

APTNE
16

Annual Meeting and Symposium

Rosecliff Mansion

Newport, RI • February 5

Water and Its Impact on Historic Sites & Structures

Who We Are

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 approximately 110 members.

APTNE is committed to this large geographic community with regional and local preservation events. We conduct workshops, co-sponsor events with local and statewide preservation organizations, and sponsor symposia including our annual meeting. We support preservation students by offering scholarships and outreach for student chapters. We invite you to learn more about our organization at www.aptne.org.

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APTNE

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Schedule of Events Friday, February 5, 2016

8:30 - 9:30	Registration	2:10 - 2:30	Not So Fast! Avoiding Imprudent Responses to Water Damaged Materials Michael Devonshire
9:30 - 9:45	APTNE Welcome Address Chris Dabek	2:30 - 3:00	Coffee and Refreshment Break
9:45 - 10:15	<i>Keynote Speaker:</i> Heritage Stewardship: Preservation as a Means to a Greater End Philip Marshall	3:00 - 3:20	Improvements to Freeze-Thaw Resistance of Historic Mortars Mike Edison & Chad Lausberg
10:15 - 10:35	Managing Water and Its Impact on the Newport Mansions Olga Backilova & Curt Genga	3:20 - 3:40	Coney Island's Gem by the Sea: The Restoration of Child's Restaurant Yasmine Elrasidy & Diane Kaese
10:35 - 11:00	Coffee and Refreshment Break	3:40 - 4:10	Open Discussion
11:00 - 11:20	Groundwater Recharge Systems to Mitigate Settlement of Historic Buildings and Timber Pile Deterioration in the Boston Area Giuliana Zelada-Tumialan	4:10 - 4:25	Closing Remarks Chris Dabek
11:20 - 11:40	180 Years of Water Infiltration Susan Hollister & James Lee	4:25 - 4:45	Annual Meeting—Chapter Highlights
11:40 - 12:00	Navigating Uncharted Waters: Flood Proofing a Historic Site Andrea Brue	5:00 - 7:00	Reception Marble House
12:00 - 1:30	Lunch	Saturday February 6 Behind the Scene Tours:	
1:30 - 1:50	Aden's Ancient Cisterns: Historic Preservation and its Impact on Water Management Edie Dunn	9:00 - 11:00	Rough Point
1:50 - 2:10	Water & Water Vapor Management in the Modernization of the FDR Museum & Library, Hyde Park, NY Christopher Tavener	11:00 - 1:00	Restoration Yacht School
		11:00 - 1:00	Salve Regina

Water and Its Impact on Historic Sites and Structures

Speaker Abstracts

Heritage Stewardship: Preservation as a Means to a Greater End

Keynote Speaker

**Philip C.
Marshall**

This presentation describes the process of **Heritage Stewardship** as a means to preserve our physical cultural resources while augmenting our collective capacity to meet this goal.

Heritage Stewardship involves the intentional interdependence between each coupled component (below), which are opposites whose interaction in the liminal space of a mandorla (ven diagram) transcends their duality to gain a greater whole.

The foundation of heritage stewardship includes the cultural, social and professional **Standards** that serve to guide all work. Standards include legislation, charters, guidelines, benchmarks, terminology, and more.

Values is a community based expression (“thick description”) of culture that is a seldom written, process-driven, place-based valuation of self and society.

Collections include material culture, moveable and immovable (architectural components, buildings, landscapes, and districts). This comprehensive definition demands a multi-disciplinary approach.

Care is the process of applying preventive, predictive, precautionary measures to preserve the value and integrity of cultural resources for posterity while providing access today. Stewards are not only professionals but also a participating public—communities that, through interpretation and education, “appreciate the value” and, through involvement and investment, “value the appreciation” of shared assets and their conservation.

Collections and **Care**. Alone, collections are a passive, limited, nonrenewable resource, ever-impermanent and subject to deterioration. When without context (records, below), even their significance and value may be questioned. Care involves the action of a “learning organization” (read: community) whose structure, cooperative management, knowledge,



and skills are intangible—yet unlimited and renewable. The value of collections is made possible through informed care in concert with stakeholders.

Records include documents that record the **Assets**: the physical collections and the process and capacity of their stewardship. It is the process that is emphasized here, with records integrated into a flexible and accessible information and communication management system employing data analytics.

“Risk Management” actually entails **Asset** (as **records**, above) and **Risk Management**, for until stewards understand what assets (physical and organizational) exist they do not know fully how to manage their risk.

Preservation is a decision-making process, not a treatment. Preservation addresses the following factors before specific treatments are considered: safety and security, community, capacity/skills, condition, economics, use, access, materials and equipment, and interpretation. →



Treatment is not restricted to conservation, but includes a range of options—from maintenance and monitoring, through restoration, to new construction—that entail varying degrees of intervention. It is a quantitative listing and does not presume one treatment as “better” or “worse” (more or less “appropriate”). Proactive, preventive treatments are favored over response and mitigation.

Techniques involves a skilled, problem-based, process-oriented approach to the design and execution of work toward conservation of material objects—and conservation of the capacity and cultural expression embodied in their intent and integrity, and traditions necessary to recognize and respect their value.

Preservation treatment techniques are distinct yet inseparable, guided by **Standards** and **Values, Collections Care,** and **Asset and Risk Management.** Collectively, this is understood as the process of **Heritage Stewardship.** ●

KEYNOTE SPEAKER
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About the Keynote ...

Philip Marshall consults and teaches in the field of historic preservation. Mr. Marshall has combined two undergraduate degrees (in geology and studio art) from Brown University and a M.S. in Historic Preservation from the University of Vermont.

Since 1980, Mr. Marshall has held faculty positions in graduate and undergraduate preservation programs at the University of Vermont, Columbia University, Swain School of Design, Southeastern Massachusetts University (UMass Dartmouth) and Roger Williams University, where he is tenured as a full professor and serves as coordinator of the Historic Preservation Program.

In his capacity as an advisor to Heritage Preservation, since 1991, Mr. Marshall has undertaken architectural conservation assessments for organizations including the Newport Historical Society (RI); Rhode Island Historical Society; and the Paul Revere House, Boston, MA.

Mr. Marshall has also worked on properties owned by the Preservation Society of Newport County, Newport, RI; the Newport Casino, Newport, RI, for the International Tennis Hall of Fame; Victoria Mansion for the Victoria Society of Maine, Portland, Maine; Peter Jay House, Rye, New York; United States Customs House, New York, NY for the Society for the Preservation of New England Antiquities, and Old Albuquerque Public Library, Albuquerque, New Mexico; and Marsh-Billings-Rockefeller Mansion, Woodstock, Vermont.

