

Schedule:

8:15-9:00: Check-in / registration / breakfast

9:00-9:15: Introduction

9:15-10:00: Norman Weiss, Associate Professor, Columbia University

Title: Science and History of Surface-applied Treatments

This talk is an attempt to define what water-repellents are (and are not), and to examine how they fit into the considerably broader category of masonry treatments. Conservation by chemical means is a practical component of the quest for prolonged service life. As so many of the modes of degradation of masonry materials are associated with moisture, the discussion must start with an understanding of the fundamental nature of water, and of its behavior in porous materials. There is a long history of the use of paints, clear coatings and water-repellents to enhance building performance by keeping masonry dry. This lecture will look more specifically at how the science and technology of surface-applied treatments was changed by the events of the Second World War.

10:00-10:45: John Lambert, Founder / President of Abstract Masonry Restoration

Title: Specifying Water Repellent Treatments - Things to Consider.

Treating masonry surfaces with water repellent treatments is robustly discussed among preservation professionals. The decision to apply, or not to apply water repellent treatments is an important one that significantly affects the performance of the masonry. There are several factors to consider in order to make the right decision. Many are not so obvious. From the perspective of an historic masonry restoration contractor, this presentation outlines many considerations for preservation professionals to thoughtfully ponder before specifying water repellent treatments.

10:45-11:00: Break

11:00-11:45: Michael Edison, President, Edison Coatings Inc.

Title: Alternative Treatments for Moisture Protection of Masonry

While water repellents based on various forms of silicone chemistry have been the mostly widely used treatments, over the past 30 years, alternative treatments provide different performance profiles and esthetic effects, as may be appropriate for some projects. This presentation will discuss several alternative treatments for protection of masonry from moisture infiltration:

- **Hybrid clear sealers**, incorporating both water repellent and film-forming components, can provide a different balance of properties than silicone-based treatments, including improved chemical resistance, light consolidation and reduced potential to engender subfluorescence.
- **Mineral stains and coatings based on potassium silicate** have the capacity to strengthen certain substrates while incorporating water repellent chemistry to reduce water absorption.
- **Breathable elastomeric coatings** based on acrylic or aliphatic polyurethane polymers have the capacity to bridge small working cracks to a degree not practically achievable with hydrophobic water repellent treatments.
- **Polymer-modification of masonry mortars and repair mortars** can effectively reduce water absorption of the most vulnerable elements in a masonry building envelope.

The presentation will provide case study examples of these alternative treatments and will discuss their relative strengths and limitations

11:45-12:30: Peter Meijer, *Principal, Peter Meijer Architect*

Title: Backed by an aggressive 15-Year Waterproofing Warranty this waterborne, polyester-polymer and polyurethane sealer penetrates up to 4" inside brick, mortar, grout, concrete and masonry. Product X internally fills the pores, bonds the substrate, and cures rock hard making the seal practically permanent.

Product X works as a masonry sealer. But what are the long-term ramifications of using Product X on masonry buildings? Masonry sealers come in a wide variety of formulations. How do the various chemical compositions react to environmental conditions and what affect does the formulation have on the masonry.

Unlike Product X, most masonry waterproofing sealers specified by architects and conservators, installed by contractors, and requested by property owners are based on Si-O-Si chemistry. There are three popular groups of silicone based materials being used as waterproofing materials: 1) silicates, 2) the group of silane, siloxane, silicate; and 3) silicones

Silicates, similar to Product X, provide waterproofing properties by filling the pore structure of building materials with silicone dioxide precipitation.

Silanes, siloxanes and siliconates provide waterproofing properties by bonding with the substrate. Siliconates are water soluble and they impart water repellency on porous surfaces. As per the conventional method of application, 30% by weight of siliconate solution is diluted to less than about 3% by weight. Dilution reduces solution viscosity and increases its penetration along the depth of the substrate.

However, there is a drawback in using diluted siliconate solution for waterproofing applications. When this solution is applied by brush/spray/roller to the substrate, siliconates react with carbon dioxide and carbonaceous matters present in the substrate to form a water repellent, water-insoluble, white colored precipitate. This white layer may become quite visible and require aggressive removal procedures. Silicones are present in the polymer form and they do not form chemical bonds with the substrate. They provide waterproofing properties by forming a non-bonded film.

Each of the formulations has an impact on the substrate, based on field observation and lab testing, the long-term effects on masonry substrate of specific waterproofing sealers will be presented.

12:30-1:15 Lunch

1:15-2:00 Mark Morden, *Associate Principal, Wiss, Janney, Elstner Associates, Inc.*

Title: Try, Try Again – The History of Water Repellent Treatments on the Washington State Legislative Building

The Washington State Legislative Building (WSLB) is perhaps the most significant building in the State of Washington. Home to the state legislature and governor, the edifice is clad entirely in Wilkeson sandstone. From construction in the late 1920s to today, the building has been plagued by the susceptibility of the stone to foster organic growth and retain soiling. The history of treatments to address these problems extends back to 1959. Attempts to control organic growth and soiling have

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included, over the life of the building, applications of several types of water repellents and consolidants, including silicones and acrylics. The results have ranged from ineffective to permanent deterioration of stone elements on the building.

The talk will review the history of stone treatments, the short and long term effects of the treatments, and explore other approaches to minimizing the soiling of the stone without causing further damage to the historic material.

2:00-2:45: Michael Aoki-Kramer, Senior Specialist, Managing Principal RDH Building Science Inc.

Title: To seal or not to seal – are you asking the right question?

Michael will present thoughts and insight into the development of the Northwest Masonry Systems Guide's section on masonry sealers, design considerations that should precede the choice of whether to use sealers, followed by case studies highlighting approaches his firm has taken on various projects involving aspects of historical masonry restoration.

- 1) Presenter will discuss the Masonry Institute of Washington's Masonry Systems Guide, Northwest Edition, focusing on the recommended uses of masonry sealers and the research that went into the recommendations.
- 2) Presenter will discuss various design considerations to factor in before deciding on use of sealers.
- 3) Presenter will share case studies where masonry sealers were used in historic masonry projects and why.
- 4) Presenter will share case studies where masonry sealers were not used and why.

2:45-3:30: Sarah Hunter, Preservation Specialist with the Clean & Protect Group, PROSOCO and Al Morris, National Sales Manager with PROSOCO

Title: Water Repellents and Historic Masonry: A Manufacturer's Perspective

PROSOCO, Inc. has been an industry leader in the manufacturing of products for cleaning, protecting, and maintaining historic masonry buildings. Over the course of 78 years, PROSOCO has been a part of the progression and advancement of water repellent and protective treatment technology. Water repellents and other protective treatments are often misunderstood. Water repellents are often specified and then subjected to scrutiny due to the mischaracterization of newer water repellent technology as that of the past. This presentation will provide the perspective of the manufacturer in the evaluation, selection, and application of water repellents and protective treatments. Following a summary of PROSOCO company history, attendees will learn where PROSOCO water repellents fit into the array of products that are available on the market. Participants will also learn how water repellents were approached in the past and see examples of contemporary treatments. During this session, participants will learn how to evaluate, select, and gauge expectations for treating historic masonry buildings with water repellents.

3:30-3:45 Break

3:45-4:45 Moderated group discussion

4:45 – 5:00 Closing Remarks