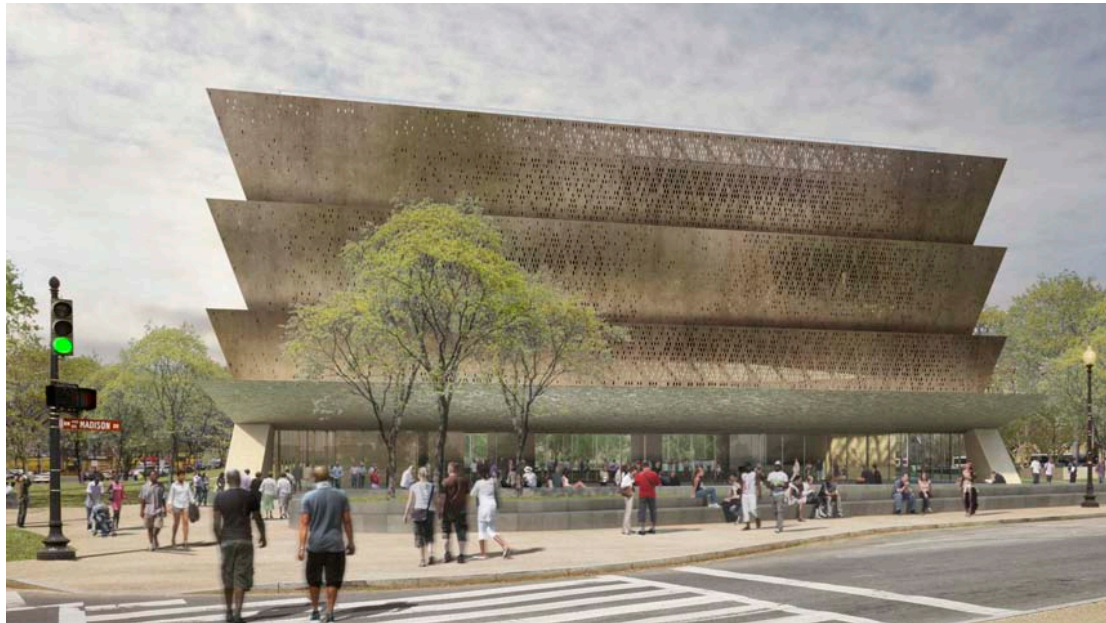


# National Museum of African American History and Culture

## NEPA & Flood Protection



# Background

Enabling Legislation  
H.R. 3491  
NMAAHC Act  
January 2003

NMAAHC  
Plan for Action  
Presidential  
Commission  
April 2003

NMAAHC  
Plan for Action  
Presidential  
Commission  
September 2003

Site Evaluation Study |  
Phase I & II  
September 2005  
November 2005

One Hundred Eighth Congress  
of the  
United States of America

AT THE FIRST SESSION

*Began and held at the City of Washington on Tuesday,  
the seventh day of January, two thousand and three*

An Act

To establish within the Smithsonian Institution the National Museum of African  
American History and Culture, and for other purposes.



**The Time Has Come**  
Report to the President and to the Congress



**Final Site Report**



Smithsonian  
National Museum of African American  
History and Culture



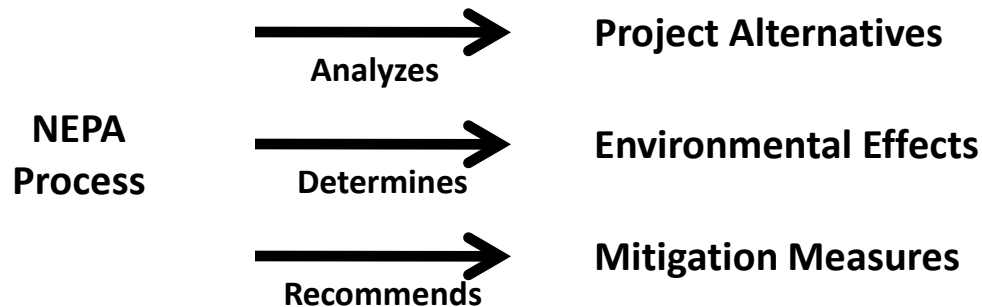
# What is NEPA?

