



# REHABILITATE LINCOLN MEMORIAL REFLECTING POOL AND GROUNDS

SUBMITTED BY THE NATIONAL PARK SERVICE

WITH:

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CONCEPT SUBMITTAL TO THE U.S. COMMISSION OF FINE ARTS

WASHINGTON, D.C.

JULY 16, 2009

CURRENT CONDITION, APRIL 2009



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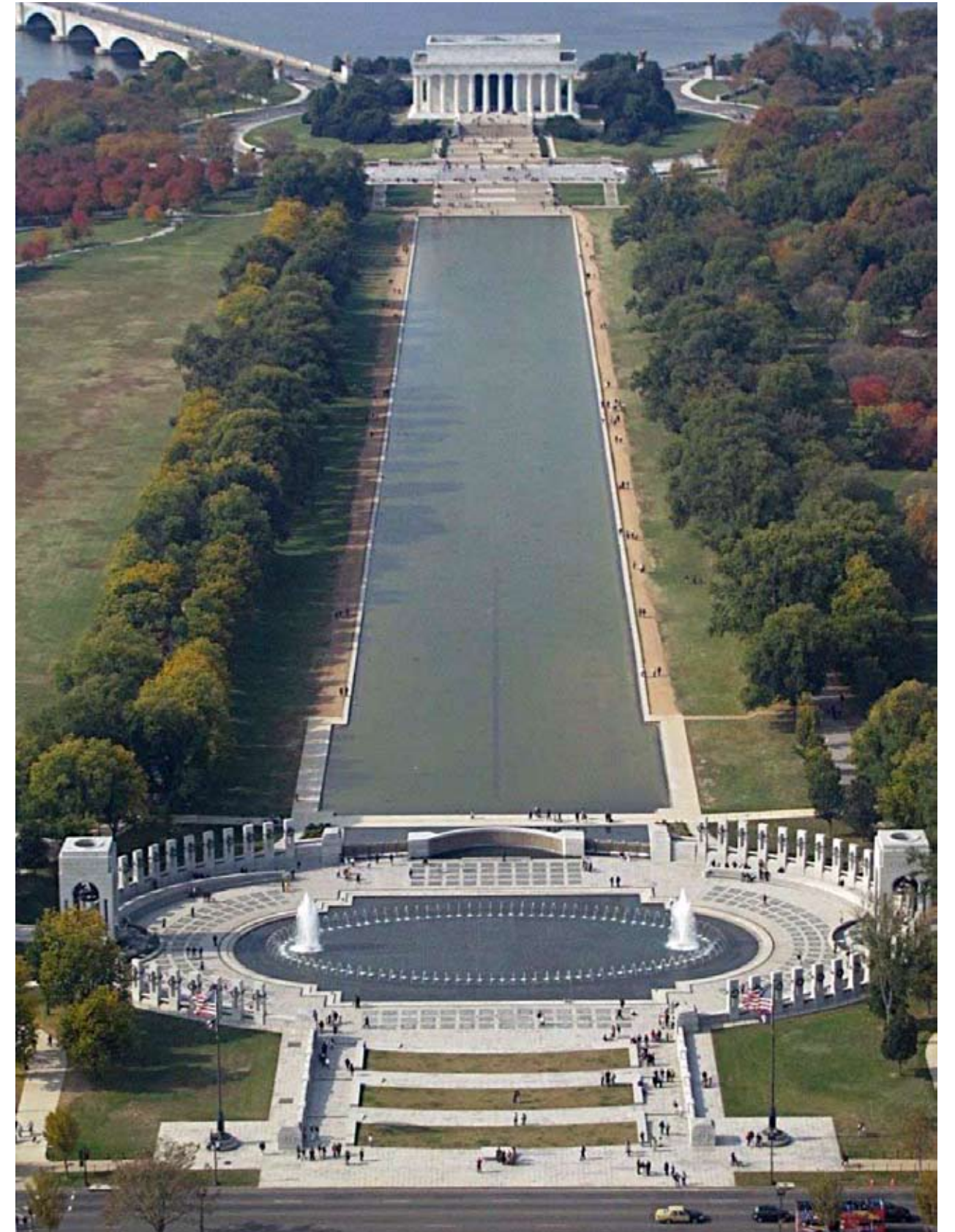
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# 1 INTRODUCTION AND ANALYSIS

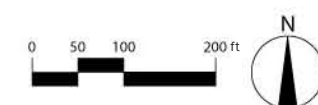






SURVEY (1990) BY:  
DEWBERRY & DAVIS  
8401 ARLINGTON BLVD  
FAIRFAX, VA 22031

## EXISTING CONDITIONS SURVEY





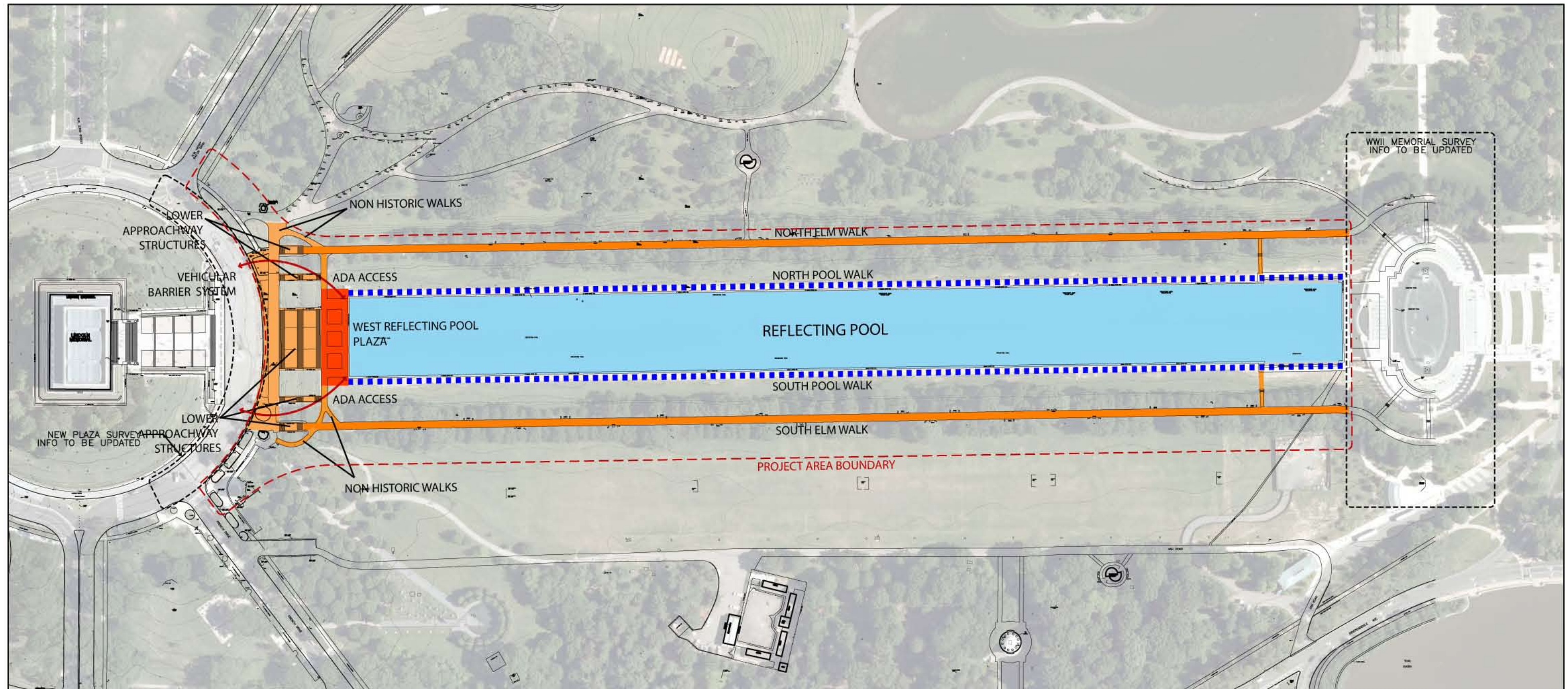


## Introduction

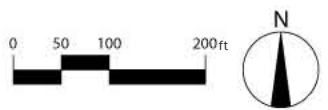
Sasaki Associates and our team members have begun our assignment to conduct the Pre-design and Schematic Design phases of the project. We have learned a great deal about the site and its importance. We began by reviewing the surveys, Cultural Landscape Report, and other documents provided by the National Park Service (NPS). We held a kickoff meeting at the NPS Headquarters in West Potomac Park on Monday, 11 May 2009, in which NPS personnel gave us personal accounts of their involvement in the evolution of the project. This was followed by a site walk, in which we saw the issues first hand. This Concept Submittal records our progress to date.







## PROJECT PROGRAM



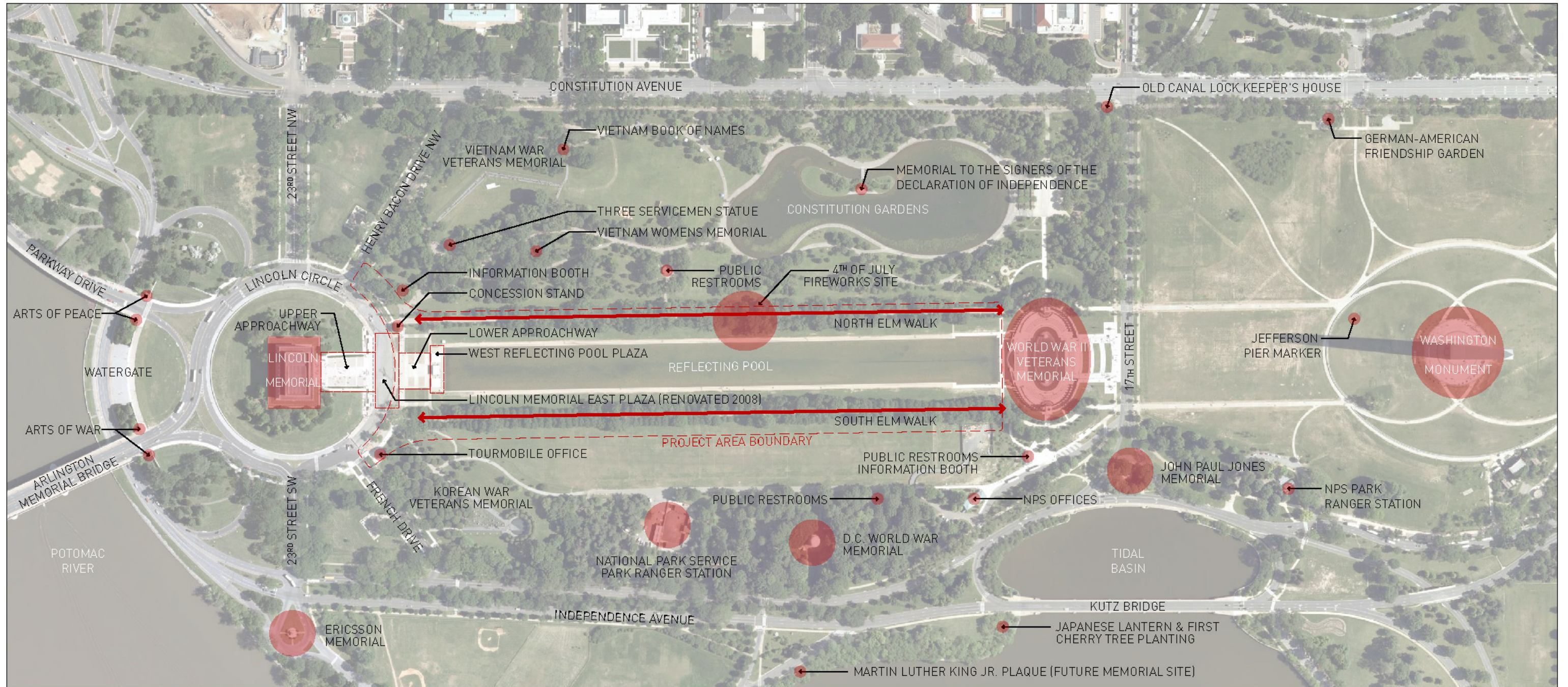




## Project Program

- Grounds:
  - Elm Walk repairs
  - ADA/ABAAS accessibility compliance
  - lighting
  - repair Reflecting Pool west plaza
  - new walks along north and south sides of Reflecting Pool
- Complete Lincoln Memorial Vehicle Barrier System
- Pool, repair and rehabilitate pool structure, slab, and coping walls