Since 1989, Mr. Marshall has served as associate and architectural conservator for the Hopi Foundation: *Lomasumi'nangwtukwsiwmani*, working on development and implementation preservation projects of the Hopi Nation, in what is now known as Arizona, to help preserve their millennia-old structures.

He has served on the board of *Migyul—Himalayan* Community Magazine in New York. Closer to home, he is a member of the board of Preserve Rhode Island and Blithewold. He is on the council of Historic New England and the advisory council of the Newport Historical Society.

Mr. Marshall is a member of the board of the United State Committee of the International Council on Monuments and Sites (US/ICOMOS) for which he is chair of the International Exchange Program committee; co-chair of the Training Committee; at the international level, a member of ICOMOS International Training Committee (CIF); and a member of the CIF Worldwide Network of Universities Committee.

Mr. Marshall is also active in the arena of elder justice. Details are available on request. ●

Managing Water and its Impact on the Newport Mansions

Presented by
Olga Bachilova
&
Curt Genga

The Preservation Society of Newport County ("PSNC"), Rhode Island's largest cultural organization, preserves and protects Newport County's architectural heritage. Its 11 historic properties and landscapes—seven of which are National Historic Landmarks—trace America's architectural and social development from the Colonial era through the Gilded Age. For 70 years, PSNC has been protecting, preserving and presenting the story of some of America's most important legacy buildings and furnishings, landscapes, collections as well as the stories of the people who created them. Not only does PSNC manage preserving 36 unique buildings dating from 1748 to 1902, it also provides a safe environment for their unique interiors and valuable collections.

PROBLEM

Water and its impact on buildings in coastal areas is a continuous hazard for the preservation of museum interiors and collections. Water hazards at Newport Mansions include:

- Coastal rain, snow and wind (Elms, Breakers, Kingscote, Marble House)
- Groundwater penetration (Hunter House, Breakers Boiler Room, Elms Sunken Garden)
- Threats from tidal waters (Hunter House)
- Failures of unsecured water lines (Rosecliff plumbing, Breakers boiler, Elms drainage)

These varying climatic conditions require constant attention and diverse measures for disaster preventions and timely response. →



APPROACH

The following themes will be addressed:

- Close monitoring and collection of field data
 - Field data is key to managing the maintenance of PSNC's 36 historic buildings located along Rhode Island's coastline. For the last 16 years PSNC has been effectively using a maintenance database designed and developed by David M. Hart, AIA, in order to collect field data and schedule maintenance of buildings. PSNC staff will share the experience of conserving landmarks (through techniques such as inspecting of hidden leaks with FLIR Thermal Imager) and prioritizing repair schedules, maintenance plans and budgeting for years ahead.
- Repairs, prevention and protection measures
 - Caring for PSNC's properties requires consultation with architects, engineers, property managers, contractors and the organization's maintenance crew, which consists of qualified carpenters, masons and painters.
- Hurricane preparation plan
 - Assignment of control center
 - Communication management
 - Phased precautionary actions
 - Individualized plan and assignments for each property
- Managing moisture in a museum environment
 - Monitoring moisture level
 - Installation of dehumidifiers and climate control systems using heat pumps and geothermal technology.

PSNC will present relevant photos and monitoring data associated with each topic.

CONCLUSIONS

Be well prepared to face the continuous threat of water damage and addressing this ongoing issue with preventative measures is key to successful maintenance of the Newport Mansions. We will discuss our findings and experiences regarding preventative measures like gathering thorough field data of building conditions, using it to prepare preservation plans, and budgeting for upcoming repairs based on such data. ●

About the Presenters ...

Olga A. Bachilova, Chief Historic Preservation Architect

With over 30 years of international experience in preservation and restoration of landmarks Olga Bachilova joined the Preservation Society in 2013. Previously Olga worked on a wide variety of historically significant buildings of varying sizes and for nearly all types of historic structures. Her previous projects in Rhode Island include Southeast and Dutch Lighthouses (Block Island and Jamestown), Slaterville Mill (Slaterville), Blithewold Mansion (Bristol), Barrington Town Hall, and Newport Congregational Church. Further afield, Olga has worked on the Jamaica Plain and People's Baptist Churches in Boston, and number of colonial house-museums in New England. She has also worked on research and revitalization of historic urban districts and on restoration of churches and museums in Russia. Ms. Bachilova has hands-on experience with masonry restoration, first period post and beam timber framing and has significant inspection, analysis, and application experience with brick, stone, stucco, plaster, terra-cotta, wood, paint and mortar. This unique expertise allows her to restore buildings and preserve historic materials to their original appearance and historic integrity. In 1999, under the guidance of David M. Hart, AIA, she helped create the PSNC Facilities Management Database and currently continues to work on the Database as part of her role with PSNC. Olga's volunteering services include Hurricane Katrina Recovery Team and illustration of a book to support the Russian Orthodox Church in America. ●

Curt H. Genga, Director of Properties

Curt Genga joined the Preservation Society of Newport County in 1990 as the Director of Properties. He has worked in the preservation field for the past 40 years. As a member of the senior staff, he provides counsel on the planning and management of all major repairs, restorations, and building maintenance and daily operations. Curt has worked on all 36 of the Preservation Society's buildings over the past 25 years, including the complete exterior restoration of The Breakers and its two terraces, Marble House and its terrace and Chinese Tea House; The Elms and its sunken garden, fountains and three terraces; Rosecliff and its fountains, Hunter House, the Osgood-Pell House (which houses the Preservation Society's headquarters), Green Animals Topiary Garden, Chateau-sur-Mer and its Tea House, as well as Isaac Bell House and Chepstow. Curt also oversaw the creation of the groundbreaking Facilities Management Database that tracks all restoration and maintenance projects for the 36 buildings. The database prioritizes and budgets for all building repairs over the next 30 years. Curt oversees a staff of 45 employees, including caretakers, security guards, cleaning staff, carpenters, painters and masons. ●

Groundwater Recharge Systems to Mitigate Settlement of Historic Buildings and Timber Pile Deterioration in the Boston Area

Presented by

**Giuliana
Zelada-
Tumialan**

Several historical structures in the New England area are supported on timber piles extending through reclaimed fill and organics into the underlying marine soils. Due to lowered groundwater levels, as a result of underground construction, leaking utility lines, and leaking basements, several of these buildings have been affected by severe deterioration of the timber piles that support them. As groundwater levels decrease, the tops of the timber piles are exposed to air. Exposure to oxygen and high moisture conditions is conducive to growth of fungi and bacteria which can lead to decay of the tops of timber piles, loss of building support, and consequent settlement. As most historic buildings in the New England area are brick masonry structures, they are particularly sensitive to movement which can result in cracking of the structural framing and the interior and exterior finishes.

