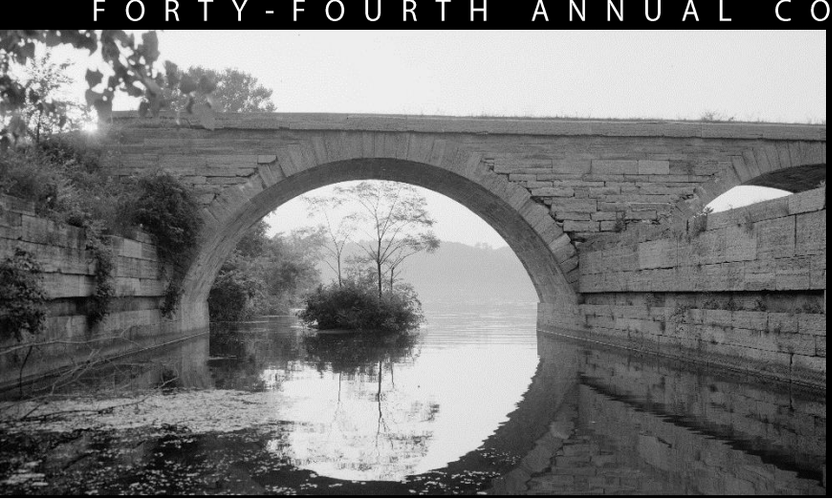
SOCIETY FOR INDUSTRIAL ARCHEOLOGY

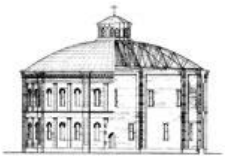
ALBANY AND THE HUDSON–MOHAWK REGION OF NEW YORK

2015

FORTY-FOURTH ANNUAL CONFERENCE



PRESENTATIONS



SOCIETY FOR INDUSTRIAL ARCHEOLOGY

Presentations

44th Annual Conference
Albany and the Hudson–Mohawk Region of New York

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Middle: New York State Capitol and the Governor Nelson A. Rockefeller Empire State Plaza, Albany, New York, courtesy Robert Silman Associates and New York State Office of General Services

Bottom: Erie Canal (Enlarged), Schoharie Creek Aqueduct, Spanning Schoharie Creek, Fort Hunter, Montgomery County, New York, HAER NY,29-FORHU,2A--9

Top and bottom images from Library of Congress, Prints & Photographs Division, Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey (HABS/HAER/HALS) Collection

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Resources for Industrial Site Research at the New York State Archives

Historical New York State government records in the State Archives contain much information—both textual and graphical—about industrial sites from the early nineteenth century to the later twentieth century. Records of the nineteenth-century Erie Canal and its branches and the twentieth-century New York State Barge Canal system total several thousand cubic feet. Successive canal corridor maps date from the 1830s through the 1920s. These maps show canal rights of way and canal structures as well as adjacent features such as natural and artificial watercourses; mills, factories, stores, houses, and barns; and roads, railroads, and property lines. Thousands of drawings and plans depict individual canal structures, some of which related to water power used by private industries. Textual records of canal governing bodies document the lease of, or disputes about the use of, canal property for industrial uses.

The New York State Archives also holds records relating to state water pollution control from circa 1900 to 1990, totaling hundreds of cubic feet. Usually organized geographically, the records document both public and private sources of water pollution, the latter often being industrial operations. The Archives holds files of state-assessed valuations of industrial properties from the 1940s through the 1980s, often documenting facilities with diagrams. The Department of Transportation Map Information Unit's archive includes hundreds of large-scale maps of highway corridors statewide, dating from the 1940s to the 1990s.

Although business records of small- and medium-sized industrial enterprises rarely survive, state government records in the New York State Archives contain locational and even operational data for many locations and time periods. These records can help identify and document industrial sites, especially when used in conjunction with other documentary sources and field research. The presenter will provide an illustrated overview of records in the State Archives of possible interest to members of the Society for Industrial Archeology investigating New York sites, and advise on strategies for locating information about specific locales and time periods. A handout will be provided.

James D. Folts has served as Head of Reference Services for the New York State Archives since 1992. He coordinates the Larry J. Hackman Research Residency program of travel grants funded by the Archives Partnership Trust, specializes in land, court, and canal records, and also provides archival appraisal and outreach services. He holds a Bachelor of Arts degree from SUNY Albany and a Master of Arts and Ph.D. in History from the University of Rochester.

Pottery and Poison: Excavations at the N. A. White & Sons Pottery Site

The early nineteenth century saw Utica, New York, rapidly grow into a manufacturing and industrial hub for central New York. The brewing, textile, and pottery industries were central to Utica's growth and prosperity at this time, which was aided by the construction of the Erie Canal and, later, the Chenango Canal. By 1833, Noah White had consolidated multiple potteries along the Erie Canal in northern Utica into the massive White's Pottery. The New York State canal system was utilized by White's Pottery for access to clays and fuels, as well as for gaining access to nationwide markets. White's Pottery went on to become a dominant player in the stoneware industry of not only the Northeast, but also the rest of the United States. Handed down through the generations, White's Pottery continued production up until the end of the nineteenth century and eventually added new stoneware types to their catalog, including molded wares and steins, which allowed the pottery to continue production long after other potteries were shuttered. By the early twentieth century, the pottery had closed and various knitting companies took over the factory space.

The New York State Museum's Cultural Resource Survey Program completed a site mitigation of the N. A. White and Sons Pottery Site in the summer of 2012. The excavations uncovered a staggering amount of refuse from stoneware production, of which the preliminary analysis has begun. Artifacts recovered included brick remains from the factory and kilns, as well as the residential structures associated with workers who lived on site. West of the main pottery facility, stoneware debris was collected across the site in the form of a pottery dump. This presentation will discuss the history of the White family and pottery production, with special attention to the narrative developed from the excavation and multiple impacts to the site since the nineteenth century.

Barry R. Dale, a native of Missouri, received his Bachelor of Arts degree in Art History and Archaeology from the University of Missouri–Columbia. He completed his Master of Arts degree in Classical Archaeology in 2001 at the University at Albany and is ABD in Anthropology. In 2002, Barry joined the staff of the New York State Museum's Cultural Resource Survey Program and currently serves as a Principal Investigator. Barry also teaches courses in archaeology and ancient history at the University at Albany and Siena College. He has excavated sites in the Mediterranean and throughout New York State.

The Snyder Canal Slip: Its Development in Relationship to the Delaware & Hudson Canal and Its Connections to the Natural Cement Industry

In the rural countryside of Ulster County lie the remains of some of the most productive cement works in New York State, known collectively as the Rosendale District. Archaeological investigations on the site of two such works have revealed information about the manufacture of natural cement, the ways in which it was transported, and the remains of the material cultural of the workers who once lived and worked in a small settlement known as Lawrenceville. A portion of the Delaware & Hudson (D&H) Canal ran through the hamlet, home to some of the earliest and most widely known natural cement manufactories in the downstate region. The canal had a significant role in the development of cement companies, from High Falls east to Eddyville, because it provided cheap and convenient transportation for most of the cement produced in the area. Cement from this area was shipped along the canal to Kingston, where it was then towed to terminal facilities in New York City. The demand for American-made natural cement continued throughout the nineteenth century and it was used both in residential and industrial projects, as well as large public works that required watertight locks, dams, retaining walls, piers, aqueducts, and bridges.

The former Snyder and Lawrenceville Cement Company works were located along a small stretch of the D&H Canal in the Rosendale-Lawrenceville area. During archaeological monitoring for a New York State Department of Transportation project, a segment of the D&H Canal and a portion of the Snyder Canal Slip were excavated. Given its high level of integrity and importance to the region's industrial heritage, the D&H and Lawrenceville Cement Works Site was determined to be eligible for the National Register of Historic Places (NRHP). The D&H Canal was placed on the NRHP in 1968 and Snyder Estate Natural Cement Historical District, in which the site is located, was nominated to the NRHP in June of 1992. In addition to historic documentation, archaeological investigations carried out during a highway project provided information about the several different phases of construction of both the D&H Canal and the Snyder Company Canal Slip through the mid- to late nineteenth century. The removal of fill materials from canal features also revealed artifacts that have shed light on the daily lives of workers who once lived in nearby company tenements.

Robert E. Dean is a Principal Investigator in the New York State Museum's Cultural Resource Survey Program. He received his Bachelor of Arts in Archaeology and has participated in graduate studies toward a Master of Arts at SUNY Albany. Dean has worked on a wide variety of sites across New York State, with over twenty years of experience in cultural resource management. His archeological research related to industrial development in New York includes the Schaghticoke Woolen Mill Site, the Jamesville Plaster Mill Site, and the D&H and Lawrenceville Cement Works Site.

Pottery Waste: Evidence of the Haxstun and Hilfinger Potteries in Fort Edward, New York

The nineteenth-century industrial history of Fort Edward, New York, includes several well-known potteries. Among them is the late-nineteenth- to early-twentieth-century stoneware-turned-earthenware pottery that operated for almost seven decades in the village.

Fort Edward is situated along the eastern shore of the upper Hudson River at its confluence with Bond Creek, where, in prehistoric and colonial times, travelers left the river to portage northeast up the creek valley to Lake Champlain. In the early nineteenth century, the Champlain Canal was established along this former portage route linking the Hudson River and points south with the St. Lawrence River and Canada. Early settlers in the village took advantage of the Hudson for milling purposes by establishing a large, multiple-industry mill complex in the northern part of the village. This grew along what was the Fort Edward Feeder Canal, which was designed to bring water from the Hudson to the Champlain Canal. By the middle of the nineteenth century, it ended up supplying water power to these mills while also connecting them to the canal for transportation of goods.

The site of the Hilfinger Pottery was, however, unique in that it was built south of the village and away from the "mill yard" and its source of water power. Instead, it was situated along the canal and used steam and horse power. It was first built and run in the 1870s by Haxstun and Tilford, manufacturers of stoneware goods. In the early 1890s the property was bought out by a local family, the Hilfinger brothers, who had already been producing red earthenware goods as a family cottage business behind their house on East Street. After that business burned in 1892, they took over the stoneware works in the southern part of the village and continued to manufacture redware flower pots, drain tiles, and sewer piping until 1942.

Highway reconstruction efforts in 2006 provided an opportunity to archaeologically examine the Hilfinger Pottery property by monitoring construction on the periphery of the lot. It also allowed discovery of some off-site locations of dumped industrial waste directly linked to this pottery. The industrial waste included marked stoneware wasters and kiln furniture, objects from the early Haxstun & Company operation, and a large waster deposit of red clay flowerpots from the later Hilfinger operation. It also revealed places in the village where red earthenware drainage tiles (pipes) were used as under-curb drains, these being one of the products made at the Hilfinger pottery.

Nancy L. Davis has been an archaeological Principal Investigator with the Cultural Resource Survey Program at the New York State Museum in Albany for over 26 years. Before that, she worked for several private consulting firms on projects in the Ohio River Valley and mid-Atlantic regions. Her work focuses mostly on historical-period archaeological sites in New York State. She received her Bachelor and Master of Arts degrees in anthropology from the University at Albany.

Manuscripts and Maps in the New York State Library

The potential value of original manuscripts and maps in industrial archaeology hardly needs to be stated. This presentation will describe map and manuscript resources available at the New York State Library by focusing on a few selected examples from the library's rich holdings.

John Taylor was a prominent Albany brewer, entrepreneur, and politician during the first half of the nineteenth century. His business ventures in Albany began around 1807, with the opening of a candle-making shop. In 1822 he began operating a brewery, which ultimately became one of the largest in the country. At about the same time, he was also involved in building and operating steamboats. He served as mayor of Albany from 1847 to 1853. His private notebook, recently purchased by the New York State Library, contains unique pen-and-ink sketches (in color) of his brewery and dwelling house on Lydius Street (now Madison Avenue) in Albany and his family farm in Durham, England; sketch maps of his brewery buildings and grounds; and plans and sketches relative to the design of steamboat, the *DeWitt Clinton*. This content could be an invaluable source for researching nineteenth-century breweries in general, as well as for archaeological research in the industrial heart of lower Albany.