- NEPA

**National Environmental Policy Act of 1969**

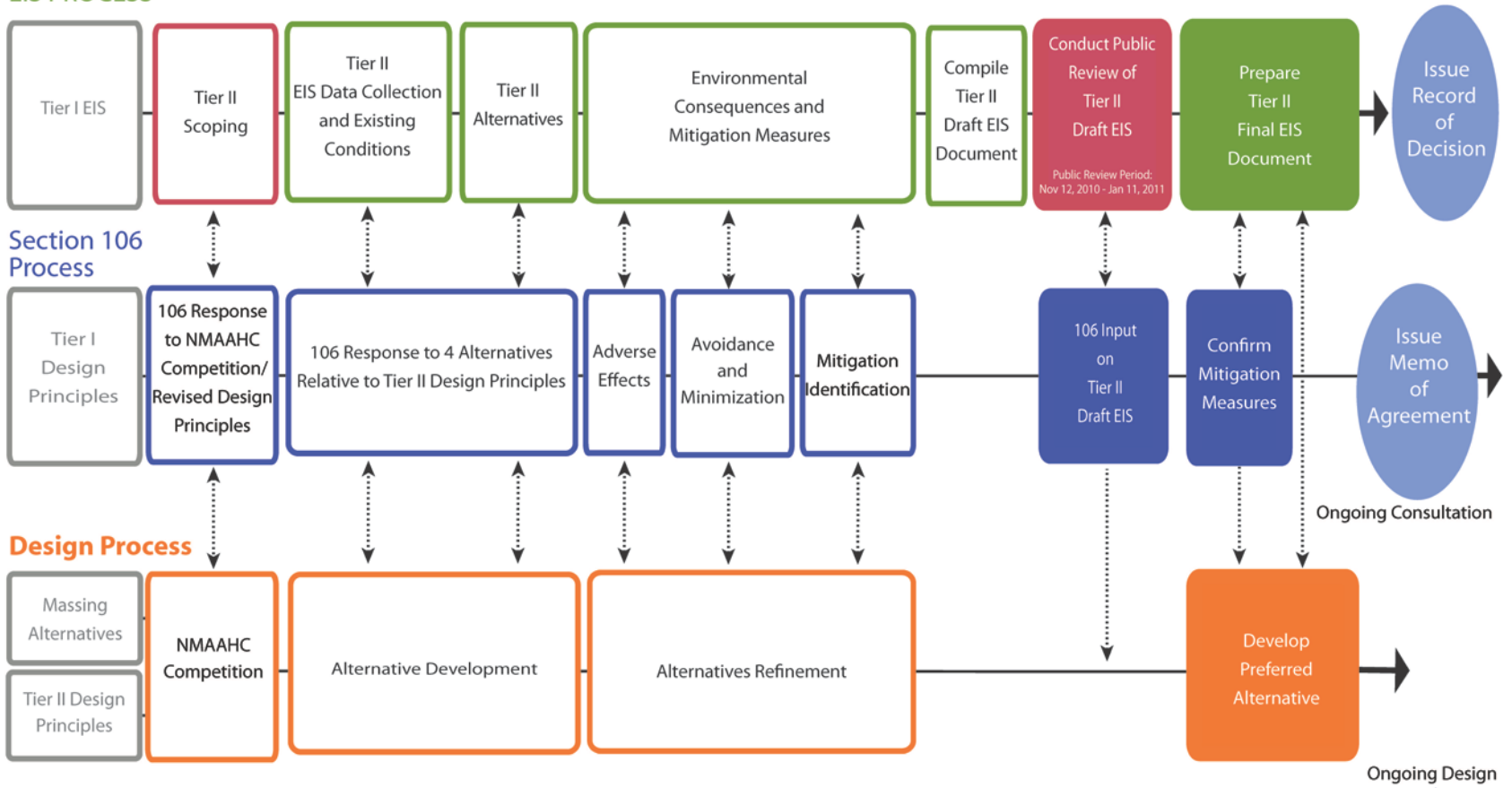
(NEPA; Public Law 91-190; 42 U.S.C. 4321 *et seq*)