Groundwater recharge systems in combination with cut-and-post underpinning (to remove the deteriorated portions of the timber piles) are frequently used to mitigate lowering groundwater levels, possible future pile deterioration, and areas of already deteriorated piles. Given typical access constraints in historical structures, this process of underpinning and ground water recharge can be, and usually is, a significant investment. The planning and design of there charge system needs to be well thoughtout not only to maximize the efficiency of the system, but also to allow for the inclusion of safeguards and redundancies that will extend its service life. Post-construction monitoring of the recharge system's performance and the commitment of the Owner to its regular maintenance are key items for a successful implementation of this remediation option. →



Our presentation will discuss how timber pile deterioration develops, how buildings are impacted by the consequent displacement, and how a carefully planned and well-designed recharge system can help reduce the potential for pile deterioration. We will identify the key components for design of their charge system, its installation, monitoring, and maintenance.

We will also present a case study of a historical building in downtown Boston where differential settlement due to timber pile deterioration required the design and implementation of a remediation program which included underpinning of the most risk-critical parts of the structure, as well as the design and installation of a charge system to increase groundwater levels above the tops of the timber piles. The recharge system is regularly monitored to allow timely identification of any issues that may arise during its service life such as, for example, a drop in recharged groundwater levels due to clogging of the drainage pipes. ●

About the Presenters ...

Ms. Zelada is a Senior Project Manager in the Heavy Civil Group at Simpson Gumpertz & Heger in Boston, MA. She received both her B.Sc. and M.Sc. degree in Civil Engineering at Missouri Science and Technology University in the 90s, back when it was still known as University of Missouri-Rolla. She is a Registered Professional Civil Engineer in multiple states. She has more than 15 years of experience in geotechnical engineering and soil-structure interaction. She works on various projects involving investigations into the cause of building/structure movements and foundation failures, as well as in the development and design of their repair and rehabilitation schemes. ●

180 Years of Water Infiltration

*Presented by***Susan Hollister****& James Lee III**

Fort Monroe is the largest and most fully realized example of Third System fortifications constructed in the early part of the 19th century as part of the nation's seacoast defense system. It is located on a narrow peninsula projecting into the Chesapeake Bay at the mouth of the James River in Hampton, Virginia. It was designed according to classic French military architectural principles and it consists of a series of barrel vaulted structures known as casemates connected by projecting angled structures known as bastions. It is an unmistakable symbol of strength, protection, and power. It also leaks like a sieve.



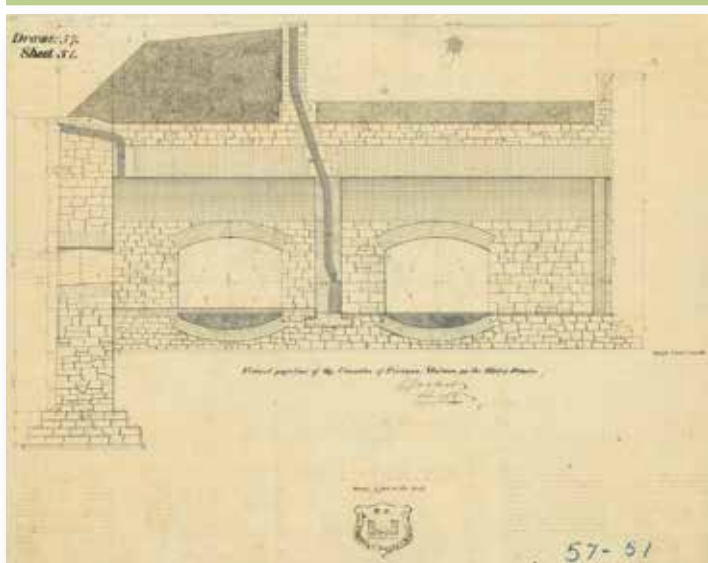
Fort Monroe has been experiencing significant water infiltration for 180 years. During all that time it has been an occupied structure—home to officer's quarters, storage and office spaces, a Masonic

Lodge, and currently as a museum with artifact storage and archival collections. The first portion of this presentation will look at the history of the fort's construction as depicted in original engineer's records and drawings, and discuss some of the construction techniques of Third System fortifications.

Specifically the speaker will describe the construction of the masonry walls, vaulted casemates, and

the earthen ramparts; noting that the scarp and perpendicular casemate walls were not structurally connected. This was an intentional design technique that allowed the walls to move separately, but created the potential for a larger separation between the adjacent walls. This portion of the presentation will also describe the casemate roofs and drainage system that theoretically conducted water from the ramparts and terreplein to the ground level and cisterns. This portion will conclude with the first reports from the US Army Corps of Engineers of water infiltration in the casemates. →





The second portion of the presentation will elaborate on some of the inherent design issues that contribute to the water infiltration problems. Those include the earthen overburden, the open joints between the scarp and casemate walls, incompatible geometry at the angles of the bastions, and penetrations that allow water to migrate from the exterior of the fortification to the interior of the casemates. This portion will also describe some of the later alterations that may have exacerbated the water infiltration problems. The speaker will discuss some of the previous attempts to solve the water problems at Fort Monroe that range from the construction of relieving arches in the 19th century to alterations to the drainage systems, addition of bituminous materials on the terreplein, and installation of drip pans in the 20th century.

The presentation will conclude with some of the recommended solutions to the water infiltration problems that include abandoning the structures, changing the use, and/or adapting to the conditions. The feasibility of introducing some type of water-proofing will also be discussed, but that aspect of the project has not been fully explored at this time. Though the project has not concluded the final recommendations will most likely include some of all the aforementioned. ●

About the Presenters . . .