Among the thousands of historical maps held by the State Library are many volumes of fire insurance maps, including those published by the well-known Sanborn Map Company, as well as some lesser-known firms. These are indisputably important for determining the physical footprints of industrial facilities. Among the most interesting of such surveys, and certainly less well-known than Sanborn maps, are the Barlow's Insurance surveys of the later nineteenth century. This presentation will highlight the State Library's collection of these lesser-known insurance surveys, covering many important factories in Albany and Rensselaer Counties.

One other map will be discussed in detail: a recently catalogued 1882 map of the so-called Marshall Estate in Troy, New York. Between 1825 and 1840, John Taylor's contemporary, Benjamin Marshall—an entrepreneur born in Manchester, England—built a number of textile mills along the Poesten Kill in Troy. In 1840, he constructed a 600-foot-long (180 m) water tunnel near the foot of Ida Falls to power his mills. Marshall subsequently sold his energy rights to mills and factories, which then established themselves along the banks of the Poesten Kill. The map of the Marshall Estate shows in graphic detail the extent of Marshall's lands and the many small factories developed on his estate, which were still active in the 1880s.

Born in Canada, **Paul Mercer** holds a Master of Arts in Folklore from Memorial University of Newfoundland and a Master's degree in Information Science and Policy from the University at Albany. Since 1979, he has worked at the New York State Library, and since 1986, in the library's Manuscripts and Special Collections, where he is responsible for maps, music collections, prints, and broadsides. He has published books and papers in folklore and history, and for 35 years, has performed professionally as a folk singer and songwriter.

Death of a Dream

In 1903 the Hudson River Electric Power Company, original operators of the National Register-listed Mechanicville Hydroelectric Plant, began construction of a second and much larger hydroelectric plant at Spier Falls on the upper Hudson River. To provide power for construction equipment, a small temporary substation and switching facility was built on the Mechanicville-to-Schenectady transmission line, across the river from Schenectady in the village of Alplaus. The substation's primary function was to provide power at 8 kilovolts (kV) to the construction site 40 miles (64 km) to the north, as well as to the towns of Ballston Spa, Saratoga, and Glens Falls. When the Spier Falls plant came on line in 1904, this circuit was to become the main transmission line supplying power at 30 kV from Spier Falls to Schenectady. By that time, the tiny substation at Alplaus had been rebuilt as a state-of-the-art brick "switch house," designed with expansion in mind, as a major hub in their planned power grid.

However, the company almost immediately became overextended, apparently in a quixotic attempt to compete with the Niagara Falls power interests, just in time to be brought to its knees by the Panic of 1905. The new owners, which acquired the facilities after bankruptcy proceedings, had different plans for the future, which did not include the Alplaus facility as a major hub, so it was left in place as a minor local facility. The increasingly obsolescent substation was then bypassed, and was decommissioned and demolished around 1922. The property was subsequently acquired by the adjacent Delaware & Hudson (D&H) Railroad but never developed, which left the site intact until 2007.

Archaeological work sponsored by the New York State Department of Transportation was performed at the site by the New York State Museum prior to construction of a new railroad overpass, and the site was found to be undisturbed. Excavations revealed the floor of the building and surrounding pole sites, which provided information about the circuitry, equipment, and architectural plan of the substation. Analysis of this information revealed that it had never been significantly modified from its original 1903 configuration, so the architectural remains and artifact distribution represented the layout of a state-of-the-art substation in the earliest years of the electrical transmission industry. The presenter will discuss the way in which architectural details and the use of non-standard components revealed this layout, as well as some of the cost-cutting measures adopted by the company in the face of its increasingly overextended financial condition.

Martin Pickands received his Master of Arts in Anthropology from the University of Connecticut at Storrs. He has been involved in cultural resource management archaeology since 1986 and has been a project director for the Cultural Resource Survey Program at the New York State Museum since 1996. He has excavated on a variety of industrial and industry-related sites over the course of his career, including worker's housing at the West Point Foundry, a tenement-turned-boarding house for mill workers and lumberjacks in the Adirondacks, a blacksmith shop and carriage shop in the St. Lawrence River valley, and the project described in this presentation. He organized the Iron in New York colloquium at the New York State Museum in 2010 and is presently editing a volume of articles resulting from that event for the *New York State Museum Record*.

"Such as the Engineer Will Direct": Adaptive Creativity at Chenango Canal Lock No. 3, Utica, New York

The Chenango Canal was built between 1833 and 1836, connecting Binghamton to Utica. A notable feat of engineering, this 97-mile-long (156 km) canal included 1,015 feet (309 m) of lift using 116 composite lift locks. As a lateral to the Erie Canal, the Chenango benefitted adjacent communities by carrying traffic and products. The transport of Pennsylvania coal to Utica's steam-powered industries along the Chenango Canal prompted the resurgence of Utica as a manufacturing center during the second half of the nineteenth century. The canal was abandoned in 1878 due to competition from railroads and overwhelming maintenance costs.

Many of the structures of the New York State canal system are thoroughly documented by standardized engineering plans, drawings, detailed specifications, and other bureaucratic and contractual records. In contrast, there is a paucity of information regarding the construction, modifications, and repairs of the spillways and bypass sluices of the Chenango Canal lift locks and the existing documentary detail is limited. An examination of original project mapping and other documents suggests that records for these sluices are not lost, but that detailed specifications never existed. In the void of rigid contractual specifications, engineers and builders were freed to create and innovate particular responses to hydrologic and geographic settings and material availability.

In 2013, New York State Museum's Cultural Resource Survey Program conducted data recovery excavations at the 1026–1028 Lincoln Avenue site in Utica, New York, in preparation for the New York State Department of Transportation's North–South Arterial Project. Remnants of the canal prism, lock, spillway, sluice, and several canal-side privies were discovered deeply buried under late nineteenth-century fills. Much of the wooden infrastructure was well preserved due to its having been submerged and waterlogged. Excavations revealed unique design and construction details pertaining to the original construction in 1835 and subsequent modifications and repairs. Post-abandonment impacts from salvage were observed in several structural elements. Many of the modifications and repairs reflect escalating decay coupled with diminishing state support and funding. The archaeological documentation of this subset of canal structures affords an opportunity to contribute to the broader examination of the range of structural design and construction variability brought to bear on this nineteenth-century construction project. Furthermore, archaeological remains of these canal structures may constitute the only historic record of anonymous junior field engineers, craftsmen, builders, and laborers who built the Chenango Canal.

David P. Staley is a Principal Investigator in the New York State Museum's Cultural Resource Survey Program. He received his Bachelor of Arts degree from the University of New Mexico and his Master of Arts from Washington State University. His more than thirty years of cultural resource archaeology experience have ranged from Alaska to Panama to Maine, including research and documentation of gold mining features in the Sierras of California and Real de Dolores, New Mexico's first gold rush town. Recent industrial archaeological research includes the Adirondack Iron and Steel Company's Upper Works and the Deansboro Creamery Site.

The New York State and National Register of Historic Places: Our Evolving Understanding of Properties Associated with Our Industrial Heritage

In the first decade of the National Register program, buildings and structures representing New York's industrial heritage were virtually ignored. After 15 years, only 42 industrial buildings and sites had been listed on the register. Today, resources related to industry are a significant component of our workload; we have a constant stream of new applications; and in the last three years alone, we've listed 22 industrial resources, a number of them as complexes or districts. So what has changed? Preservation or Preservationists? Perhaps both. It took preservationists a while to appreciate mills, factories, and warehouses as historic buildings, and it took a broadening view of preservation as economic development to make the conservation of industrial buildings feasible.

This presentation will examine the early context of the historic preservation movement in America, explaining why the reaction against Urban Renewal led to an understanding of preservation as a tool to protect the "beautiful" visual environment. It will also present a full interpretation of the criteria used to evaluate properties for the National Register, which was intended to help document and preserve all aspects of American history, and discuss how industrial resources, which may have once been perceived as "unattractive" eyesores, are actually the foundation of local history, woven into the economic and social foundation of our cities and hamlets. It will also talk about the broad range of information about design, economics, technology, engineering, social history, and other themes that is embodied in industrial architecture. Finally, the presentation will make the case for listing industrial resources on the National Register, one of our most important preservation tools, and outline the methodology and process of using the criteria effectively to evaluate a wide variety of industrial property types, thus leading to successful nominations. Listing on the register is prepares a site for participation in preservation programming, including the New York State and Federal Rehabilitation Tax Credit Program.

Kathleen LaFrank has a Master of Arts in architecture and design criticism from Parsons School of Design. She is the National Register Coordinator for the New York State Historic Preservation Office with expertise in rural cultural landscapes, state parks, parkways, modern architecture, and cultural resources. She is the author of the National Register or National Historic Landmark nominations for the Solomon R. Guggenheim Museum, Manitoga (Russel Wright Home), and the Taconic State Parkway and has worked on National Register documentation or evaluation projects for the Palisades Interstate Parkway, the Whitney Museum of Art, the Woodstock Festival Site, and Stonewall. She has guided the preparation of hundreds of National Register nominations.

New York State and Federal Rehabilitation Tax Credits: Unlocking the Reuse Potential of Industrial Sites

New York State was an early player in industrial development due to the availability of water power to drive mills and factories, but with the opening of the Erie Canal, New York State companies gained an advantage from the relative ease and low cost of transportation of goods and materials to nationwide markets. This was followed by investment in rail lines and shipping facilities (on both the Atlantic Ocean and the Great Lakes), and the availability of a seemingly endless supply of workers due to European immigration. In the late nineteenth and early twentieth centuries, the name "the Empire State" reflected the place of New York in the life of the nation with its extraordinary industrial output and the wealth that came from that industrialism. Seemingly every city, village, and town had a product or products that were synonymous with their name. However, as the twentieth century progressed, jobs moved elsewhere, contracting the industrial base, shifting capital and workers to other parts of the country, and leaving millions of square feet of factories, warehouses, and mills vacant. While the Urban Renewal efforts of the 1960s demolished some of this industrial heritage, much remains to remind us of this industrial history, with historic factories and entire industrial complexes either under-utilized or entirely abandoned.

If this sounds sad, there is a happy future for many of these buildings, one of which has been playing out across New York State through the combined use of Federal and New York State Tax Credits for the Rehabilitation of Historic Buildings. The federal credit has been around in some form since 1976, taking its current form of 20 percent of total investment costs in 1986. While this credit has been successful in providing a financial edge to projects for several decades, it is the recent addition of the additional 20-percent New York State credit that has caused a new surge of interest in investment in historic buildings in New York State. Much interest has been shown in vacant or under-utilized industrial buildings due to their size, solid construction, location on transportation routes, and unique character. Once seen as eyesores or reminders of past glory days, these buildings are being converted into market rate housing, low-to-moderate income housing, student housing, artist live-work space, and other creative adaptive reuses. Projects have also been providing new commercial space for start-up companies, entrepreneurs, and shops, all providing a new vitality in downtowns and neighborhoods. Additional benefits have been construction jobs, increased tax bases, street life, and simply having the "lights on" in buildings that had been dark for many years.

This presentation will provide information on how the credits work, the application process, and program requirements, using numerous examples from across New York State of recent industrial properties that have found new life through the use of the credit programs.

Julian Adams is the director of the Community Preservation Services Bureau for the New York State Historic Preservation Office (SHPO). A native of Georgia, he holds a Masters of Historic Preservation from the University of Georgia at Athens. He started in New York State service in 1988, when he took a job in the SHPO's Technical Services Unit, overseeing rehabilitations and restorations across New York State under federal and state programs. During a sabbatical from the SHPO in 1995–96, he worked with the Historic Natchez (Mississippi) Foundation, overseeing low-income housing development in historic neighborhoods, working with the local preservation commission and planning department, and assisting in heritage education. In 2000, he was named head of the Technical Services Unit. In 2005, he took a position as Senior Architectural Historian/Historic Preservation Specialist with a nationwide environmental consulting firm based in Dallas, Texas, working with military bases in their responsibilities under federal historic preservation law. He returned to New York State service in 2006, and in 2013 was named Director of the Bureau of Community Preservation Services, overseeing several state and federal programs, including the Federal Rehabilitation Tax Credit, Certified Local Government program, National Register, Survey, and Capital Programs review within the Office of Parks, Recreation and Historic Preservation, assisting the agency and communities and municipalities across New York State with preservation issues.

