APT NORTHEAST

2022

Annual Meeting
& Symposium

Association for
Preservation Technology
NORTHEAST CHAPTER

WALKING THE PRESERVATION TIGHTROPE: TECHNOLOGY VS. TRADITION

February 25, 2022

APTNE 2022
Annual Meeting
& Symposium

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WALKING THE PRESERVATION TIGHTROPE: TECHNOLOGY VS. TRADITION

"Technology, though ceaselessly striving toward the future, has continually revised how we view the past," — Ben Rowen

Preservation of the built environment requires a thorough understanding of historic construction and craftsmanship, but preservation professionals frequently walk the tightrope of integrating old construction with new technologies. Too much focus on either side and a building can lose historic character or risk becoming obsolete. As the world moves towards integrating new modes of technology into all phases of construction, we also risk the loss of knowledge from trades and craftspersons as younger generations are drawn towards the latest and greatest, at the expense of the tried and true.

Preservation is left to wrestle with a number of the following questions. What are the risks, opportunities, and challenges of a greater focus on technological advancements and new construction materials? Are there limits to what new technology can accomplish meaning that there will always be a place for traditional trade skills? How can trades adapt to modern methods and materials to ensure long-term relevance? Can technology and tradition coexist and what practices can preservationists utilize in their project development to ensure that both are integrated into the process? How can vernacular architecture take advantage of modern technology in response to changing culture, code requirements, and development? In what ways, if any, does new technology threaten the historic integrity of built structures?

The 2022 APTNE Annual Meeting & Symposium at Hudson Hall at the historic Hudson Opera House in Hudson, New York features 11 presentations and 1 panel discussion from a variety of industry professionals and a local student. We have included not only case studies, but also larger social discussions, academic research, and review of technology methodology. Presenters will demonstrate how the case study contributes broader knowledge to the field of preservation by providing in-depth analysis of what was learned in the course of the study or project and how that applies elsewhere.

PRESENTATIONS ARE TIED TO ONE THE FOLLOWING TRACKS:

1. Modern technology, *i.e.* non-destructive evaluation, photogrammetry, laser scanning, materials testing, computer modeling, upgraded and modern materials
2. Traditional building techniques, i.e. tradesperson techniques, preservation of knowledge
3. Adaptation of traditional building techniques and materials using modern technology, *i.e.* what works and what doesn't, revisiting historic methods and materials in new construction
4. Infrastructure upgrades, *i.e.* sustainability efforts, mechanical upgrades to existing structures, building monitoring systems

COVER

Top Right:
Projection mapping of the original fresco in the apse at Sant Climent de Taüll, Spain.
Photo Credit: Xavier Mula Studio

Bottom Left:
Interior of Guastavino dome inspection.
Photo Credit: Vertical Access LLC

SCHEDULE OF EVENTS

February 25, 2022

8:30 AM - 9:00 AM	Registration and Breakfast
9:00 AM - 9:10 AM	**APTNE WELCOME ADDRESS** APTNE President, Helena Currie
9:10 AM - 9:55 AM	**KEYNOTE PRESENTATION** **Tradition and Technology- Shared Solutions to 21st Century Challenges** Judy Hayward
9:55 AM - 10:20 AM	**Having a Blast in Preservation** Ken Follett
10:20 AM - 10:30 AM	**Q&A** Michelle Dallhoff
10:30 AM - 10:50 AM	**Coffee Break**
10:50 AM - 11:15 PM	**Influence and Innovation of North American Capitol Domes** Robin Whitehurst
11:15 AM - 11:40 AM	**Discrete Reinforcement of Loadbearing Unreinforced Masonry at the Franklin School** Gretchen Pfaehler and Vassil Draganov
11:40 AM - 12:05 PM	**Experiments in Hygrothermal and Freeze/Thaw Effects of Insulating Mass Masonry Walls** David Artigas
12:05 PM - 12:20 PM	**Q&A** Michelle Dallhoff
12:20 PM - 12:30 PM	**CHAPTER HIGHLIGHTS** APTNE President, Helena Currie
12:30 PM - 1:30 PM	**Lunch, APTNE Annual Board Meeting**
1:30 PM - 1:55 PM	**Crossing the Pell** Liliane Wong
1:55 PM - 2:10 PM	**And There was Light: The Use of Projection Mapping for Historic Preservation** Preme Chaiyatham
2:10 PM - 2:35 PM	**Adapting Traditional Techniques with Modern Technology for Murals and Architectural Ornament** Kim Lovejoy and Katharine George
2:35 PM - 3:00 PM	**A Tale of Two Angels: The Restoration of Two Cemetery Memorials** Danielle Pape
3:00 PM - 3:15 PM	**Q&A** Jen Kearney
3:15 PM – 3:35 PM	**Coffee Break**
3:35 PM - 4:20 PM	**ROUNDTABLE** **Technology vs. Tradition: Perspectives on a Masonry Wall: A Case Study** Moderator: Jeffrey Weatherford Panelists: Kelly Streeter, Amarantha Quintana-Morales, Chas Finch, Matthew Ridgway
4:20 PM - 4:45 PM	**On a Wing and a Prayer: Roof Curtainwall Integration in a Mid-Cenutry Modern Icon** Pamela Clemens
4:45 PM - 5:10 PM	**The Quiet Wisdom of Climate-based Design** Cory Rouillard
5:10 PM - 5:25 PM	**Q&A** Jen Kearney
5:25 PM - 5:35 PM	**CLOSING REMARKS** APTNE President, Helena Currie
5:40 PM - 8:00 PM	**RECEPTION**

WHO WE ARE

2021-2022 BOARD MEMBERS

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Originally founded as the APT New York Chapter in the mid-1980s, the organization was restructured in 2003 as the **Association for Preservation Technology Northeast Chapter** (APTNE) encompassing New England, New York State, and northern New Jersey. At present, we have over 300 active members.

APTNE is committed to serving this geographic community with regional and local preservation events and outreach. We conduct workshops, co-sponsor events with local and statewide preservation organizations, and sponsor symposia, including our annual meeting in late February. We support students interested in preservation by offering free student membership and discounted young preservation membership and event admission, as well as annual scholarship opportunities.

PLEASE WELCOME OUR NEW BOARD MEMBER!

STACEY THOMAS is from the Albany, NY area. She works at Ryan Biggs Clark Davis Engineering as a Restoration Engineer. Over the last 20+ years, she has focused her career on investigating, diagnosing and designing repairs for various historic buildings. Stacey received her Master of Engineering degree in Structural Engineering from Virginia Tech and a Bachelor of Science degree from SUNY College of Environmental Science and Forestry in Construction Management and Engineering. She continued her education in building conservation with coursework at RPI and Boston University, while working in the preservation field. Stacey enjoys being active in local organizations that support her community, home improvement projects, cooking classes and cheering her kids on during their sporting events.

THANK YOU!

As of February 2022, one of our Directors is stepping off of the **Board of Directors.** We'd like to take the time to thank her for her time and dedication to making APTNE excellent during her terms.

OLGA HATHAWAY, 6 Years of Service

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9:10AM - 9:55AM

KEYNOTE

TRADITION AND TECHNOLOGY: SHARED SOLUTIONS TO 21ST CENTURY CHALLENGES

Presented By **Judy Hayward**

Pittsburgh's former Pennsylvania Station, Photo Credit: Michael Edison

HOW MANY OF YOU WERE TOLD not to play with matches as a child by your parents, and those same parents enrolled you in scouts where you learned how to start a fire by rubbing two sticks together? Since fire is critical to the history of building trades and technology, let's break down a mixed message about it.

Starting a fire by rubbing two sticks together seems safer because it is a slower process, a skill developed under careful supervision. The goal of making fire using the resources around you is to ensure your survival in any situation. If you found yourself alone in the wilderness and needed to survive, making, and tending to fire would be essential. By contrast, matches are quick and easy to use; the fire would quickly get underway. Yet no self-respecting parent would hand a pack of matches to a seven-year- old and say, in case you are lost in the woods, here is an easier way to start a fire that might save your life. It is assumed that somehow the child would get into mischief with the matches and burn a forest down. Historically apprenticeships began for children as young as seven; they would spend seven years under supervision learning the basics and honing skills for increasingly complex tasks. This example highlights that we fear (sometimes for good reason) when processes are made too easy and the need for understanding and control is cut out (even if those newer/faster processes could save our life one day).

We moved from fire with sticks, to fire with flint, to never letting the fire go out on the hearth, to matches, to coal, to the combustion engine, to electric and butane powered fire starters like lighters. Today we power rockets with fire. With each change in technology, the ability to start a fire is faster, but not necessarily safer. Fire can be a creative force. Many trades and technologies we will discuss today evolved because of fire. Fire can be destructive force. And thus, the fight between tradition and technology begins. If technology fails us, you can always start a fire by rubbing two sticks together. Who wants to work that hard? Who wants to wait that long? In fact, much of the change from building craft to building technology was driven by the need to build faster to serve a growing population and rapidly expanding economy.