Susan Hollister

Susan's architecture and preservation planning experience includes design, analysis, and review of a wide-range of cultural resources and building types for both public and private entities. In addition to strong architectural skills that focus on restoration and adaptive reuse, she has extensive preservation and project management expertise with public and non-profit preservation focused organizations including the National Park Service, Massachusetts Historical Commission, Historic Boston Incorporated, and the Public Archaeology Laboratory. In the private sector as a Preservation Architect at Goody Clancy she has been involved in several award-winning, sustainable adaptive re-use projects including the Perry Hall Admissions Center, Champlain College, and Stockwell Hall and Mosher Jordan Residence Halls at the University of Michigan. She has been an active, long-time member of both APTI and APTNE and served on the chapter board for a number of years. She currently is the Architect of the Fabric for Old South Meeting House, Boston, MA.

She is currently working as a Historical Architect for the National Park Service, Northeast Region and is responsible for the Region's cultural resource database, provides Section 106 review and advise to 12 parks in the region, and is co-author with James Lee III of the forthcoming Casemate Museum Historic Structures Report, Fort Monroe, VA. Susan has a Master's degree in Architecture from MIT and a Master's degree in Historic Preservation from Boston University, and is a registered architect in Massachusetts. ●

James Lee

James started his career in the field of historic preservation working as a preservation specialist for the National Park Service. Soon after that he received his Master's Degree in Preservation Studies from Boston University in 1991. James continued his career working for Historic New England (formerly S.P.N.E.A.) as an Architectural Conservator and Property Care Manager. At Historic New England James performed materials analysis; assessed building conditions; and planned and managed building and landscape preservation projects. James returned to the National Park Service (NPS), Historic Architecture, Conservation and Engineering Center in 2004 as an Architectural Conservator. His work entails the physical investigation of historic structures, documentation of building elements, assessment of existing building conditions, analytical investigations of architectural fabric, and documentary research. The information and results of the various building investigations and assessments are presented in Historic Structure Reports, technical reports, and treatment reports. James also supports NPS park planning efforts and advises parks on the treatment of their historic structures. ●

Navigating Uncharted Waters: Flood Proofing a Historic Site

Presented by

Andrea Brue

In less than 24 hours, up to 8.3 inches of rain swelled the banks of the Winooski River up in Vermont during the 2011 Tropical Storm Irene. Sited along this river is the Waterbury State Office Complex, a historic campus of over 20 buildings at the time housing 1500 state office workers and over 50 hospital patients. As a result of the storm, the basement and ground floors of these buildings were completely flooded. This is the story of how the historic complex of Victorian era structures was restored and flood proofed to create a more resilient and sustainable workplace for the future.

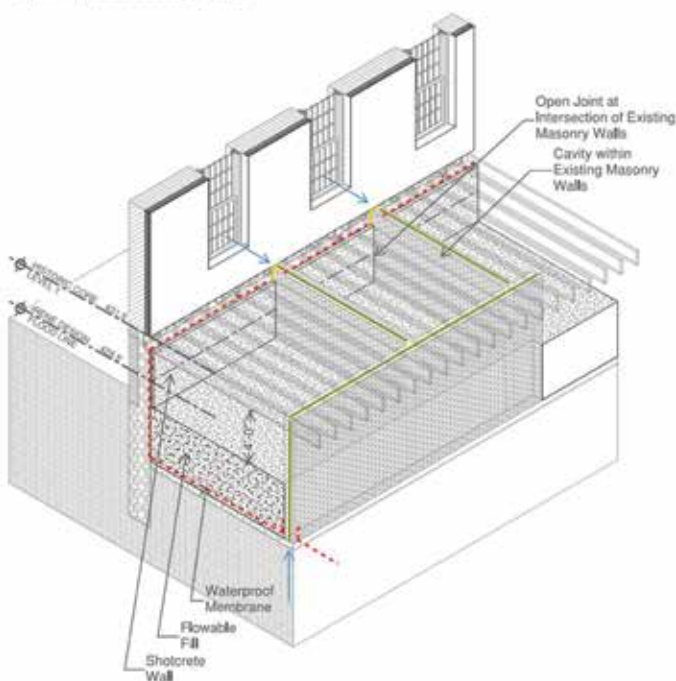
The methods chosen to flood proof and restore were developed through a coordinated and thorough study of the site's historic landscape and structures, flood proof technologies, and economics. A team of preservation architects, engineers, and estimators worked together with the client and SHPO to create a balanced approach between flood proofing and

respecting the historic significance of the structures. Flood proofing mitigation for the project is complete, and the restoration of the complex is expected to be done by the end of 2015.

The Waterbury complex is a unique case study as the team had the benefit of reacting to a natural disaster that helped inform solutions. Using the Waterbury project as a case study, the following 'Four Commandments' are important for those embarking on uncharted waters and will be discussed in the presentation:

1. Thou shalt know thy site: It was important to understand site conditions, including flood zones, history of flooding (there was a similar flood in 1927), and soil conditions. Knowing this helped inform site work to mitigate flooding by determining which buildings could be saved and which had to be removed. For those that were restored, understanding soil conditions at these buildings led to specific flood proofing methods. →

Floodproofing Detail: Historic Core
Option A (Schematic Design Option)



2. Thou shalt have a clear definition of scope: This was achieved through a Programmatic Agreement negotiated between the State of Vermont and FEMA. To offset the negative effects of building deconstruction necessary for flood protection, it was agreed to restore historic fabric that had been removed in the past. This included reconstruction of historic chimneys, cupolas, and a porte cochere. Because of the agreement, these added features withstood many budget pressures during the design phase.

3. Thou shalt balance new technologies with historic fabric: Two flood proofing methods were considered for the project—dry and wet. Dry flood proofing involved more significant changes to the historic structures and is a more expensive method but provides a higher degree of protection. The decision to wet flood proof was used at the most historic and elevated locations.