- Established a national policy for **protecting the environment** and requires evaluation of alternative actions
- Goal: To ensure **informed decision-making**
- EIS and Record of Decision (ROD)



# EIS – An Integrated Approach

## EIS PROCESS



2007-2008 DECEMBER 2009

SUMMER 2010

FALL 2010

Fall 2011

## **EIS Addressed**

- Cultural & Historic Resources
- Aesthetics and Visual Resources
- Surface Water Resources
- Geology, Soils, and Groundwater
- Conservation of Natural Resources
- Air Quality
- Noise
- Land Use and Zoning Policies
- Communities and Businesses
- Visitor Use and Experience
- Transportation
- Public Health and Safety
- Environmental Justice
- Infrastructure and Utilities
- Cumulative Impacts

## EIS Mitigation Measures

- Placement within the site to generally respect established setback lines
- Efforts to reduce the above-ground mass of the museum
- Continuity of Washington Monument Grounds landscape
- Replacement of trees lost to construction
- Support of Excavation wall to maintain soil stability and avoid de-watering offsite
- Sustainable methods of capturing stormwater on site
- Relocate underground utilities to areas outside of building footprint
- Use of rainwater for irrigation
- Appropriate stormwater management and soil erosion measures
- Minimize nighttime light pollution while providing appropriate illumination
- Minimize Construction traffic impacts
- Use of low-sulfur fuel in construction equipment
- Use of low-flow toilets

NMAAHC site

HP +19  
\*

HP +28  
\*

HP +44  
\*

HP +30  
\*

# Multi-Hazard Vulnerability Assessment



## Man-Made Threats

- Explosive Blast due to vehicle bomb
- Chemical / Biological / Radiological (CBR)
- Technological accident
- Armed attack
- Civil Disruption
- Cyber Attack
- Kidnapping / Hostage