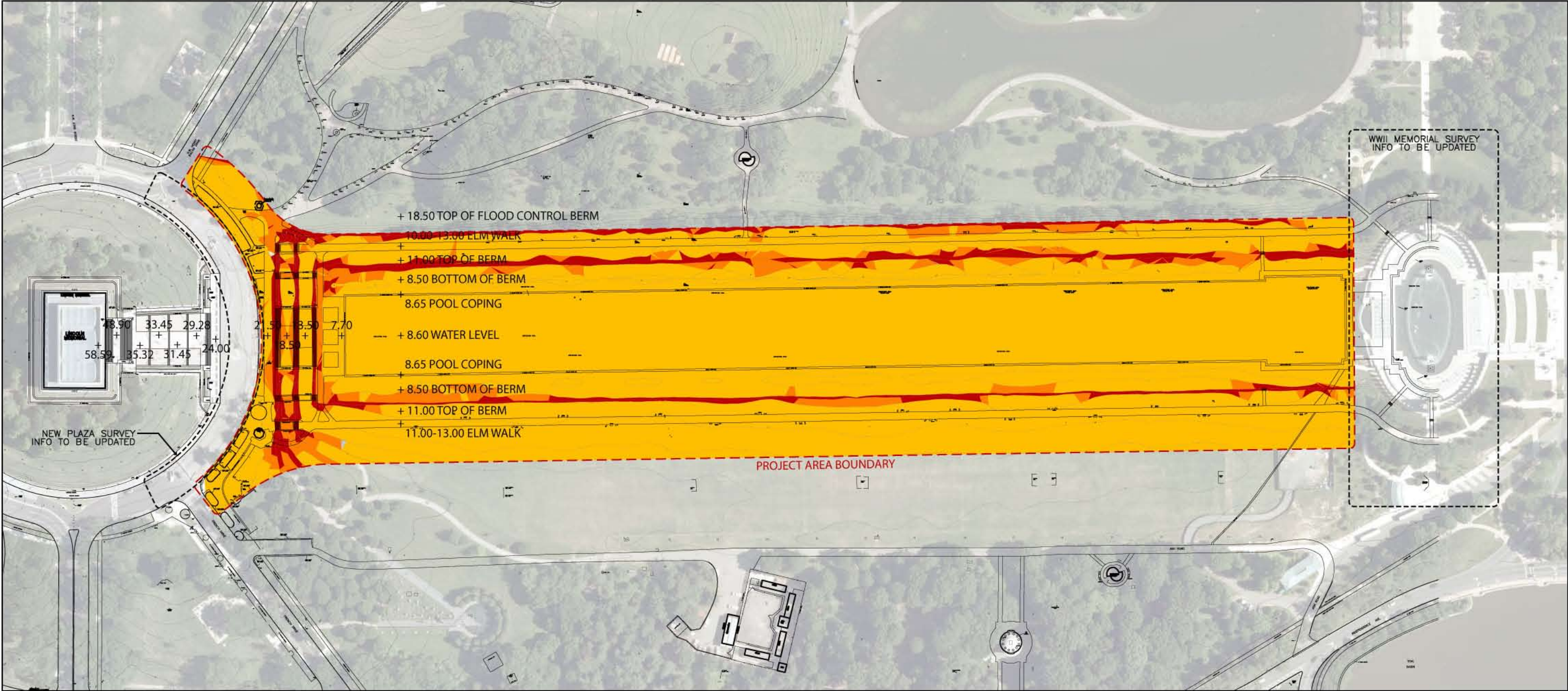
## CONTEXT PLAN





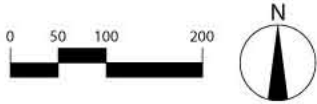






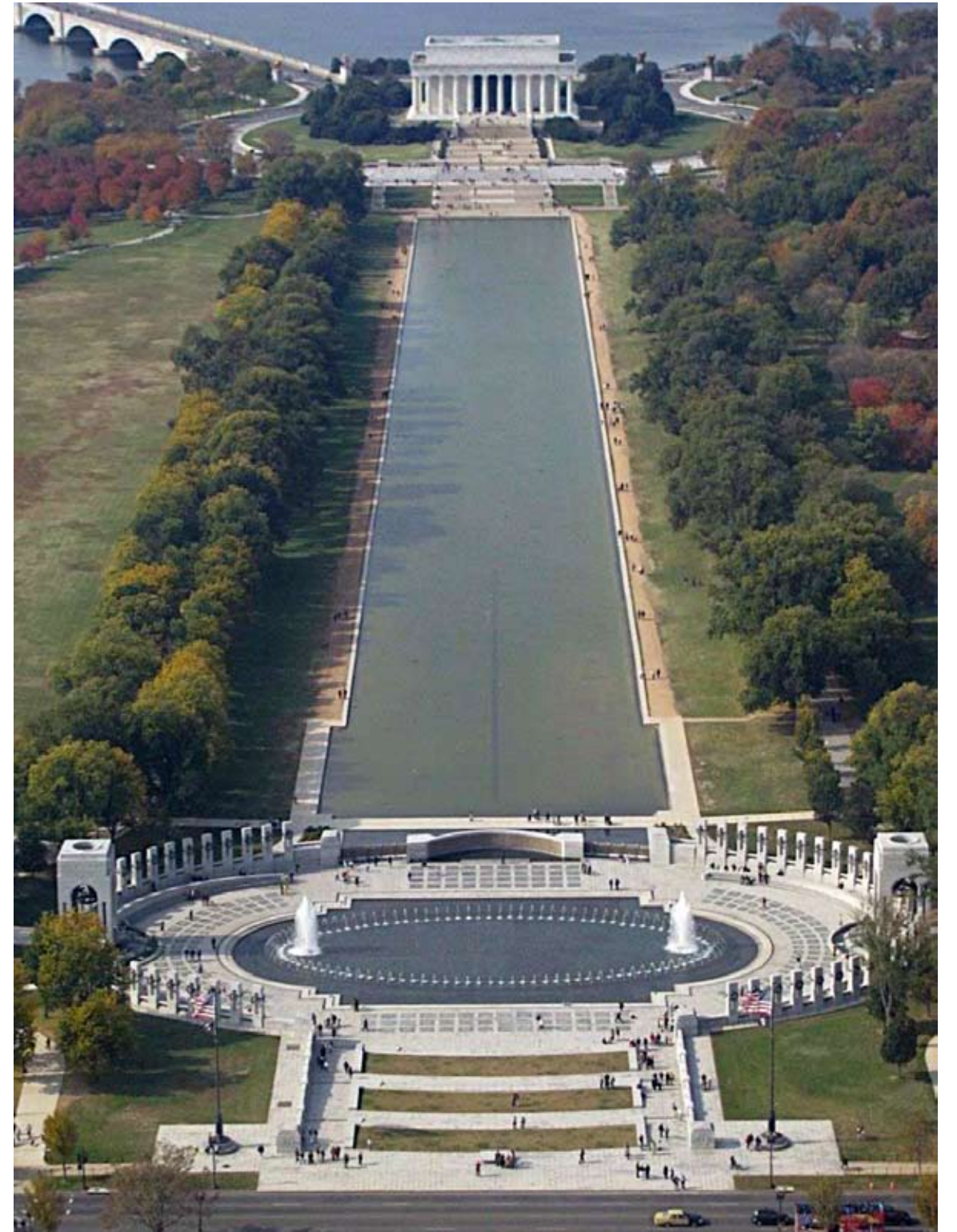
# TOPOGRAPHIC ANALYSIS

SLOPE: 4.99% OR LESS  
SLOPE: 5% - 8.33%  
SLOPE: 8.34% OR GREATER

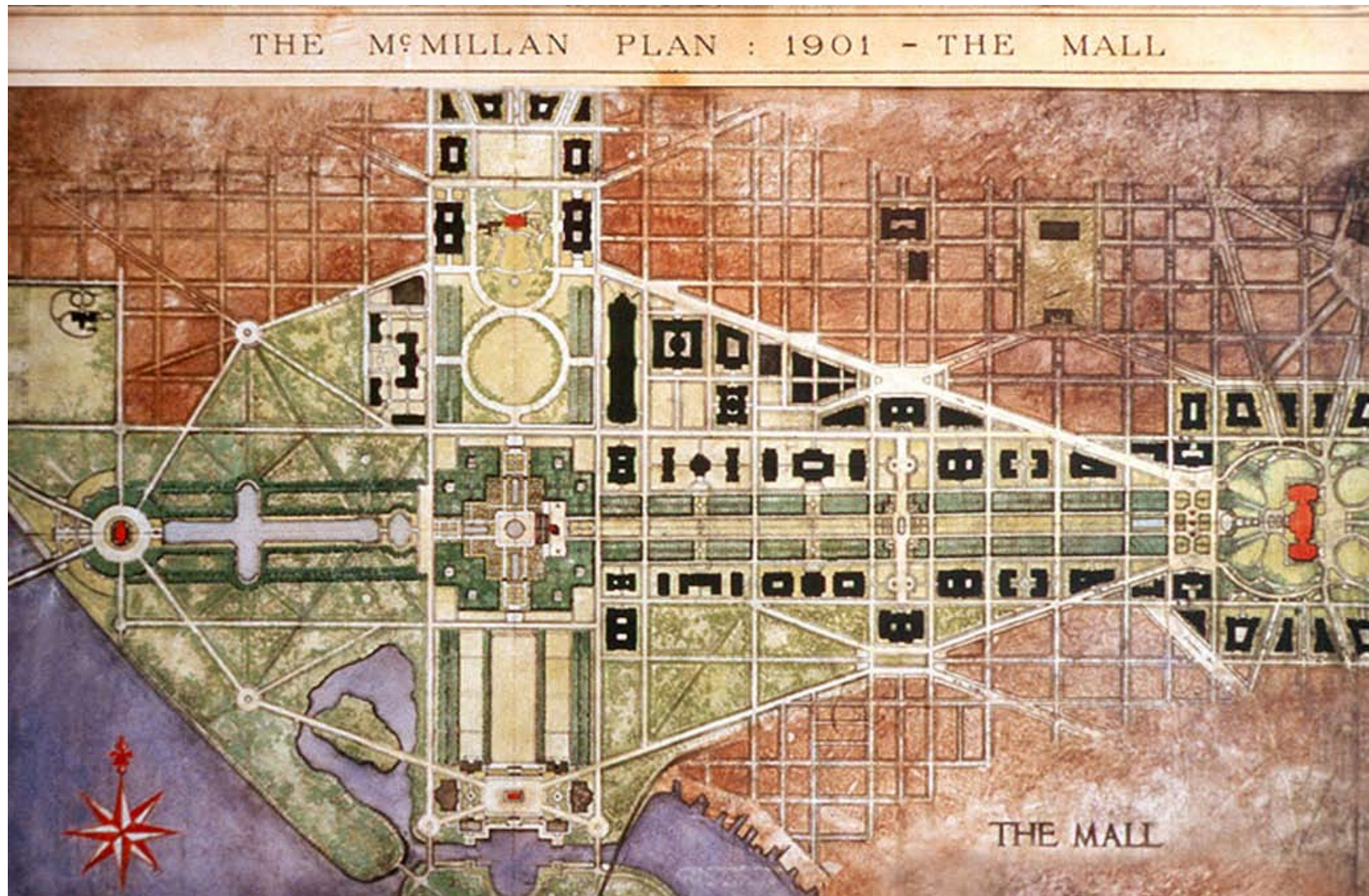




# 2 HISTORY





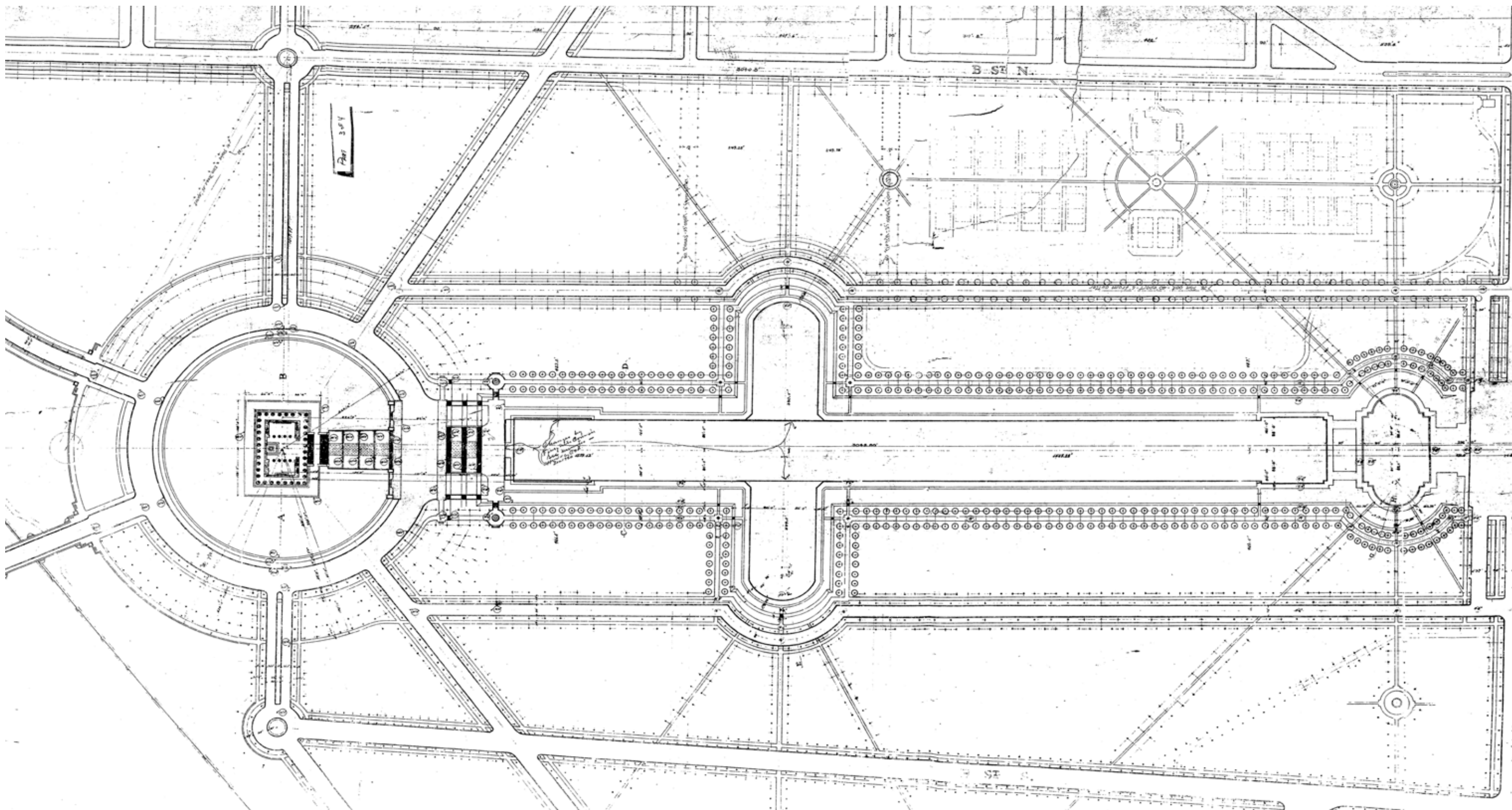


THE 1901-1902 MCMILLAN PLAN FOR WASHINGTON'S MONUMENTAL CORE DEPICTS EARLY CONCEPTS FOR THE REFLECTING POOL  
(NATIONAL CAPITAL PLANNING COMMISSION, [HTTP://WWW.NCPC.GOV/MEDIAROOM/PG.ASP?P=PHOTOLIBRARY](http://www.ncpc.gov/mediaroom/pg.asp?p=photolibrary))