"But how much time must pass before something becomes a "time-honored tradition" versus a technological advancement?"

Let's fast forward through some historical debates for a quick overview of how we were set up for conflict between tradition and technology.

Is the world flat or round? This debate sets the stage for heated exchange between the Holy Roman Empire and scientists that later reappeared in the 19th century with Darwinism or Creationism. Were you a "man of God" or a "man of science?" And as the preservation of historic sites became popular, did you favor Ruskin, Violette-Le-Duc or Morris?

As education expanded for people in the 19th and 20th centuries, the pursuit of trades careers was diminished in favor of white-collar careers. People were encouraged to "use your mind, not your back." Such admonition belied the reality of what was happening to the trades. Throughout the 20th century, the demand for skilled trades decreased as changes in building materials required only "installers" to execute an architect's plans. And trade unions were disrupted as a result of political debates. A common description heard in the 1980s was "trades were treated as headless hands." The divide between architecture, engineering, and trades seemed to keep growing. An entire group of people, trained to build with their hands, were minimized by new building materials and increasing professional distinction within the building industry.

Is it any wonder that we are here in 2022 with a conference title of Tradition vs. Technology?

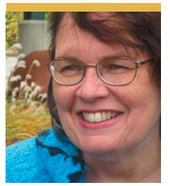
Tradition has many definitions, but the essential qualities of tradition include processes informed over time by experience that are shared and passed on from generation to generation. Technology implies applying experience and information from the sciences. Both tradition and technology are rooted in experience and process. My perception is that technology evolves to solve problems. Traditions have evolved over time to solve problems- slowly or not; whereas technology seems to evolve rapidly and makes its way into practice before we know all the consequences- good or bad.

The good news is that the management of this balancing act already exists within each and every one of those in attendance. The importance of site-specific solutions in historic preservation will serve as our guide to the appropriate applications of tradition and technology. The curiosity in your approach to your work will be the source of working through the right solutions for each project. A deepening understanding of traditions and technology will expand your professional toolbox.

One of the key concepts includes architect Steve Mouzon's reflection, "Most discussions about tradition begin with 'we do this because...'" His point is that much of good building practice and design has resulted from an understanding of a building's response to climate. But how much time must pass before something becomes a "time-honored tradition" versus a technological advancement? Our choices are similar to our ancestors; we just have more choices but usually less time to work through the answers. I have learned to ask questions that guide my search for solutions.

- How will a process protect the historic integrity of building fabric?
- Will the treatment allow the structure to tell its full story?
- Do the materials contain ingredients that might harm the structure or people?
- What do we gain or lose from each alternative treatment?
- Can the treatment be reversed or permit future treatment?
- What are the financial implications of the decision?
- Are there political or personal concerns in play with a given project?
- What are implications for the carbon footprint of a treatment?

Tradition and technology are not so different. Tradition is the history of technological change. The path to using them appropriately lies in the shared study and mutual respect. •



JUDY HAYWARD is executive director of Historic Windsor, Inc., and the Preservation Education Institute in Windsor, Vermont. She is also the education director for the Traditional Building Conference Series and develops and moderates its distance education programs as well. She is a past president of the Preservation Trust of Vermont and has been a board member of the APT Northeast Chapter and Historic New England's Advisory Council. She serves on the Windsor Design Review Commission, a Certified Local Government (CLG). For nearly 40 years, she has developed preservation skills training programs for building professionals and written specialized curricula and learning materials on topics including fire safety and historic preservation and accessibility for people with disabilities and historic preservation. Judy writes a column for Traditional Building on Preservation and Traditional Building Techniques and she blogs for the publication's website. She holds a master's degree in public administration from the University of New Hampshire and a Certificate in Educational Technology from Marlboro College Graduate and Professional School. She is an honorary life member of the Preservation Trades Network.

9:55AM - 10:20AM

HAVING A BLAST IN HISTORIC PRESERVATION

Presented By **Ken Follett**

Photo Credit: Brett Sayles. Pexels.com

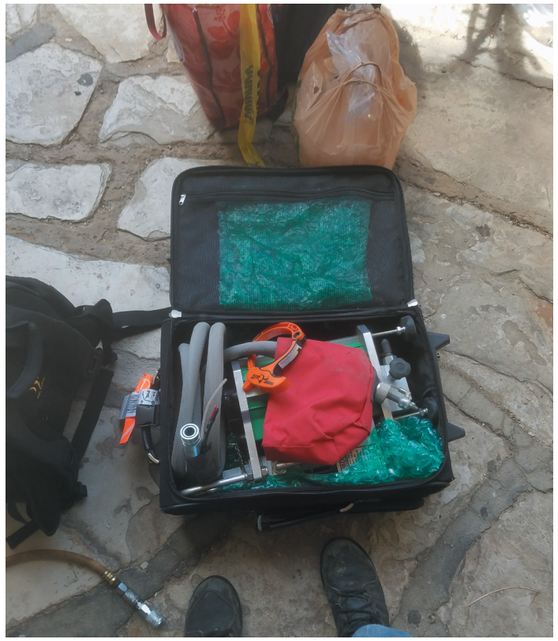
OVER THE LAST FIFTY YEARS, there have been several parallel arcs of development in aggregate blasting in Historic Preservation. The physical technology was refined through experimentation and adaptation, while the perceptions within the preservation industry evolved. The evolution of this technology will trace the development of equipment, changing attitudes and perceptions towards intentional surface erosion, the understanding of the hands-on trades, and an assortment of pressures from the industrial applications within the construction environment.

The chronology begins in the 1970s with the introduction to sandblasting of steel beams with the application of a primer coat. The 1980s followed with the use of standard blast equipment with plastic media for removal of epoxy paint on granite at the entry of Carnegie Hall, plastic media being a technology adapted from the airline maintenance industry. Within that time an undesirable but common technique used for cleaning brick masonry structures was to sandblast them and thus remove the fire skin, permanently damaging historic facades. A prevailing attitude at the time within the preservation community was to not ever talk about aggregate blasting as a technique to be used on a heritage structure.

"There is always the economically driven introduction of inappropriate technology, ignorance of preservation philosophy, and the threat of irreparable damage."

The technique and the technology are tools that satisfy specific needs. In historic preservation, the needs in each case where aggregate blast technology is appropriate are more highly refined and specific than in the general construction environment. There is always the economically driven introduction of inappropriate technology, ignorance of preservation philosophy, and the threat of irreparable damage.

Thus, architectural conservators are required to serve as gatekeepers to advise on projects as to the need for testing and mock-ups. But there also needs to be an understanding of how the capital-based contractor with an investment in a particular technology will approach a project. How can this be balanced? Technology develops where there is a need to be satisfied, but technology can also develop and be introduced where there is no need, and where it is fully inappropriate. As technology

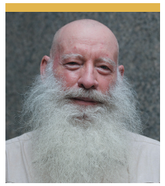


Blast cleaning unit in a Suitcase, Santa Barbara Courthouse. Photo credit: Ken Follet

Blast cleaning at Waldorf-Astoria Lobby. Photo Credit: Ken Follett Left: Aggregate blasting at The Elms, Newport, RI. Photo Credit: Ken Follett

develops, increasingly the hands-on trades need to have a more informed understanding of their work. What exactly is happening at the surface of the media, whether it be stone, wood, metal, or otherwise? To what extent and in what manner is the surface changed? What controls are there to assure that heritage fabric is not permanently damaged?

The presentation will review from personal anecdotal experience, the speaker's participation in the use, experiment, and development of aggregate blast technology up to the current practice of laser cleaning, which is essentially the use of an aggregate of light energy.



KEN FOLLET is based in Dutchess County, NY, and has more than 50 years of experience in contract and construction work with forty of those years based in the New York Metropolitan region, working primarily on the restoration of exterior facades of historic buildings. Mr. Follet has a trade background in masonry, traditional fireplace construction and stonework. He also has extensive experience in providing support services to architects, structural engineers, and architectural conservators in field investigations of historic structures. Mr. Follet is a founding member and first past president of the Preservation Trades Network as well as a longtime member of APTI. He is currently Country Manager for Kalam Preservation and APTNE board member, co-chair of the events committee.

10:50AM - 11:15AM

INFLUENCE AND INNOVATION OF NORTH AMERICAN CAPITOL DOMES

Presented By **Robin Whitehurst**

Photo Credit: Karolina Grabowska. Pexels.com

THE MAJORITY OF STATE CAPITOL BUILDINGS as well as several other significant government buildings including city halls, courthouses, and even the U.S. Capitol Building are topped with a style of dome derived by those in Europe and innovated upon here in America. Through an understanding of their commonalities with each other and their European relatives, we identify and appreciate their differences as well as formulate restoration, renovation, and maintenance plans to ensure these spaces can continue to function as government facilities while also showcasing their historic significance.

