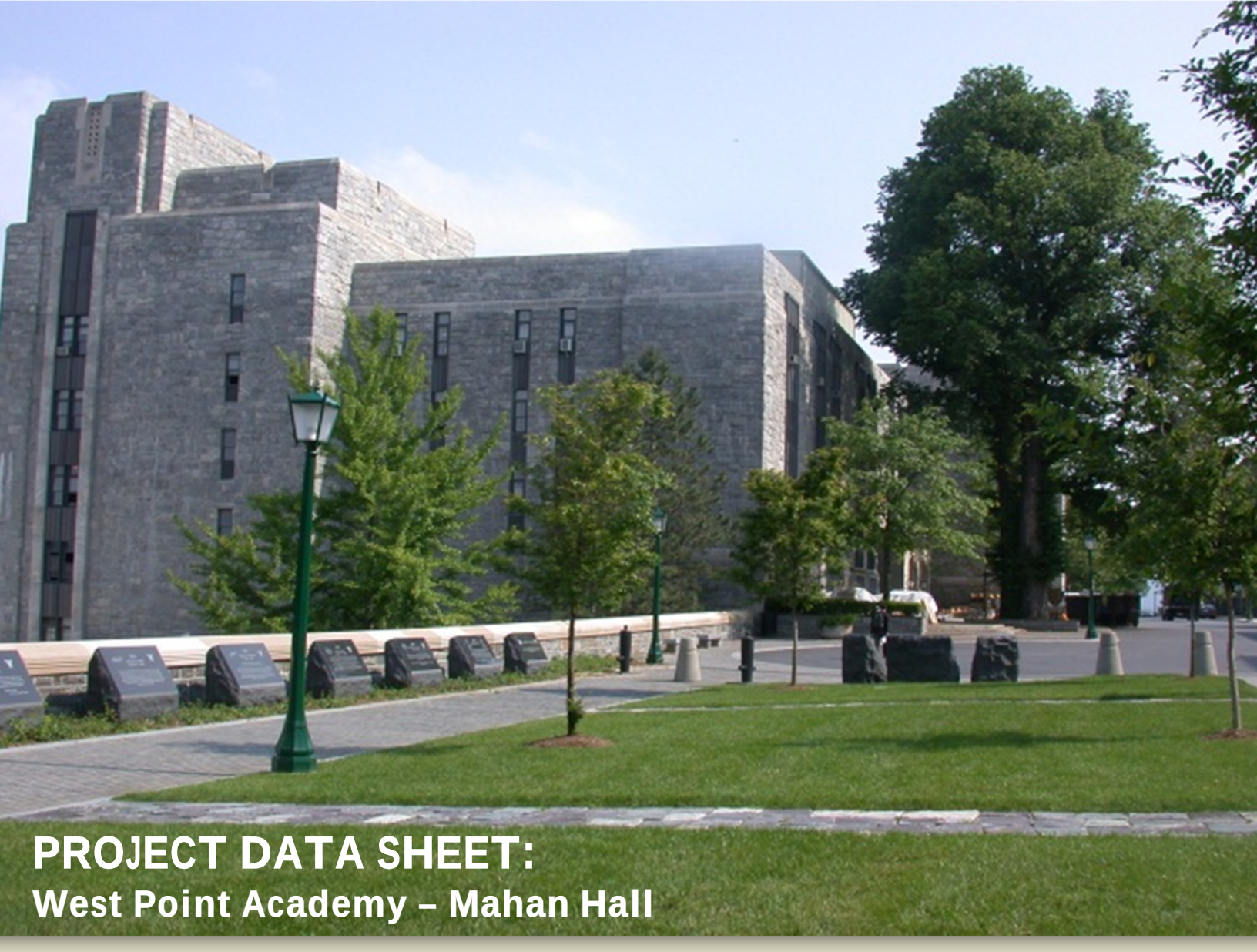

PROJECT DATA SHEET:
West Point Academy – Mahan Hall

A LOOK AT MOISTURE PREVENTION AND SEISMIC RETROFIT FOR ONE OF THE WORLD'S MOST FAMOUS MILITARY INSTITUTIONS

MASONRY SOLUTIONS INTERNATIONAL

Masonry Preservation and Enhancement Specialists

10815 Beaver Dam Rd, Suite D
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Tel: 877-815-7906 Fax: 410-771-1942

Repair and enhance
without changing the aesthetics.

West Point Academy – Mahan Hall

Location: West Point, NY

Age: Built 1971

Key Topics: Water Infiltration, seismic retrofitting, NDE, masonry analysis, CIF injection

Project Background:

- Located on grounds of the world famous West Point Military Academy
- Mahan Hall represents the commitment to excellence demonstrated by the US Armed Services
- Home to the Academy's Department of Civil and Mechanical Engineering and the Department of Systems Engineering

Challenges Presented:

- For decades since its construction, Mahan Hall had been exhibiting signs of severe water infiltration
- To collect the large quantities of water permeating through the walls, a patchwork rain gutter system was actually erected inside of classrooms. Previous repointing efforts failed to solve these water penetration issues
- Personnel in command of the Hall were also evaluating seismic retrofit techniques due to recent changes in seismic mapping and building codes. They required a solution that would address both concerns
- MSI was contracted to develop an approach, prevent moisture permeation and meet the new building codes

Repair and enhance
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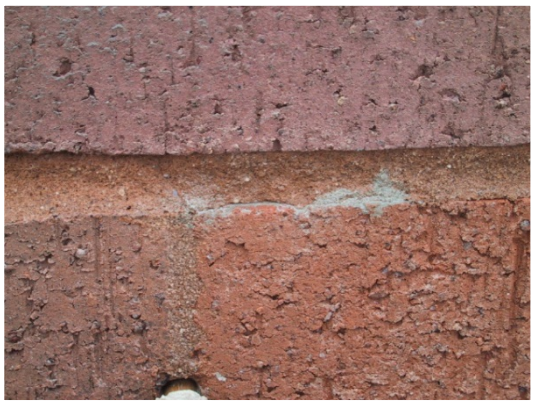
Services and Solutions:

- Masonry Solutions technicians began by assessing the water infiltration present using a series of NDE techniques including minimally invasive borescoping and ultra-sonic pulse velocity mapping
- Through this NDE, MSI determined that an ASTM C1601 water permeation test should be conducted in order to provide an accurate analysis of the conditions present
- Following this analysis, the project team reviewed MSI's report, which revealed compatible injection of the structure would solve their water penetration problems
- Informed by MSI's report, the Academy's project team approved CIF injection of the affected areas
- Masonry Solutions' laboratory engineers designed an injection material that matched the characteristics of the affected walls, in order to promote a stronger bond and thus an effective barrier to moisture penetration
- MSI's custom CIF needed to not only solidify voids , but also seep through the wall's cracks that were promoting water permeation
- MSI injection specialists then injected the exterior granite sections with their customized CIF. All of this work took place from interior brick walls as scaffolding the building's exterior for access was near to impossible
- CIF injection simultaneously strengthened the walls, prevented access for water infiltration, and allowed the building to meet the area's new seismic guidelines
- Further NDE concluded that all project goals were successfully achieved



CIF fines sealing moisture penetration path from the inside out

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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.