## History of Existing Structures and Landscape

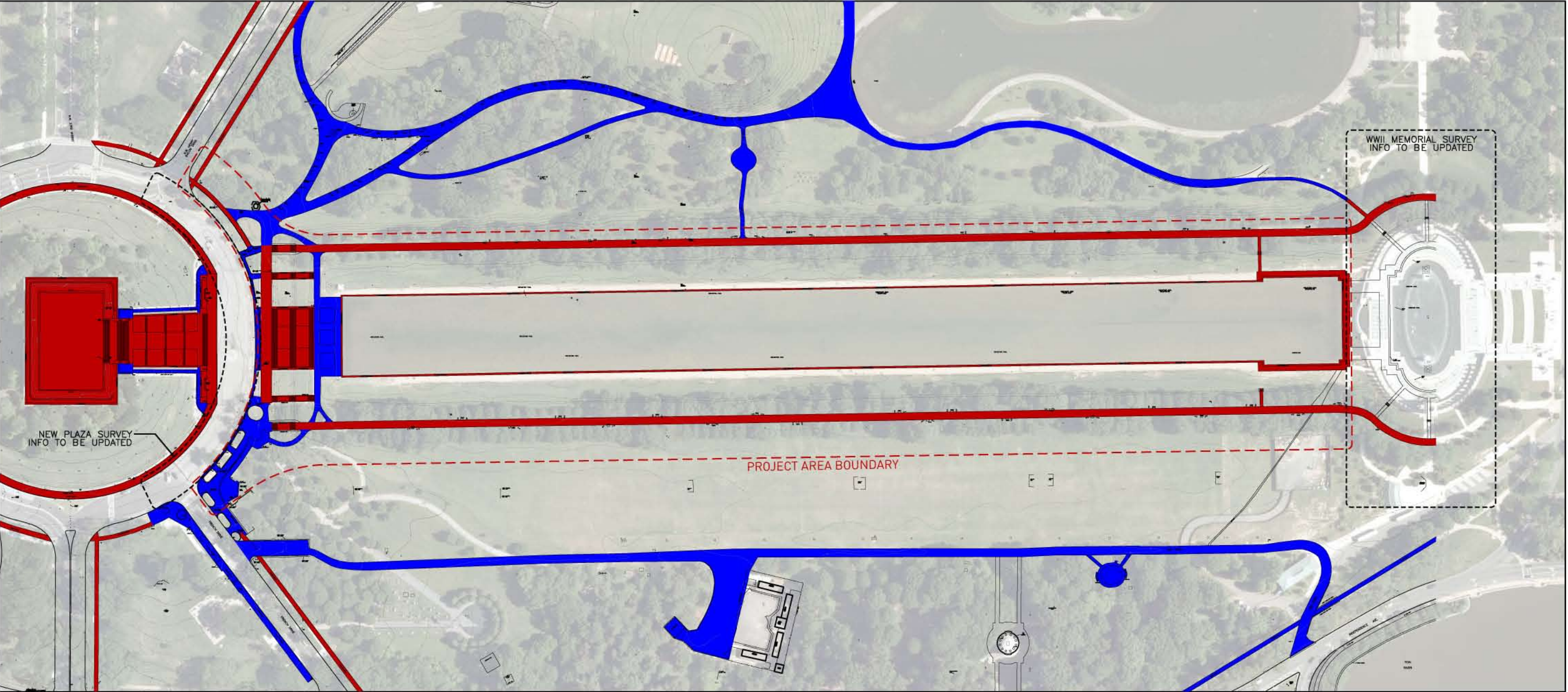
- 1902 - Senate Park Commission – (McMillan Commission)
- 1922 - Lincoln Memorial dedicated
- 1924 - Reflecting Pool / Rainbow Pool completed
- 1976 - Bicentennial
  - Handicap ramps to Lincoln Memorial built
  - Lower Terrace built
- 2009 - Obama Innauguration
  - Security bollards added (2008)





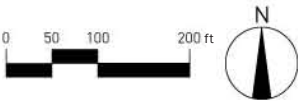
LANDSCAPE ARCHITECT C.E. HOWARD'S 1916 INTERPRETATION OF THE MCMILLAN PLAN FOR THE LINCOLN MEMORIAL GROUNDS  
 (NATIONAL PARK SERVICE, "CULTURAL LANDSCAPE REPORT: WEST POTOMAC PARK, LINCOLN MEMORIAL GROUNDS," PART 1, AUGUST 1999, 23)





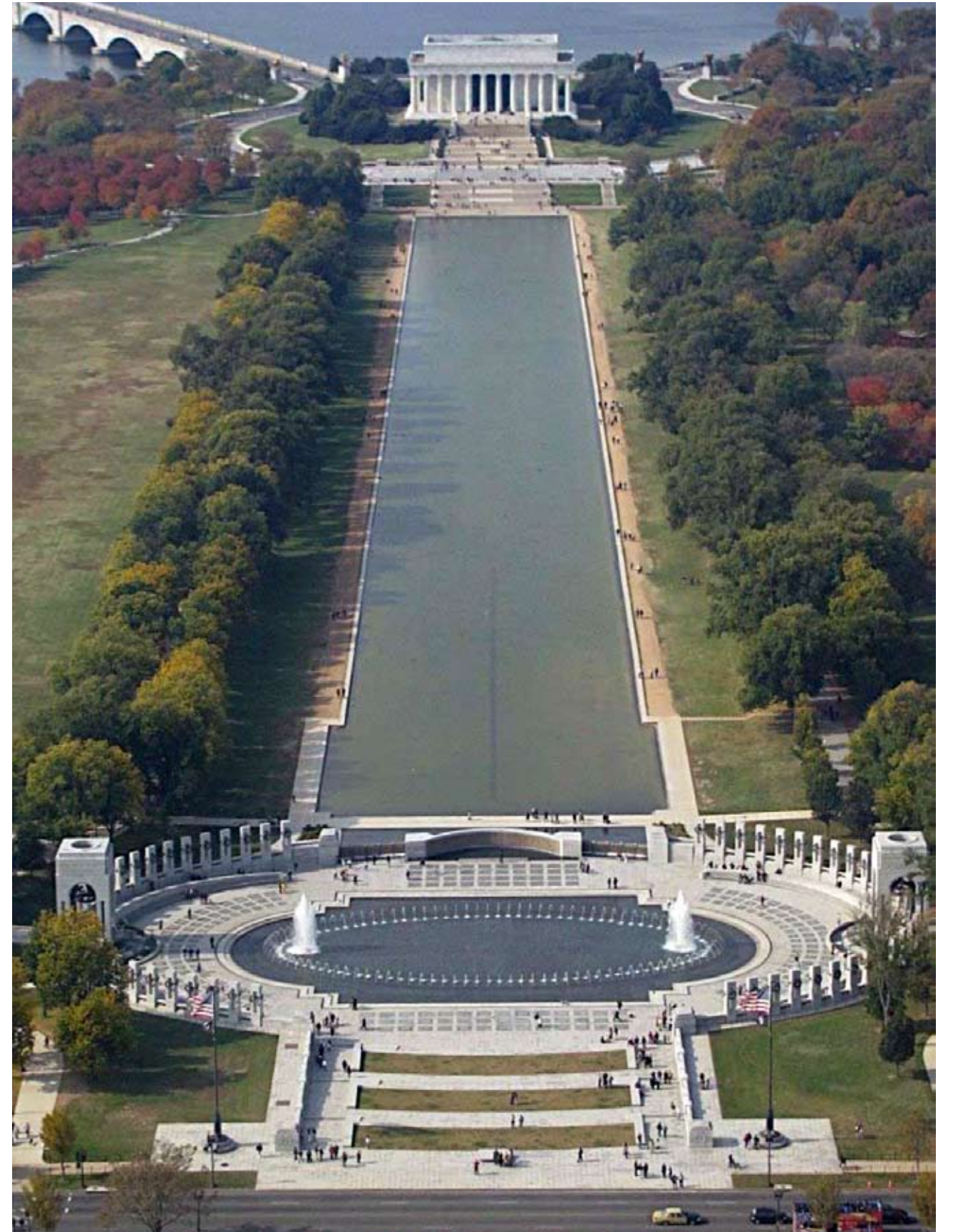
HISTORICAL SIGNIFICANCE

HARDSCAPE FEATURES OF NON-HISTORIC SIGNIFICANCE (POST 1933) [Blue]  
HARDSCAPE FEATURES FROM THE PERIOD OF HISTORICAL SIGNIFICANCE (1914 - 1933) [Red]





# 3 POOL OPTIONS







POOL FLOOR HAS SETTLED AND SEPARATED FROM COPING



THE BACKER ROD AND SEALANT AT THE POOL FLOOR/COPING JOINT HAVE DETERIORATED

### Pool Options

- Sustainability and life cycle of proposed systems consider energy, water, materials, and environmental quality.
- Options for pool improvements will trigger a review of current EPA requirements

### Reflecting Pool - Architectural/Structural

#### *Existing Grade Beam Repair*

- Damage to the coping stones has allowed water intrusion into the supporting structural elements
- Structural repair will be required; epoxy crack injection, partial demolition and reinforcement replacement, areas of complete grade beam reconstruction.

#### *Pool Support*

- Pool bottom has settled; outward leakage of pool water, inward leakage of groundwater, deterioration of the pool bottom

#### *Pool Coping and Floor*

- The existing floor of the pool is cast in place concrete.
- Options for waterproofing will be investigated.

Reflecting Pool Water

**Existing Pool has significant leakage and water quality issues.**

- The design team is studying a number of options that will potentially reduce/eliminate pool leakage,
- reduce consumption of potable City water
- improve the quality and appearance of the pool water.

**Potential Sources for Fill and Makeup Water**

- Potomac River
- Onsite Wells
- Rainwater collection
- City Potable Water Supply

**Water Quality Improvement Options**

- Ultrasonic transducers
- Continuous Flow from Potomac River
- Circulation and Filtration System

Through the Value Assessment process, the water source and quality options will be narrowed, yielding a preferred alternative that is both cost effective and will maintain the aesthetic quality of the pool.