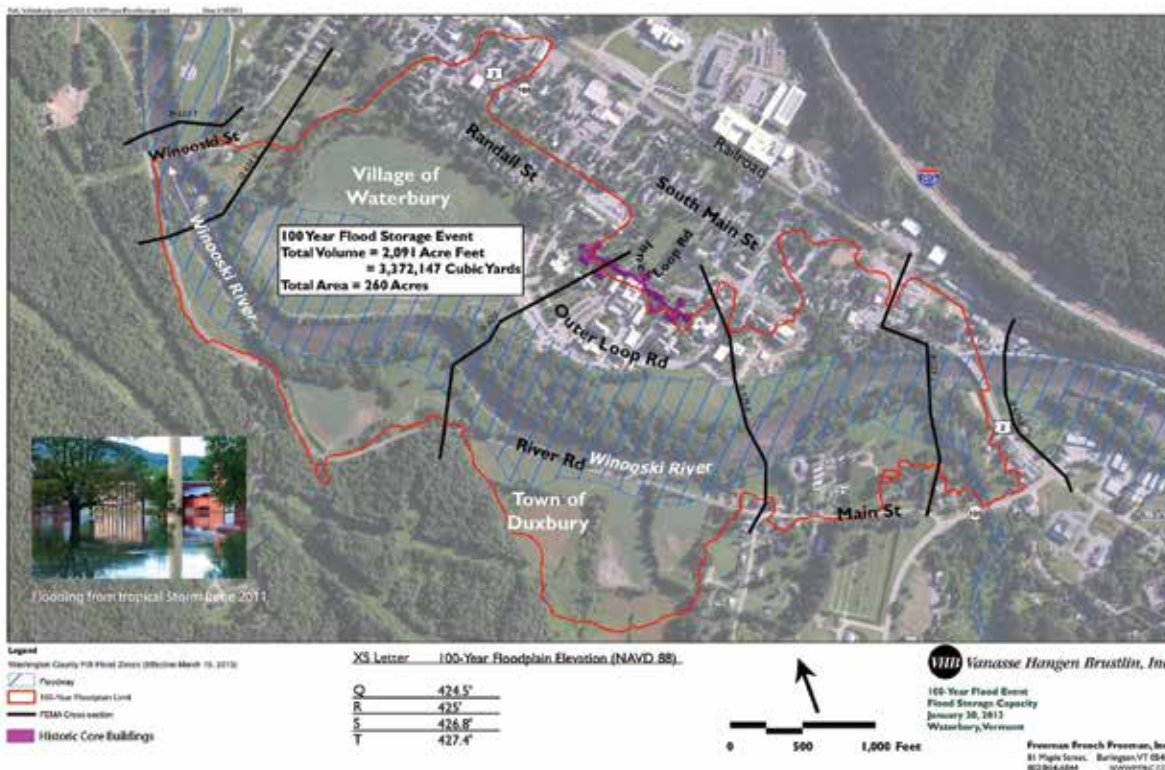
4. Thou shalt be kind to the historic fabric: Common design elements that come with flood proofing a historic building include relocating utility equipment

About the Presenters ...

Andrea Brue, AIA, LEED BD+C

Andrea, an Associate at Goody Clancy with over 25 years of experience, specializes in the design and adaptive reuse of complex, multi-phased historic projects for both private and public-sector clients. Recent projects include a renovation project at the University of Virginia and the adaptive reuse of two historic state asylum complexes—St. Elizabeths campus for the Department of Homeland Security Headquarters in Washington DC as well as the Waterbury State Office Complex in Vermont. Her experience in adapting historic buildings for the twenty-first century has been driven by a respect for the past balanced with modern necessities. ●

to upper floors, cleaning exterior facades, and making the facades water tight. At Waterbury, careful attention was paid to minimize changes to the buildings due to relocated equipment; façade treatments were designed to fit in. ●



Aden's Ancient Cisterns: Historic Preservation and its Impact on Water Management

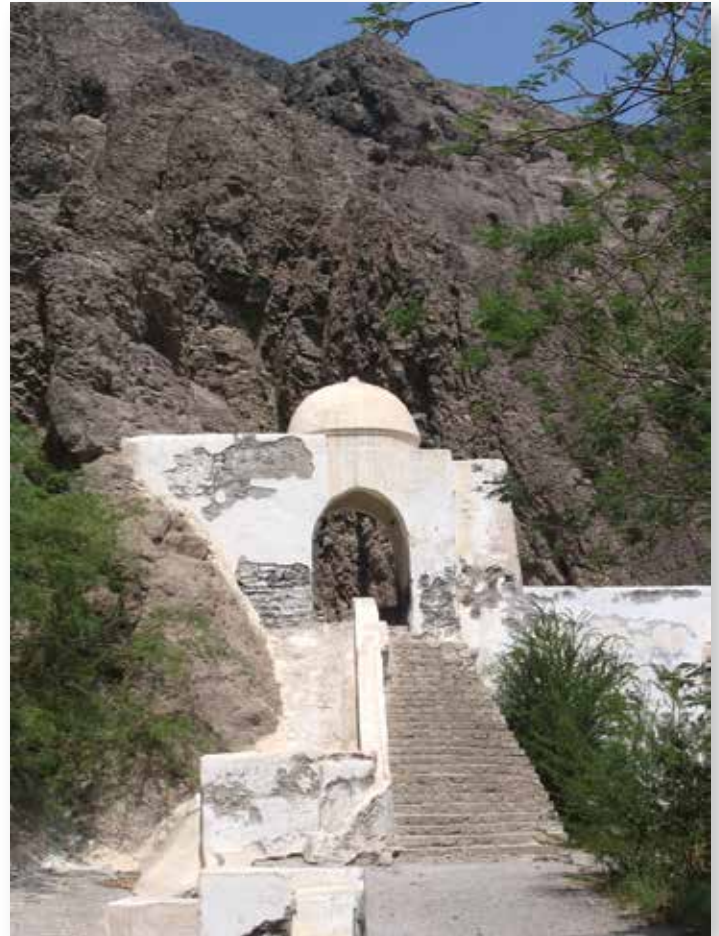
Presented by

**Edith A. Dunn,
PhD**

The city of Aden, Yemen is a natural harbor on the Red Sea. Securing a potable water supply has been an issue throughout the city's long history. While they have been modified many times over the centuries, the water tanks in Aden have existed for at least 1500 years. This feature, known in Arabic as "al-saharaj" is an integral part of the city's urban fabric and cultural heritage.

Although the water from the tanks is not considered potable by modern standards, it is a potentially critical resource in a city with no natural supply of fresh water. Unfortunately, underdevelopment and chronic water shortages render the tanks the only water source in times of crisis. The water has been used in emergencies despite its poor quality. The pollution of the water is exacerbated by the deteriorated condition of the tanks and the mismanagement of the watershed area. Planning issues that adversely affect the historic fabric of the water cisterns have also negatively impacted water collection, public health and safety. Mismanagement of the water system has encouraged the spread of water borne disease and flooding. These flood events have destroyed property and resulted in the loss of human life.

A condition assessment of the water collection system for the purposes of historic preservation was performed in 2007. The researcher discovered, however, that problems regarding al-saharaj's historic integrity could not be separated from broader issues of water management. The preservation of historic fabric had to be addressed in conjunction with water management issues.