Industrial Evolution: Adaptive Use Strategies for Historic Industrial Buildings

This presentation will review the Preservation League of New York State's Industrial Heritage Reuse Project, completed in 2014 with funding from the J. M. Kaplan Fund and Erie Canalway National Heritage Corridor.

New York State, a leader in nineteenth- and twentieth-century industry, has seen those industries move elsewhere and businesses close over the last half-century. While this dynamic can be found throughout upstate New York, industrial corridors along water or transportation lines have the greatest concentration of vacant or greatly under-utilized historic buildings. These industrial buildings are often found within struggling communities, as the loss of their dominant industry leads to population decline and closing of Main Street businesses.

From the opening of the Erie Canal in 1825 through the mid-twentieth century, companies built a rich and diverse assortment of headquarters, warehouses, mills, manufacturing, and utility buildings reflecting the leading upstate industries. These include masonry-clad post-and-beam structures from the first half of the nineteenth century, through the daylight factories of the late nineteenth and early twentieth centuries, to the large General Electric plants of the post-World War II period.

Throughout the second half of the twentieth century, industry largely abandoned upstate New York, leaving behind canyons of historic industrial buildings. These buildings define the history of each municipality yet present very modern development challenges. Many communities have mixed feelings about these surviving reminders of their city's boom and bust, seeing them as liabilities and remnants of the past, instead of assets and development opportunities.

The Preservation League's Industrial Heritage Reuse Project is the first effort of its kind in New York State to promote historic industrial building redevelopment through condition survey and code analysis. Troy Architectural Program, Inc. (TAP, Inc.) has produced these feasibility studies for our five project sites, located within New York's Capital Region in Montgomery, Schenectady, Albany, and Rensselaer Counties. It is anticipated that these reports will spur industrial building rehabilitation in the project communities and provide models for similar properties across New York State. In the four months since the reports were released, the Preservation League has seen interest grow among developers and building owners wishing to rehabilitate their industrial buildings for adaptive use. We specifically selected vacant or drastically underused buildings for this project, which focused on adaptive uses for industrial buildings.

The presentation will provide an overview of the building selection process, history of each of the buildings, and results from the five reports.

Erin Tobin serves as the Preservation League's Director of Preservation and has been with the League since September 2007. Erin serves as the League's principal preservation program staff, working directly with local communities, organizations, individuals, and elected officials on all aspects of historic preservation and community development. Erin also manages the League's grant and assistance programs. Erin was the part-time Executive Director of the James Marston Fitch Charitable Foundation from 2006 to 2008. From 2004 to 2007, Erin was Director of Preservation Services at Historic Albany Foundation in Albany, New York, where she acted as principal staff for historic preservation, implementing advocacy, technical services, and educational programming. Erin has also worked for the New York Landmarks Conservancy and the Massachusetts Historical Commission. Erin holds a Master of Science degree in Historic Preservation from the University of Pennsylvania.

The New York State Barge Canal and the National Register of Historic Places

The New York State Barge Canal System is a direct early twentieth-century successor to the Erie, Champlain, Oswego, and Cayuga–Seneca canals, which were waterways of the 1820s that opened the upper Great Lakes to commercial agriculture, settlement, and industrialization and helped make New York "the Empire State." The Barge Canal System, built between 1905 and 1918, was designed for self-propelled vessels and tug-and-barge tows with concrete lock chambers and electrically operated steel gates that had ten times the capacity of their stone-and-wood towpath-era predecessors. While New York's towpath canals were hand-cut channels, parallel to but separate from rivers, the Barge Canal made extensive use of canalized rivers and lakes. The system featured many novel engineering works, including movable dams suspended from bridge trusses, vertical lift bridges, and hydroelectric or gasoline-electric powerhouses at nearly every lock.

The New York State Barge Canal System and most of those century-old structures remain in service today, and in October 2014, it was listed on the National Register of Historic Places (NR) as a nationally significant historic district. The NR district is 500 miles (800 km) long and passes through 152 municipalities in 18 counties. It is the longest such district in the state and one of the longest in the nation. Building upon a 2009 Historic American Engineering Record (HAER) survey, the nomination consisted of 552 contributing buildings and structures including locks, powerhouses, fixed and movable dams, fixed bridges, lift bridges, terminals, and shop complexes, most of which were largely unaltered since the system went into operation in 1918. This presentation will highlight characteristic features of this monumental work of early twentieth-century engineering; explain what was included within the historic district boundary, what was left out and why; and discuss what NR listing means for New York, its Canal System, and communities along its banks. This presentation will also provide context for some of the sites visited on this year's SIA conference tours and give some sense of significant features elsewhere on the system.

Duncan Hay was the principal author of the New York State Barge Canal NR nomination. He works for the Northeast Region of the National Park Service as a hydropower licensing specialist and as historian for Erie Canalway National Heritage Corridor. Previously, he worked for New York State Museum, the National Building Museum, the Museum of American Textile History, and Lowell National Historical Park. He is past president of the Society for Industrial Archeology. Duncan earned a Master of Arts and Ph.D. in the History of Technology from the University of Delaware's Hagley Program in the History of Industrial America and a Bachelor of Arts in Geography from SUNY Oneonta.

Milling and Memory along the Erie Canal: How Multiple Generations Built, Reused, and Remade Port Byron's Green Street Mill

In the late fall of 2012, contractors set about demolishing a sturdy, wood-frame, water-powered mill located at the intersection of Green Street and the Owasco Outlet in the Village of Port Byron, New York. Staff with the U.S. Environmental Protection Agency (EPA) had recently determined that the National Register-eligible building and the soils beneath it posed significant health risks stemming from electro-plating waste and had further determined that the site could not be mitigated without demolition. The decision to raze the historic mill was understandable but unfortunate. A local miller had built the mill (eventually known as the Green Street Mill) most likely for milling lumber adjacent to the Erie Canal in the decades before the Civil War. In time, the mill would be readapted as a planing mill, feed mill, creamery, and would spend its final years as storage for antiques, apart from housing the small electro-plating business that lead to the structure's demise.

How did the Green Street Mill, just one of many such mills positioned to profit from decades of canal traffic, go from a meeting point between timbermen, farmers, and boatmen to a space for chrome-plating tire gauges and storing Americana? Multiple generations of millers, entrepreneurs, and other local residents helped create this long historical arc, and their efforts are revealed in several sources including maps, photographs, newspapers, local histories, and an interview with Mr. Delvin E. Wilt. He was the last owner of the mill, and he had an intimate memory of the site that spanned from his childhood in the 1920s through the mill's demolition. Mr. Wilt was the last of several generations of owners and operators who adapted the Green Street Mill to make a livelihood as they took part in local and regional economies. They did so while keeping an eye on changing trends in milling and the destiny of the Erie Canal itself. As a cultural landmark, the Green Street Mill served as a fixture of local orientation from generation to generation, with its fabric and memory curated by its owners and Port Byron's residents alike. Though certainly not an anomaly in the tradition of readaptation, the Green Street Mill reminds us that industrial sites with longevities that span past and living memory were rarely static. Industrial archaeologists, historians, and heritage professionals cannot always detect the material traces and nuances of repurposing and adaptation; however, as the history of the Green Street Mill demonstrates, we should remain mindful of its possibility when studying industrial heritage and seeking methods and evidence to detect how people have made industry their own.

T. Arron Kotlensky, a 2006 graduate of Michigan Tech's Industrial Archaeology Master's program, has been working in cultural resources management on a full-time basis since that time. As with most industrial archaeologists, his interests are broad and touch on almost anything rusty or soot-stained, but the study of iron-making technologies and sites has gained his attention the most. He is also interested in studying how industries, both big and small, have responded to the declining demand for their products. He is currently a Senior Project Archaeologist in the Houston, Texas, offices of HRA Gray & Pape.

West Point Foundry Preserve: History Revealed and Interpreted

Preservation, stabilization, archeological and interpretative strategies allowed New York City-based landscape architecture firm Mathews Nielsen to create a new park and "outdoor museum" at West Point Foundry Preserve (WPFP), nestled within an 87-acre (35 ha) forested ravine in the Village of Cold Spring on the Hudson River. Listed on the National Register of Historic Places (NRHP), it is the site of a groundbreaking nineteenth-century ironworks and a treasure of industrial archeology. WPFP opened in the fall of 2013 as an interpretive experience for the twenty-first century and invites new pedestrian use while celebrating landscape as a mediating medium capable of reconciling complex cultural, archeological, and ecological histories.

After foundry operations ceased in 1911, nature slowly reclaimed the land and the foundry site. When Scenic Hudson, Inc.—a non-profit environmental organization—obtained the WPFP site in 1996, preventing its proposed development, only one foundry structure remained standing. However, archeological discoveries had been made during federal Superfund remediation of adjacent Foundry Cove marsh. Recognizing the site's significant industrial past, Scenic Hudson began a long-term collaboration with university-affiliated archeologists in 2001. In 2006, amidst ongoing archeological research, the organization retained Mathews Nielsen to lead the design of a cultural landscape that would invite the public to experience both its rich history and renewed natural beauty.

Working with Scenic Hudson and archeologists from Michigan Technological University, Mathews Nielsen helped to define a project scope that included (1) a site planning strategy for a safe, accessible, and ecologically vibrant site; (2) stabilization tactics for archeological fabric, slopes, and ecosystem health; and (3) an approach to an interpretation program that would celebrate and share the site's history. The design process included phases of rigorous research and mapping, client-inclusive design development, community involvement, and site visits to observe ongoing archeological field investigations. The results include trails that follow historic rail beds and pass extensive remains of the casting house, boring mill, and other foundry structures. New interpretive features—including a full-scale sculptural model of the 36-foot-diameter (11 m) water wheel that powered the boring mill—tell the story of the site's contributions to the American Industrial Revolution, its role in the Civil War (manufacturing Parrott guns), and the cleanup leading to its ecological renewal.

Kim Mathews of Mathews Nielsen Landscape Architects will describe how geological, hydrological, ecological, and human events framed their award-winning design. She will be joined by Scenic Hudson Director of Parks Rita D. Shaheen. Together, they will discuss how they resolved challenges during construction at this important industrial archeological site, as well as the ongoing management of the park in the wake of a surge in heritage tourism.

Kim Mathews, ASLA, is a founding principal of Mathews Nielsen Landscape Architects, P.C., a 30-person design studio in New York City. The firm's award-winning portfolio reflects her ability to achieve consensus on the most complex design issues and guide others to outcomes that are sustainable, practical, and inspiring. She is the recipient of over twenty individual design awards and lectures frequently on environmental design. Her keen interest in cultural and historic landscapes combined with her commitment to sustainable design is embodied in her firm's work at West Point Foundry Preserve, which is on the NRHP and a certified SITES pilot project. She holds a graduate degree in Landscape Architecture from the University of Pennsylvania and an undergraduate degree in Fine Arts from the University of North Carolina at Chapel Hill. She is an active member of the American Society of Landscape Architects and the American Planning Association.

Rita D. Shaheen, ASLA, is the Director of Parks for Scenic Hudson, Inc., the largest organization working to protect majestic landscapes along New York's Hudson River as resources for residents and visitors. Scenic Hudson has conserved over 30,000 acres (12,000 ha) of land and created or enhanced 65 public parks and historic sites. Ms. Shaheen joined Scenic Hudson in 1996, becoming its first Director of Parks in 2007. She has overseen the planning, design, and construction of more than 15 parks, including West Point Foundry Preserve. She was responsible for securing the listing of the West Point Foundry Archeological Area on the NRHP and worked closely with Michigan Technological University's Industrial Archeology Program during eight years of research at the foundry site. She also leads efforts to make Scenic Hudson parks national models of sustainable design and management. Ms. Shaheen holds a Master of Landscape Architecture from SUNY Environmental Science and Forestry.

Good Roads *and* Good Sidepaths

This presentation summarizes historical contexts for bicycle paths built during the nineteenth and early twentieth centuries in America: (1) the spontaneous efforts by bicycle clubs and club associations such as wheelway leagues to pursue country riding; (2) New York's legislatively governed sidepath campaign, which grew to dominate path-building during the 1890s and spread to many other parts of the country; and (3) paths constructed by park commissions in parks and along parkways. Each context began during the high-wheel era and developed into maturity during the safety bicycle era.