Dome structures were popularized in America thanks to a close-knit group of Architects including George I. Barnett and Alfred Piquenard who took these European classics and injected them with American ingenuity. Rather than relying on masonry, these domes were constructed with metal, often iron, skeletons. Initially, these skeleton cages were often wrapped in wood and topped with decorative metals. Today, many of these wooden skins have been replaced with more sturdy stone or precast concrete panels which are better suited to protect the domes from the elements.

As iron grew in popularity and availability in North America, so too did innovative takes on stately, European architecture of old. While American Dome design incorporated newer materials, the shapes and techniques echoed Renaissance structures through the inclusion of hollow shaft systems for ventilation in mass masonry walls, inner and outer domes, and wooden rib technology for structural stability.

Standing 341 feet from the lantern, the Illinois State Capitol Dome employs many of the strategies innovated in America to reach its impressive size. Its long construction managed by multiple architects over more than twenty years gave way to strategies influenced by both European design and contemporary American domes. The Illinois Dome's maintenance and renovation history also illustrates both successful and unsuccessful strategies to let

"Today, many of these wooden skins have been replaced with more sturdy stone or precast concrete panels which are better suited to protect the domes from the elements."

participants understand techniques that should and should not be utilized by similar buildings. In sharing the recommended future, we all can have a better understanding of how to ensure we treat these iconic domed buildings in a way that preserves their history while allowing them to continue to serve as functional government buildings.

The condition assessment and structural study of the Dome and supporting tower is a case study of forensic methodology for similar buildings. The integrated team performed extensive research and review of historic documents, photographs, and previous, less comprehensive studies. By conducting a five-day, multi-disciplinary forensic study of the Capitol Dome and tower, the team sought to fully understand the current conditions, structural characteristics, thermal performance, and historic elements, enabling the team to inform restoration and repairs along with sustainable improvements. To determine the existing interior conditions and potential causes of deterioration, both destructive and non-destructive evaluations were conducted along with visual observations and material testing.

Destructive evaluations included: removal of portions of steel and wrought iron for metallurgical analysis; mortar sample removal for testing of composition and strength; precast concrete panel core removal for petrographic analysis and strength testing; removal of roofing sealants, roofing flashing, precast concrete cores, window sealants, window glazing, and paint samples for hazardous material testing; exterior and interior probes; flat jack testing to determine masonry compressive strength; in-situ testing at the wrought iron in the dome structure; metallographic analysis of wrought iron supports including additional tensile testing, chemical analysis, and hardness testing

Non-destructive evaluations included: pulse echo, radar, and infrared scanning to scope/verify floor and wall construction; electronic sensor installation to monitor cracks, temperature, and humidity; monitoring along with temperature and humidity sensors were installed and monitored. A digital laser scan for the interior and exterior of the building was conducted to facilitate an accurate BIM model that could be used to develop a structural model to analyze the structure.

By using sophisticated technology, this holistic study identified shortcomings in the original design of the dome and tower, shining light on both issues and potential solutions. The forensic methods performed at this site can inform testing at other domes experiencing issues throughout the continent.

ROBIN WHITEHURST is the Technical Principal at Bailey Edward and has led the company's historic preservation efforts since 1992. Robin has worked throughout the United States and Canada with organizations such as the AIA, APTI, Traditional Building and the University of Illinois, as a lecturer, mentor and educator training students, contractors and allied professionals the proper methods, technologies and techniques needed to preserve historic buildings. He leads by example, pairing his historic expertise with feasible and efficient strategies to restore, preserve and maintain facilities. His energy level is contagious and motivates the entire team to perform at a higher level.

Drone photography of the Illinois State Capitol Dome used for the forensic investigation. Photo Credit: Bailey Edward Staff

The staircase leading to the uppermost heights of the outer dome. Photo Credit: Bailey Edward Staff

A team member scales the exterior of the Illinois State Capitol building to access hard-to-reach places. Photo Credit: Bailey Edward Staff

Looking up at the archway and into the Illinois Capitol Dome from the fourth floor. Photo Credit: Bailey Edward Staff

11:15AM - 11:40AM

DISCRETE REINFORCEMENT OF LOADBEARING UNREINFORCED MASONRY AT THE FRANKLIN SCHOOL

Presented By **Gretchen Pfaehler** and **Vassil Draganov**

Planet Word. Photo Credit: Beyer Blinder Belle

PLANET WORD IS A LANGUAGE ARTS MUSEUM that opened in Washington D.C.'s Franklin School in October 2020. Originally designed by Adolf Cluss, a prominent local architect, in a modern Renaissance rounded-arch style, the school is on the National Register and a National Historic Landmark. It was constructed in 1865 as the flagship of eight schools providing universal public education. Cluss featured this design at the Centennial Exposition in Philadelphia for its inventive air circulation systems and classroom layouts. The school also was the site of Alexander Graham Bell's first wireless communication to his lab on L street–the precursor of modern fiber optic systems. The building subsequently served many uses, including a teacher training school, the Board of Education Administration Building, and a homeless shelter, before being left vacant.

The unreinforced masonry building was built with multi-wythe brick walls decorated with stone and cast iron details. The building includes multiple flooring systems. Analysis by the museum's project team showed that none of the floors met current code, and it was not immediately known if the exterior walls would carry the transfer loads when the flooring was modified. The project team conducted specific research, documentation, and testing to learn more about the brick and mortar foundations and, ultimately, to carefully prepare the walls. To meet current seismic code, they would need to carry the loads to the footings for new steel beams and complete the shear strength analysis.

Through testing of the footings, the team learned that the foundations were not brick but instead rubble. An assumed existing bearing pressure and proposed bearing pressure were established. The geotechnical engineer provided ultimate bearing pressure for each foundation wall and Factor of Safety (FoS) measures to determine which locations required foundation reinforcement. Localized changes were included in the design documents for discreet spread footings and grade beams; a notable exception was made for the locations for the new elevator shafts, which required significant underpinning.

"Analysis by the museum's project team showed that none of the floors met current code, and it was not immediately known if the exterior walls would carry the transfer loads when the flooring was modified."

New concrete columns were installed within the inner wythe of the wall, bearing on the reinforced footings, to carry the loads from the floors down through the building. The ceiling of the Great Hall, the largest historical space, was modified to achieve the required loading capacity for the attic-level event hall above and to effectively support a hanging, 15' diameter planet of LEDs, a central component of an exhibit below. In installing the new concrete columns, we discovered a lack of connections between the wythes on the primary façade, which required us to develop solutions for stepping injection grouting to bond the wythes. Together, these efforts will protect the National Historic Landmark well into its next 100 years. •

GRETCHEN PFAEHLER, AIA is a Partner and Senior Preservation Architect in Beyer Blinder Belle's Washington DC office, Gretchen offers deep expertise in preservation planning, restoration, and rehabilitation of historic buildings and landscapes. Gretchen's clients include the Architect of the Capitol, National Gallery of Art, Smithsonian Institution, US Department of State, US General Services Administration, and National Park Service. Her expertise includes management of multi-disciplinary teams, preservation laws, and review processes and regulations. Gretchen is a board member and past President of APTI and a board member and past chair of the DC HPRB.

VASSIL DRAGANOV has been a structural engineer with Silman since 2008 and has over 24 years in the industry working with new and existing structures. Well-versed in designing for both new and existing structures, he has extensive knowledge of all major structural systems and a depth of experience in envelope assessment and adaptive reuse, with special expertise in aluminum and Ultra-High Performance Concrete (UHPC) structures. As Principal at the Washington DC office, he is the manager of the BIM and project planning efforts. As principal in charge, Vassil will be in direct communication with the design team and work closely to assure that the progress of the project runs smoothly. He will provide oversight in the form of quality assurance and quality control throughout the project's duration.

Planet Word. Photo Credit: Beyer Blinder Belle

11:40AM - 12:05PM

EXPERIMENTS IN HYGROTHERMAL AND FREEZE/THAW EFFECTS OF INSULATING MASS MASONRY WALLS

Presented By **David Artigas**

Photo Credit: Pexels.com

THE RENOVATION AND REUSE OF EXISTING BUILDINGS is a cornerstone of sustainable design and preservation efforts. Masonry buildings, many of which are over a hundred years old, are good candidates for renovation because they have withstood the test of time and proven themselves as durable structures. However, current building codes, environmental concerns, and desires for comfort can require both interior heating and cooling (which require energy) and energy efficiency improvements, often including the addition of interior insulation and air barriers to the existing masonry walls.

Much of the current literature and thinking on the topic of insulating mass masonry walls cautions that adding insulation significantly increases the potential for freeze/thaw damage to the masonry and other moisture-related issues. This literature asserts that insulation should be added with caution and only after testing the existing masonry's hygric and strength properties and performing hygrothermal modeling of the wall assembly, which are often costly exercises. However, there is no documented case where adding interior insulation to a mass masonry wall causes damage without additional detrimental factors, e.g., bulk water leakage into the wall. Also, previous research on the freeze/thaw durability and the conditions necessary to cause freeze/thaw damage seems to indicate that masonry generally must experience far greater stresses than insulation typically imposes on the masonry for freeze/thaw damage to occur.