Understanding the relationship between the preservation of al-saharaj and water management requires a holistic understanding of numerous issues. The interdisciplinary approach required for analysis includes considering the site from historical, archaeological, geomorphological, and hydrological contexts. The consideration of the site's larger landscape, including the watershed areas is essential, both from the perspective of international preservation standards and effective hydrologic management. →

The recent armed conflict in Yemen has resulted in a severe water crisis. Since there is no fuel available to operate modern well pumps, the residents have consistent access only to surface water. The planning problems that adversely impacted historic fabric of al-saharaj, are now intertwined with the growing tragedy of the latest Civil War. Public health of Aden's population is threatened by a shortage of clean water. The reconstruction of Aden will include many hardships, but hopefully a peaceful future will include preservation of the historic water tanks, and a safer system for managing surface water. ●

About the Presenters ...

Edith Dunn earned a MS in Historic Preservation from Columbia University and a PhD in Interdisciplinary Archaeological Studies from University of Minnesota. She has more than 25 years of experience in historic preservation, conservation and cultural heritage both domestically and abroad. She is a Conservator and Project Manager at Conservation Solutions Inc. ●



Water and Water Vapor Management in the Modernization of the FDR Museum & Library, Hyde Park, NY

Presented by

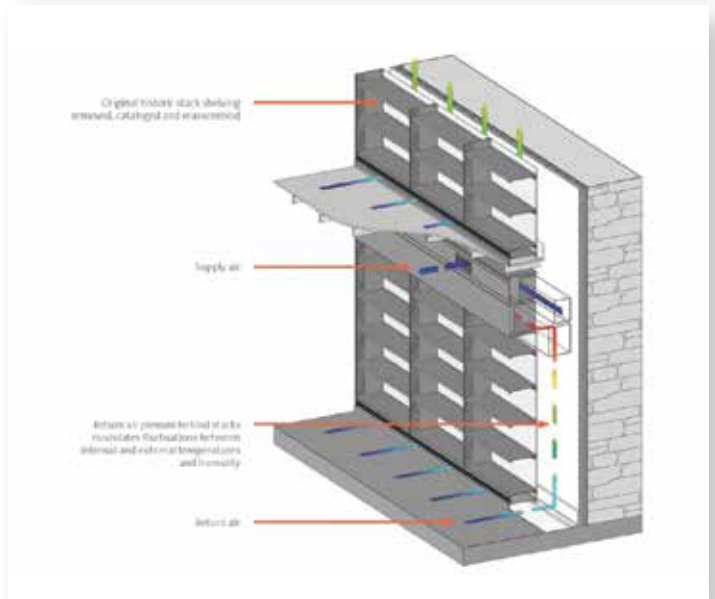
**Christopher
Tavener**

While the focus of the client (NARA) was re-planning a new, larger permanent exhibition, increased and improved archival and collections storage, and new building systems for this historic building, water and water vapor management commanded our attention.

Since records revealed that archival standards for temperature and RH had rarely been attained, a prime issue was predicting and controlling the impact of compliant environments on the masonry envelope. WUFI analysis predicted that, if no perimeter insulation was added, problems would emerge only where books or archives were stacked densely against the walls, as in FDR's private stacks, designated for preservation in the HSR. By moving the perimeter stacks inches, we created a slim, return-air plenum that warmed, and pulled moisture out of, the masonry. This concept was then applied to new archival and collections storage spaces.

Demand for more exhibit space pushed collections to the basement and demanded compact storage. Probes confirmed that the original slabs, two thin layers separated by an asphaltic membrane, would not sustain the loads. Thickening the slabs impacted the water table, which could rise. Sub-slab drainage fields with on-demand pumps and sensors at floor level were installed.

The flat, clayey site, the historic view-scape, and NPS ownership of surrounding land demanded an unusual approach to managing a 100-year storm. A retention pond was proscribed; existing drainage was a single 6" pipe exiting on a river bank. A bracelet of huge site drains, squeezed around the building and above the water-table, created an invisible holding tank. The 6" pipe and new rip-rap on the bank limited erosion and avoided archaeology on NPS land.



Existing damage and storms during construction showed that water could infiltrate sound fieldstone immediately above grade, above foundation wall waterproofing, close to a joint in the pre-cast concrete walls of the Eleanor Roosevelt wings. Internal gutters were added, either concealed behind ornamental cornices in public spaces or behind new walls in collections areas. →

Interior finish damage continued to be a problem below the original fieldstone chimneys, despite local repointing, decommissioning and capping of flues, and upgrading of intake louvers. Study of original drawings, the history of construction, and patterns of weather and damage suggest that the water source is the single wythe fieldstone at the top of the gable ends of the original structure. A solution has been suggested that combines deep repointing using a latex-modified water-resistant mortar on the exterior, and a liner of soft brick, a hydrophilic parge coat and increased ventilation on the interior. Time will tell.

Our experience suggests that options for water and water vapor control in historic buildings, while vital, may be seriously limited by the character of the original construction, adherence to preservation standards, and demands for new interior environments. At the same time, it is likely that, in the northeast, we will be seeing increased rainfall and storms. Effective solutions demand close study of the existing fabric and, as this project demonstrates, reaching for uncommon but carefully considered interventions. ●

About the Presenters ...

Christopher Tavener is a registered architect in the State of New York, who obtained his architectural degree at The Cooper Union. He has previously presented several papers on materials and preservation practice at annual APTI meetings.

In over twenty years at EYP, and before that at The Stein Partnership in NYC, he has specialized in the analysis and solution of problems in historic construction in rehabilitation and modernization projects, such as the stabilization of the terra cotta façades of Shepard Hall at the City College of New York and of the brick remnants of the Methodist Chapel at the Women's Rights National Historic Park, Seneca Falls, NY; the modernization of the Washington State Legislative Building, which won an Honor Award for Architecture for Excellence in Architectural Design from the American Institute of Architects; the restoration of the ornate stone and stucco façades of the American ambassador's residence in Prague; and, from 2005 through 2013, the planning and implementation of the rehabilitation of the FDR Museum and Library in Hyde Park, New York. ●

