



PROJECT DATA SHEET:
Colonial Williamsburg - Benjamin Powell Smokehouse

**PROVIDING A UNIQUE SOLUTION FOR ONE OF WILLIAMSBURG’S ORIGINAL
COLONIAL PROPERTIES**



*Masonry Preservation
and Enhancement Specialists*

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Repair and enhance without changing the aesthetics.



Colonial Williamsburg – Benjamin Powell Smokehouse

Location: Williamsburg, VA

Age: Built circa 1790

Key Topics: Historic stabilization,
NDE, CIF injection, desalination

Project Background:

- Located in Colonial Williamsburg, a member of the National Register of Historic Places and a US National Historic Landmark District
- One of the original 88 properties of Colonial Williamsburg and the only surviving brick smokehouse
- Until 1984 the building was still fully functioning, demonstrating the traditional methods of curing and smoking meats for over half a million annual visitors



Challenges Presented:

- The smokehouse had suffered severe deterioration of both brick and mortar due to salt crystallization within its walls and was unstable
- Local birds were actually eating the salts from the exterior walls, further damaging the structure
- Mortar deterioration was so severe that repointing of the mortar joints was required almost semi-annually
- Due to the irregular patterns and rate of deterioration, architectural conservators were hesitant to implement conservation measures without a clear understanding of the underlying processes taking place and their effects





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Services and Solutions:

- Masonry Solutions' laboratory engineers began by using non-destructive evaluation techniques, including ultrasonic and mechanical pulse velocity surveys and infrared thermography scans to study the structure
- Pulse velocity surveys indicated severe internal deterioration not visible by other means
- MSI personnel utilized their findings to develop a unique poultice treatment that would remove salts from the interior walls
- Masonry Solutions formulated a CIF mix that would match the characteristics of its historic host
- This CIF mix was injected under very low pressure to ensure the walls were solidified and provided monolithic performance
- Then MSI techs carefully applied their custom poultice treatment, utilizing a protocol that would not leave any changes in the building's appearance upon completion
- Once applied, a de-humidifying system was installed at the interior to draw moisture to the poultice, capturing the salts in the process
- Initial poultice samples were collected and tested to quantify the procedure's performance
- A total of 4 poultice treatments fully eliminated the smokehouse's salt crystallization issues, stabilizing the construction and preventing future structural decline
- Further NDE verified that the voids were indeed filled and that the interior condition of the walls was greatly improved



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Masonry Solutions International has worked in the field of masonry preservation and enhancement for over 20 years. It has pioneered a number of advanced techniques, including compatible masonry injection and undercut fabric anchorage.