Building off of previous research on freeze/thaw damage to masonry, this research specifically aims on exploring how adding different forms of insulation to masonry samples effects their capillary suction and reaction to both gradual and rapid temperature cycling, as previous research has shown that both significant water content and rapid decrease in temperature typically are necessary to cause freeze/thaw damage. This research also includes a review of weather records and hygrothermal modeling of mass masonry walls in different cold climates to compare the probable temperature changes that the masonry will experience with different forms of insulation to the conditions that our experiments show generally are necessary to cause freeze/thaw damage. •

DAVID ARTIGAS joined Simpson Gumpertz and Hager (SGH) in 2007. He is experienced in managing the investigation, design, and construction contract administration of building enclosures on both historic and contemporary buildings of many types in the United States. He also performs thermal and hygrothermal modeling and assessment of building enclosure assemblies, specializing in existing and historic building enclosure systems.

Brick samples prepared for freeze/thaw cycling. Photo Credit: Simpson Gumpertz & Heger Inc.

Capillary suction test of brick sections with and without an air barrier on the exposed top. Photo Credit: Simpson Gumpertz & Heger Inc.

1:30PM - 1:55PM

CROSSING THE PELL

Presented By **Liliane Wong**

DESPITE THE PARTISAN FRAY ON CAPITOL HILL, an infrastructure bill will pass in the near future. The array of programs covered by such a bill will be the result of ongoing 'horse trading' amongst legislators. But the program intended for the repair and retrofit of aging infrastructure will be a certainty. Every four years, the American Society of Civil Engineers conducts a survey and issues a report card for the nation's infrastructure. This year, they issued an overall grade of "C-," citing mediocre roads, deficient water mains and aging levees. Bridges are a particular point of focus. Of the more than 617,000 bridges across the United States, 42% are at least 50 years old, and 7.5% are considered structurally deficient.[1] The upgrade of these bridges will include repair and maintenance but also projections of their use in a resilient future.

Upgrading our nation's old and deteriorating bridges will require the introduction of new technology, materials and methods to structures constructed more than 50 years ago. Bridges, as structures of exposed construction, are uniquely defined by their construction materials and methods. In no other type of structure in the built environment will the integration of new methods to old be more visible, nor the tightrope of technology vs. tradition more evident.

Crossing the Pell is a RISD Adaptive Reuse studio inspired by the 2019 Bridge Investment Act and the IMAGINE Act (for the use of innovative construction materials and techniques), co-sponsored by Senator Sheldon Whitehouse of RI. It is a speculation on the future of the Claiborne Pell Bridge of Rhode Island. At a length of 2.1 miles and a main span of 1601 ft, it is the longest suspension bridge in New England. The Preservation Society of Newport County calls it "An icon of the state of Rhode Island .... [and] an important gateway to one of the most beautiful, historic cities in America."[2] The construction of the Pell Bridge to replace ferry access contributed to the development of the city as a center of historic tourism. More than half a century later, consideration is given to a different type of access on the Pell Bridge – bike and pedestrian – in planning for a resilient future in the Narragansett Bay.

As an investigation of adaptive reuse of the Pell Bridge for bike and pedestrian access, the studio produced four visions for a future bridge that respond to the existing construction and technology of the 52-year-old bridge. These four interpretations address the integration of advanced composite materials as well as new construction methods within the existing cable suspension system. They also focus on future uses of infrastructure as a means towards a sustainable and equitable community in the Narragansett Bay.

Crossing the Pell is also the name of an immersive exhibition of these four infrastructural visions that utilizes AR/VR technology to provide the visitor the experience of crossing the bridge. The proposed presentation will include a discussion of the projects as well as the exhibition. It will conclude with a visualization component to "cross" the bay. •

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1 https://infrastructurereportcard.org/cat-item/bridges/

2 The Newport Bridge Turns 50," from the website of The Preservation Society of Newport County, May 31, 2019. https://www.newportmansions.org/press/press-releases/the-newport-pell-bridge-turns-50

LILIANE WONG, AIA received her BA in Mathematics from Vassar College and her MArch from the Harvard University Graduate School of Design. She is Professor in the Department of Interior Architecture at the Rhode Island School of Design. She is co-founder and co-editor of the *Int|AR Journal* on Design Interventions & Adaptive Reuse, author of Adaptive Reuse - Extending the Lives of Buildings, and co-author of *Libraries – A Design Manual.* Recognized by *Design Intelligence* for 2018-2020 as one of the top 25 most admired design educators in the US, her teaching emphasizes the importance of public engagement and social activism in architecture and design.

Top: Crossing the Pell: Immersive Visions. Photo Credit: Wolfgang Rudorf
Bottom: Participant "Riding Across" the Pell. Photo Credit: Liliane Wong

1:55PM - 2:00PM

AND THERE WAS LIGHT: THE USE OF PROJECTION MAPPING FOR HISTORIC PRESERVATION

Presented By **Preme Chaiyatham**

Photo Credit: Ryutaro Tsukata. Pexels.com

PROJECTION MAPPING IS A TECHNOLOGY that allows us to change the environment without physically altering it. With no physical contact and complete reversibility, this new technology should be more widely used in the preservation field. Projection mapping has been widely employed in the entertainment sector on both large and small scales, but its use in the field of cultural heritage preservation has been limited to date. While the equipment can vary from off the shelf to highly sophisticated, it is all about using light to display an interpreted finish or room.

Historic sites are frequently curated to interpret a designated period of significance. While the one period may establish the importance of the site and offer the visitor an interpretation of that period, the history of the site over time can be lost. A new tool, projection mapping has the potential to enable a site to be interpreted for several periods of time. Its non-invasive, non-contact, and reversible character distinguishes it from physical conventional interpretation, which may require the removal of materials. This allows us to temporarily and visually change the space into different time periods without requiring physical intervention. The ephemeral mediation immerses the public in various interpretations while allowing the space to remain in its current condition and deterioration as a living document of the site.

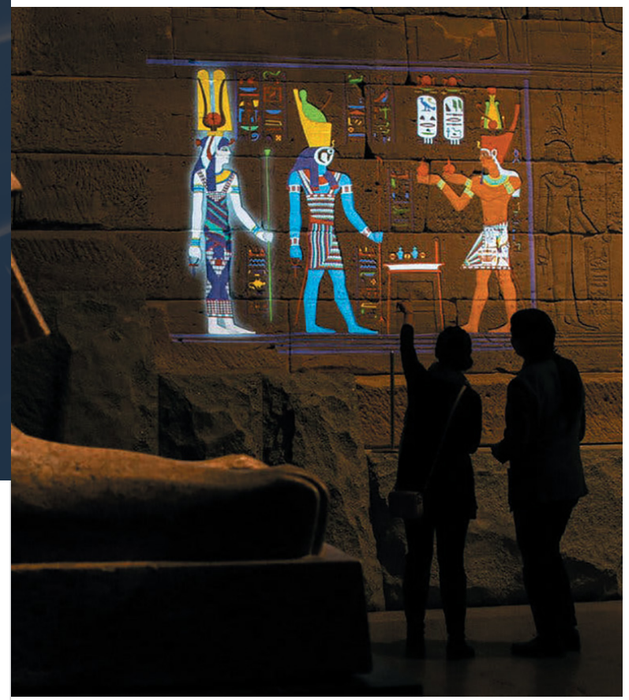
There have been a few initiatives to integrate projected light with historic objects and architecture but they have been limited. Previous projects mostly focused on color reconstruction of deteriorated paintings or places, such as the reconstruction of Mark Rothko's murals at Harvard University and the color restoration of the Temple of Dendur at the Metropolitan Museum of Art. The Amiens Cathedral light show illuminates its facade in original colors, while the permanent exhibition at Sant Climent de Taüll exhibits the original fresco in its apse. These examples are confined to larger institutions. But as the technology has become increasingly accessible to the general public, it will allow small and underfunded institutions, such as house museums, to employ it. Physical restoration can be expensive and beyond the means of smaller institutions. As an interpretative tool, projection mapping enables these places to show their history, attract visitors, and provide interpretation to the general public.

Projection mapping has enormous potential but it is a little-known technology. To begin promoting projection mapping, variables will need to be considered such as cost, size, and space limitations. Like many technologies, there are drawbacks. The effects of projected light on a darker or non-matte surface may be inaccurate. The challenge of how to incorporate new technology without disrupting the historical environment needs to be considered. The framework for its implementation and maintenance is likewise largely unknown. These are issues that must be acknowledged and resolved before we can fully include this technology into our toolkit.

"This allows us to temporarily and visually change the space into different time periods without requiring physical intervention."