Not So Fast! Avoiding Imprudent Responses to Water Damaged Materials

Presented by

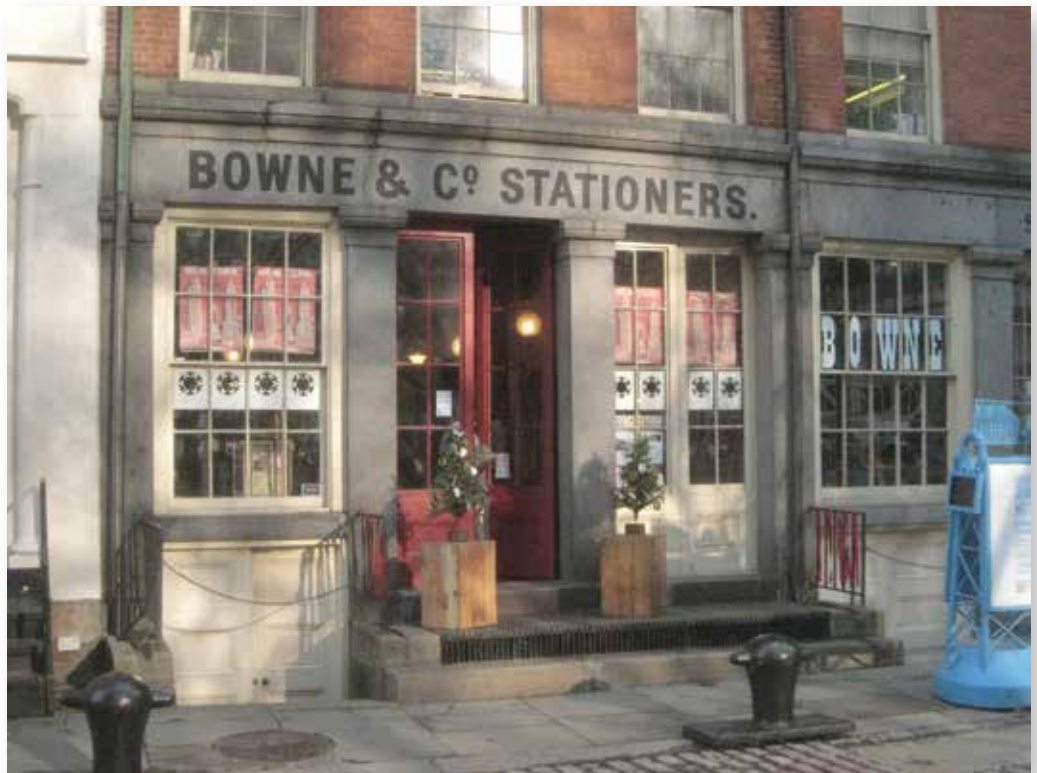
**Michael
Devonshire**

On October 29, 2013 Tropical Storm Sandy ravaged the US eastern seaboard. One of the areas significantly affected by the deluge was New York City. One of the foremost areas affected was the South Street Seaport Museum- which was effectively devastated, and remained closed for many months after the storm.

Two of the principal buildings of the Museum, the Bowne Printing Shop and the adjacent mercantile building, in which the Mast Brothers Chocolatiers had recently rented space, were heavily affected by the deluge. The cellars of both buildings were fully flooded, and the first story levels were under from 4'-6' of water.

When the water subsided, the damage to the building interiors was very clear—floor framing members were saturated, and floor boards were cupped, warped and in some cases fully displaced. Wall finish panels and wainscoting were damaged, and wooden counters and furniture elements were affected as well—among much other damage.

Our office received a call from the New York Landmarks Conservancy—they had been to the site and were poised to offer financial assistance to the Seaport, but wished to receive some additional technical advice concerning how to proceed with an appropriate intervention—the building management consultants on contract with the Seaport were indicating that all of the historic fabric required demolition and replacement. Such a drastic →



approach warranted a second assessment in the opinion of the Conservancy's technical director, and in fact, a cursory assessment of the situation revealed numerous alternative options. In addition, the "emergency" visceral response to the condition—closing of the buildings and mechanical dehumidification—appeared poised to worsen the situation.

After much negotiation, it was decided to take a less aggressive approach to the removal of water-soaked and deformed materials—employing no mechanical equipment, but natural air circulation and ventilation, and a period of gentle, natural moisture mitigation was undertaken.

Ultimately, the less aggressive, though more time-consuming, approach was successful—saving the museum a considerable amount of money, and ensuring that the historic fabric of the buildings would be retained. ●

About the Presenters ...

Michael Devonshire is a Principal and Director of Conservation at Jan Hird Pokorny Associates, in New York City. On the staff at JHPA since 1986, he has had exposure to numerous building types and condition issues, as a function of documentation, and in developing appropriate interventions. ●



Improvements to Freeze-Thaw Resistance of Historic Mortars

Presented by

**Michael Edison
&
Chad Lausberg**

While the long-term destructive potential of liquid water in masonry assemblies is well known, the potential for disruption of saturated mortars exposed to freezing conditions can represent a more challenging and more immediate problem. High permeability mortars, valued in historic

preservation work, also have the potential to become rapidly saturated. Projecting elements such as buttress caps, water tables and copings are particularly vulnerable. The problem is exacerbated in situations such as pavements and stairways, where water ponding and saturation prior to freezing may be further complicated by the presence of deicing salts. →



BEFORE AND AFTER PHOTOS OF NATURAL CEMENT MORTAR 1:1 WITH AMENDMENT AFTER 50 FREEZE-THAW CYCLES.



BEFORE AND AFTER PHOTOS OF NATURAL CEMENT MORTAR 1:1 WITHOUT AMENDMENT AFTER 3 FREEZE-THAW CYCLES.

Early freeze thaw failures of air-entrained Type O portland cement-lime masonry mortar on projecting elements at the East Block on Parliament Hill in Ottawa led to initiation of a testing program aimed at evaluating a potential amendment for improving freeze-thaw resistance. Early freeze-thaw failures of several natural cement pavement mortars led to a second study, examining a variety of historic mortars in pavement joints, including natural cement, natural hydraulic lime and portland cement-lime mortars.

The presentation reviews the testing programs and methods, the materials evaluated, the results of testing, and the mortar amendments determined to be most effective at improving freeze-thaw resistance while maintaining high moisture vapor permeability. Saturation coefficient reduction was determined to be the most effective strategy for improving performance in salt-scaling resistance, as determined in ASTM C672 testing. ●

About the Presenters ...

