIPWRECKS (1918-1979) / 3:45 – 5:00 PM

Aowa (1918 – 1929): A Case Study into the United States Shipping Board Emergency Fleet Corporation Ferris Hull Design and Implementation

Allyson Ropp

In the Potomac River, lies an abandoned fleet of wooden steamships. Embedded in the mud of Mallows Bay, the wooden steamships were part of the military-industrial complex during World War I. In 1917, the United States Shipping Board Emergency Fleet Corporation launched a national shipbuilding program to develop a war-time coastal fleet. The most prolific wooden steamship was Hull No. 1001 Ferris-type and is found in great number in the bay.

From 2022 to 2025, a research team documented the archaeological remains and generated a series of 3D models of one of the Ferris-type hulls in the bay, Aowa. The resulting models and archaeological data of Aowa allowed for a comparison of the planned steamship and those constructed and used. This presentation will show how modeling can be used to identify design deviations during wartime and to assess salvage and archaeological breakdown.

Allyson Ropp is an archaeologist, specializing in coastal and submerged sites. She earned an MA in Maritime Studies from East Carolina University and is completing her doctorate in Integrated Coastal Sciences in Spring 2026. Her career has taken her from the Caribbean and the Great Lakes to the Pacific, studying the reciprocal relationships between submerged archaeological site and their environment, and the impacts of climate change on coastal and submerged resources.

PC-1084 (1943–c.1960s): Wartime Construction, Postwar Conversion, and 3D Modeling of a World War II Subchaser

Harley Drange

In the upper Cape Fear River near Fayetteville, North Carolina, lies the partially submerged hull of PC-1084, a World War II patrol craft built in 1943 as part of the U.S. Navy's PC-461 class submarine chasers. Designed for coastal antisubmarine operations, the vessel later entered the mothball fleet and then private ownership, where its wartime form was reshaped through conversion and use as a floating dock before its abandonment in the 1960s.

In the summer of 2025, the archaeological remains of PC-1084 were recorded, producing detailed 3D photogrammetric models of its current condition. These models will be compared to Rhino CAD reconstructions developed from original line plans to visualize the vessel as built, as well as an interpretive digital model representing its configuration during private use. Together these datasets provide a framework for examining how PC-1084 changed throughout its life, highlighting the impacts of wartime standardization, postwar surplus, commercial modification, salvage activity, and long-term freshwater site-formation processes. This presentation will demonstrate how integrating photogrammetry with CAD-based reconstructions clarifies design deviations, use-life alterations, and cultural transforms that shaped the vessel's technological and material evolution from naval patrol craft to riverine wreck.

Harley Drange is a second-year graduate student in the Program in Maritime Studies at East Carolina University. Their research focuses on the documentation, interpretation, and management of partially submerged and abandoned vessels in dynamic riverine environments. Their thesis examines PC-1084, a World War II PC-461–class patrol craft located in the upper Cape Fear River. Through this case study, they explore the interplay of natural and cultural formation processes, salvage, private ownership, and abandonment. Their broader research interests include naval material culture, site formation processes, and the use of 3D modeling and digital visualization to enhance public engagement with maritime archaeological sites.

LCU-1524 Chapultepec (1954-1979): Adapting American Amphibious Craft After the Second World War

Nathan Richards and Jeremy Borrelli

In 2019 the authors led an expedition to record the remains of a post-WW2 Landing Craft Utility (LCU-1466 class) wrecked in Kwajalein Atoll, Republic of the Marshall Islands and believed to represent the remains of LCU-1524 Chapultepec. Using a 3D model developed from the builder's plans as a baseline to visualize the shipwreck, project participants gathered data to track deterioration or modifications on the shipwreck in the form of photogrammetric field assessment and hand-drawn measurements. Combined, this data became an opportunity to explore how the US military adapted WW2-era Landing Craft, Tank (LCT) designs to create the new LCU type. Additionally, this presentation will show how modeling data enhances researcher detection of watercraft manufacturing processes and design deviations, can assist with the potential recognition of field-expedient modifications, use-life alterations, and informs how the impacts of post-wrecking archaeological site formation processes are understood.

Dr. Nathan Richards is Distinguished Professor of the Thomas Harriot College of Arts and Sciences, with the Program in Maritime Studies, Department of History, at East Carolina University (ECU). His research interests mainly focus on 19th and 20th century historical contexts, the history of maritime technology, and the application of new technologies to archaeological research questions. His research has appeared in journal articles, book chapters, reports, reviews, monographs, and edited volumes. Nathan has taught classes in the history, theory, method, and ethics of maritime archaeology, field schools, and cultural heritage management at ECU since 2003.