There is however enormous potential with projection mapping and its use for cultural heritage projects. This presentation attempts to establish a framework to begin the use of this technology that is beneficial to the preservation of cultural assets and can be extensively adopted. I hope that conversations among preservation experts about its potential, problems, and limits will spark ideas for incorporating it into our interpretative toolboxes and advancing the discipline of preservation. •

PREME CHAIYATHAM completed her undergraduate degree in interior architecture, she has been in interior design and built environment industry for four years in Bangkok, Thailand. She is competent in spatial design for residential, commercial, and organizational spaces. With experience working in old structures, she decided to pursue her graduate program in Historic Preservation at Graduate School of Architecture, Planning, and Preservation at Columbia University where she has been working as a preservation lab assistant for the school and served as a student council for the program. Her main goal is to be a conservation architect and an interior designer specialized in adaptive reuse.



Temple of Dendur's lost colors brought back by projection mapping. Photo Credit: Brian Harkin

Projection mapping of the original fresco in the apse at Sant Climent de Taüll, Spain. Photo Credit: Xavier Mula Studio

2:10PM - 2:35PM

ADAPTING TRADITIONAL TECHNIQUES WITH MODERN TECHNOLOGY FOR MURALS AND ARCHITECTURAL ORNAMENT: BENEFITS OF 3-D SCANNING AND OTHER TOOLS

Presented By **Kim Lovejoy** and **Katharine George**

Mississippi County Courthouse perspective drawing. Photo Credit: Kevin Enright, EverGreene Architectural Arts

FROM HAND TO DIGITAL: DOCUMENTATION AND DESIGN FOR MURAL REPLICATION

As a decorative arts studio with a long history of recreating or replicating lost or irretrievably damaged historic murals and decorative painting, over the years a number of digital technologies have been adopted in our design and art studios. Traditional artwork with the artist's hands is still fundamental on many levels. Complementary digital tools in routine use include design software for layout, colorization, and archival digital printing of repetitive patterns on canvas. While laser scanning is widely employed by architects to generate baseline architectural drawings, we now use it ourselves to support faster, more accurate pattern documentation in finishes investigations and artwork replication.

Mississippi County Courthouse in Blytheville, Arkansas, completed in 1918, is a perfect example of the benefits of 3-D scanning and the payoff of effort to learn how to use the technology for mural replication. Listed on the National Register for its local significance as the best example of Colonial Revival architecture in its district, a courtroom had lost its original trompe l'oeil decorative scheme behind acoustic tile alterations. When there is no lift or scaffold access until a restoration project is underway, we have to wait until the last minute to get field measurements and then rush out the final designs and artwork to install. As subcontractor for the decorative paint restoration, ortho-rectified 3-D scanning of the room to get measurements earlier in the process was commissioned. "There is no way we would have been able to meet this project's deadline and with such high quality without a 3-D scan of the room. The accuracy, quantity, and speed with which we get site dimensions from 3-D scans is unparalleled. This technology allows our design studio to prepare layout and design drawings, and our studio artists to produce the murals on canvas, at the right size the first time." The onsite crew that received the shipments of painted canvases were impressed by the accuracy of dimensions of the artwork, which made their installation easier and avoided costly do-overs.

2-D TO 3-D: DOCUMENTATION AND CRAFT TECHNIQUES AT TRINITY CHURCH REREDOS

In the massive restoration at Trinity Church Wall Street, tasks included cleaning, repairs, gilding and sculpture reinstallation at the Gothic Revival reredos designed by Frederick Clarke Withers and completed in 1877. The contract scope included allowances and unit prices for quantities of several types of repairs tagged on standard 2-D architectural drawings. A key part of our responsibility as conservator/contractor was to re-survey and document conditions on all sides of three-dimensional ornament that could not have been seen in a limited inspection pre-construction. A pictorial workaround of hi-tech professional photo-documentation using slider photos proved valuable, along with hands-on inspection when scaffolding was in place. The conservation team documented findings in a numerical labeling system, photos, and preparation of supplemental drawings and an inventory spreadsheet of conditions and recommendations for repair types and quantities. This provided a point of reference for collaborative field meetings with the design team to decide upon the revised treatment scope for over 150 repairs, and a format for as-built documentation.

Traditional techniques for French Caen stone and Lisbon marble included cleaning, repointing, re-pinning, Dutchman repairs, and reinstallation of four angels and the central cross. Materials chosen where matching stone wasn't available included molding plaster and modern substitute formulations of natural hydraulic lime and aggregates.

The survey and documentation methodology employed for the Trinity reredos is the latest iteration of field documentation procedures we employ at large-scale stone and plaster projects. It is expected that evolving uses of digital technologies and traditional crafts continue, involving conservators, designers, artists, and craftsmen to serve the unique needs of each project. •

KIM LOVEJOY brings over forty years experience in historic preservation and building conservation to her role as business developer and project executive. She works with EverGreene's clients, project managers, conservators, designers and subcontractors to develop technical and artistic solutions for restoration, conservation, and new design of interior finishes and architectural ornament.

Her experience at EverGreene, the New York Landmarks Conservancy and the Massachusetts Historic Commission, contribute to Kim's strength at understanding client needs and developing realistic treatment scopes, budgets, logistics plans, schedules and contract. Her focus is working with institutional and commercial clients on large-scale, phased and multi-trade projects in the Northeast Region. Key projects include the New York Public Library Rose Reading Room, Park Avenue Armory Board of Officers and Veterans Room, Harlem Hospital Murals, American Museum of Natural History Roosevelt Memorial, Grace Church Brooklyn Heights, and Enoch Pratt Free Library in Baltimore.

Kim holds a B.A. in the History of Art and Architecture from Harvard University, an M.A. in Preservation Studies from Boston University, and an M.A. in Conservation Studies from the University of York in England. She is a Professional Associate of the American Institute for the Conservation of Historic and Artistic Works (AIC) and was the author of many technical articles in Traditional Building, Common Bond, and other publications.

Trinity Church Reredos Tagged Finial. Photo Credit: Katharine George, EverGreene Architectural Arts

KATHARINE GEORGE is a conservator for EverGreene Architectural Arts, based out of the New York office. She works on an array of projects which cover many aspects of conservation work, including: research, documentation, conditions assessments, conservation treatments, construction management, and materials testing and analysis. She works frequently on plaster, painted finishes, wood, stone and metals. She has been involved in the field of historic preservation and architecture for over a decade, graduating with a MS in Historic Preservation from the University of Pennsylvania. Her master's thesis on alternative wood preservation systems received the Charles E. Peterson Award for distinguished study in specialized historic building technology in 2017. Katharine is a Professional Associate of the American Institute of Conservation (AIC).

Mississippi County Courthouse mural installation in progress. Photo Credit: EverGreene Architectural Arts

Trinity Church Reredos Christ in Glory. Photo Credit: EverGreene Architectural Arts

2:35PM - 3:00PM

A TALE OF TWO ANGELS: THE RESTORATION OF TWO CEMETERY MEMORIALS

Presented By **Danielle Pape**

Hall Memorial after treatment and reinstallation. Photo Credit: Ed FitzGerald

DESTRUCTION BROUGHT ON BY HURRICANE SANDY led to a set of conservation decisions on how to restore two large stone monuments at Woodlawn Cemetery, located in the Bronx, New York. The two monuments, the Deeves Memorial and Hall Memorial, were both knocked from their pedestals and severely damaged by fallen trees. Each monument brought its own set of challenges: The Deeves Memorial, consisting of a marble angel figure, lost its delicate marble wings and arms as it fell from on the top of a 30-foot granite column. The Hall Memorial, consisting of a seated marble female figure resting her hands on a ship's anchor, was fractured in multiple places and lost significant portions of stone, including most of her head and a corner of the base.

Restoration of these two monuments was complicated by the fragile nature of the remaining marble, the availability of replacement stone, a short timeline for completing the work, and a limited budget. A conservation treatment plan was developed using substitute materials to recreate some missing elements, while other elements were either not replaced or replaced using traditional conservation materials.

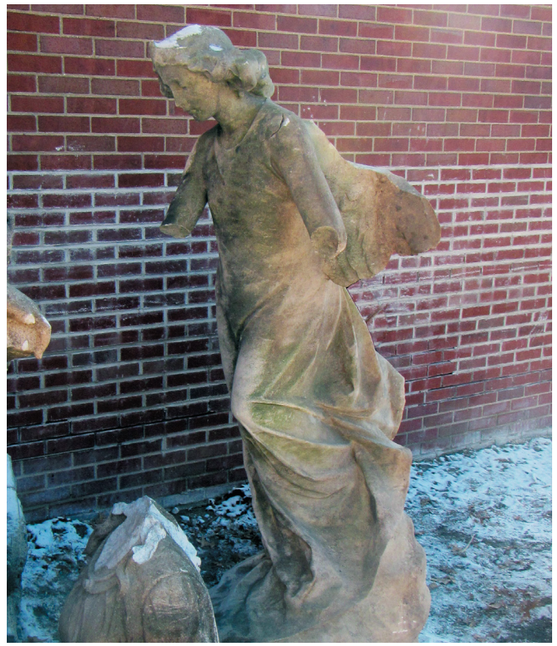
A modern material was used to recreate the missing wings of the Deeves Monument. Due to the fragility of the marble wing tabs, traditional carved marble or cast stone recreations were not feasible because of the weight. A novel treatment was devised to meet project conditions involving the use of a light-weight composite material known as Microcotta to recreate the missing angel wings. Clay models were sculpted of the missing wings based on historic photographs of the memorial from which molds were created for the casting process.