Examples from each of the three contexts include, in the first category: the Wilkes Barre-Kingston-Wyoming path (1886) and the Hazleton-Eckley path (1898) in Luzerne County, Pennsylvania; the Binghamton-Union path in Broome County, New York (1887); the Charlotte Turnpike path in Monroe County, New York (1888); and the DeGraff path in Amsterdam, Montgomery County, New York (1893),

In the second category, encompassing more than 2,000 miles (3,200 km) of sidepaths in New York State alone, the Lockport-Olcott path in Niagara County (1892); the Scottsville-Rochester path in Monroe County (1896); the New Hartford paths in Oneida County (1896); and the Albany-Schenectady Path (1895) are noteworthy.

Among paths constructed by park commissioners, Brooklyn's Coney Island paths (1895 and 1896) are well known, but were preceded by Cleveland's Doan Brookway path proposed by landscape architect Ernest Bowditch (1886). Brooklyn's paths were also developed contemporaneously with plans for paths in Buffalo's Delaware Park and along several of that city's parkways. The role of the Olmsted firm in discouraging plans for separate bicycle paths in parks in several cities, and discuss how John Charles Olmsted's plan for a perimeter path in Louisville's Iroquois Park became a landmark in that context.

Several other paths outside these three contexts deserve mention, including the Broad Ripple path along the White River Canal in Indianapolis (1898); the Old Croton Aqueduct Path in Van Cortlandt Park (1895); the Great Falls Cycle Path near Washington, D.C. (1899); the Williamsburg Bridge path in New York (1903); and paths developed in New York by Robert Moses shortly before World War II.

Three themes tie these contexts together: the valiant, grass-roots efforts of cyclists to build networks of bicycle paths during the 1880s and 1890s; the century-old struggle, today unresolved in America, to establish a viable place for bicycles as a means of transportation; and the creative efforts by nineteenth-century cyclists to resolve that challenge, among them the attempts to develop alliances with trolley-car companies.

Robert McCullough is an Associate Professor of Historic Preservation at the University of Vermont and is the author of several books, including *A Path for Kindred Spirits: The Friendship of Clarence Stein and Benton MacKaye.*

Carpets on the Mohawk

Like the "Electric City" of Schenectady and the eponymous village of Gloversville, Amsterdam, New York, is a Mohawk Valley town that drew its identity from its dominant industry. This presentation, illustrated with vintage and modern images, will describe how Amsterdam became "the Carpet City" by tracing the hundred-year-long relationship between the Stephen Sanford & Sons mill's adaptation of increasingly complex and highly mechanized carpet-weaving technology and Chuctanunda Creek, its original power source.

First, the presentation describes the Sanford firm's beginnings during the 1850s as a small mill with hand-powered looms, dependent on creek water for wool washing and dyeing, through the Civil War years, when it began weaving ingrain carpet with water-powered looms and established a multi-building sequential production line that stretched along the Chuctanunda's banks. At the same time, the firm led efforts to transform the creek into an architectural construct as highly rationalized as any factory building, incorporating its flow through a channelized bed into a system of dams, canals, millponds, and millraces. Chuctanunda Creek became one component of a production process whose efficiency was enhanced by the diffusion of technological innovations like the turbine waterwheel from the Lowell manufacturers to far-flung towns like Amsterdam. The creek's transformation into a power distribution system further evidenced the growing mandate for political as well as technological control of resources, as new legislation provided Amsterdam's factory owners far-reaching powers, including the right of eminent domain, over hundreds of acres of creek-lands.

The second part of the presentation describes how the complex evolved during the 1870s to accommodate larger power looms for producing the more heavily woven, colorful Brussels tapestry carpets that were fashionable during the Gilded Era. This transition saw the construction of heavy-timber-framed, multi-story brick mills, which dwarfed the cut limestone single-story structures associated with ingrain weaving, as well as specialized structures for the drawing of thread and spinning of yarn. New processes like drum-printing of yarn, whose control systems prefigured computer-punch cards, were also introduced. Although steam supplanted water as a primary power source, this developmental stage marked the near-total integration of the Chuctanunda, spanned by a network of bridges, shaftways, and steam lines, into the mill structure.

Next, the presentation describes the adaptation of the mill complex for the automated weaving of Axminster carpet between the 1890s and 1920s, including the building of even more massive steam-powered, fireproof, brick and reinforced concrete mills to weave the heavy broadlooms that became Sanford's trademark. Although the creek was no longer the mill's major source of power, new buildings and structures exploited its waters for dyeing and wool preparation with increasing technological sophistication.

The presentation ends with the conversion of the mill to electric power and daylight-style factory buildings situated off the creek bank during the World War I years, when the Sanford firm employed more than 4,000 workers. A brief photo overview urges the preservation of the Sanford complex's many intact structures.

After a long career with the U.S. Census Bureau, **Douglas Peter Sefton** received a master's degree in Architectural History from the University of Virginia in 2012. His thesis topic was the Stephen Sanford & Sons mill complex. He is active in historic preservation in Washington, D.C., and his recent projects include preparing a National Register of Historic Places nomination for the Office of Strategic Services Headquarters and giving presentations on a variety of architectural topics at several national conferences of the American Studies Association. In addition to further research on the Sanford Mill, he is currently collaborating on a full-length study of "Calvert Town," an unbuilt New Deal-era planned community designed by the distinguished African-American architect Albert I. Cassell.

Shoe Buttons, Liberty Laces, and Insulated Staples: 153 Years of M. M. Rhodes & Sons Company, Taunton, Massachusetts

This presentation is an overview of ongoing efforts to document and preserve the remarkable M. M. Rhodes & Sons Company complex in Taunton, Massachusetts, which closed in 2014 after 153 years of operation by the Rhodes family. The M. M. Rhodes & Sons Company was founded in 1861 by Marcus Morton Rhodes, in the rented space of a former umbrella factory. Rhodes initially produced small metal items such as carriage lining nails, carpet tacks, hoop skirt trimmings, and tufting buttons. In the early 1870s, joined by his two sons, Rhodes developed the machinery and process for the production of papier-mâché shoe buttons, which became the company's primary product for several decades. By 1893, Rhodes employed about thirty people and produced six million buttons per day to supply the burgeoning shoe industry. In 1897, they also developed a process for finishing shoe hooks, sold under the "Rhodite" trademark.

However, by the time of Rhodes' passing in 1916, the industry had changed, and shoe buttons were no longer en vogue. The company attempted to diversify with other products, including a short-lived venture to manufacture shoe laces, sold under the "Liberty Laces" trademark. In 1922, the family began producing insulated nails, staples, and other types of fasteners for the wiring industry. This business ultimately was a success, and would carry the company for more than ninety years until it ceased operations in 2014.

The small factory complex is a rare survivor, containing an array of belt-driven machinery operated by antique electric motors. The company's office appears much like it did a century ago, with its original tin ceiling and woodwork, along with an extensive collection of product samples and company records. Together, these elements provide great insight on how the company grew and adapted over the years.

The particular focus of this presentation will be on the site's most unique building, the wooden japanning house and paint shop that contain several steam-heated ovens and a system of tracks and trolleys used in the finishing process to provide the buttons with a hard, durable finish. The ovens had also been used until recently to dry the company's painted products. The presentation will conclude with an update of the ongoing efforts to document and preserve the site, equipment, and archives for the benefit of future generations, and the anticipated adaptive reuse of the property.

Marc N. Belanger is a licensed civil engineer from Taunton, Massachusetts, with a longtime interest in the history and geography of New England. Since 2001, he has photographed and studied dozens of industrial sites throughout the Southern New England region, with particular focus on the textile industry in his hometown of Fall River. In 2013, he wrote and published *A Guide to Fall River's Mills and other Industrial Sites,* and presented a paper entitled "Industrialization of the Lower Quequechan Valley (1813–1850)" as part of the Fall River Historical Society's summer lecture series. He is the current president of the SIA's Southern New England Chapter.

History and Archaeology of the Gulf Brick and Tile Factory, Mobile County, Alabama

Archaeological investigations of the early twentieth-century Gulf Brick and Tile Company factory in Mobile County, Alabama, combined historical and archaeological research to examine aspects of the regional brick industry around Mobile Bay and the Gulf of Mexico and to address questions concerning site function, technology, organization, and labor.

The study indicated that brick manufacturing never reached significant and sustained levels in the region. Instead, it appears to have been a speculative business, attracting investment in response to building booms during the late nineteenth and early twentieth centuries. Brickyards were mostly small and typically operated for only a few years. The Gulf Brick and Tile Company followed this pattern upon its incorporation in 1915, establishing a small-scale venture that produced low numbers of bricks over its lifespan.

Archaeological excavation indicated that, although modest in size and output, the brickyard was well-planned and incorporated modern (for the time) equipment and methods. Bricks were mechanically produced, and drying was completed in enclosed and possibly heated sheds. The kiln included upgrades that improved its efficiency compared to traditional types. The brickyard also contained improvements for drainage and internal shifting of materials and products by rail.

Examination of archival and archaeological data did not yield much information about certain aspects of this brickyard or brickmaking in the region. In particular, except for a few artifacts, little evidence of daily lives or activities of brickyard workers was found. Nevertheless, the study offered a glimpse into a little-known clay industry in the Mobile region and provided baseline data for comparison with other brickmaking sites.

Brad Botwick is a Principal Investigator and Senior Archaeologist with New South Associates, Inc., in Stone Mountain, Georgia. While at New South, he has investigated and documented numerous industrial sites in the southeastern U.S. His research has emphasized highlighting industry in the region, which is often considered to have been minor and insubstantial compared to the region's agricultural history.

The Alphons Custodis Chimney Construction Company: Perforated Radial Brick Chimneys and the Industrial Demand for Height

This presentation is the result of a research project aimed at surveying the construction of industrial chimneys during the early twentieth century. The journal *Power* was selected as a review to describe and trace the development of this land feature in relation to industrial growth and demands for power. During this time, the need for greater production capacity resulted in a corresponding demand for taller chimneys; it is within this general context of growth that the use of perforated radial brick is discussed as a means to achieve the desire for increased chimney height.

There were a variety of materials being used to construct chimneys by the twentieth century, and brick was a material that promised structural strength, height, and impressive craftsmanship in chimney construction. During the first two decades of the twentieth century, some of the tallest brick chimneys being built seem to be represented overwhelmingly by the Alphons Custodis Chimney Construction Company. Alphons Custodis's 1901 patent for perforated radial brick is described in detail as an innovation not yet seen in the United States in brick chimney construction before the arrival of his company. The development of perforated radial brick is also traced through two later, similar, patents held by American companies seeking to compete in the industrial world of taller, larger smokestacks.

This presentation also develops a catalog of important Custodis chimneys, highlighting specific chimneys as they relate to certain kinds of industries and power plants. The catalog aims to reveal the range of work done by the Alphons Custodis Chimney Construction Company and to identify surviving Custodis chimneys.

Jessie McNabb works at the University of Vermont (UVM) in addiction psychiatry and is a second semester student in UVM's Historic Preservation program. Jessie's participation in this year's conference is the result of a research assignment for a class focused on changes in the built environment as a result of human expansion and activities. Her research has initially focused on detailing the building of brick chimneys in relation to industrial activity and power needs during the early twentieth century.

A Yorktown Kiln Site: A Window into Shell Midden Use in the Historical Agricultural Economy of Westchester County, New York

The results of the Phase II archaeological site evaluation of a previously unstudied lime kiln in Yorktown, New York, revealed its unusual distinction of using bivalve shell as the raw material. The late-eighteenth- or early-nineteenth-century kiln is located on land owned by the town, and it was tentatively identified as a lime manufacturing site by Yorktown Parks Department employees with the assistance of local residents. During a previous archaeological survey conducted by Public Archaeology Laboratory, Inc. (PAL) in 2013, the Kiln Site (NY OPRHP USN 11918.000089) was found to contain, in addition to the kiln, two large concentrations (or piles) of oyster and other bivalve shells, fieldstone property boundary walls, and two stone walls paralleling a cart path or historic road. Initial testing indicated the presence of both pre- and post-contact artifacts.

PAL excavated 40 test pits measuring 50 by 50 cm, three 1-by-1-m excavation units, and one 1-by-2-m excavation unit during the 2014–2015 Phase II archaeological site evaluation; 166 post-contact period artifacts and 11 pre-contact period artifacts were recovered. PAL staff also conducted archival research to document the site's history and to develop a lime-making context for Westchester County, New York, and adjacent portions of the lower Hudson River Valley.