Jeremy Borrelli is the Staff Archaeologist for the Program in Maritime Studies, East Carolina University (ECU). He has experience in terrestrial and maritime archaeology, maritime history and material culture analysis. Jeremy has been involved with archaeological projects in North Carolina, New York's Hudson Valley, the Great Lakes, Africa and the Caribbean. Before joining ECU, he worked as a maritime archaeologist for the Queen Anne's Revenge Shipwreck Project at the QAR Conservation Laboratory and NC Underwater Archaeology Branch. His research interests include 18th and 19th century maritime history, the archaeology of ports, harbors, and landing sites, digital and 3D documentation methods, maritime landscape studies and public archaeology.

INHERITED BURDENS: PERSPECTIVES ON CONTAMINATION & REMEDIATION / 3:45 – 5:00 PM

Mapping an Extinct Industry: Coal Gasification Plants in Massachusetts, 1820-1970

Thomas Speight and Allen Hatheway

Between roughly 1800 and 1950 the worldwide gas industry used manufactured gas plants (MGPs) to produce gas from coal, oil or other feedstocks to supply gas for public illumination, industrial fuel, and domestic needs. The byproducts and wastes of these plants contained numerous persistent toxic constituents, and many MGP sites still present risks to public health and the environment.

As part of a research project conducted between 2012 and 2017, the authors researched and mapped the locations of known manufactured gas plants and related facilities in Massachusetts that were active during the lifetime of the coal gas industry in Massachusetts (roughly 1820-1970).

Massachusetts was selected in part because by the early 1900s the statewide gas industry was the second-largest in the US, surpassed only by New York. We located and researched a core population of approximately 200 confirmed gas industry related sites in Massachusetts, plus a larger population of suspect coal-tar sites. We compiled 19th and 20th Century historical information, such as regulatory filings and engineering documents, together with current land use and regulatory status. The sites were then mapped using GPS/GIS methods cross-referenced to historic mapping and other referenced sources. Our findings were summarized as part of an overall narrative history of the state's gas industry from its origins through to the modern management of environmental legacy issues, supplemented by discussions of historic MGP operational information.

The 'core population' of confirmed and located sites we reviewed included 95 former utility manufactured gas plants; one byproduct coke plant, 18 private fuel gas plants; and numerous appurtenant sites such as district gasholder stations, off-plant dump sites, and other facilities.

Thomas Speight has twenty years' experience in the environmental field as a consultant and regulator, including approximately fifteen years with a primary focus on assessment and remediation of contaminated sites. He is a Massachusetts Licensed Site Professional and a Certified Hazardous Materials Manager.

Allen Hatheway, PhD, PE, P.Geol. has spent approximately sixty years as a consulting engineering geologist, including a primary focus on the assessment and remediation of coal tar sites. Allen has published over 200 books and papers. He is also a retired colonel in the US Army Corps of Engineers, and retired from the engineering faculty at the Missouri University of Science and Technology, where he was Professor of Geological Engineering.

Oysters, hydrographic surveys, and modern subaqueous soil surveys in Chesapeake Bay

Barret Wessel

Chesapeake Bay has been a rich resource for human populations for thousands of years, with shores that are still dotted with oyster shell middens that represent many generations of use by Native Americans before European contact. When the first European explorers sailed into Chesapeake Bay, the oyster reefs were so large that they were charted as navigation hazards. Today, the oyster population is at ~1% of historic levels, depleted by overfishing, diseases, and environmental damage. The rise and decline of the industrial Chesapeake oyster fishery traces technology from hand tongs to powered dredges, to modern efforts at restoring the oyster population through aquaculture. Throughout this history, the industry has been supported by tidal and hydrographic data, sediment surveys, and modern subaqueous soil surveys, a story that can be traced in part through historic reports including the Yates survey of historic oyster bars and assorted reports from the National Oceanic and Atmospheric Administration and its precursor agencies. Repeated surveys of the same subestuary through over 150 years allow a reconstruction of environmental history that traces the collapse of shellfish industries and a transformation of the bottom type in some lo-

cations, while revealing remarkable environmental stability in the face of these changes; however, globally accelerating sea-level rise threatens this stability.

Dr. Wessel researches the genesis, morphology, and management of soils. His specialty is wetland and subaqueous soils, but he maintains interests in other soils and landscapes including upland forest and agricultural soils, as well as urban and anthropogenic soils. He earned his PhD in Soil and Watershed Science from the University of Maryland in 2020, with a dissertation focused on subaqueous soils in Chesapeake Bay, and a Graduate Certificate in Historic Preservation.