"Due to the fragility of the marble wing tabs, traditional carved marble or cast stone recreations were not feasible because of the weight."

The Microcotta cast wings were then blind pinned to the existing marble wing tabs. Though they appeared to be highly friable, the marble arm fragments proved sound enough to be able to blind pin at the elbows; allowing the ability to reattach original fragments.

The Hall Memorial was treated in a more traditional way. The remaining fragments of the head of the seated female figure was sent to a stone mason to be recarved based on historic photographs and remaining features in marble.The missing corner of the base was cast-in-place using a composite patching material that was matched to the color and texture of the adjacent marble. •

DANIELLE PAPE has worked for Jablonski Building Conservation, Inc. (JBC) since 2017. She graduated from the University of Pennsylvania's Weitzman School of Design ('17) with an MS in Historic Preservation concentrating in architectural conservation. Danielle's interests include field and laboratory testing of materials, cemetery conservation, and hands-on conservation treatments. She performs conditions surveys and construction supervision for a wide range of restoration projects at JBC.



Top: Deeves Memorial before treatment. Photo Credit: Jennifer Pont
Bottom: Deeves Memorial after treatment and reinstallation. Photo Credit: Ed FitzGerald

Top: Hall Memorial before treatment. Photo Credit: Jennifer Pont
Bottom: Hall Memorial after treatment and reinstallation. Photo Credit: Ed FitzGerald

3:35PM - 4:20PM

ROUNDTABLE

TECHNOLOGY VS. TRADITION: PERSPECTIVES ON A MASONRY WALL: A CASE STUDY

Moderated by **Jeffrey Weatherford**
with **Kelly Streeter, Amarantha Quintana-Morales, Chas Finch,** and **Matthew Ridgway**

Photo Credit: Tim Mossholder. Pexels.com

ADVANCES IN NEW TECHNOLOGIES CAN BE VERY POWERFUL TOOLS TO INCREASE EFFICIENCY (of the building and information gathering) and provide more data. Balancing new technologies with traditional tried-and-true techniques requires a critical evaluation by the Professional. Preservationists can rehabilitate deteriorated buildings integrating new technology from the initial design phase through construction. These technologies are employed to assess conditions, increase building performance, and improve sustainability. What information can new technologies provide and how can we evaluate that information to ensure we aren't altering construction techniques without an understanding of long-term performance?

Technology vs. Tradition: Perspectives on a Masonry Wall: A Case Study is a roundtable discussion to speculate how to design a successful conditions assessment program for the rehabilitation of a masonry landmark building in the Northeast. The program incorporates recommendations from professionals during all phases of design and construction.

Case Study to be Explored:
A client owns a five-story mass masonry brick building on the National Register of Historic Places in the Northeast. This building has a circa 1970s addition that consists of a brick veneer exterior cladding attached to a steel frame structure. At the addition's connection, there are systematic cracks and brick degradation throughout. Mortar loss, open joints with loose bricks, and buckling walls have been found at both the old and new construction. The client is concerned that there might be extensive hidden degradation issues and wants to effectively repair this damage and realign the conjoining walls while also introducing the appropriate water abatement infrastructure. It is critical that the restoration retains the original character of the building while improving stability and the long-term performance. Consultants and the Contractor are asked to inform the client what type of assessment should be conducted and what modern code compliance will be required. The client expects all preservation requirements to be followed and is interested in a solution that improves sustainability performance.

MODERATOR

JEFFREY WEATHERFORD is a furniture maker, architectural and furniture conservator, and historic preservation consultant. He also teaches materials conservation and adaptive use of historic structures at Eastern Michigan University's Graduate Program in Historic Preservation. Over the past thirty years he has been extensively involved in the restoration of historic buildings as well as the creation and restoration of furniture.

PANELISTS

KELLY STREETER, PE is a partner and structural engineer with Vertical Access. She developed a testing and research program to evaluate the acoustic properties of Guastavino tiles and the use of non-destructive evaluation of Guastavino tile as an assessment tool. In addition, Kelly serves as chairperson for the American National Standards Institute (ANSI) Z359.9 Personal Equipment for Protection Against Falls – Descent Controllers and leads all Maintenance and Access Fall Protection assessment, design, and installation projects. Kelly also leads the in-house development of inspection technologies including direct-to-digital annotation software (TPAS®), and 3D imaging techniques using unmanned aerial vehicles, or drones.

AMARANTHA QUINTANA-MORALES works on projects involving building enclosure investigation, remedial design and renovation, and design consultation of new building enclosure systems. She has experience investigating and designing both contemporary and historic facade claddings, fenestration, roofing, masonry, and waterproofing systems. Her notable projects in New York City include Shepard Hall at City College of New York and the Four Seasons Hotel, as well as multiple historic New York State psychiatric centers. Amarantha has presented on the sensitive use of modern materials in preservation, pre-design for building repositioning and enclosure, identifying facade elements at risk of ice buildup/shedding, and energy code compliance for new and existing buildings. She is a member of the Association for Preservation Technology International and Northeast Chapter, the American Institute of Architects New York, and the National Organization of Minority Architects.

MATTHEW RIDGWAY is a licensed Architectural Engineer specializing in the assessment, design, analysis and remediation of building enclosure systems on historic and modern buildings, managing projects for both public and private clients. Matt is well-versed in the contemporary analysis and issues of building enclosure design, serviceability, materials selection and enclosure commissioning and often moderates discussions between stakeholders, consultants and local code/historic authorities. Mr. Ridgway is the Regional Manager of Intertek's Building Science Solutions consulting group and oversees the Northeast Region's diverse team of experts who help clients understand building performance issues, diagnostics, risk mitigation, and capital/maintenance planning. Mr. Ridgway has been a guest speaker and guest lecturer at local Universities, the National AIA Convention, ASTM Symposia, and local RCI (IIBEC), NCC and BEC chapters.

CHARLES (CHAS) FINCH is the Director of Restoration Services at Pullman. He joined the Pullman Team in 2019. He started in the commercial masonry façade restoration field in 1980. He has 42 years of hands-on experience in nearly every facet of the restoration, rehabilitation, and re-construction after working nationwide on hundreds of major Historic and Landmark masonry restoration projects. Chas brings a well-rounded, practical, and realistic approach to every project from years of experience and expertise in building façade restoration. He assists countless design teams and building owners with practical, field-driven solutions to complex restoration procedures as well as logistic, and access challenges. He assigns and directs required trades, labor, equipment, and materials for each specific task, with detailed Method of Procedures. He has designed, fabricated and realized countless safety, and labor-saving mechanical and procedural solutions. His specialties include major restoration and replacement of terra-cotta, brick, and stone facade, concrete & steel structure repair and rehabilitation, complex rigging and hoisting solutions, and overall restoration forensics. He holds a current NYC DOB Special Riggers License.

4:20PM - 4:45PM

ON A WING AND A PRAYER: ROOF CURTAINWALL INTEGRATION IN A MID-CENTURY MODERN ICON

Presented By **Pamela Clemens**

UPGRADING BUILDINGS TO INCORPORATE MODERN MATERIALS DOES NOT COME WITHOUT ITS HURDLES. Taking the time to study all options is imperative to creating a design that balances the historic beauty with current needs. While the new curtainwall system at the Westport Unitarian Church does not directly mimic the initial construction, it provides an appropriate balance of aesthetic intent, occupant needs, and budget constraints.

Distinguished by its soaring roofline, the gracefulness of its soaring curved wood beams, and the simplicity of its material palette, the Unitarian Church of Westport inspires both new and returning visitors. Designed by Victor Lundy, this 1961 building has been occupied by the same congregation that commissioned its design and this next generation of parishioners are beginning to plan for its future. It has remained largely unrenovated allowing the original construction to shine through but also left it in need of modern advancements. The design team was tasked with creating a master plan to restore and upgrade this majestic mid-century modern building. After the creation of the master plan, the parish decided an important first step was to increase occupant comfort and highlight the congregation's commitment to sustainability by upgrading their exterior curtain wall, starting with the sanctuary.

"Due to the fragility of the marble wing tabs, traditional carved marble or cast stone recreations were not feasible because of the weight

This construction campaign focused on using the sanctuary as a showcase to the congregation how investing in modern technology and materials can impact the building in a positive way. While maintaining the soaring wood roof aesthetic the single pane, non-thermally broken exterior wall needed to be upgraded to meet modern code, enhance occupant comfort and raise the building efficiency. In order to achieve this goal, we studied different ways to imitate the curving mullion patterns, overcome the minimal transom structure and balance the glazing pane sizes with available glass technology. It was understood the curtain wall structure would change in depth to meet current lateral and gravity load requirements, but it was of the utmost importance that this mid-century modern swooping structure continued to uplift the spirits of all occupants. Working directly with a curtain wall manufacturer, we were able to study challenging details and evaluate several viable solutions.