Analysis of the kiln structure and excavation results within the context of Westchester County lime production and related kiln technologies allowed for preliminary dating of the site to the late eighteenth or early nineteenth century and the identification of contemporary landowner(s) and/or potential kiln operator(s). Lithic fragments found in the shell piles on site, coupled with associated background research, may connect the Kiln Site to Native American shell middens, a lost aspect of the lower Hudson River Valley landscape and, in so doing, provide an intriguing glimpse of Westchester County's historical agricultural economy. Viewed through this broader historical lens, the Kiln Site is an unusual tangible reminder of Europeans' exploitation of the pre-contact landscape following settlement of the region.

John J. Daly is the senior industrial historian at PAL, where he specializes in researching, evaluating, interpreting, and recording historic industrial and civil engineering infrastructure. Mr. Daly has been involved in public history for over 14 years and has worked in historic preservation and related fields for nine years. His specific areas of interest include transportation history, industrial hydropower development, and cultural attitudes towards industrial landscapes. He received his Master of Arts in Museum Studies in the Department of American Civilization at Brown University in 2004 and graduated with a Bachelor of Fine Arts from the University of New Hampshire in 1999.

Jenifer Elam, RPA, PAL project archaeologist, co-authored this presentation and directed fieldwork at the Kiln Site. Ms. Elam has worked in cultural resource management since 1999; she specializes in the consumption and subsistence patterns of historic/post-contact sites in the northeastern United States. She earned her Bachelor of Arts in Anthropology with an emphasis in Archaeology from the University of Memphis in 2001 and her Master of Arts in Archaeology by Research at the University of Durham, England, in 2005.

Points to Prints: Creating 3D Visualizations from Total Station Data

In 1861, the newly reorganized Pennsylvania Mining Company (PMC) assumed control of the North-west Mining Company operations in the Upper Peninsula of Michigan. Along with additional investment in shaft sinking and exploration, PMC erected a new winding engine house, the architecture of which is unusual when compared to other hoisting houses the Upper Peninsula region. Obscured by vegetation, the Cornish-style structure is at a remote site and differs significantly from illustrations found in the archives. This is not an isolated example. Across North America, many historic industrial sites are overgrown by vegetation and are difficult to describe and interpret. While many of these sites may not possess World Heritage status, they are nonetheless significant to the communities built around them and have the potential to attract visitors who contribute to the local economy. With a focus on stimulating discussion and preservation of these historic industrial structures, the approach set forth in this study will document the existing remains of the engine house and create a three-dimensional (3D) model that can be visualized, studied, and become the foundation for interpretation. To this end, the goal of the presenter's research project is to devise a method of accurately recording the remaining architecture of historic industrial remains and creating interactive 3D discussion models from total station data. The study will research the practicality, efficiency, and adaptability of using a reflectorless total station to record the exterior dimensions and outline of a standing ruin. Furthermore, the data will be processed and formatted to construct a 3D model of the historic industrial structure with landscape.

Normally used by engineers and archaeologists to record topography and set out features, the total station is an electronic and optical transit with an electronic distance meter (EDM), which determines slope distances from the instrument to a particular point. Most often used in the X and Y axes, in this study, the vertical, or Z axis, will be exploited to record elevation data (walls) of the remaining structure and to create landscape topography by exploiting the rectangulation feature of the robotic total station. Performing as a low-cost alternative to laser scanning, the total station has the capability to obtain precise measurements through and around foliage, collect photos of the point location, and accomplish all of this from a safe distance. With survey-grade accuracy, data from multiple locations can be combined and modeled, geo-referenced, and displayed on Internet sites such as Google Earth.

The approach set forth in this presentation will utilize the features of a total station to record the exterior dimensions and outline of the PMC engine house. The approach also uses the collected data to create a three-dimensional model to stimulate discussion and interpretation of this and similar historic industrial structures.

Mark Dice has over 35 years' experience in video media production and is pursuing a Master of Science in Industrial Heritage and Archeology degree at Michigan Technical University in Houghton, Michigan. He earned a Bachelor of Music Education from Kansas State Teachers College in Emporia, Kansas, and launched a video production company in 1976. In 1982 Mark designed and built the first portable multi-camera production system for projecting live concerts (1983) and has supplied equipment and engineering for over 400 live events. Mark is researching opportunities for industrial archaeologists to engage in public archaeology and involve the engineering and stakeholder communities in documenting and preserving our industrial heritage.

Mining by Degrees: An Accounting of Theses and Dissertations on the Archaeology of America's Historic Mines

Thirty years ago, archaeological publications on America's historic mines mimicked the character of precious metals in being hard to find and limited in distribution. Archaeological interest in mining sites continues to be a specialized activity, but there are also abundant indicators of a different quantity and quality of engagement. For one, archaeological reports on abandoned mining lands have increased in step with the wider recognition of mining sites as both heritage resources and point sources for environmental contamination. It is also the case that several universities with graduate programs in anthropology, cultural resource management, and heritage preservation list mining sites among their inventory of student projects. A close search of library catalogs now reveals upwards of 200 theses and dissertations on the material culture of America's historic mining sites, of which 90 percent postdate 1990.

This presentation offers a provisional synthesis of these products of storm and stress. Key here is that master's and doctoral theses do more than serve as a rite of passage for degree certification, and offer more than individualized insights into particular site histories. Several theses have already become the basis for articles and publications directing archaeological attention to particular facets of the industry, and an evaluation of the broader set discerns additional research directions. More so than other archaeological reports, academic theses frame field data around an explicit body of theory. While the grafting of data to theory has not always held fast, theses nevertheless document the perspectives that have been sought and the perspectives that have frequently borne fruit. An assessment of the sites investigated also reveals how theses and dissertations focus on particular regions, minerals, time periods, and site features. In so doing, this presentation highlights topics that have become robust areas for archaeological research, and topics in which archaeological forays remain wanting.

Paul White is an assistant professor of anthropology at the University of Alaska Anchorage, with research interests in historical and industrial archaeology. He has focused attention particularly on the American mining industry, exploring themes of technological change, environmental impacts, and relations between mining and colonialism. His recent work includes partnering with Michigan Technological University in the survey and evaluation of gold mining sites on Bureau of Land Management holdings in central Alaska.

Human Factors in the Definition of Ore: The Case of the Lava Cap Mine, California

Robert Peele defines an ore as "a metal-bearing mineral, or aggregate of such minerals, mixed with barren matter, called 'gangue,' and capable of being mined at a profit." (Robert Peele, *Mining Engineers' Handbook,* Vol. I, New York: John Wiley & Sons, Inc., 1945, pp. 2–18). Thus, because profitability is part of the definition, the determination of whether a mineral may be called ore depends on economic variables in addition to the material's grade, or the percentage that is metal. Two economic variables are the market price of the metal or metals being sought and the costs of mining, processing, and transportation necessary to put the metal on the market.

The Lava Cap gold and silver mine near Nevada City, California, is a case study in mining economics that shows, historically, how another factor—environmental controls—helped to prevent a mineral deposit, which had been classed as ore prior to World War II, from ever being ore again. The mine had been one of California's leading gold and silver producers in the 1930s and early 1940s, before it had to close as the U.S. government implemented policy aimed to divert scarce skilled labor from mining precious metals to mining strategic metals needed for the war effort. Labor costs in the U.S. increased during the war so that, after the war, with the price of gold fixed by the federal government at the pre-war level, the proven reserves in the Lava Cap could not be mined at a profit. A Canadian company bought the Lava Cap property, hoping that its investment would pay off when the U.S. ceased setting the price of gold, which occurred in the late 1960s, and the price began to escalate. When the company tried to reopen the mine, however, it found that the demographics of the Grass Valley-Nevada City area had changed. The area was now inhabited by people who had moved there for other values that Grass Valley and Nevada City offered: forested and mountainous environment and rural or small-town life far from the bustle of industry and the city. Local government entities placed such expensive environmental restrictions on the proposed new mining operation that its costs would still exceed revenue, even though the price of gold had risen by an order of magnitude over what it had been during the era of federal price-fixing. The presentation will be accompanied by photographs of the physical plant at the mine, much of which survives.

Fred Quivik is professor of history in the Department of Social Sciences at Michigan Technological University, and he is the editor of *IA: The Journal of the Society for Industrial Archeology*.

Nineteenth-Century Iron Ore Washing, or, The Oft-Forgotten Middle Step between Mine and Furnace

In the typical mine-to-furnace story, the broad category of iron ore processing is not entirely forgotten, but largely ignored for the apparently more interesting quarrying (blasting!) and smelting (fire!) processes that turn ores into iron and steel. Ore processing, however, is in many ways the most complex part of mining, and the least understood by historians. This particular study, of brown hematite mining on the shoulders of the Appalachians, involves a type of processing generally known as, simply, ore washing. The study takes at its kernel a series of late nineteenth-century ore washers in Centre County, Pennsylvania, and considers the relationship of the washers to their immediate surroundings, both ore-bank and, occasionally, furnace.

Ore washers in central Pennsylvania were almost all of the "log washer" type, which was invented in Bellefonte, Pennsylvania, in the 1850s. Ore in the form of sandy and clayey earth with high concentrations of brown hematite nodules came from the mines and was fed into one end of the log washer. The inclined log had iron paddles attached and a counterflow of water. Its rotation agitated the earth, washing out the sand and clay and slowly moving iron (and other rocks) by auger to the top end. In some cases further separation, jigs or flotation, was used to then concentrate the iron ore before sending it to the furnace. The material and power requirements of these plants can be found from period sources and some modern estimations.

Detailed surface survey of the ore washing facilities at Scotia and Tow Hill mines were undertaken in 2012 and further investigations are currently ongoing at the Pennsylvania Furnace washer. In addition, a Phase III survey of the Rockview washer was completed by others in 2010–2011, and the final report of that investigation has just become available. Comparison of these sites and a comparison to a number of others in the county demonstrate the diversity of arrangement of the washing plant in close proximity to one another—sometimes operated by the same firms—and all in the 1870s–1890s. This type of technology went out of use in the industry and area early in the twentieth century as ore deposits were tapped out and Lake Superior ore made mining in the region unprofitable.

This presentation also looks more broadly, and briefly, at the development of ore washer machinery though patent records and the geographical spread of the technology, although that remains a topic for a later presentation.

Steven A. Walton is an assistant professor of history at Michigan Tech, a longtime SIA member (as a grad student helped organize and run the 1994 annual conference in Toronto), and a historian of technology and science. His interests range from the history of mills of all sorts (water, wind, grain, paper, gunpowder, ore, and so on) and engineering to military-industrial topics including foundries, cannon, gunpowder, and torpedoes.

Wood Type and Worker Skill: An Inquiry into Technology and Practice in Wood Printing Type Manufacture

Throughout the late nineteenth and early twentieth centuries, the Hamilton Manufacturing Company in Two Rivers, Wisconsin, was the nation's leading producer of wood printing type. Printers used wood type to print posters, newspaper headlines, and other materials requiring large-scale letterforms. Wood type manufacturing, as it was performed at Hamilton, involved multiple processes and technologies, each requiring different degrees of tactile skill on the part of the type shop's workers. This presentation explores how wood type manufacturing technology structured practice for workers in the Hamilton type shop. Type cutters used pneumatic, pantograph-mounted routers to cut letterforms into blocks of end-grain maple. Type trimmers then used hand tools to finish the type pieces. Another process produced wood type blocks used for printing decorative borders: a reciprocating stamping machine impressed patterns into strips of end-grain maple wood, leaving the printing surface in relief.

This presentation uses oral history and material culture analysis to explore type cutting, and experimental archaeology to gain insight into the stamping machine's operation. The concept of industrial skill frames both the archaeological experiment and the wider inquiry. The dominant narrative in the history of industrialization, as it relates to the experience of work, has been about the de-skilling of workers through division of labor and the mechanization of production processes. The concept of industrial skill posits that industrialized manufacturing gave rise to a new kind of specialized knowledge intrinsically linked to the technological and social environment of the factory. In the case of the wood type border stamping machine, its design and physical structure limited the movements of its operators and directed those movements toward precisely prescribed ends. Yet much was required of the worker to successfully produce wood printing type with this machine: specialized knowledge for calibrating the machine to produce a variety of decorative patterns and dexterity and disciplined attention to successfully operate the machine. This presentation argues that embodied, materially oriented knowledge, largely absent from modern, computer-based "knowledge work," deserves recognition as a form of intangible cultural heritage.

