



## Tripoli Monument

UNITED STATES NAVAL ACADEMY, ANNAPOLIS, MD

We cleaned, completed stone repairs, repointed and regilded the nearly 200-year-old marble and sandstone Tripoli Monument located on the campus of the U. S. Naval Academy in Annapolis, Maryland. We also performed a series of cleaning tests and several alternative repair methods to assist the Navy in meeting the goals of their bid specifications.

The monument was cleaned of biological growth and gypsum crusts using a 3% to 5% solution of calcium hypochlorite and a fine nebulous water-misting system. Tests were performed to determine the nature and possible cause for the red/orange staining. Microbial analysis performed by Harvard University identified the staining as the fungi *Epicoccum nigrum* and *Drechslera* sp. It was found that the staining is a protective pigment that is created by the *E. Nigrum* only when the organism is in contact with an alkaline material, such as the Carrara marble of the monument. Several biocides were identified to kill the fungi but none were successful in removing the staining. At the Navy's request, visible areas of staining were in-painted using a reversible pigmented lime shelter coat until a suitable technique was found for its removal.

Repairs to the monument included 100% raking-out and repointing, crack filling with dispersed hydrated lime putty injection, removal and replacement of ferrous elements, regilding of the decorative flames, recarving heavily damaged stone sections, patching damaged and/or missing sections of the monument using a custom matched lime putty, and Dutchman repairs.

MORE INFORMATION:

<https://evergreene.com/projects/tripoli-monument/>

### SERVICES PERFORMED

Conservation Treatments  
Investigation, Testing & Analysis  
Surveys & Condition Assessments