Unitarian Church exterior curtainwall. Photo Credit: John Hill

The north wall of the sanctuary is a soaring 20-foot-tall decorative glass focal point. With the vertical and arched mullions directly connected to the adjacent curtain walls and a vent window stuck in a partially open position, it was important to include this wall in the replacement. The challenge to the curtain wall designer was to mimic the decorative wall with a modern system. The system would need to be able to accommodate the more regular design of the east and west wall. By modifying an EFCO system with internal structural steel combined with applied mullions, the curtainwall contractor was able to get a similar look with minimal aesthetic concessions.

The biggest structural hurdle was to recreate the full-glass transom aesthetic to meet modern codes but maintain the aesthetic of a floating roof. The existing transom was a full glass system following the curved roof line with an aluminum mullion on the bottom of the glass only. The sides were connected to adjacent glass with a sealant joint. The top of the glazing was captured by a shallow channel carved into the roof deck. The congregation widely acknowledged the transom's transparency was important to disconnecting the roof from the structure. While the curtain wall now requires vertical structure to meet code-prescribed loading, the design strategically placed mullions to minimize site lines and created a custom top rail detail that that reduced the visual impact of the connections to the roof.

The size of the original glazing panes was a challenge for both constructability and energy efficient technology. The original curtainwall relied on an 8' wide by 6'-8" tall mullion pattern throughout the sanctuary. A double-paned glazing unit of this size weighs approximately 350 lb and could not be easily transported into position due to site constraints. Of bigger concern was a low-E coating was not an option for that size glass. The Low-E performance was essential for this building with a glass to wall ratio of over 90%. After several hours of glazing technology research and coordination meetings with the contractor, all but one pane of glass will be able to receive a Low-E coating. The final design reflects the required energy upgrades balanced with a maintained building aesthetic.

PAMELA CLEMENS is an associate in Goody Clancy's preservation practice. She brings an expertise in sensitive renovations to historic structures, revitalizing buildings that communities will cherish for years to come. Her projects have ranged from restoration of the 1790 Akin House Museum, whose mission focused on teaching local history to young students, to overhauling a 1970's dormitory building into a vibrant, open place focused on community. She believes that historic buildings create a connection between past, present and future occupants strengthening a multi-generational community bond. To every project, she brings an excitement to understanding that community connection focuses on guiding the adaptation and preservation of an existing building as a means of accommodating present and future uses. She received her B.S./M.Arch from Roger Williams University.

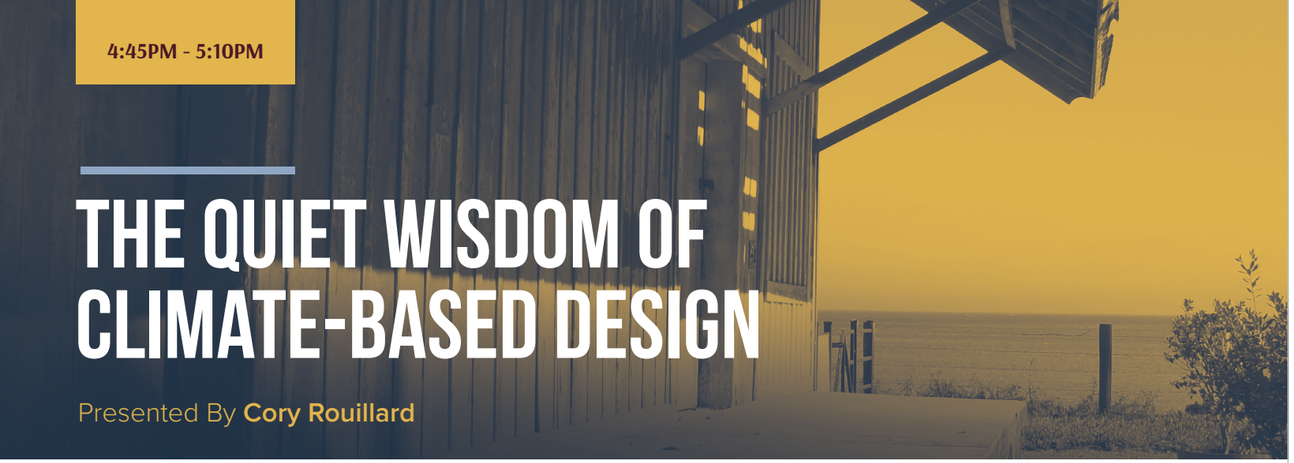
Sanctuary Sketch by Victor Lundy. Original Construction Drawing.

Soaring Lines of the North Wall. Photo Credit: John Hill

4:45PM - 5:10PM

THE QUIET WISDOM OF CLIMATE-BASED DESIGN

Presented By **Cory Rouillard**



Shade and water diversion at a roof line. Photo Credit: Cory Rouillard

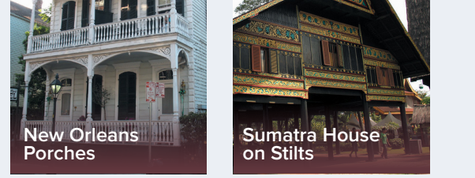
Existing shade and ventilation at a window. Photo Credit: Cory Rouillard

IN THE CONTINUED RACE AGAINST CLIMATE CHANGE, where buildings are responsible for approximately 40% of global carbon emissions; it is vital that the preservation community apply its expertise in providing creative solutions to curb drastic environmental effects. Typically, the role of existing buildings is discussed in terms of operational carbon improvements, such as through deep energy retrofits. However, the role of embodied carbon is also being broadly considered as a vital player in the care of our existing buildings.

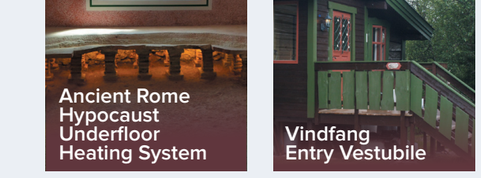
Preservation brings a critical resource to the table: the wisdom and ingenuity of traditional building forms and techniques developed over the millenia to make the built environment work with local climates and conditions. Long before the recent era of cheap fuel, people have been inhabiting buildings and devising strategies for improving human comfort (thermal, humidity, daylighting) and building longevity (durability and repairability) through the design and detailing of their built environment. These strategies, as built forms, may be considered “inherently sustainable features”, or ISF. They often are found in the form of passive design, sometimes in the form of well-considered active features. While they are by definition climate-specific, the underlying concepts may be found globally. They often become character-defining features, helping to shape local styles, and yet they may also transcend styles through place and time.

There is a growing database of ISF. Hundreds of examples have been catalogued thus far, as these climate concepts are explored in their built form around the world. This database is in the process of being uploaded to APT’s OSCAR platform, and will continue to grow and evolve in the coming years. •

CORY ROUILLARD brings to Jan Hird Pokorny Associates (JHPA) her decades of historic preservation experience, as a licensed architect, architectural conservator, and active advocate for climate leadership through preservation. Her award-winning work has included the restoration of significant historical buildings, new construction in a historic context, and work in many unusual circumstances, including relocating entire buildings and reassembling buildings from previously disassembled components. In her role at JHPA and in her professional outreach, she promotes technical guidance for the appropriate care of existing buildings to both protect our cultural heritage and meet our carbon mitigation targets. Ms. Rouillard oversees all of JHPA’s architectural services agreements and construction contracts.



Hot-Humid Climate ISF strategies.
Photo Credits (left to right clockwise): JGWA, Peter Shep, Karin Link, Ahmad Fuad Morad,



Cold Climate ISF strategies.
Photo Credits (left to right clockwise): Nicole Ambrose, Cory Rouillard, Anu Wintschalek, Haye Rienk Drost

STUDENT MEMBERSHIP WITH APTNE

The Northeast Chapter of the Association for Preservation Technology International is committed to serving the arts, science, architecture, conservation, construction and engineering community with regional and local preservation knowledge and events.

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SHANNON TRONO

Columbia University, New York

APTNE is proud to announce that Shannon Trono is the **2021 Melissa Morrissey Scholarship Fund Recipient.**

Shannon's keen interest in the interdisciplinary studies of preservation, conservation, material science and architecture is evident both in the classroom and in her past work experiences as a museum educator, a conservatory of the decorative arts and an archeological laboratory technician. Shannon's passion for preservation in the form of architectural conservation prompted her to relocate from Texas to New York, where she is currently pursuing her masters in historic preservation at Columbia University. As part of her thesis research, Shannon is exploring how 3D printing technologies can provide a potential cost-saving alternative to mold-made reproductions for historic terracotta elements. Shannon is also passionate about expanding the number and diversity of voices heard within the preservation industry.