Daniel Schneider is a graduate student in the Industrial Archaeology Program at Michigan Technological University and a practicing letterpress printer.

Corporate Identity: A Contemporary Issue? A Case Study in Indonesia during the Industrialization Era

In Indonesia, industrialization began in 1870 with the implementation of agrarian law in response to the previous system's failure to improve the economy. Agrarian law allowed foreign investors to conduct business in Indonesia. The impact of agrarian law changed industrial technology in Indonesia from handmade to mechanized. This change can be viewed from the remains of material culture from the era of industrialization, such as factories, houses, machinery, and other artifacts. There are many research projects that discuss the archeological remains of the industrialization era in Indonesia. The research projects provide an overview of the early industrial era through buildings, monuments, and landscape areas.

This presentation discusses the function of stock certificates in describing the industrialization era in Indonesia. Not many researchers provide an overview of the industrial era through stocks or other commercial papers. Stock certificates are important because they are material remains from the intervention of foreign investment during the industrialization era. The stock data analyzed in this presentation come from the records of the Nederlandsche Handel Maatschappij (now in the Mandiri Bank Museum). Nederlandsche Handel Maatschappij was a government agency that engaged in banking operations during the reign of the Dutch East Indies. The bank also served to implement and manage the administration of securities; therefore, many stocks are contained in Nederlandsche Handel Maatschappij records. The stock data was derived from 29 companies engaged in agriculture, trading, food production, electricity, engineering, transportation, mining, residential construction, and automotive manufacturing.

The main focus of the analysis is to describe decorative motifs on the stock certificates. Decorative motifs on the certificates are divided into three aspects: frame motifs, center motifs, and watermarks. The decorative motifs can also be classified as floral, geometric, trophy, sun, hat, and building. Studying the decorative motifs in the context of heraldry reveals that the elements in the decorative motifs have meaning and purpose in accordance with the company that issued the stock. For example, floral motifs symbolize natural properties or natural resources, based on associations with fertility, growth, and forecasts of goodness. Therefore, floral elements appear mostly on agricultural companies' stock certificates.

The results of the study also show that the stocks were not only used to represent the identity, legitimacy, and hope of the company, but they also provided an economic function. This is similar to corporate identity, which is a representation or visual illustration and the physical manifestation that displays the identity of company to distinguish it from other companies.

Alqiz Lukman graduated with a bachelor's degree from the Department of Archaeology at Universitas Indonesia in 2014. His thesis research discussed industries during the colonial period in Indonesia through old commercial paper. He is part of Museum Ceria (Independent Museum Educator in Jakarta) as manager in the andragogy division. At 2012, he joined the staff of the scientific division in Universitas Indonesia's archaeology student organization. Recently, he was a facilitator at the Alzheimer's program at the Museum Nasional, Indonesia, and an assistant trainer at a workshop for caretakers at the Muarajambi Temple in Indonesia.

Pennsylvania's Bridge Marketing Program

Pennsylvania's historic truss bridges stand as testimony to the ingenuity of truss bridge manufacturers, many of whom were located in Pennsylvania. Many of these bridges, once considered state of the art, are not able to be rehabilitated for vehicular needs but offer an opportunity to serve new uses off the highway system.

In 1987 the U.S. Congress passed the Surface Transportation and Uniform Relocation Assistance Act (STURAA), which created a mandate for all states using Highway Bridge Replacement and Rehabilitation (HBRR) funds to market historic bridges that have been determined to have no feasible or prudent alternative to demolition. This bill was in addition to Section 106 of the National Historic Preservation Act of 1966, which requires federal agencies to seek to avoid actions that may adversely affect a property listed on, or eligible for listing on, the National Register of Historic Places.

The Pennsylvania Department of Transportation (PennDOT) has been seeking adaptive reuses for historic bridges ever since the passage of STURAA, without tremendous success. The barriers to success are many, not the least of which is the cost to rehabilitate. It has been PennDOT's experience that there is either little information to offer potential buyers in terms of the cost to rehabilitate, or a high estimate of the cost of rehabilitation for continued vehicular use, which involves a degree of rehabilitation that is often well above the needs of potential buyers.

PennDOT is currently attempting to bridge this gap by partnering with specialists in the rehabilitation of historic metal truss bridges, who possess the expertise to provide realistic and practical cost estimates for rehabilitation. PennDOT is also partnering with the statewide historic preservation advocacy organization, Preservation Pennsylvania, to see how they may be able to help in the marketing process.

This presentation will discuss PennDOT's historic bridge marketing program, including lessons learned and dilemmas encountered, as PennDOT seeks to achieve greater success in this program.

Kara Russell is the Cultural Resource Team Leader for PennDOT's Western Region, responsible for supervision of architectural historians and archaeologists based in PennDOT Districts 1, 2, 9, 10, 11, and 12. She also serves as the Department's senior architectural historian, providing technical guidance and policy for issues concerning historic resources. She is responsible for assisting the Cultural Resource Section Chief and other Department staff in the development and integration of the Department's cultural resource program into the planning, design, construction, and operation of transportation facilities in Pennsylvania.

Ms. Russell has been with the Department for 16 years. She received her Master of Arts in Urban Affairs and Public Policy, with a specialization in Historic Preservation, from the University of Delaware. Kara received a Bachelor of Arts degree in History from John Carroll University.

Julie Bowers is the Executive Director of The North Skunk River Greenbelt Association (NSRGA), a non-profit that she helped found in 2009 to save an historic bowstring bridge in Iowa. Together with master craftsman Nels Raynor, Ms. Bowers formed the organization Workin' Bridges in 2011, under the umbrella of NSRGA, to assist others across the country in historic bridge preservation efforts. Ms. Bowers is a graduate of Grinnell College and a fourth-generation contractor dedicated to providing realistic rehabilitation costs, providing an economical way for those not experienced in bridge restoration to fund-raise, and to making historic bridge preservation economical for off-system adaptive reuse. She is presently involved in historic bridge preservation efforts in 12 states. In 2014 Ms. Bowers researched the re-use of Wiley's Bridge in Berks County, which led to her work with Preservation Pennsylvania and PennDOT's Bridge Marketing Program.

Mindy Crawford is the Executive Director of Preservation Pennsylvania, the Commonwealth's only statewide, private non-profit dedicated to the protection of historically and architecturally significant resources. Preservation Pennsylvania acts as resource for, and provider of expertise to, many local and regional preservation agencies, municipalities, groups, and individuals on matters related to historic preservation.

Ms. Crawford has worked in the field of historic preservation for 33 years, currently as the Executive Director of Preservation Pennsylvania since June 2006, and prior to that, as Executive Director of Historic York, Inc. Her areas of expertise include architectural history, rehabilitation, and restoration practices, as well as fund raising, grant writing, and education in the field of historic preservation. In addition, she is an adjunct faculty member at Penn State Harrisburg and York College of Pennsylvania. She holds a master's degree in Historic Preservation from Goucher College and a bachelor's degree in Business Administration.

Discovering an Abandoned Cast and Wrought Iron Swing Bridge in Florida

This presentation will explore the construction details and potential historic significance of an abandoned swing bridge over the Suwannee River north of the town of Mayo, Florida. The bridge was only briefly noted a number of years ago by a consultant for the Florida Division of Historical Resources as potentially significant, and its design and significance was never explored in detail. Very little factual data about the bridge's origin and construction date has been found to date, other than the general history of the bridge being relocated to its current site, where it served a railroad line for a number of years. Despite the lack of written records about the bridge, a site visit to the bridge to analyze its construction details led to an amazing discovery. Major elements of the bridge are composed of cast iron, and the remainder of the bridge appears to be wrought iron. Names rolled into the iron and unusual details of truss construction all point to the possibility of the bridge dating to circa 1870. As such, the bridge has the potential to be one of the oldest of its kind, not only in Florida, but the entire country. Its cast and wrought iron construction would appear to place it among the earliest and most historically significant surviving historic metal truss bridges in the country.

The presentation will include a brief national context of metal swing bridges and cast and wrought iron truss bridges. Reference will be made to the 1879 New Richmond Bridge in Michigan, the oldest known highway swing bridge, the 1880 Redstone Bridge in Minnesota, a very early surviving railroad swing bridge, and the 1869 Old Clays Ferry Bridge in Kentucky, a cast and wrought iron truss bridge with design details similar to those of the bridge in Florida.

A brief history of the Suwannee River Bridge will be offered, including facts and local rumors about the bridge's history. Using extensive photos taken during a site visit to the bridge, the presenter will discuss the numerous unusual and noteworthy construction details of the bridge and its current physical condition. A couple potential threats to this abandoned structure will also be noted.

The presentation will conclude with an analysis of what was learned about the history and significance of the bridge by careful observation of the bridge's design details in the absence of written records. Conclusions about the bridge's potential historic significance will be drawn from the limited factual data, supplemented by the observations made on site.

It is hoped that this presentation will encourage comments and input from the audience, perhaps leading toward additional avenues for future research on this bridge.

Nathan Holth holds a Bachelor of Arts in Secondary Education with a Political Science major and a History minor. He has twelve years' experience studying and working with historic bridges. Holth is the author of HistoricBridges.org and the book *Chicago's Bridges* and has personally visited and photo-documented thousands of old and historic bridges across North America. He is an active advocate for the preservation of historic bridges, has given a number of historic bridge-related presentations and speeches, and has participated as a consulting party for Section 106 review of historic bridges in many different states.

A Forgotten Wall along a River: Rediscovering the 1823 Nashville Toll Bridge

In 2013, the Historic American Engineering Record (HAER) was contacted by the National Park Service National Trails Office and the Native History Association about the authenticity of some peculiar stonework along the Cumberland River in downtown Nashville, Tennessee. The site was of interest because it was thought to be the last remains of the Nashville Toll Bridge, a circa 1823 covered bridge attributed to early bridge pioneer Lewis Wernwag and builder Joseph Johnson. The bridge was crossed by the Cherokee Indians on the Trail of Tears when they were displaced from their homelands in the South and forced to migrate west to Oklahoma Territory in 1838–39. HAER recommended that historic bridge engineer Jim Barker inspect the site. He did so and reported that the remains did indeed match an 1820s bridge abutment, and that according to primary source material, the bridge was "erected on the principles of Lewis Wernwag's patent as displayed in the New Hope, Reading, and Pittsburgh bridges."

This presentation, prepared with Jim Barker, will tell the story of documenting the bridge's remains, its history, and its significance. The presentation will describe the legacy of Lewis Wernwag, a German native who rose to fame by building of The Colossus, a bridge over the Schuylkill River in Philadelphia in 1812. Wernwag subsequently designed several other crossings along prominent turnpikes and railroads from the mid-Atlantic to the Ohio Valley over the next twenty years. Many of these spans were erected by other builders, including his own sons. A major partner was bridgewright Joseph Johnson, who built Wernwag-designed bridges at New Hope, Reading, and Pittsburgh, Pennsylvania, before starting the Nashville project.

While few of Wernwag's designs survived long enough to be documented through photography, there are three major pieces of evidence pertaining to the Nashville Bridge that still survive: the 1819 construction contract, a detailed design drawing of the New Hope Bridge, and the abutments themselves. Using these sources, the authors will describe the engineering design of the truss and its place in the evolution of early American truss development. They will also analyze the surviving abutments and describe the challenges presented for HAER documentation and large-format photography of the site amidst urban development and the Cumberland River.

Finally, the presentation will examine the bridge's role in the history of city of Nashville, which cemented its claim to be the permanent capital of Tennessee in 1826, only three years after the bridge's opening. It will also examine the tragic history of the Trail of Tears and local organizations' plans to interpret and preserve the Nashville Toll Bridge's abutments as a monument to Nashville's early history.