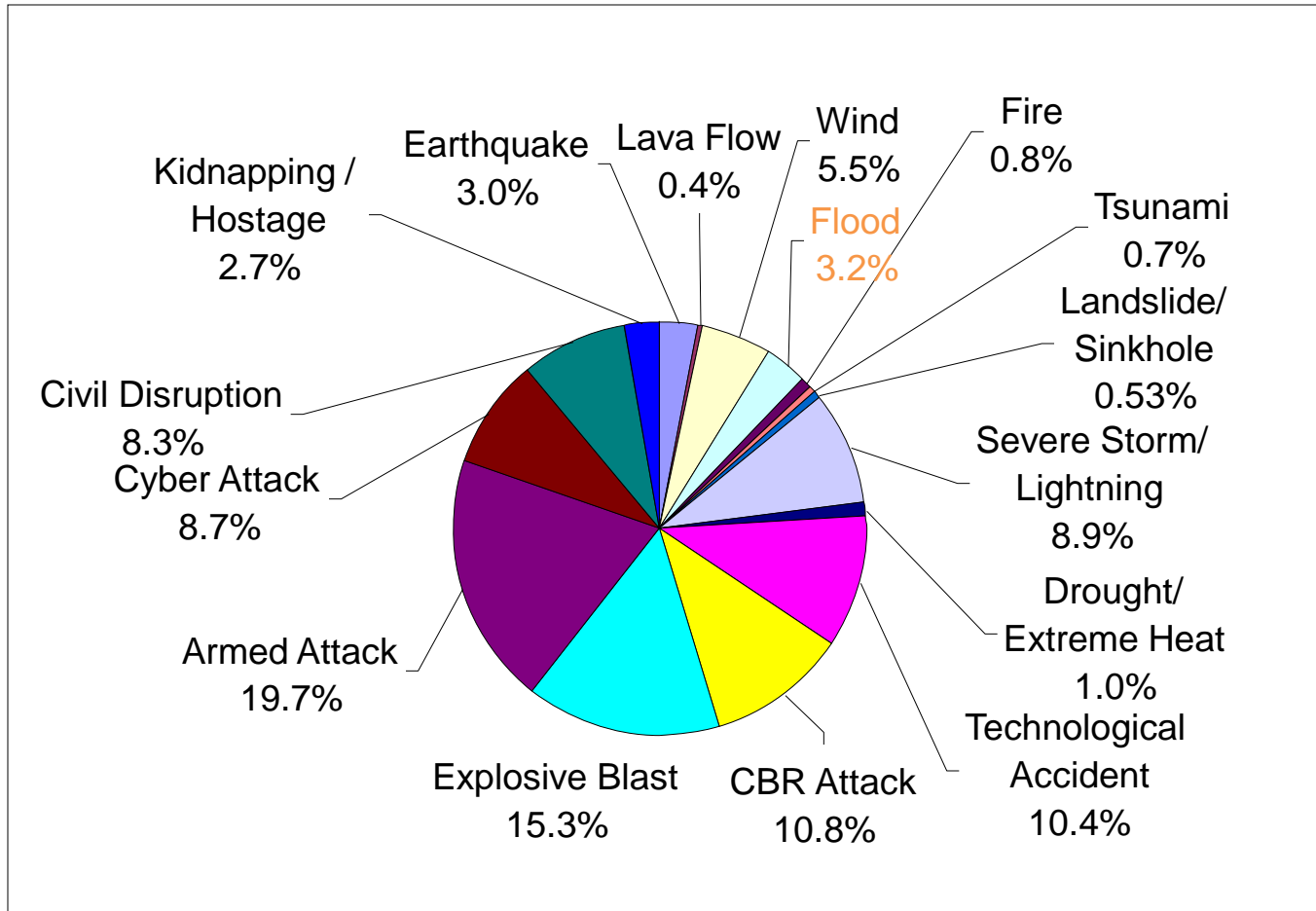
## Natural Hazards

- Wind (hurricane or tornado)
- Severe Storm / Lightning
- Earthquake
- Wildfire (not building fire)
- Flooding (surface water, not broken pipes)
- Landslide / Sinkhole
- Lava flow

