

SMITHSONIAN FACILITIES MAINTENANCE

From its original building on the Mall (commonly known as the "Castle"), the Smithsonian has evolved into the world's largest museum complex and research institution. With this expansion comes the challenge of upkeep and maintenance of these facilities. The Smithsonian has adopted industry best practices to maximize the effectiveness of its resources, modernized its operating procedures and established dynamic processes for prioritizing work and allocating funds. Still, facilities-related problems resulting from a serious lack of adequate funding plague the Institution.

Facilities problems at the Smithsonian have resulted in several building closures and access restrictions, and in some limited cases, resulted in damage to collections. Maintaining desired humidity and temperature levels for conserving collections is a pervasive problem. These types of problems are indicative of a broad decline in the condition of the Smithsonian's aging facilities and systems that pose a serious long-term threat to the collections and limit the Institution in accomplishing its mission. Below are illustrations of the types of issues Smithsonian officials face in applying limited resources to wide-spread problems:

- 1) Arts and Industries (A&I) - The structural, roofing, electrical, plumbing and mechanical systems of the A&I Building have deteriorated to the point that the building is no longer safe for use and it has been closed. The trusses that support the roof are of particular concern as the top chords continue to weaken due to ongoing corrosion. Further corrosion of the structural system creates the potential for a roof collapse in the event of a heavy snowload.

- 2) National Zoological Park (NZP) - The Zoo's infrastructure is in a state of crisis requiring substantial infusion of funding to renew and preserve the facilities. NZP infrastructure deteriorates more quickly than other environments due to the large volumes of water used for cleaning and corrosive chemicals used as disinfectants. In fact, several buildings have had to be demolished in the last few years due to structural failure

(Australia Building 2003, Upper Bears Exhibit 2005, Flight Cage 2005).

3) National Museum of American History (NMAH) - Now 43 years old, NMAH is in trouble as building systems are reaching the end of their respective design lives. For instance, components of the electrical system (specifically motor control centers) are being cannibalized because parts needed for repairs are no longer manufactured; and the HVAC chillers are well beyond their expected life spans. In addition to problems with building systems, substantial upgrades are needed for fire protection, physical security and accessibility for people with disabilities.

4) National Museum of Natural History (NMNH) - Now 97 years old, NMNH is in an advanced state of deterioration, especially the mechanical, plumbing and electrical systems. Furthermore, there are significant safety and security deficiencies, and in accommodations for persons with disabilities. And finally, architectural features reflect significant distress from aging, weather, and the wear and tear from millions of visitors.

5) National Air and Space Museum (NASM) - Now 41 years old, NASM's Heating, Ventilating and Air Conditioning (HVAC) systems, domestic water systems, and water heating systems are in a state of extreme disrepair. Major components of the electrical distribution systems are obsolete and have become increasingly difficult to maintain. Repairing obsolete equipment often involves cannibalizing used parts from old equipment that had been previously removed from service. Further, there are numerous architectural and structural problems, the most serious of which is water intrusion.

6) Mall Art Museums - Roof leaks and maintaining a proper environment for valuable art collections continues to be a major issue for Mall Art Museums. Aging HVAC systems and/or inadequate control systems make it difficult

to maintain relative humidity within the accepted range of 45% +/- 8%, and consequently the collections are placed at risk from condensation. Further, roof leaks place the collections at additional risk from direct water intrusion.