PREME CHAIYATHAM

Columbia University, New York

APTNE is proud to announce that Preme Chaiyatham is the **2021 APTNE Scholarship Recipient.**

Preme's passion for preservation stems from examining the critical intersection of technology, creativity and preservation to progress the industry and practice. Her thesis investigates the use of projection mapping as a non-invasive and reversible tool in historic preservation. As projection mapping technology becomes more available and costs become more affordable, small and underfunded house museums can use this technology to educate the public about their history and engage the next generation. The remainder of Preme's thesis will focus on evaluating various types of projection mapping software to develop a guideline for small institutes to follow when incorporating this technology. In addition to her master's thesis research, Preme recently earned first place in APTi's design-build student competition where students examined the arch of the Brooklyn Bridge and were asked to design/build two masonry arches. Preme is a student speaker at APTNE's 2022 Annual Symposium on Technology vs. Tradition.

2021 YEAR-END REVIEW

VIRTUAL
JANUARY 14, 2021
5-6PM

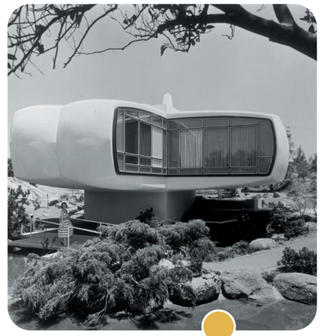
How the Future of Preservation will Change as a Result of COVID-19

VIRTUAL
FEBRUARY 26, 2021
9AM—7:30PM

2021 Annual Meeting & Symposium

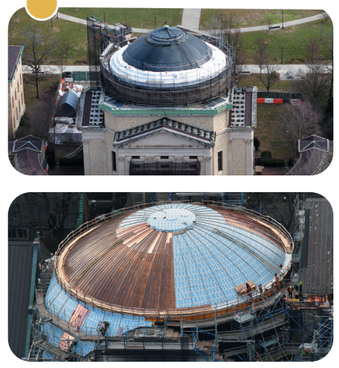
VIRTUAL
MARCH 18, 2021
5PM–6PM

Exploring the Legacy of the Monsanto House of the Future: A Creative Collaboration in Structural Plastics that was Ahead of its Time



VIRTUAL
APRIL 15, 2021
5PM–6PM

Building Stone “Virtual” Walking Tour - Staten Island, NY



VIRTUAL
APRIL 29, 2021
5:30PM–7PM

APTNE Student/ Young Professional Speed Networking

VIRTUAL
MAY 20, 2021
12PM–1PM

A Tale of Two Domes: The Restoration of Domes at the Cathedral of St. John the Divine and Gould Memorial Library in New York City

VIRTUAL
JUNE 17, 2021
5PM–6PM

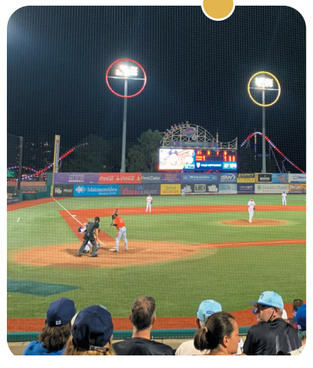
Restoring a Boston Treature: Comprehensive Restoration of the Robert Gould Shaw & Massachusetts 54th Regiment Memorial

VIRTUAL
JULY 22, 2021
5PM–6PM

Going Deep: Geothermal System Integration at St. Patrick’s Cathedral in NYC

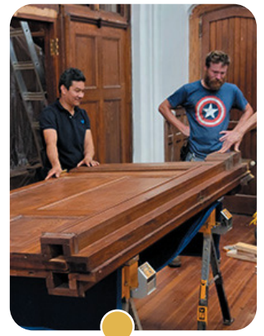
IN PERSON, CONEY ISLAND, NY
AUGUST 27, 2021
6:30PM–10PM

Brooklyn Cyclones Baseball LIVE!



VIRTUAL
SEPTEMBER 23, 2021
12PM–1PM

Traditional Tradesperson Spotlight: Ben Brandt: Wood Windows and Odd Doors

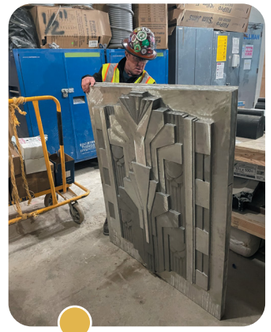


IN PERSON,
LOWER AND UPPER VERMONT
OCTOBER 1-2, 2021

Vermont Quarry Tour- Slate, Marble, & Granite

IN PERSON, NEW YORK, NY
OCTOBER 28, 2020
5PM–6PM

Artfully Restored: Waldorf Astoria Behind the Scenes Tour

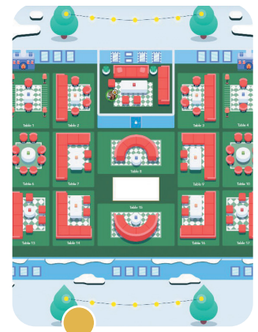


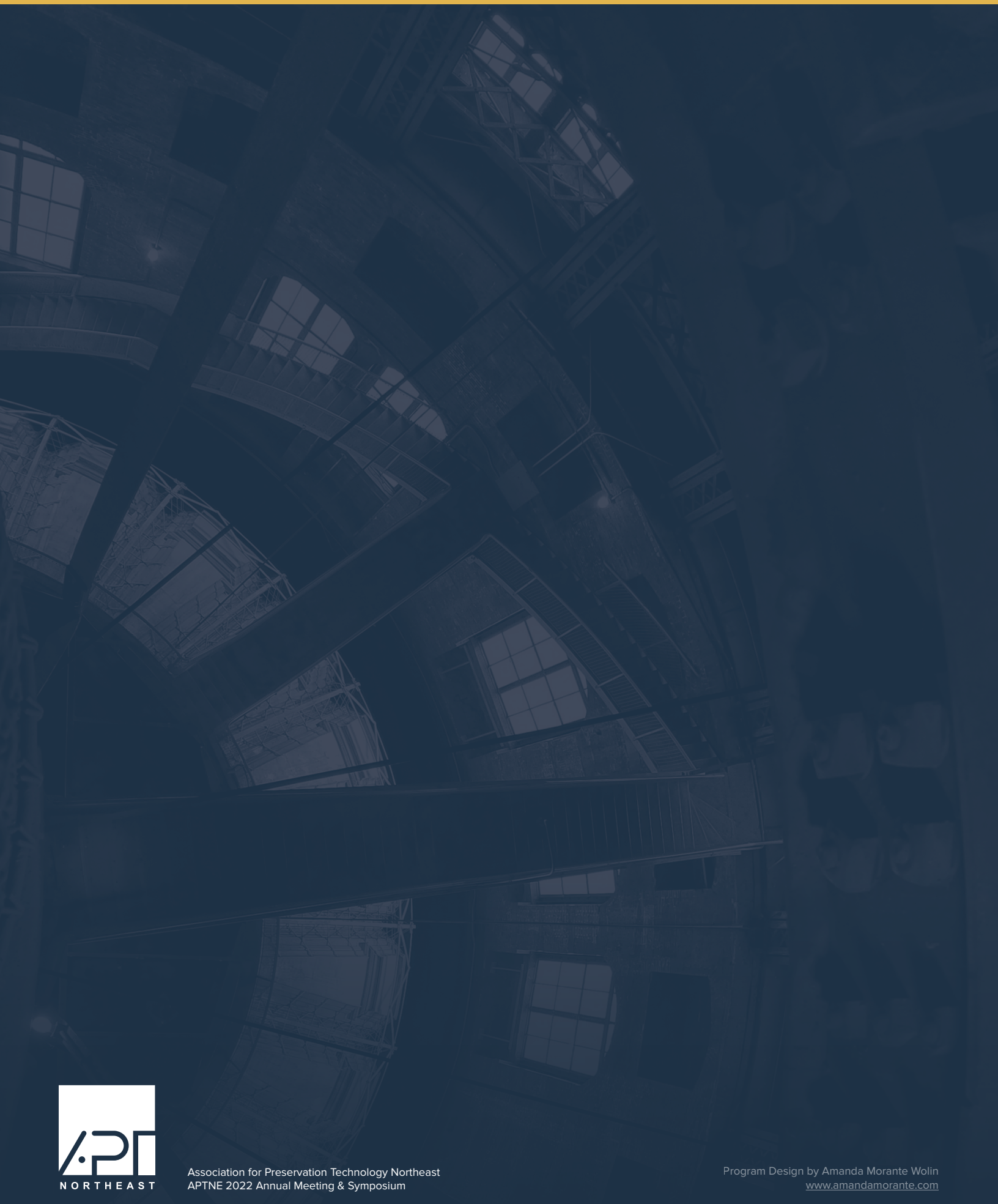
IN PERSON, NEW YORK, NY
DECEMBER 7, 2021
6PM—9PM

APTNE Winter Holiday Party LIVE!

VIRTUAL
DECEMBER 13, 2021
5PM–7PM

APTNE Holiday Virtual Networking Event





Association for Preservation Technology Northeast
APTNE 2022 Annual Meeting & Symposium

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