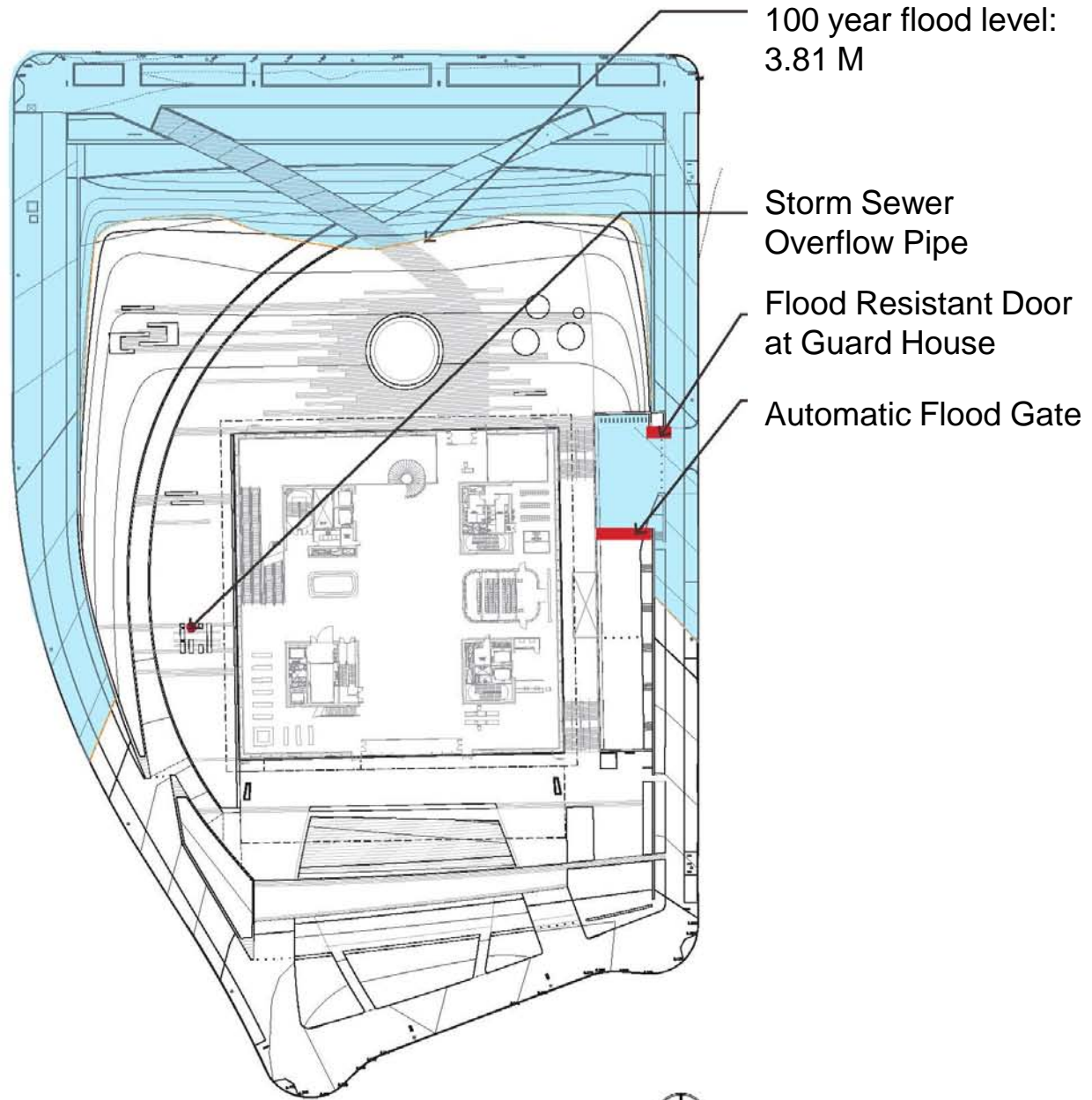




# High Vulnerability Scores SI-Wide



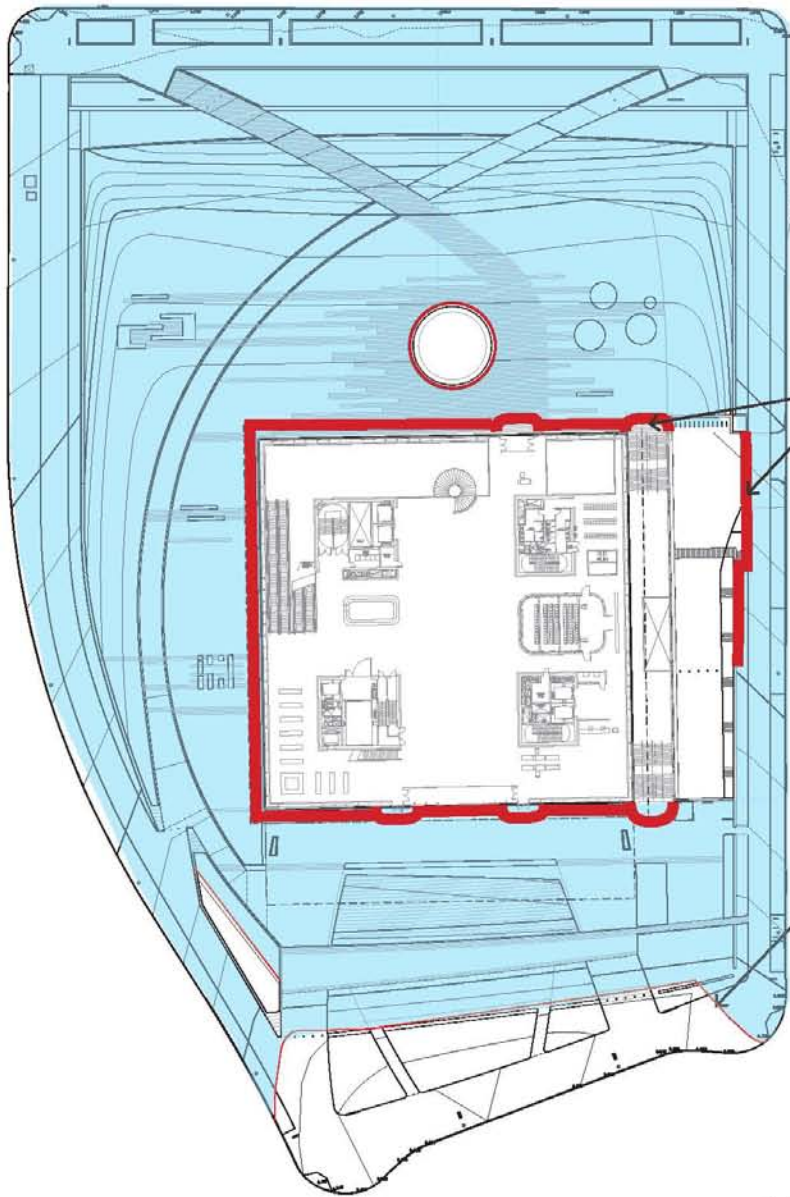
# NMAAHC Flood Protection: 100 Year



Images of the Automatic flood gate for the Loading dock.