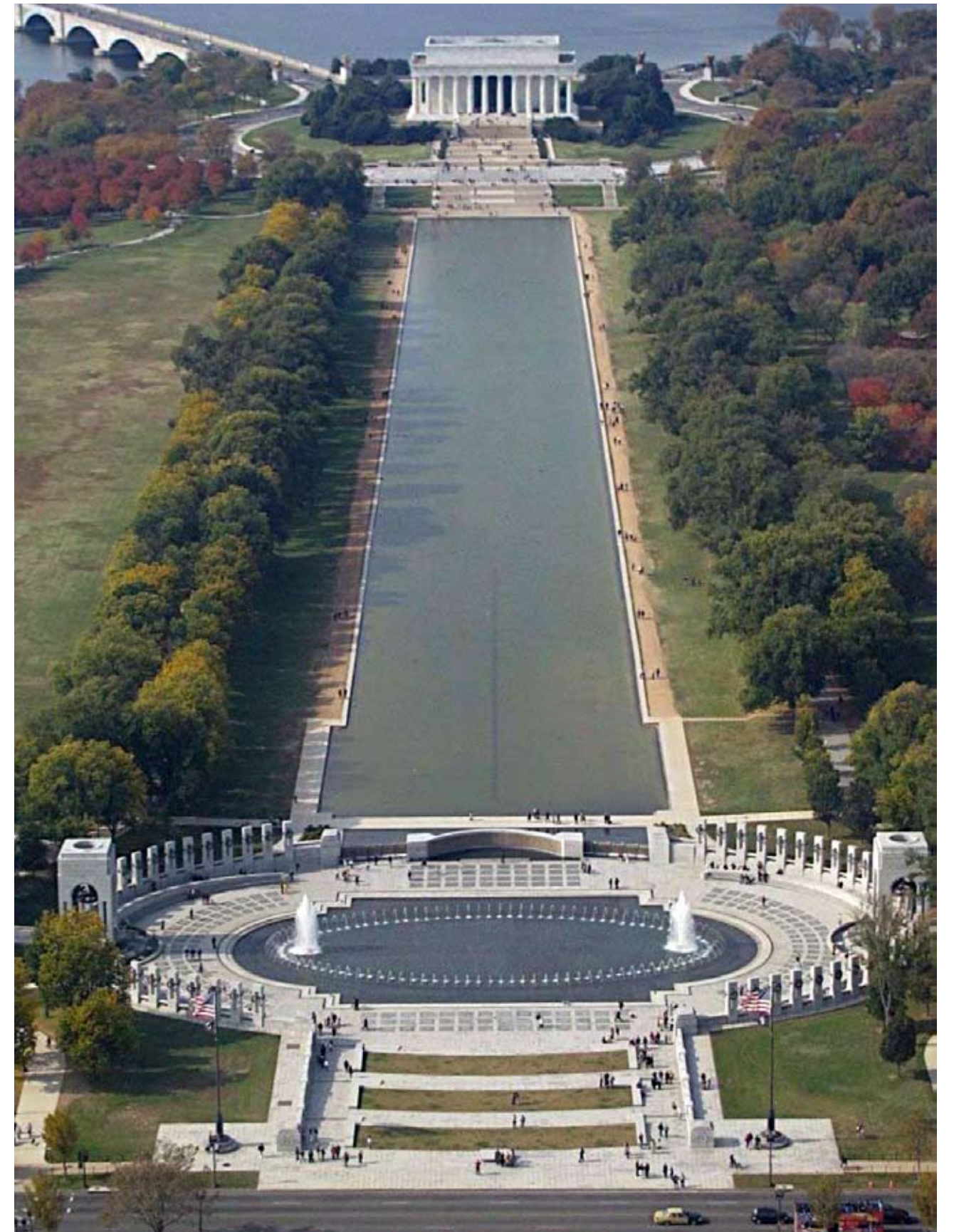




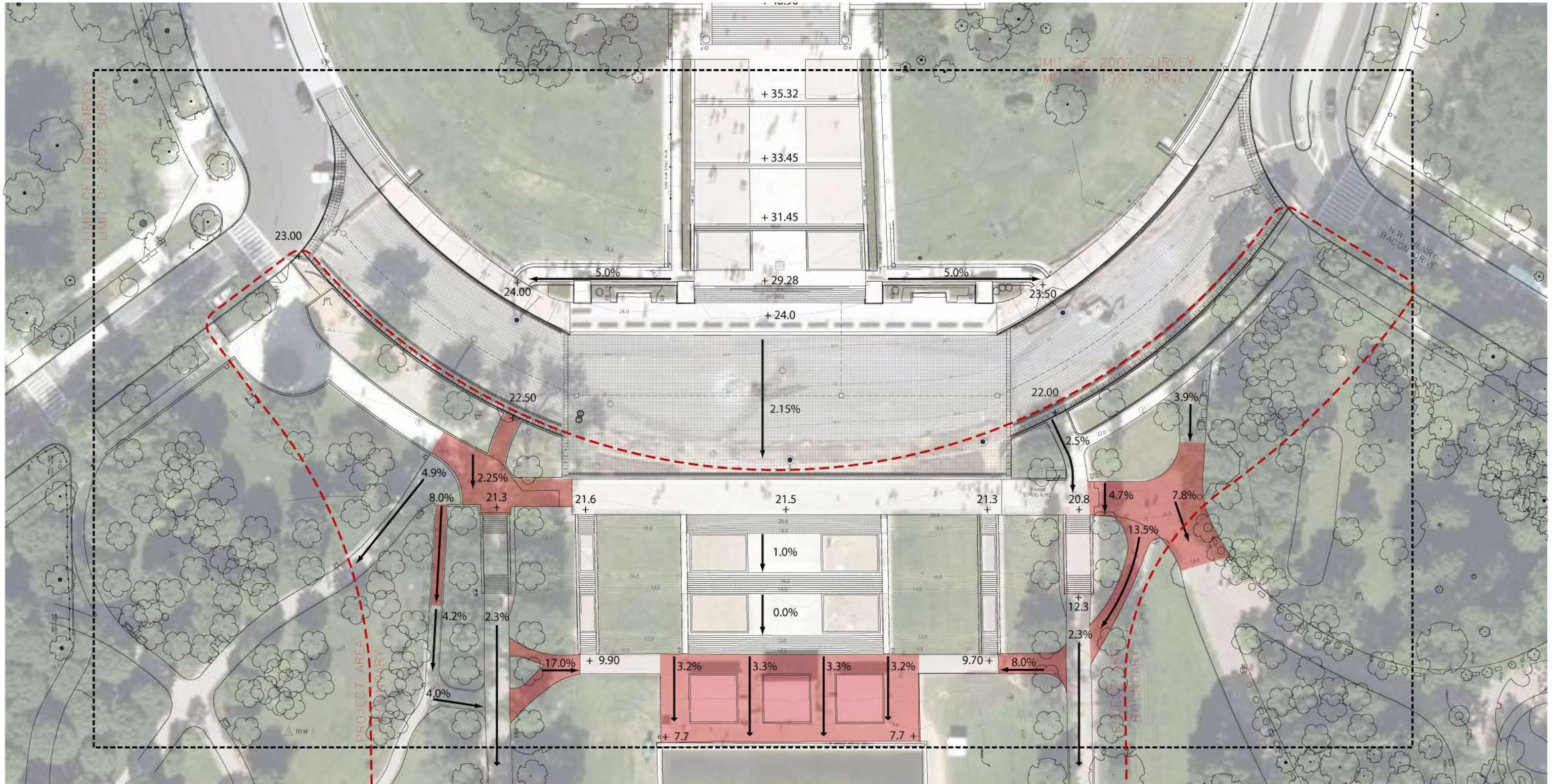


# 4

## ACCESSIBILITY CONCEPTS



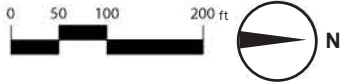




# SLOPE ANALYSIS

+ 24.0 TYPICAL EXISTING SPOT ELEVATION  
17.0 % TYPICAL EXISTING SLOPE

DOES NOT MEET ADA REQUIREMENTS  
FOR SLOPE, CROSS SLOPE, OR HANDRAILS

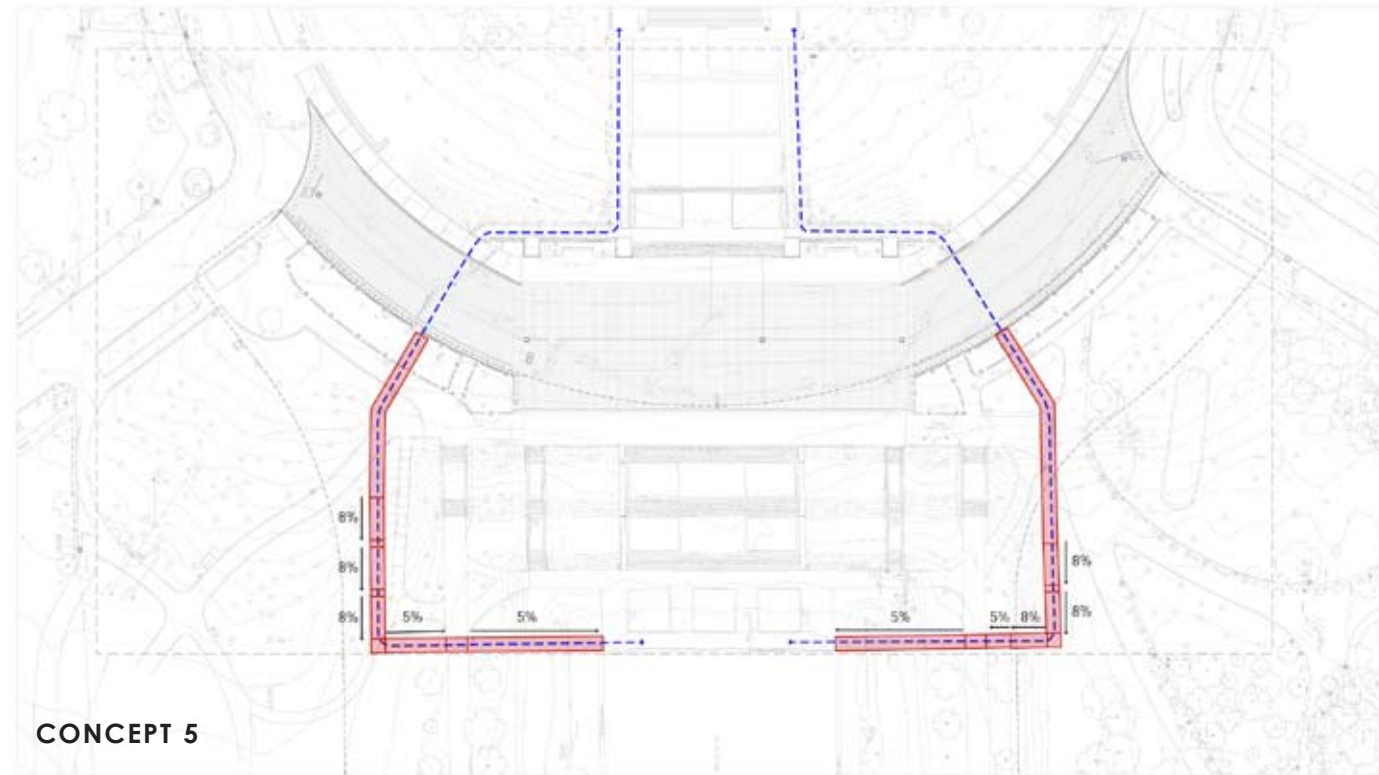
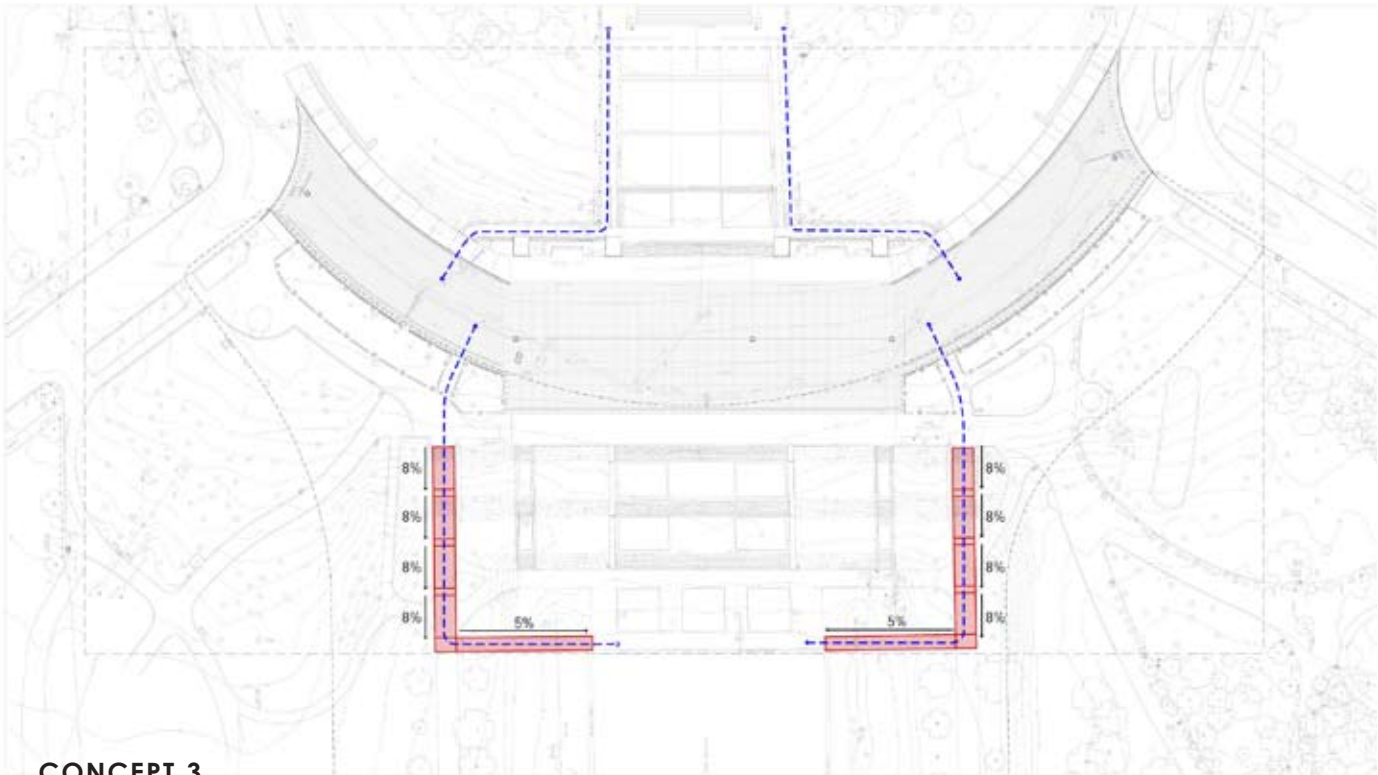
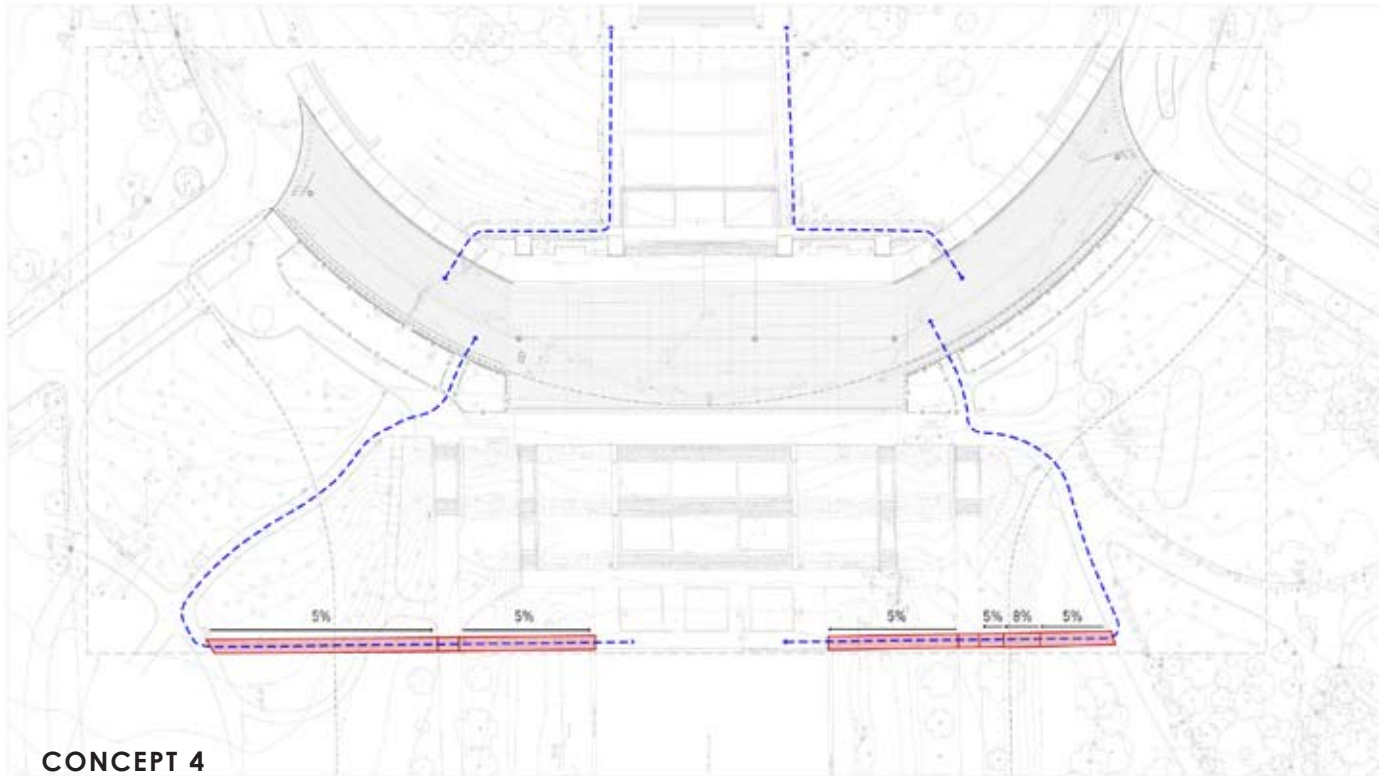
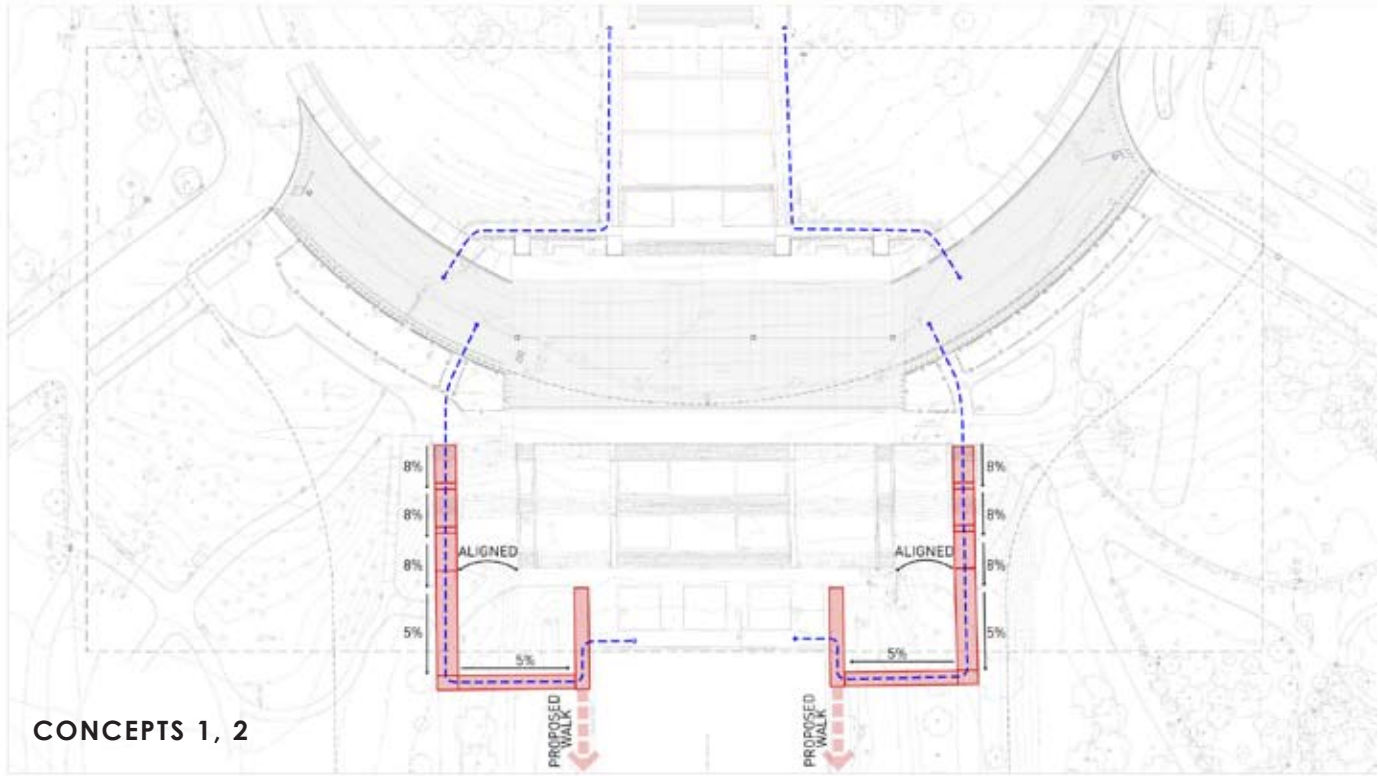