Vernon Smelter: Environmental Contamination from Secondary Lead Smelting

Fred Quivik

The Vernon Smelter, Los Angeles, California, was a secondary lead smelter (secondary smelting makes metal from recycled materials, while primary smelting makes metal from ore). Long owned by NL Industries, it benefited from its location in Los Angeles, because the LA region has a vast number of automobiles, and used automobile batteries are the main source of recyclable lead for secondary lead smelters. The Vernon Smelter Superfund Site is contaminated with lead and other hazardous materials that were disposed on the site during operations of the smelter. Remediation of the Site is under the auspices of the California Department of Toxic Substances Control, for which I worked as an expert industrial historian in the litigation the determined which parties were liable for the Superfund remediation costs.

In this presentation, I will summarize the history of the Vernon smelter and describe the kinds of evidence, physical and documentary, that I analyzed to reach my expert opinions in the case. I will put the analysis of the Vernon smelter in the context of modern society's current deliberations about moving toward a carbon-free energy system, which will likely be heavily reliant on batteries to store electrical energy. Although materials other than lead are contemplated for the batteries of the post-carbon era, the case of lead is instructive, because lead batteries were long thought to have environmental benefits: a higher percentage of lead is recycled than any other metal, in part because most lead is used for automobile batteries, and automobile batteries are of a size and shape that makes them convenient to sell, recover, and ship back to secondary smelters for recycling, thereby reducing the demand to mine new lead.

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. He recently published Smoke and Tailings: An Environmental History of Butte and Anaconda, Montana, 1880-1930 (Univ. of Nevada Press, 2025). Quivik is the current president of the SIA.

THE NITTY GRITTY OF BUILDING PRESERVATION / 3:45 – 5:00 PM

From "Need for Speed" to "Patience for Preservation": NASA Mission Control Center Precast Brise Soleil

Racheal Lute

The NASA Mission Control Center (MCC) at the Johnson Space Center in Houston, Texas, was constructed in 1965 at the height of the Space Race. Since speedy construction of the new facility was of the utmost importance, precast concrete was chosen for the first buildings. Primarily a campus of utilitarian design, by contrast, the MCC was the only building that boasted a decorative architectural feature – the brise soleil. The two-story brise soleil consists of an intricate array of atomic-style petals of exposed aggregate precast concrete. The MCC facility was historically used to monitor the Gemini and Apollo space flights, including the Apollo 11 that first landed men on the moon. The building continues to support mission control efforts for several NASA programs.

Precast concrete as a material is often chosen when there is a "need for speed". The industrialization of concrete in the early 20th century moved much of the on-site work to a factory setting through prefabrication, enabling rapid construction practices. Mass production of concrete shifted into overdrive during the postwar economic boom of the 1950s due to its speed, efficiency, and cost effectiveness in addressing the massive demand for housing, infrastructure, and public buildings. As one might expect, the rapid implementation of a new concrete production method resulted in unanticipated durability issues. Repair of structural concrete is a relatively straightforward process; however, the conservation of historic concrete elements, especially those with a decorative exposed aggregate finish, requires patience and skill to achieve a sound and aesthetically acceptable outcome.

This presentation will discuss the development of precast concrete and its use in the post-World War II construction boom. The presentation will highlight the need for "patience for preservation" when working with historic architectural concrete with a case study of the assessment and treatment of the Mission Control brise soleil.

Racheal Lute, PhD., is an Austin-based member of the technical engineering staff at Raths, Raths and Johnson, Inc. Racheal has 15 years of engineering experience specializing in the areas of rehabilitation and preservation of building enclosures with a focus on evaluating material performance. Her work encompasses architectural conservation and rehabilitation from research to implementation. Her professional experience includes laboratory analysis of construction materials, field investigation, and condition assessment of numerous building types. She specializes in the assessment of concrete and masonry structures providing mitigation strategies for material deterioration. Racheal is also a lecturer in the Historic Preservation Program at The University of Texas School of Architecture.

Ensuring Structural Continuity: Urban Maintenance Guided by Infrastructure Archives

Yifeng Zhang

Most urban "failures" are interface failures: old-to-new material interfaces, waterproofing-to-structure interfaces, utility-to-street restoration interfaces, or building-to-public-right-of-way interfaces. This paper will focus on a practical way to leverage NYC infrastructure archives so the vault/sidewalk work is guided by what the City already knows and what prior generations already built. Infrastructure archives don't just tell you what something is - they tell you how it connects, how it evolved, and where it is most likely to fail next.

As a Director of Professional Services for CANY, Yvonne Zhang, RA, LEED BD+C, is responsible for signing and sealing the overall projects in her teams. Experienced in architectural heritage documentation, Yvonne has specialized in New York City's facades and building enclosures, with an enduring respect for industrial heritage architecture. At CANY she thrives on their positivity and professionalism and is motivated by the integrity of historic preservation, diversity of material science and art of restoration, whether that's a beautifully redeveloped, repurposed heritage building, or the lessons to be learned from the practicality and simplicity of an industrial legacy.