Michael Edison, Chemical Engineer and President of Edison Coatings, has been working in product development, formulation and technical support for over 42 years. He holds a degree in Chemical Engineering from Polytechnic University (NYU) and an MBA from the University of New Haven. He is Vice President of the Society for the Preservation of Historic Cements, Inc., and Task Group Chair of ASTM C1.10.04 on Natural Cement. ●

Chad Lausberg, Chemical Engineer, has worked in various technical functions at Edison Coatings for over 10 years. He conducted significant portions of the 4-year freeze-thaw testing program that is the subject of this presentation and currently works primarily in technical and field support services. He holds a degree in Chemical Engineering from Penn State University. ●

Coney Island's Gem by the Sea: The Restoration of Child's Restaurant

Presented by

**Yasmine
Elrashidy
&
Diane Kaese**

Our presentation will outline the degradation caused by numerous forms and kinds of water to the variety of materials found at the Child's restaurant building located on the Coney Island Boardwalk.

The degradation has affected the unique terra cotta elements, delicate stone (marble), stucco, and brick. The building is being restored with the intent of matching original details while taking into consideration the buildings' adaptive reuse into a performance space and restaurant called Seaside Park and Community Arts Center.

Designed by Hiron and Dennison in a "resort style with Spanish Revival influence" and built in 1923, this massive "terra cotta palace by the sea" became a New York City Landmark in 2002. The building was designed to look as if it was "washed up by the sea" and is adorned with a variety of flamboyant, colorful terra cotta aquatic ornamentation including Poseidon, sailing ships, sea horses, squid, crabs, and seaweed.

The building was developed for Child's Restaurant, a chain that is credited for inspiring the cafeteria-style, grab-and-go service that would become a huge part of urban dining in the early and middle parts of the 20th century. A preservationist described the vibe at Child's Coney Island branch in its heyday as a "hub where older people could eat, teenagers could go to get away from their parents and children could learn how to eat out." Child's interiors were characterized by the use of high quality materials such as white tile walls and floors, marble communal tables, and modern electric



lighting and fans. The company demanded similar quality in its exterior architecture.

After the restaurant closed, the building had a variety of uses, the last being a candy factory. The city currently owns the structure. The building had obligatory maintenance until approximately 10 to 15 years ago. Since that time, the maintenance lapsed allowing the building to deteriorate exponentially. Other deterioration mechanisms have also contributed to the current state of this 92-year-old building →



including the negative effects from its close proximity to salt water, being in the path of high tides including the major surge created by Superstorm Sandy, previous repairs to the building, and relatively minor vandalism.

Typical of projects of this type, many challenges are present and judgment calls are required to do what is best for the long-term benefit of the building. The Landmark designation is based on the terra cotta elements and represents the most challenging part of the restoration. The terra cotta elements are more akin to artwork than ordinary building material, creating a very complicated terra cotta restoration. Aspects of this work will be discussed.

Other examples of unique aspects of this project that could be addressed in the presentation are the stucco (originally acoustical plaster), the brick and the marble columns. The study and understanding of projects like the Child's Restaurant building have many lessons that contribute to the advancement of the field of historic preservation. ●

About the Presenters ...

Yasmine Elrashidy is currently working with Pullman SST as an Assistant Project Manager while also attending New Jersey Institute of Technology to get her Bachelors Degree in Architecture and Concrete Industry Management. She is keen on providing support on a regular basis to the Project Managers, Foremen, and Superintendents of this project as well as others at Pullman. She has held various positions, such as Vice President of the NJIT ICRI Student Chapter, as well as Superintendent of Alpha Rho Chi. Yasmine's constant urge to learn has helped her gain experience with various aspects of the construction industry while getting her education. Yasmine can be reached at yelrashidy@pullman-services.com. ●

Diane S. Kaese, R.A. has more than 35 years of experience providing a variety of services from investigating structures to providing roofing and waterproofing specifications to performing construction administration. She is an expert in historic structures having worked on many award-winning projects including the Eldridge Street Synagogue, MTA Bleeker Street Subway Station, and Whitney Museum of Art. Diane is a well-respected professional in the field of historic preservation and is active in many professional associations including being the President numerous times of the Historic Paulus Hook Association as well as its Construction Committee Chair since 1989; is a member of the Preservation Committee of the Municipal Arts Society; and was a Board member and Education Committee Chair of Preservation New Jersey for nearly 10 years. She is a regular lecturer on a variety of topics such as preservation, construction management, and the roles and responsibilities of parties involved in construction. Diane can be reached at dskaeese@kaeselynych.com. ●

Behind the Scenes Tours

Saturday, February 6

Pre-registration for all tours is required as space is limited. Check with symposium registration for availability.

Tour 1: **Rough Point Mansion**

9:00 a.m. – 11:00 a.m.

Location: 680 Bellevue Avenue
Newport, Rhode Island 02840

As the residence of philanthropist and art collector Doris Duke, Rough Point stands proud as one of Bellevue Avenue's prominent mansions. The Newport Restoration Foundation has steadfastly maintained several properties, including Rough Point. The structure has unfortunately faced many challenges related to water infiltration and various types of water-related distress. In addition to touring the first floor of the house and exhibition galleries, you will discover what the stewards of the property have undertaken to preserve this beautiful home. The tour will be hosted and led in part by Executive Director Pieter Roos; Director of Preservation Robert Foley; and Systems Supervisor Mark Lennon.

Tour 2: **International Yacht Restoration School**

11:30 a.m. – 1:00 p.m.

Location: 449 Thames Street
Newport, Rhode Island 02840

Amongst the mansions and sculpted landscapes that represent the Gilded Age in Newport, the city's relationship to the ocean is tangible as well as the lifestyle and culture of yachting. The International Yacht Restoration School (IYRS) supports and preserves the culture and heritage of yachting. Attendees will observe unique projects currently in progress at the school and gain access to the Museum of Yachting. The IYRS offers extraordinary views of Newport harbor and the entrance to Narragansett Bay.

Tour 3: **Salve Regina University's Cultural and Historic Preservation program**

11:30 a.m. – 1:00 p.m.

Location: 100 Ochre Point Avenue
Newport, Rhode Island 02840

Dr. Robert Russell will inform attendees about the unique mission of the Noreen Stonor Drexel Program in Cultural and Historic Preservation. Dr. Russell has been instrumental in developing this interdisciplinary program that engages the multiple disciplines including the fields of archaeology, architectural history, politics, economics, and urban studies. He has pioneered the program to integrate academic studies and craftsman training through offering of a degree in historic preservation and the traditional building arts. The tour will feature the archaeological lab facilities and student workspaces—all in the repurposed Richard Morris Hunt stable building originally built for the Chateau sur Mer estate. A description and discussion of the new program Salve is commencing with the IYRS School of Trades and Technology (formerly the International Yacht restoration School) will also be a part of this tour. ●



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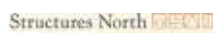
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