- The historically significant stairways, as currently configured, prohibit handicapped access from the lower Plaza to the upper plaza

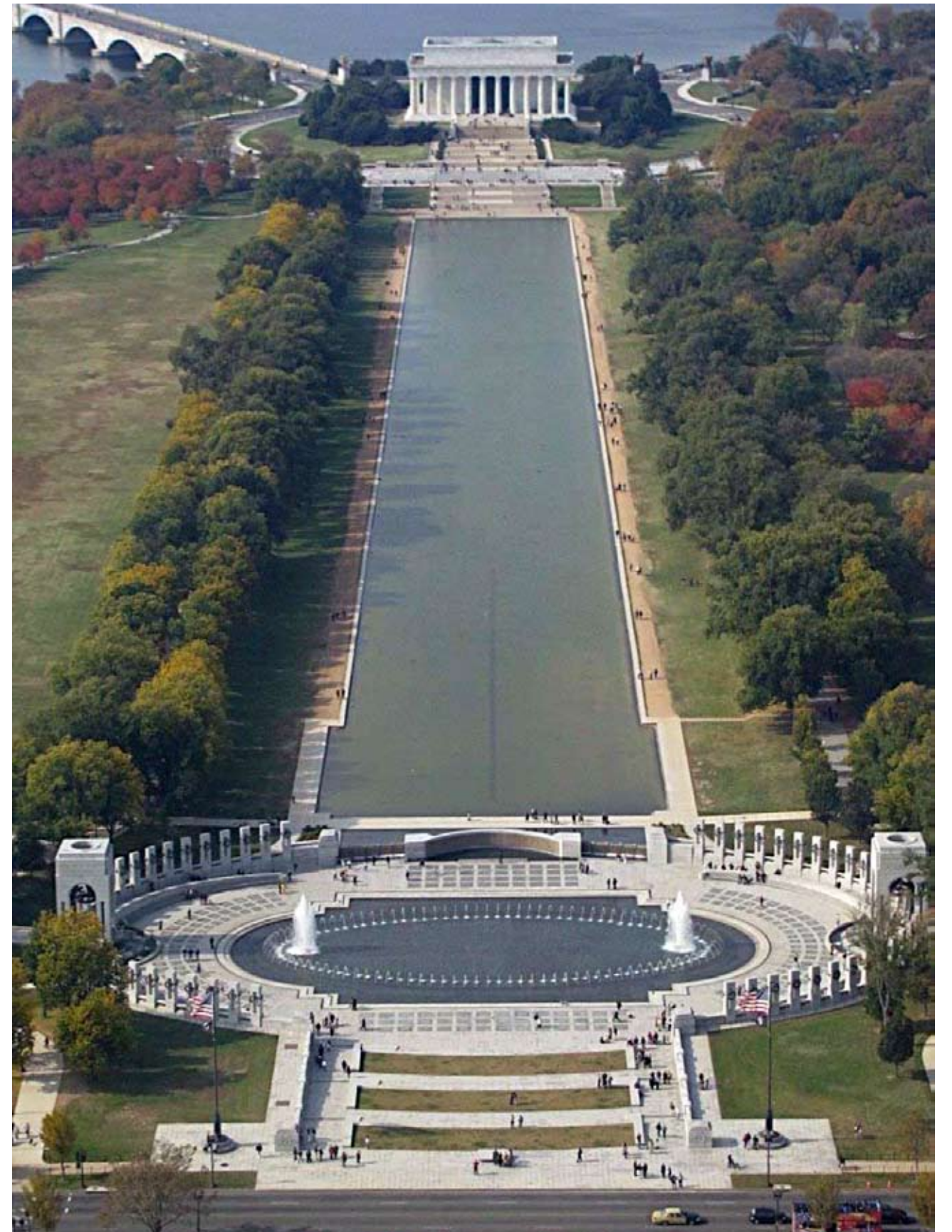




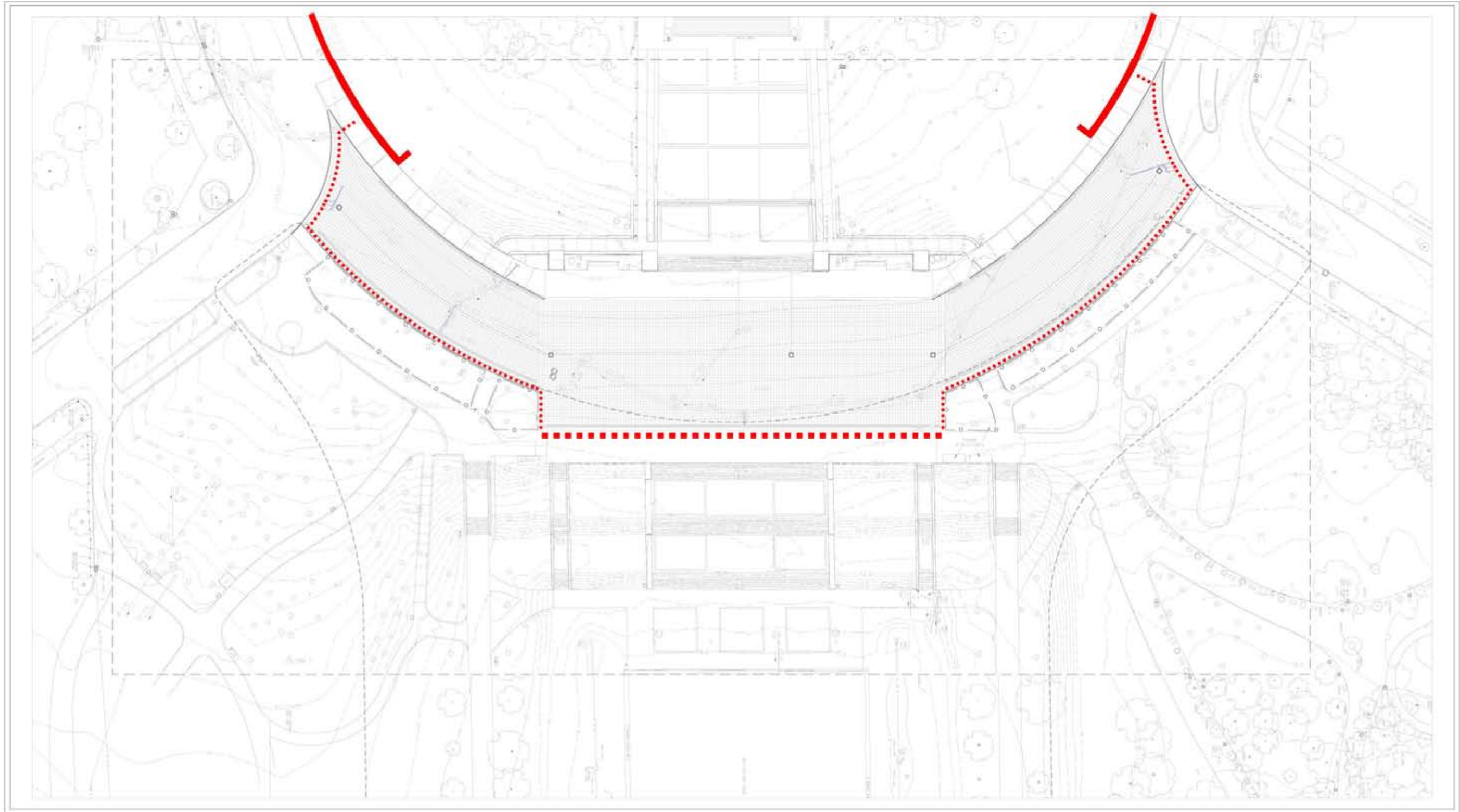


# 5

## VEHICULAR BARRIER CONCEPTS







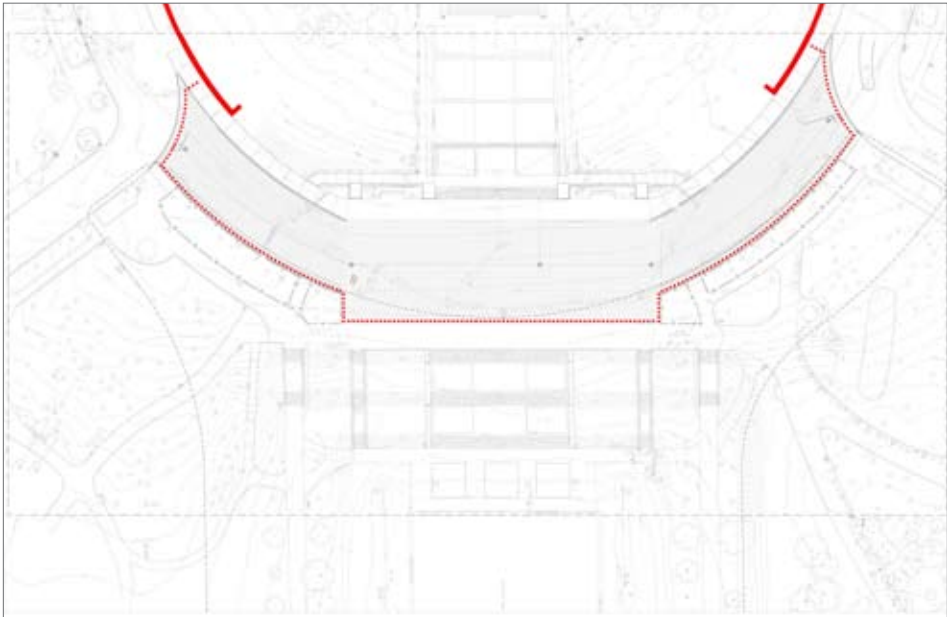
**VEHICULAR BARRIER - EXISTING CONDITIONS**



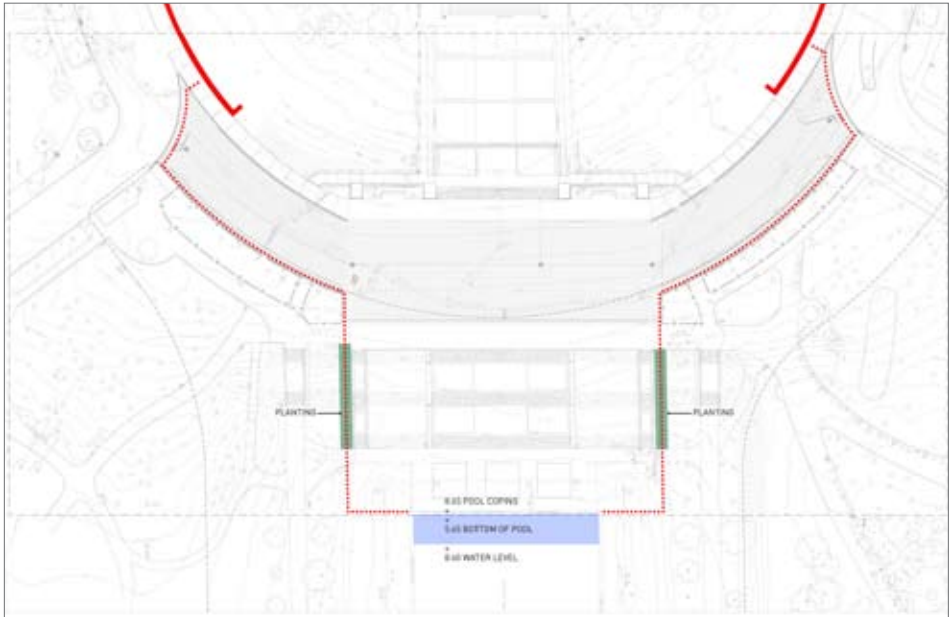
VEHICULAR BARRIER CONCEPTS

(INITIAL CONCEPTS)