Site Plan: 100 year flood

# NMAAHC Flood Protection: 500 Year



Sandbags  
Sandbags

500 year flood level: 5.13 M  
500 year flood level:  
5.13 M

Site Plan: 500 year flood



Example of Manually-Installed Panel



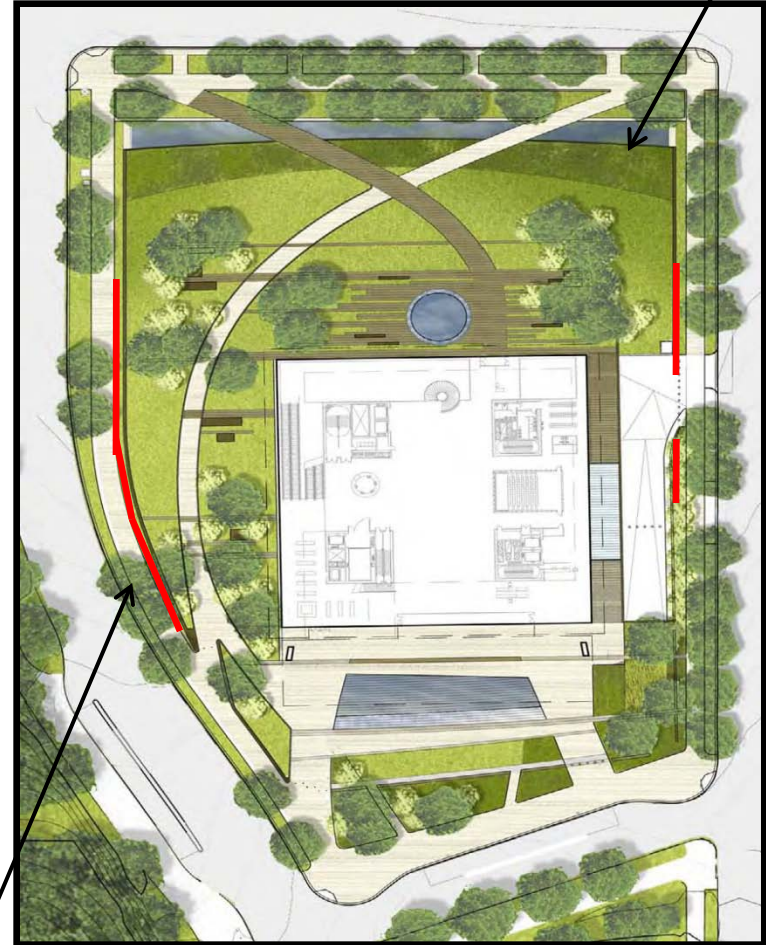
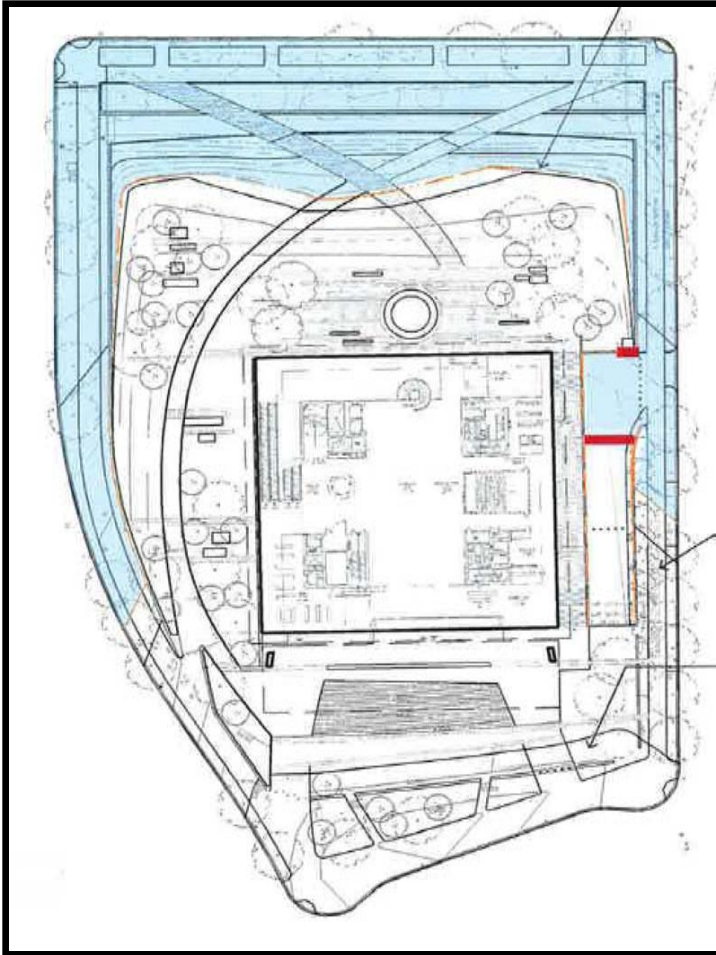
Sandbags



# NMAAHC Multi-Hazard Design

## 100 Year Flood

Security integrated with landscape



Flood protection integrated with perimeter security

# Stormwater Mandates

## Smithsonian mission

- Education
- Environmental Stewardship

## Section 438 of Energy Independence and Security Act (EISA)

- return to pre-development levels of water discharge
- Stormwater management Plan

## Chesapeake Bay E. O. 13508

- reduce level of pollutants

## Water bill basis

## Leadership in Energy and Environmental Design (LEED)

- Gold/Silver
- Capture rainwater/gray water use
- Sustainable sites initiative pilot

# LEED: Leadership in Energy and Environmental Design

- U.S. Green Building Council's Green Building Rating System since 1998
- Goals:
  1. **Water Efficiency**
  2. **Energy & Atmosphere**
  3. **Materials & Resources**
  4. **Indoor Environmental Quality**
  5. **Innovation in Design**



# LEED 1. Water Efficiency

*at the Smithsonian*



20'x100' cistern for rainwater reclamation

SMITHSONIAN INSTITUTION  
NMNH PIVAC RENOV WEST WING BASEMENT  
CONTRACT NO. F-07CC1D485  
PROJECT NO. 0300114  
ASSOCIATED BUILDERS, INC.  
View: WEST WING FRONT LOOKING EAST  
DATE: 8/31/2009 NO. 21-1  
© BERNSTEIN ASSOCIATES, WASHINGTON, DC



High efficiency fixtures



Green roof

Bird/butterfly habitat

**NMNH Water Reclamation** (above, top right)  
**NZP Green Roof at Elephant House** (right)





LEED Gold