Christopher H. Marston has been with the Historic American Engineering Record (HAER) since 1989, after receiving architecture degrees from the University of Virginia and Carnegie Mellon. The project leader of the HAER National Covered Bridge Recording Project since 2002, he oversaw the documentation of nearly 100 covered bridges, and the designation of five as National Historic Landmarks. Mr. Marston is co-editor of the forthcoming book, *Covered Bridges and the Birth of American Engineering.* He served as co-editor of the award-winning *America's National Park Roads and Parkways: Drawings from the Historic American Engineering Record,* and associate curator of the Smithsonian traveling exhibit, *Covered Bridges: Spanning the American Landscape.* Mr. Marston is an active member of several preservation organizations, including the SIA, Preserving the Historic Road, the Transportation Research Board's Committee for Historic Preservation and Archaeology, and the Rustic Roads Advisory Committee in Montgomery County, Maryland.

The "Roof's-Eye" View of Oregon's Covered Bridge Program

In the 1950s, the rapid replacement of covered bridges galvanized a national movement to protect these unique structures. This movement, and the rising awareness of historic structures in general, eventually led to the documentation of covered bridges throughout the country and the listing of many of these bridges on the National Register of Historic Places. Despite the protection afforded by National Register eligibility, bridges continued to be lost to neglect, arson, natural disasters, and replacement. In Oregon, the 1979 thematic group nomination included 46 of the 56 covered spans extant at the time. Since then, seven covered bridges have been completely lost and two were lost but rebuilt. Of those lost, two fell to fire, two to flooding, and the remaining five to neglect resulting in their demolition.

Sadly, the problem of neglect and eventually demolition or collapse is quite common nationally. Covered bridges require quite a lot of regular maintenance, and for most owners it is difficult to prioritize this funding. In response, the national transportation act in 2000 created the National Historic Covered Bridge Program (NHCBP), which provided dedicated funding for the preservation, rehabilitation, or restoration of covered bridges. Funding was also provided for research into better methods for protecting and documenting these structures. The program was discontinued as of 2012, although the preservation projects it helped fund are just being completed this year. During the life of the program, $87 million was spent on a total of approximately 200 bridges nationwide. Oregon was able to use the program to fund more than 40 projects on approximately 35 bridges.

As a result of the large number of covered bridge preservation projects that have been completed over the last 15 years, Oregon has compiled a large catalog of information on the types of repairs that are commonly required and on the costs and longevity of those repairs. Completed repairs have ranged from the routine—including painting, fumigating and roof repair—to the major, including truss member replacements, bridge relocation, and post-tensioning. This study examines the scope of these projects and the current conditions of those bridges, with the intention of developing guidelines for future work. These guidelines may include standard maintenance intervals for fumigating and replacing siding and roofing, as well as consolidated cost data for the major types of restoration work.

With the loss of dedicated funding, it is even more important for bridge owners to understand what types of maintenance projects can be expected, with sufficient warning to find alternative sources of funding. Though the climate conditions and the ages of covered bridges in Oregon vary greatly from those in other states, it is hoped that this data may also provide a baseline for others facing similar planning decisions.

Rebecca Burrow is co-author of the recently published *Oregon's Historic Bridge Field Guide* from the Oregon Department of Transportation, where she is a structural engineer in the Bridge Preservation crew. Other recent project types she been involved with include cathodic protection of concrete bridges, concrete arch strengthening, steel truss relocation, and covered bridge rehabilitation. Her educational background includes a Master of Arts in Conservation Studies (Historic Buildings) from the University of York, England, and bachelor's degrees in Engineering and History from Swarthmore College. The 2015 SIA annual conference will be her third.

Pacific Electric Railway El Prado Bridge Rehabilitation Project

Located in Torrance, California, the Pacific Electric Railway El Prado Bridge was constructed in 1913. It is an early example of multi-span reinforced concrete construction and features distinctive hollow arched reinforced concrete facades covering a conventional structural system of bents in both axes of the bridge. According to the California Historic Bridge Inventory, it is the only example of this type of design in over 100 historic concrete bridges surveyed. The bridge was listed on the National Register of Historic Places in 1989 under Criterion C and is significant in three areas: community planning, architecture, and engineering. In the area of community planning, it is a rare extant element of the original master plan for a model industrial town site designed by notable landscape architects John and Frederick Law Olmsted, Jr., which later became the City of Torrance. The bridge's architectural design exemplifies the distinctive understated style of Irving Gill, an influential pioneer in the Modernist movement of architecture. In the area of engineering, the use of the decorative arches to disguise an otherwise conventional structural system represents a unique construction approach. The period of significance chosen for the bridge's rehabilitation is 1913. During the 1920s, the Pacific Electric Railway was the largest interurban passenger service in the world, with 2,160 daily trains operating on 1,000 miles (1,600 km) of tracks. This bridge, now abandoned, currently spans over pedestrian sidewalks, automobile, lanes, and railroad tracks and was the only place in the original interurban railway system that crossed over another railroad.

The first phase of the project documented the as-found conditions and character-defining features of the remaining elements including, but not limited to, rails, ties and supporting sub-grade, turnouts, switches, overhead catenary power pole supports, guardrails, landscaping, and board-formed concrete surfaces. The presentation will describe repair techniques including blind epoxy injection, spall repairs matching the original board form pattern and texture, mitigation of corroding reinforcing steel, surface cleaning, anti-graffiti coating application, and new lighting.

One vision for reuse of the bridge as a destination along an interpretive trail leading to Torrance's historic downtown will be discussed, including the challenge of seismically strengthening the bridge in a manner compatible with its historic fabric. The top of the bridge has the potential to be similar to the High Line in New York City.

In May 2013, the American Society of Civil Engineers Los Angeles Section History and Heritage Committee presented a plaque to the city of Torrance commemorating the bridge's 100th anniversary upon completion of the first phase of the project.

Michael Krakower, S.E., is principal of Krakower & Associates, Structural Engineers in Arcadia, California. His practice focuses on structural engineering of existing buildings and bridges, many that are eligible for or listed on historic registers. Educated at Cal Poly San Luis Obispo with a Bachelor of Science in Architectural Engineering, Mr. Krakower is a licensed civil and structural engineer in California. He is a Fellow of the American Society of Civil Engineers and maintains membership in historic preservation organizations including the Los Angeles Conservancy and Pasadena Heritage. Recent projects include the first phase rehabilitation of the 100-year-old Pacific Electric Railway El Prado Bridge and the restoration of the 1896 Cummings Block Building at Mariachi Plaza in East Los Angeles, which won a national award from the National Trust for Historic Preservation in 2013.

Before the Bridge: Roebling and the D&H Canal

The Brooklyn Bridge is arguably the most significant architectural and engineering achievement of the late nineteenth century and the name Roebling is inextricably tied to its creation. But what technological and engineering advances and innovations made its construction a reality?

More explicitly, what technological advances evolved over the course of the design and construction of the projects that proceeded the design and construction of the Brooklyn Bridge? While there are historical accounts of the construction of the more significant works of John A. Roebling, there is limited publication of archival drawings of these major works that focus on the evolution and innovation of their construction. The focus of this presentation is on Roebling's work on the Delaware and Hudson (D&H) Canal, including the impact of the use of woven wire cable and the four suspension aqueducts that he constructed to make the canal more navigable.

Coming to America in 1831, John Augustus Roebling, a trained civil engineer, settled in Saxonburg, Pennsylvania, initially to build a German community founded on utopian ideals. Finding little satisfaction with farming, Roebling returned to his fascination with woven wire ropes and their potential use in suspension bridges, so he began to experiment with techniques in their manufacture.

To put this work and ingenuity in context, it is helpful to remember that this was a time before the steam locomotive, when people travelled by horse-drawn carriage, and when the primary means of transporting commercial goods was by barges floated down along natural waterways or pulled along man-made canals like the Erie Canal using hemp rope attached to mules, and when the idea of "Manifest Destiny" encouraged settlement to expand westward to the Pacific Coast.

Two of the first uses of Roebling's wire rope were to facilitate transportation along America's canal systems. In Pennsylvania—where the D&H Canal was being built by the Wurts brothers to transport coal from the hills of Carbondale, Pennsylvania, to the town of Kingston, New York, on the Hudson River, and from there to market—Roebling provided his new wire rope to pull the barges and operate the gravity railway. The first use of Roebling's wire rope was to replace the large and cumbersome hemp ropes of the gravity railway, which were prone to breaking. For many of the same reasons, this was soon followed by the replacement of the hemp ropes used to pull the barges along the canal.

Having already constructed a suspension aqueduct over the Allegheny River in Pittsburgh, the first suspension bridge built in America, Roebling was hired by the Wurts brothers to design and construct four suspension aqueducts for the D&H Canal to cross the Delaware River, where navigation was hazardous. Over the course of this work, Roebling further refined techniques and invented machinery to facilitate the manufacture of wire rope which eventually led to the founding of Roebling & Sons.

Paul C. King, a Professor of Architectural Technology at New York City College of Technology, is a licensed architect with degrees in Architecture, Landscape Architecture, and Urban Design, and a past president of the New York chapter of the Society of American Registered Architects. A pioneer in the use of technology, he was instrumental in the transition of his profession from traditional hand drawing to computer-based methodologies. He provides leadership as an educator and travels to run faculty development workshops on the "Reflective Teaching Portfolio." A resident of Sullivan County, New York, he became keenly interested in the history of the D&H Canal and the early work of John A. Roebling when he discovered that the lake he lived on was built to provide water to the canal. He is presently researching the work of Roebling and the innovations that led to the design and construction of the Brooklyn Bridge.

No Stranger to Hudson Valley IA: Discoveries from the 2012–2013 Construction Season at the West Point Foundry Preserve

The West Point Foundry (WPF) site in Cold Spring, New York, is a place well represented in recent industrial archaeology, and it has been a focus of study and interpretation since the late 1970s. Building on the results of this previous work, Scenic Hudson, Inc., undertook major construction and stabilization projects at the WPF Preserve between 2012 and 2013. These projects focused on installation of interpretive elements, access improvements and amenities, and shoring and repointing visible masonry features found throughout the site. In cooperation with Scenic Hudson staff and the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP), the Croton-on-Hudson offices of John Milner Associates, Inc., provided archaeological monitoring for key facets of the project located in the core of the foundry site. Construction work involved the use of heavy mechanical equipment that was able to quickly excavate areas of the foundry that had only been minimally excavated through conventional archaeological methods in the past. These recent excavations revealed many previously unseen building features, while yielding numerous artifacts (including large, preserved portions of the final iteration of the 36-foot-diameter (11 m) back-shot waterwheel located in the foundry's boring mill) that added greatly to the results of Michigan Tech's investigations of the site carried out between 2002 and 2008. Exciting as they were to find, many of these discoveries introduced challenges to the completion of the project. Striking a balance between protecting and documenting discoveries without delaying construction required active engagement with project planners, construction supervisors, and OPRHP staff; these cooperative efforts were further aided by creative problem solving unique to industrial archaeological sites. To highlight the results of the 2012–2013 construction season, this poster presents three aspects of recent undertakings at the WPF Preserve, working backward through time: an overview of Scenic Hudson's interpretive installations as visitors can visit them today; discussion and interpretation of key archaeological discoveries resulting from mechanical excavations; and lastly, considerations for using mechanical excavation on industrial archaeological sites, whether in compliance or research settings.

T. Arron Kotlensky, a 2006 graduate of Michigan Tech's Industrial Archaeology Master's program, has been working in cultural resources management on a full-time basis since that time. As with most industrial archaeologists, his interests are broad and touch on almost anything rusty or soot-stained, but the study of iron-making technologies and sites has gained his attention the most. He is also interested in studying how industries, both big and small, have responded to the declining demand for their products. He is currently a Senior Project Archaeologist in the Houston, Texas, offices of HRA Gray & Pape.

Fairbanks Gold: A Study in the History, Architecture, and Archaeology of Three Alaskan Stamp Mills

In the mining of lode deposits, gold is not simply where one finds it, but where one refines it. With mined concentrations historically on the order of an ounce of gold per ton (31 ppm) (and today much less), processing plants capable of refining an ore down to bullion onsite presented an attractive and at times necessary means for turning a profit. For operators in Alaska's Fairbanks District, general isolation combined with comparatively easy to process ores encouraged investment in milling facilities. Although the district was only a modest producer, upwards of two dozen mills operated during the early to mid-twentieth century. Geological reports and company documents outline the technologies employed, but blueprints of these facilities unfortunately have not survived—indeed, plans for some mills may never have existed. Today, just three mills remain: the Cleary Hill Mill, Hi–Yu Mill, and McCarty Mill. Surprisingly, despite evidence of salvage, decay, and vandalism, and despite an absence of restoration efforts, in each case rooflines, walls, and milling equipment remain largely intact.