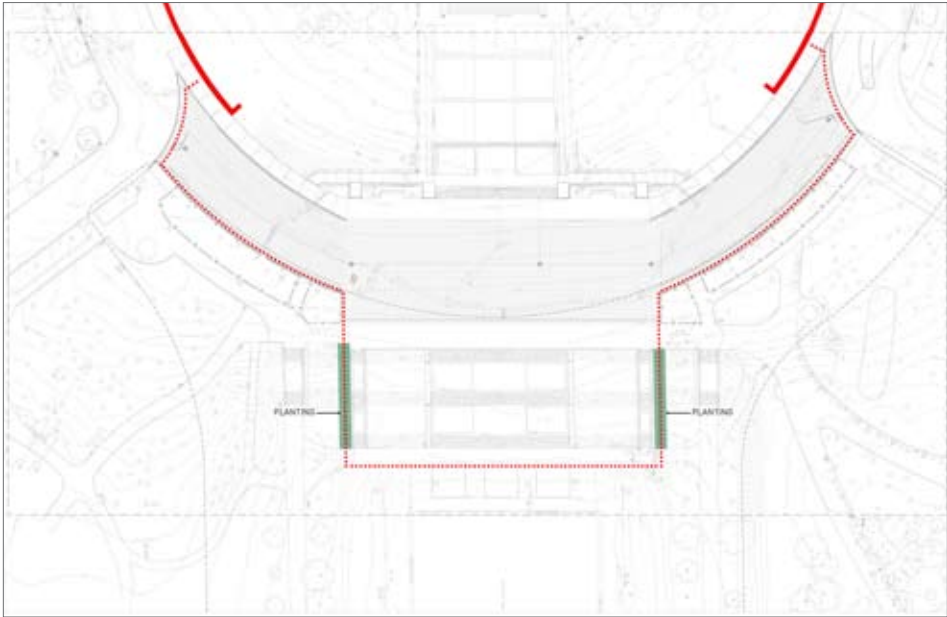
- Security Option 1: The existing precast concrete security blocks could be replaced with permanent bollards, however, they would be highly visible in front of the Lincoln Memorial.
- Security Option 2: New permanent bollards are placed on the lower plaza, parallel to the west edge of the reflecting pool and in planting beds adjacent to the stairs. The bollards and their reflection in the pool are objectionable.
- Security Option 3: Similar to Option 2, except the west wall of the pool is used as a security barrier.
- Security Option 4: Security bollards are located farther away from the central axis, however, a greater number of bollards in the landscape is required due to the increased length.



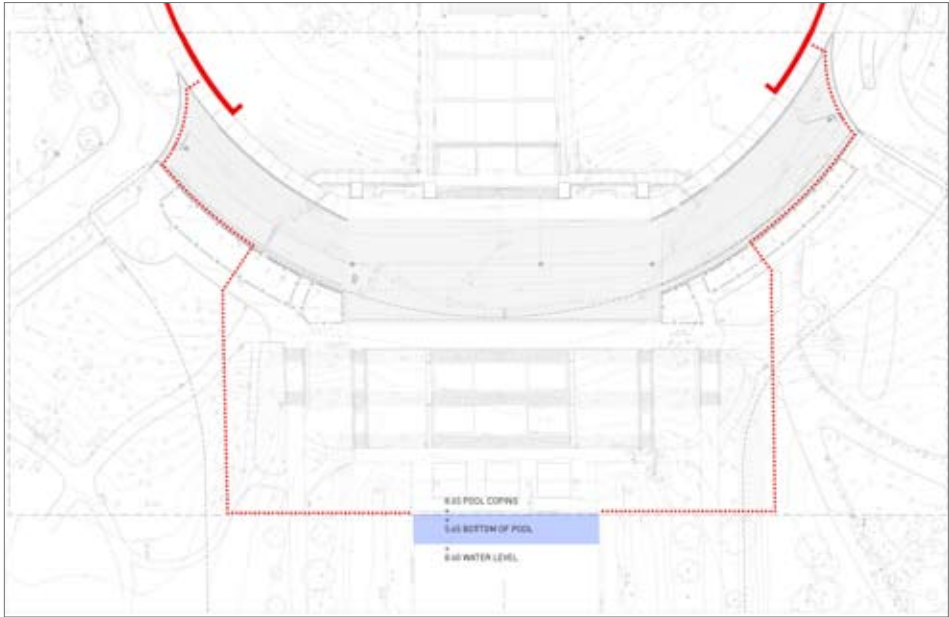
SECURITY OPTION 1



SECURITY OPTION 3

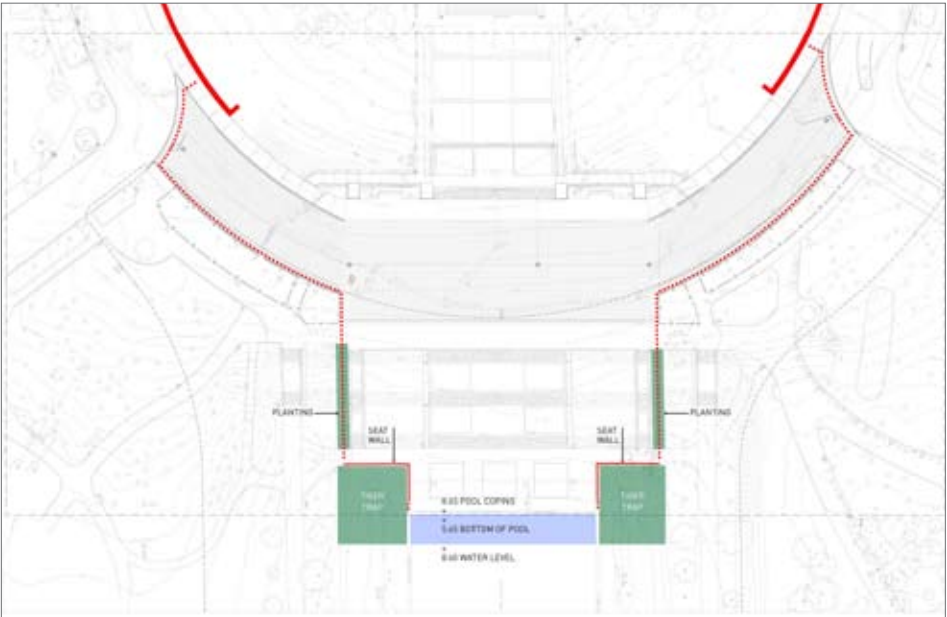


SECURITY OPTION 2

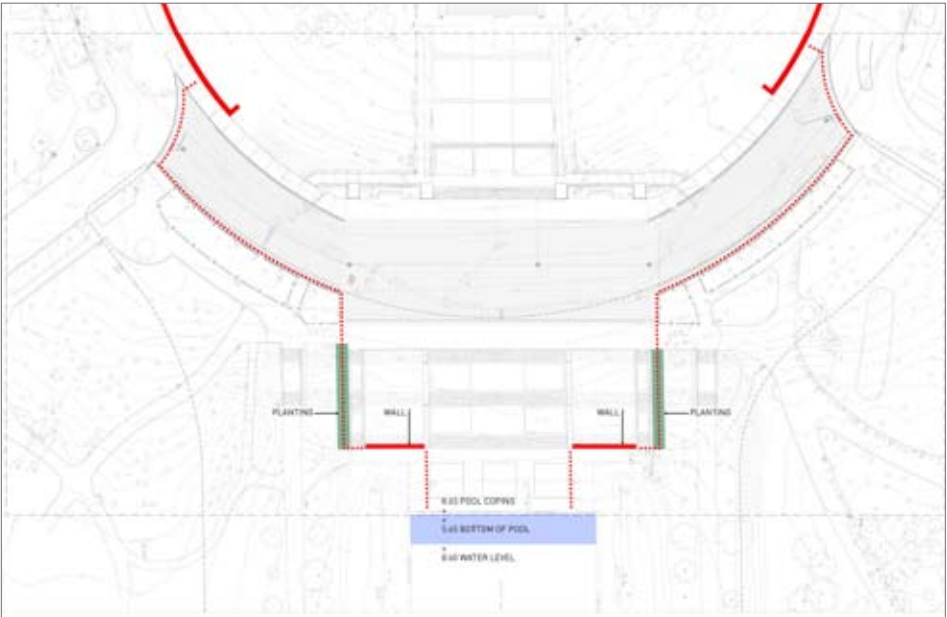


SECURITY OPTION 4

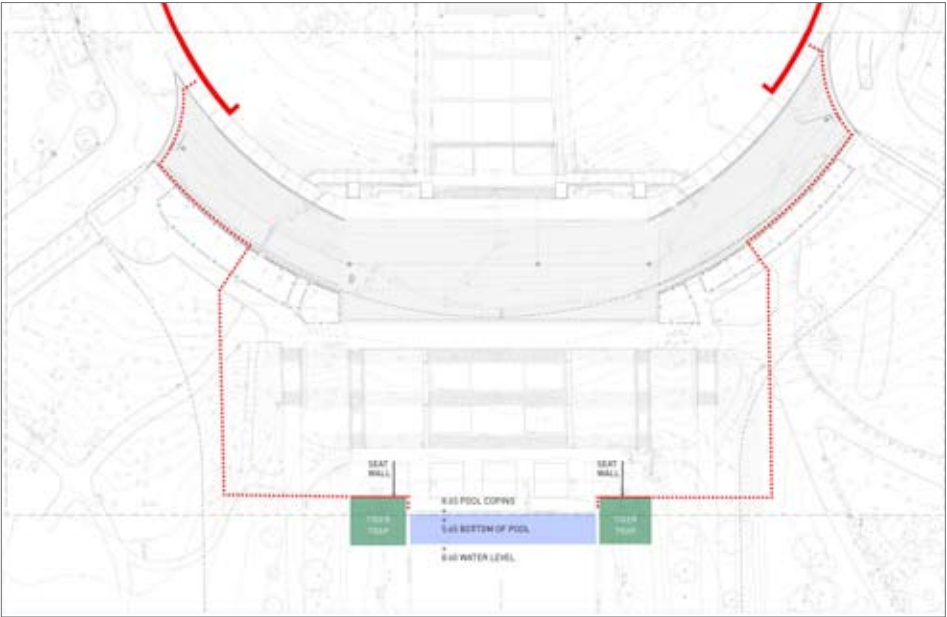
- Security Option 5: Tiger traps, which are a patented security device which collapses under the weight of a vehicle, are incorporated at the edge the pool along with seat walls. The Tiger Traps may be problematic because maintenance vehicles might accidentally be trapped.
- Security Option 6: Smaller Tiger Traps are employed along a seat wall and line of bollards that is closer to the west wall of the reflecting pool. Bollards are also extended further from the central axis, similar to Option 4 shown above.
- Security Option 7: Bollards are extended in a line parallel to the north and south edges of the central stairs. Seat walls and bollards create a barrier connected to the pool. Bollards in planting beds may be problematic.
- Security Option 8: Similar to Option 7 above, but bollards are aligned with the north and south edges of the reflecting pool.



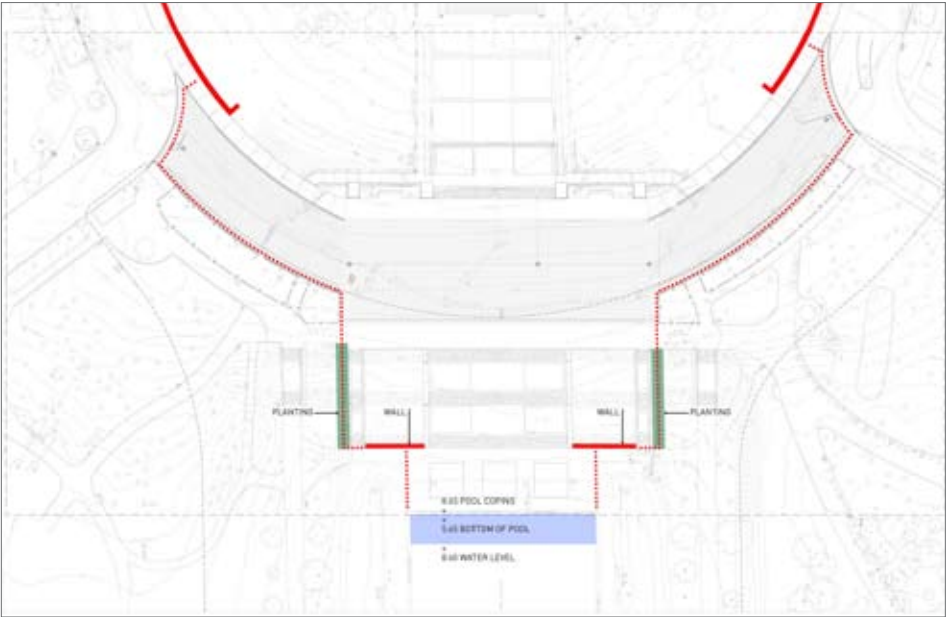
SECURITY OPTION 5



SECURITY OPTION 7



SECURITY OPTION 6



SECURITY OPTION 8



# 6

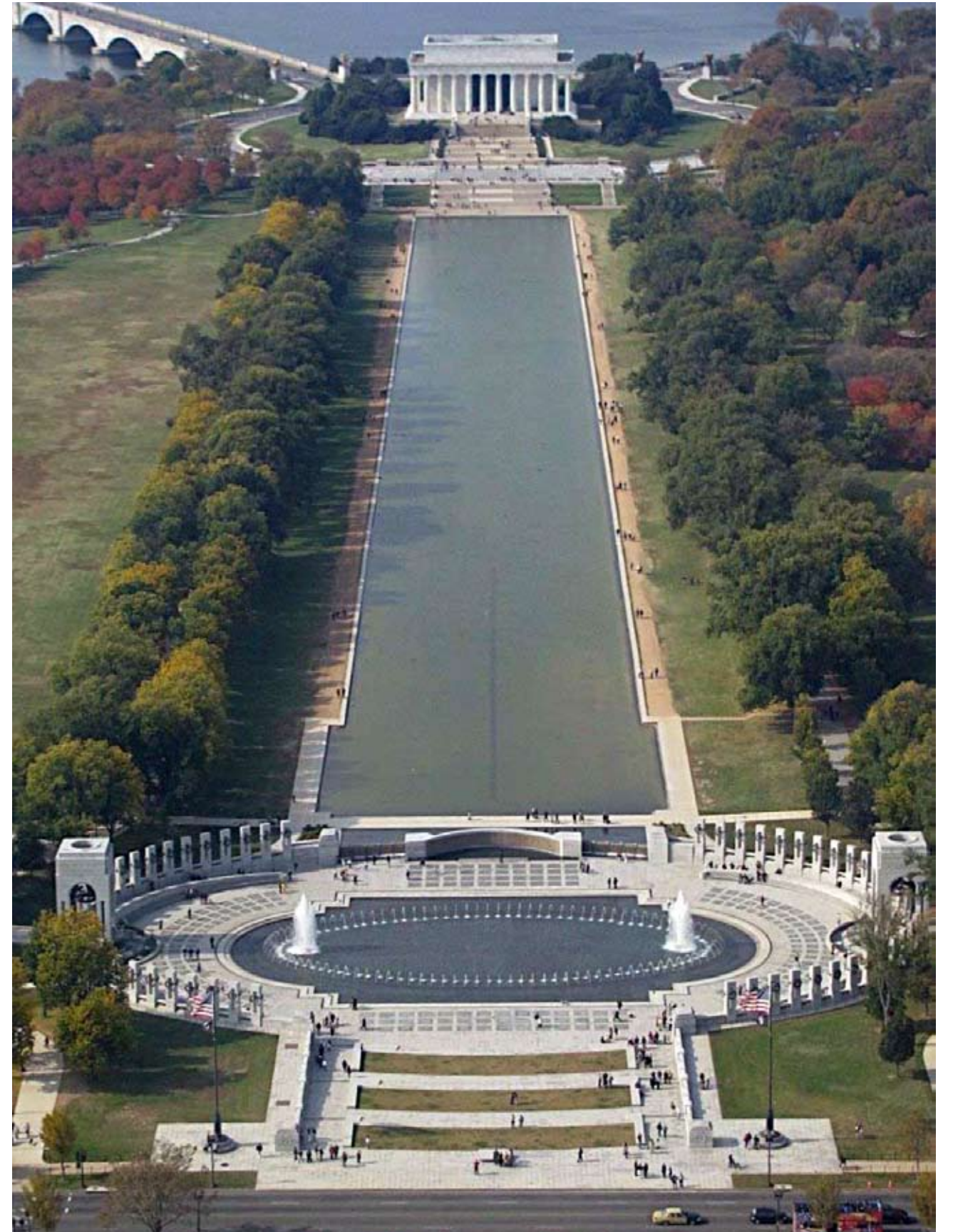
## ALTERNATIVE CONCEPT PLANS

Building on earlier concepts and comments from NPS, CFA, NCPC, and SHPO staff, three new schemes were developed. New paths are located outboard of the Elm Walks and are curvilinear to integrate into the existing the landscape. The new curvilinear walks join existing curving paths leading to the Vietnam Memorial to the north and Korean War memorial to the south.

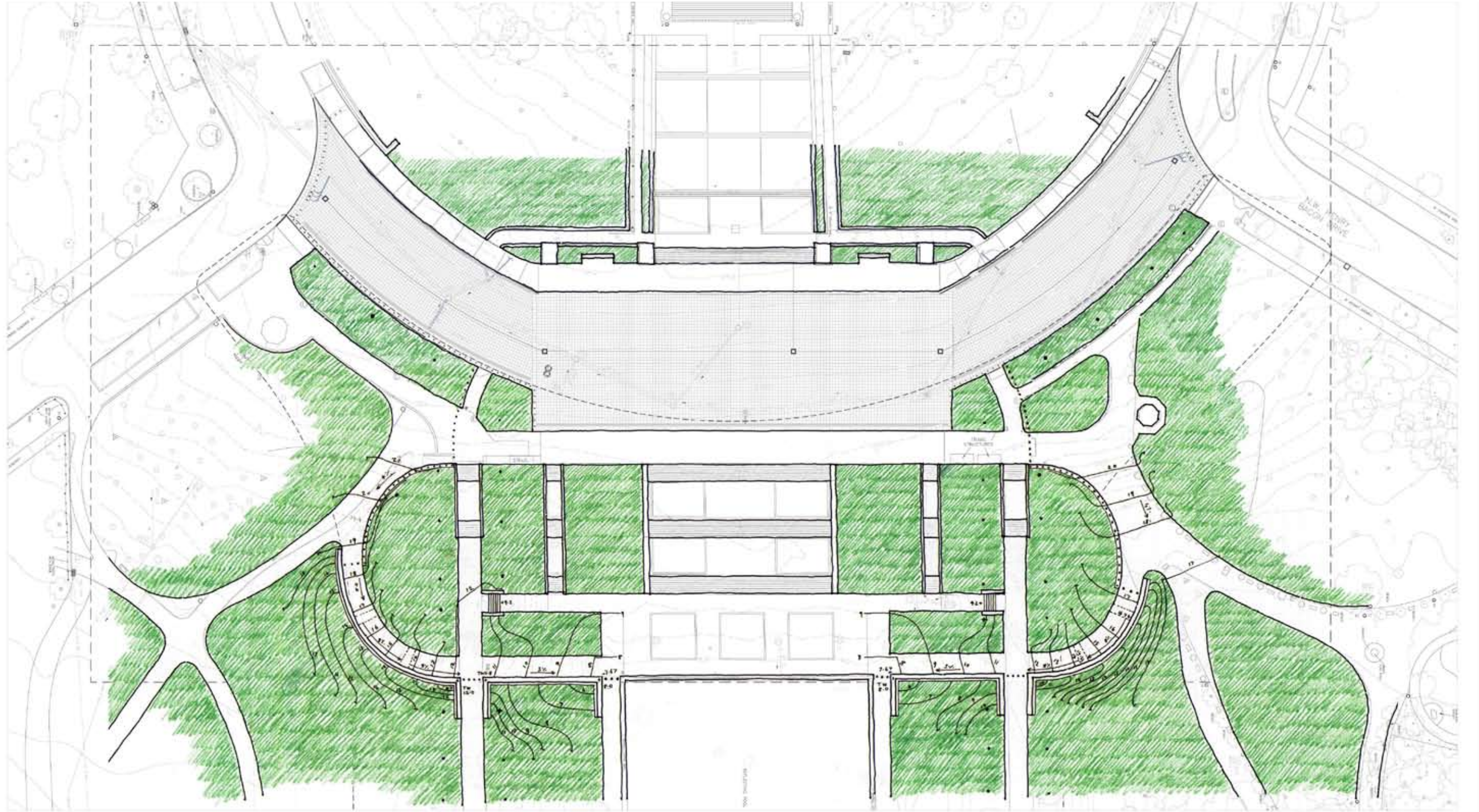
Concepts 1-3 use the reflecting pool as part of the security barrier system. All use bollards to connect the new security barrier to the pool. Each concept allows some of the bollards installed in 2008 to be removed from the view to the Lincoln Memorial. All include new north-south walks at the lower terrace ending in new stairs connecting to the Elm Walks. Parallel north-south walks aligned with the west edge of the reflecting pool, rise at 5% slopes as they move away from the pool. Security walls, where required, are intended to be as low as possible, and will provide convenient seating. Where possible, walks will be no more than 30" in height with an additional 6" curb height on the outside. The walls would be 6" high on the walk side to mark their location from above. The actual height required will be determined by a vector analysis yet to be undertaken.

Another study to be completed will determine the impact of the concepts on the existing trees, which vary in size and condition. A GIS survey to support this study of the trees is forthcoming.

The long walks parallel to the Reflecting Pool can be located adjacent to the reflecting pool coping.







**CONCEPT 1** THE SECURITY WALL ALIGNS WITH THE WEST POOL COPING, AND STAYS ON THE OUTSIDE OF THE LARGE CURVED WALK TO MAKE IT LESS VISIBLE

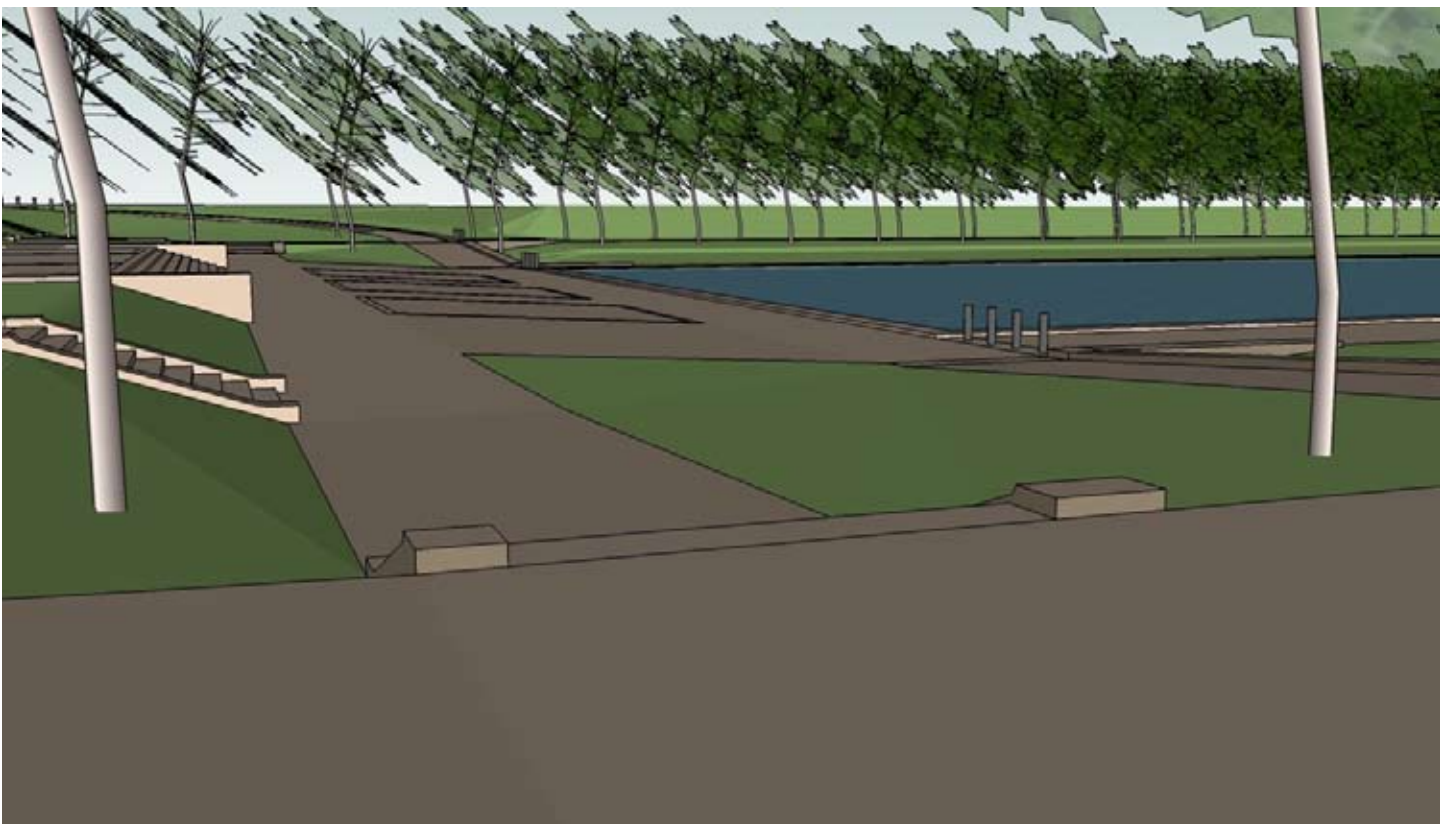
Source: Architectural Record, 2013. All rights reserved. Reproduction of this drawing is prohibited without the written permission of the copyright owner.