This poster presents the results of the structural documentation of the district's standing historic mills conducted as part of a broader archaeological inventory of abandoned mining sites. Building documentation took place during the summers of 2011, 2012, and 2014, with plans, profiles, and equipment measured with hand tapes. Field data was then used to develop a reconstructive drawing of each gold mill in its prime, righting walls that had collapsed, setting equipment back in place, and depicting buildings at their maximum developmental extent. As detailed here, field recording provided new insights into the character of milling efforts in the region. At a site-specific level, differences in room construction revealed how each structure underwent modifications over time, and equipment selections reveal both commonalities and departures. The survey also identified vernacular features such as tables and benches made from scrap timbers, drums converted into sinks, and even a few modifications to reduce the bite of Alaskan winters that gave a local signature to an imported technology.

John Hemmeter is an undergraduate student at the University of Alaska Anchorage (UAA), majoring in anthropology, with interests in the historic period. In addition to surveying mining sites in the Fairbanks District, he has assisted in the drafting of architectural reconstructions of two historic gold mills. He won the UAA Student Showcase Award for his work on drawing the Hi–Yu Mill, an abandoned stamp mill located north of Fairbanks, Alaska.

Tamara Holman is a graduate student in anthropology at the University of Alaska Anchorage with research interests in the social construction of technology and historical archaeology. She is currently writing her master's thesis, analyzing technological practice and decision-making among lode gold operators in Alaska's Fairbanks District.

Paul White is an assistant professor of anthropology at the University of Alaska Anchorage, with research interests in historical and industrial archaeology. He has focused attention particularly on the American mining industry, exploring themes of technological change, environmental impacts, and relations between mining and colonialism. His recent work includes partnering with Michigan Technological University in the survey and evaluation of gold mining sites on Bureau of Land Management holdings in central Alaska.

Covering Our Tracks: Documenting Historic Railroad Features of the Pennsylvania Railroad's Keystone Corridor

This poster will feature the results of an investigation that documented the remaining historic features of the former Philadelphia-to-Harrisburg Main Line of the Pennsylvania Railroad along the Keystone Corridor in Downingtown, Pennsylvania, and an adjacent industrial paper mill that utilized its proximity to the railroad to receive supplies and transport products. The investigation identified and documented several existing historic industrial features of the railroad, including stone and concrete arch bridges, freight cranes, mile marker monuments, relay houses, signal equipment, and catenary lines. Additionally, the investigation fully documented the remaining buildings of two industrial paper mills, the Frank P. Miller Paper Company and the Downingtown Paper Box Company, as well as associated worker housing.

The mills have been defunct since 2005 and have deteriorated significantly since that time. Extant buildings of the Frank P. Miller Paper Company include Mill No. 1, constructed between ca. 1888 and 1933; the Beater Engine Building, constructed ca. 1888; a Drying Tower, constructed ca. 1888; Stock Rooms and Railroad Platform, located adjacent to the railway and constructed between ca. 1900 and 1916; and Machine Rooms and Warehouses, constructed between ca. 1931 and 1938. Extant buildings of the Downingtown Paper Box Company include a factory building, constructed ca. 1916; a paper stock storage room, constructed ca. 1927; and a power generating plant constructed ca. 1950.

A row of associated worker housing is located to the east of the factories and to the south of the railroad. These homes were also documented and researched as part of the investigation.

This poster will illustrate the history of the development of the complex and the relationship between the railroad and the industrial paper mills and associated housing. The poster will also illustrate survey and research techniques used to assess and document the remaining structures.

Christine Leggio is an Architectural Historian with Johnson, Mirmiran & Thompson. Ms. Leggio has a wide range of professional and academic experience relating to architectural history, architectural conservation, and documentation of historic structures. She has experience in completing a variety of environmental review documents including Historic Resource Surveys and Determination of Eligibility Reports, Determination of Effect Reports, and National Register Nominations. Ms. Leggio has also been responsible for managing projects involving cultural resources management work, including historic structures and archaeology survey and research, and writing Historic Resource Survey and Determination of Eligibility Reports as part of the Section 106 process.

Vermont's Covered Bridge Railroad

Vermont's St. Johnsbury and Lamoille County (St. J & LC) Railroad, constructed in the 1870s, was called the "covered bridge railroad" because the trains passed through five wooden bridges between St. Johnsbury on the New Hampshire border and Swanton near Lake Champlain. Only one of these has been preserved, the Fisher covered bridge near Wolcott. Even that structure is only an historic homage, since the rail line itself was rebuilt in the 1950s to carry modern rail traffic and the original bridge supports only its own weight. Three of the other bridges were dismantled and replaced by steel bridges; the fourth was destroyed by a fire. The Fisher bridge is one of two railroad covered bridges remaining in Vermont, with perhaps another dozen extant elsewhere in the United States.

The St. J & LC Railroad—often referred to locally as "the Sweet Jesus and Late Coming" line—was abandoned as unprofitable in the 1990s and the right-of-way taken over by the State of Vermont. The state gave the 92-mile (148 km) line a new life in 2002 with the creation of the Lamoille Valley Rail Trail, a four-season recreational path. Two sections of the trail, about half of the total length, have been constructed and will be open to public use in the summer of 2015, while other sections will be built in phases. The rail trail is leased to the state's association of snowmobile enthusiasts and is used by them during the winter. In warm weather, no motorized vehicles (other than wheelchairs) are allowed on the trail.

The 140-foot (43 m) Burr arch covered bridge built in 1884 at Cambridge Junction, where the St. J & LC connected to the Burlington line, is the world's longest surviving single-span Burr arch structure. The freight and passenger depot that it accessed across the Lamoille River is long since gone, but it now provides an important connection for the new rail trail.

An extensive collection of photos of the rail line and its associated bridges, including the Cambridge Junction covered bridge, is available for documenting the original structures. The loss of four of the five railroad bridges through deliberate destruction or arson is a cautionary tale of how we often fail to preserve our historical record. The repurposing of the rail trail and the successful community efforts to preserve the Cambridge Junction bridge provide an optimistic theme on how to ensure the protection of such artifacts. Great economic benefits to the region are expected from the creation of the rail trail, which will include historical displays at the sites of former train stations, and the development of tours to visit the remaining covered bridges in the area.

William "Liam" McKone is a resident of Cambridge, Vermont, and a co-founder of the Vermont Covered Bridge Society in 2000. He serves as the Public Affairs Officer of the society and continues to be active in historic covered bridge preservation. McKone holds a Master of Arts degree in Military History and is president of the Fenian Historical Society documenting the history of the militant Irishmen who fought for independence from British rule. He frequently lectures on covered bridges, Irish history, and the Civil War era. He currently heads the local project of creating a trailhead for the Lamoille Valley Rail Trail, which will include historical displays.

Time	Track 1: New York State IA Room: Governor C	Track 2: On the Land and from the Earth Room: Governor D	Track 3: 24th Historic Bridge Symposium Room: Governor B	Poster Displays All Day in East Gallery
8:00-9:45	**Session 1A: New York State's Cultural Education Center and Industrial Archaeology, Session I** Moderator: David P. Staley 1. James D. Folts, "Resources for Industrial Site Research at the New York State Archives" 2. Barry R. Dale, "Pottery and Poison: Excavations at the N. A. White & Sons Pottery Site" 3. Robert E. Dean, "The Snyder Canal Slip: Its Development in Relationship to the Delaware & Hudson Canal and Its Connections to the Natural Cement Industry" 4. Nancy L. Davis, "Pottery Waste: Evidence of the Haxstun and Hilfinger Potteries in Fort Edward, New York"	**Session 2A: Landscape, Looms, and Laces** Moderator: Alicia Valentino 1. Kim Mathews and Rita D. Shaheen, "West Point Foundry Preserve: History Revealed and Interpreted" 2. Robert L. McCullough, "Good Roads *and* Good Sidepaths" 3. Douglas Peter Sefton, "Carpets on the Mohawk" 4. Marc Belanger, "Shoe Buttons, Liberty Laces, and Insulated Staples: 153 Years of M. M. Rhodes & Sons Company, Taunton, Massachusetts"	**Session 3A: 24th Historic Bridge Symposium** Moderator: Justin M. Spivey 1. Kitty Henderson, "Historic Bridge Symposium Introduction" 2. Kara Russell, Julie Bowers, and Mindy Crawford, "Pennsylvania's Bridge Marketing Program" 3. Nathan Holth, "Discovering an Abandoned Cast and Wrought Iron Swing Bridge in Florida" 4. Christopher H. Marston, "A Forgotten Wall along a River: Rediscovering the 1823 Nashville Toll Bridge"	1. T. Arron Kotlensky, "No Stranger to Hudson Valley IA: Discoveries from the 2012-2013 Construction Season at the West Point Foundry Preserve" 2. Paul White, John Hemmeter, and Tamara Holman, "Fairbanks Gold: A Study in the History, Architecture, and Archaeology of Three Alaskan Stamp Mills" 3. Christine Leggio, "Covering Our Tracks: Documenting Historic Railroad Features of the Pennsylvania Railroad's Keystone Corridor" 4. William McKone, "Vermont's Covered Bridge Railroad"
10:00-11:30	**Session 1B: New York State's Cultural Education Center and Industrial Archaeology, Session II** Moderator: David P. Staley 1. Paul Mercer, "Manuscripts and Maps in the New York State Library" 2. Martin Pickands, "Death of a Dream" 3. David P. Staley, "'Such as the Engineer will Direct': Adaptive Creativity at Chenango Canal Lock No. 3, Utica, New York"	**Session 2B: Licensed to Kiln** Moderator: Ron Petrie 1. Brad Botwick, "History and Archaeology of the Gulf Brick and Tile Factory, Mobile County, Alabama" 2. Jessie McNabb, "The Alphons Custodis Chimney Construction Company: Perforated Radial Brick and the Industrial Demand for Height in Early Twentieth-Century America" 3. John J. Daly and Jenifer Elam, "A Yorktown Kiln Site: A Window into Shell Midden Use in the Historical Agricultural Economy of Westchester County, NY"	**Session 3B: 24th Historic Bridge Symposium** Moderator: Maryellen Russo 1. Rebecca Burrow, "The Roof's-Eye View of Oregon's Covered Bridge Program" 2. Michael Krakower, "Pacific Electric Railway El Prado Bridge Rehabilitation Project" 3. Paul C. King, "Before the Bridge, Roebling and the D&H Canal"	
1:30-3:15	**Session 1C: Unlocking the Tools for Industrial Building Reuse** Moderator: Erin Tobin 1. Kathleen LaFrank, "The New York State and National Register of Historic Places: Our Evolving Understanding of Properties Associated with Our Industrial Heritage" 2. Julian Adams, "New York State and Federal Rehabilitation Tax Credits: Unlocking the Reuse Potential of Industrial Sites" 3. Erin Tobin, "Industrial Evolution: Adaptive Use Strategies for Historic Industrial Buildings"	**Session 2C: Mining Data** Moderator: Bill Vermes 1. Mark Dice, "Points to Prints: Creating 3D Visualizations from Total Station Data" 2. Paul White, "Mining by Degrees: An Accounting of Theses and Dissertations on the Archaeology of America's Historic Mines" 3. Fredric L. Quivik, "Human Factors in the Definition of Ore: the Case of the Lava Cap Mine, California" 4. Steven A. Walton, "Nineteenth-Century Iron Ore Washing, or, The Oft-Forgotten Middle Step between Mine and Furnace"		
3:30-5:00	**Session 1D: Canals in New York State** Moderator: William McNiece 1. Duncan Hay, "New York State Barge Canal and the National Register of Historic Places" 2. T. Arron Kotlensky, "Milling and Memory along the Erie Canal: How Multiple Generations Built, Reused, and Remade Port Byron's Green Street Mill"	**Session 2D: Lasting Impressions** Moderator: Justin M. Spivey 1. Daniel Schneider, "Wood Type and Worker Skill: An Inquiry into Technology and Practice in Wood Printing Type Manufacture" 2. Alqiz Lukman, "Corporate Identity: A Contemporary Issue? A Case Study in Indonesia during the Industrialization Era"	Rev. 2015-05-06	