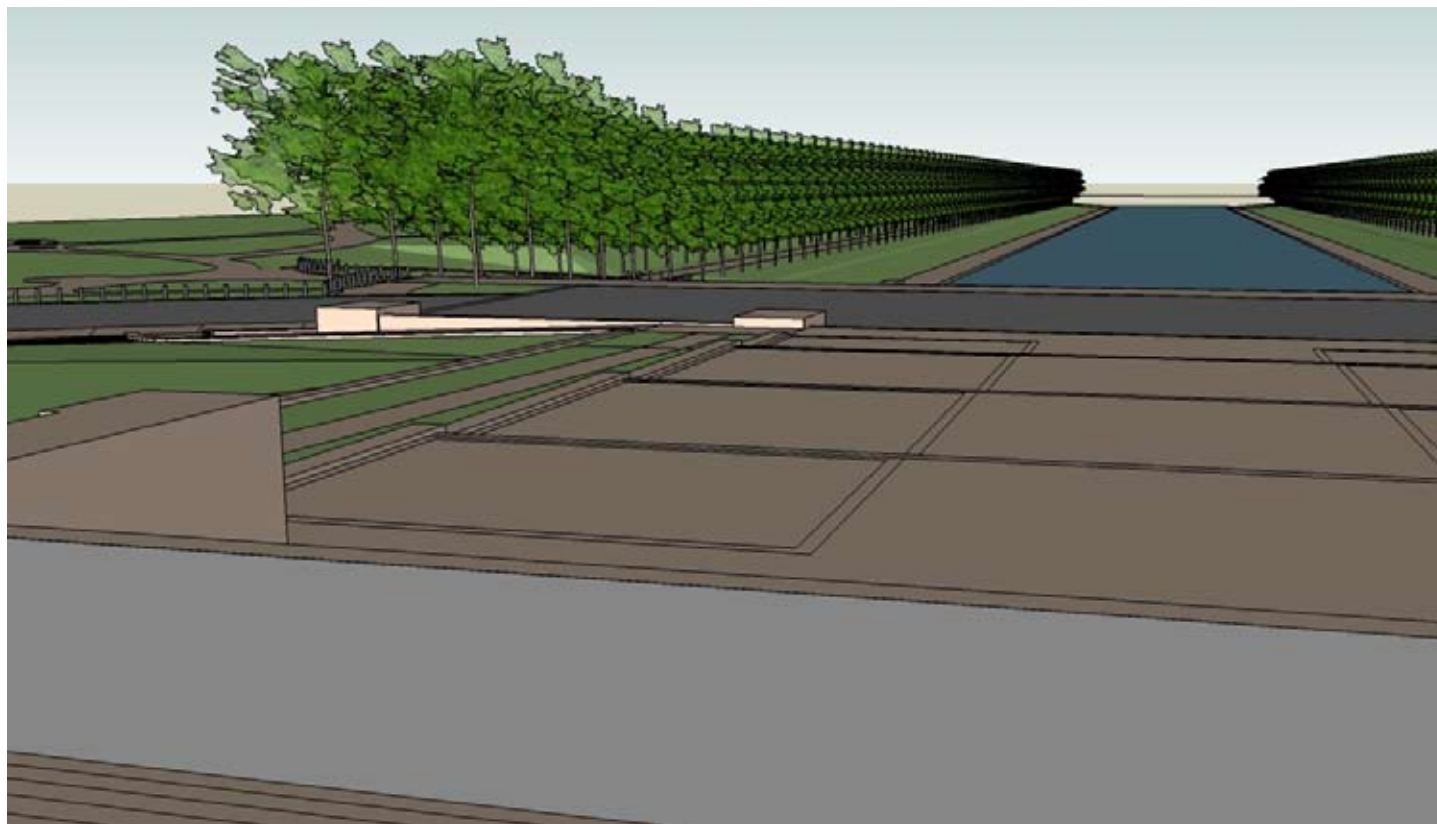




BIRD'S EYE VIEW OF PROPOSED CONCEPT 1



VIEW NORTH OF LOWER PLAZA

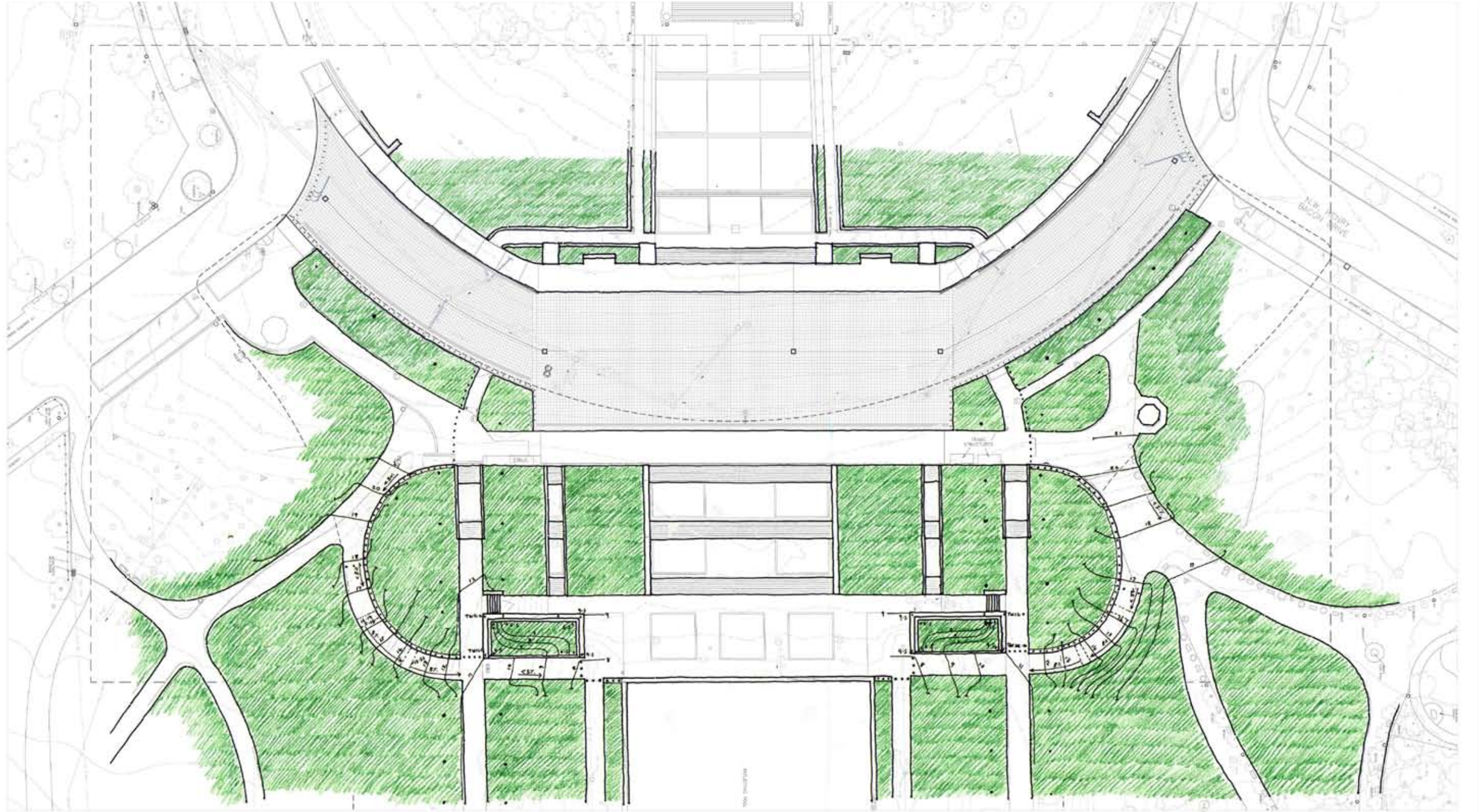


VIEW EAST FROM UPPER PLAZA



VIEW EAST ALONG SOUTH ELM WALK

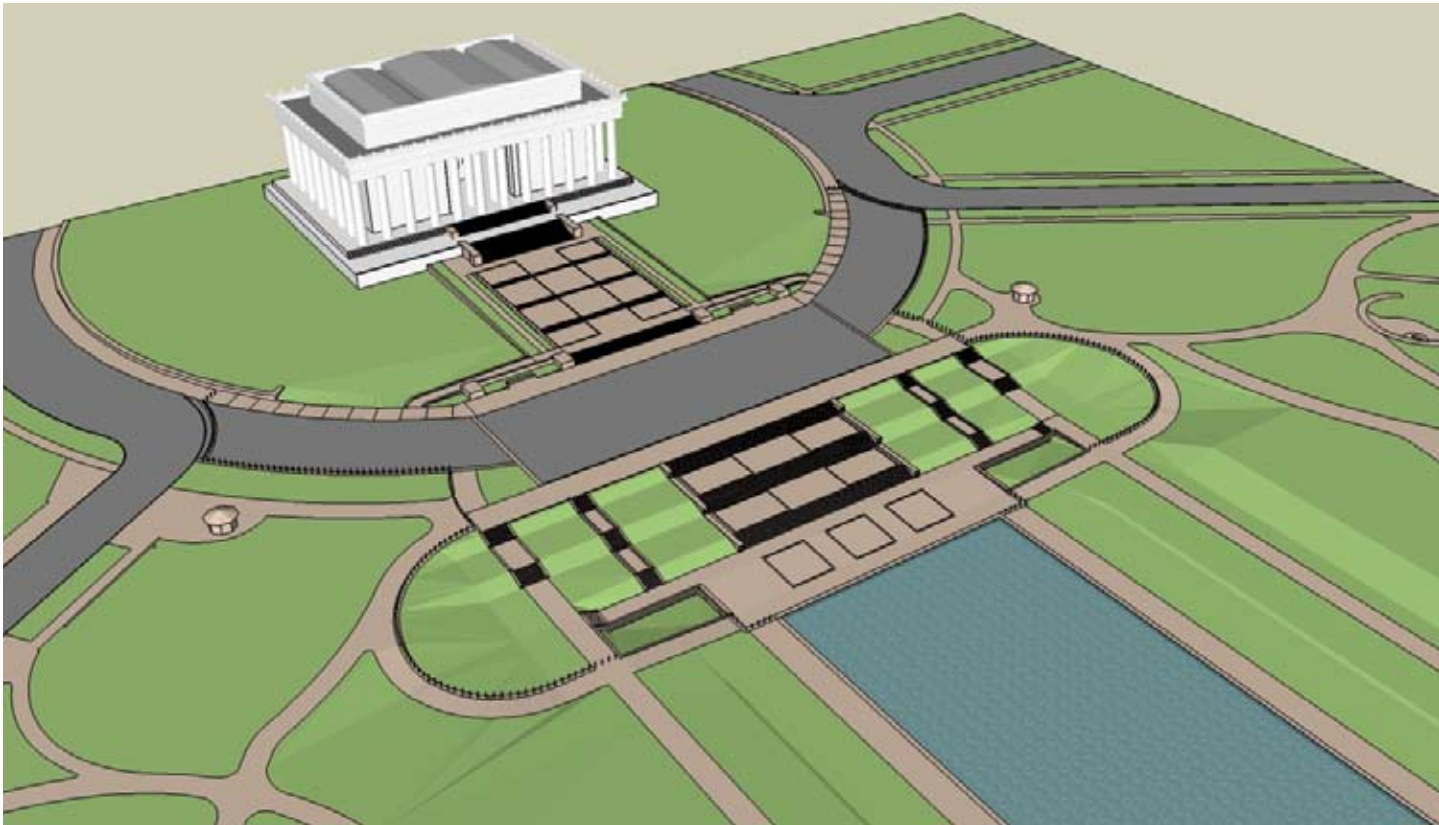




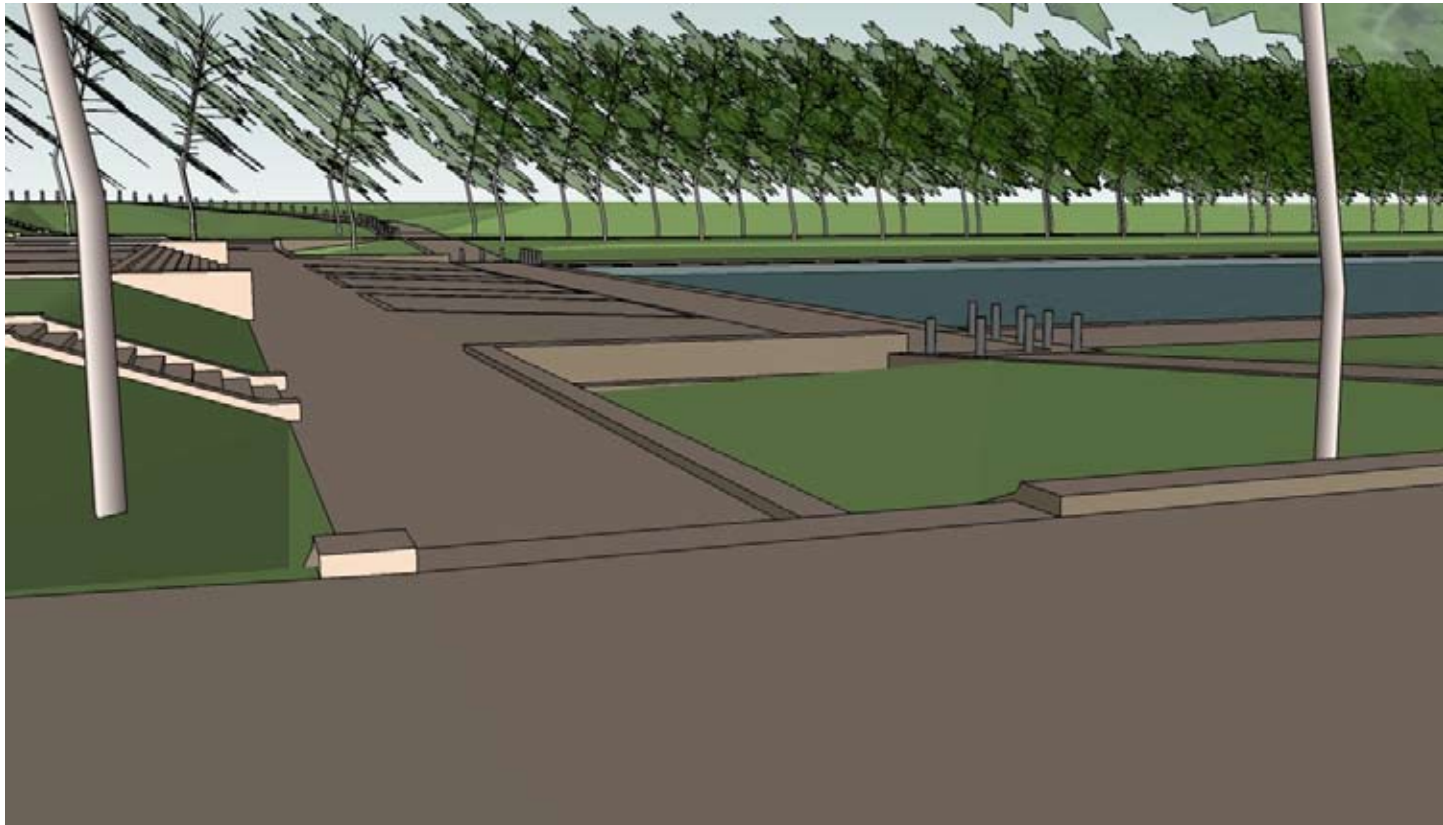
**CONCEPT 2** BOLLARDS FOLLOW THE WHOLE LENGTH OF THE LARGE CURVED WALK, LEAVING IT VISUALLY AS OPEN AS POSSIBLE



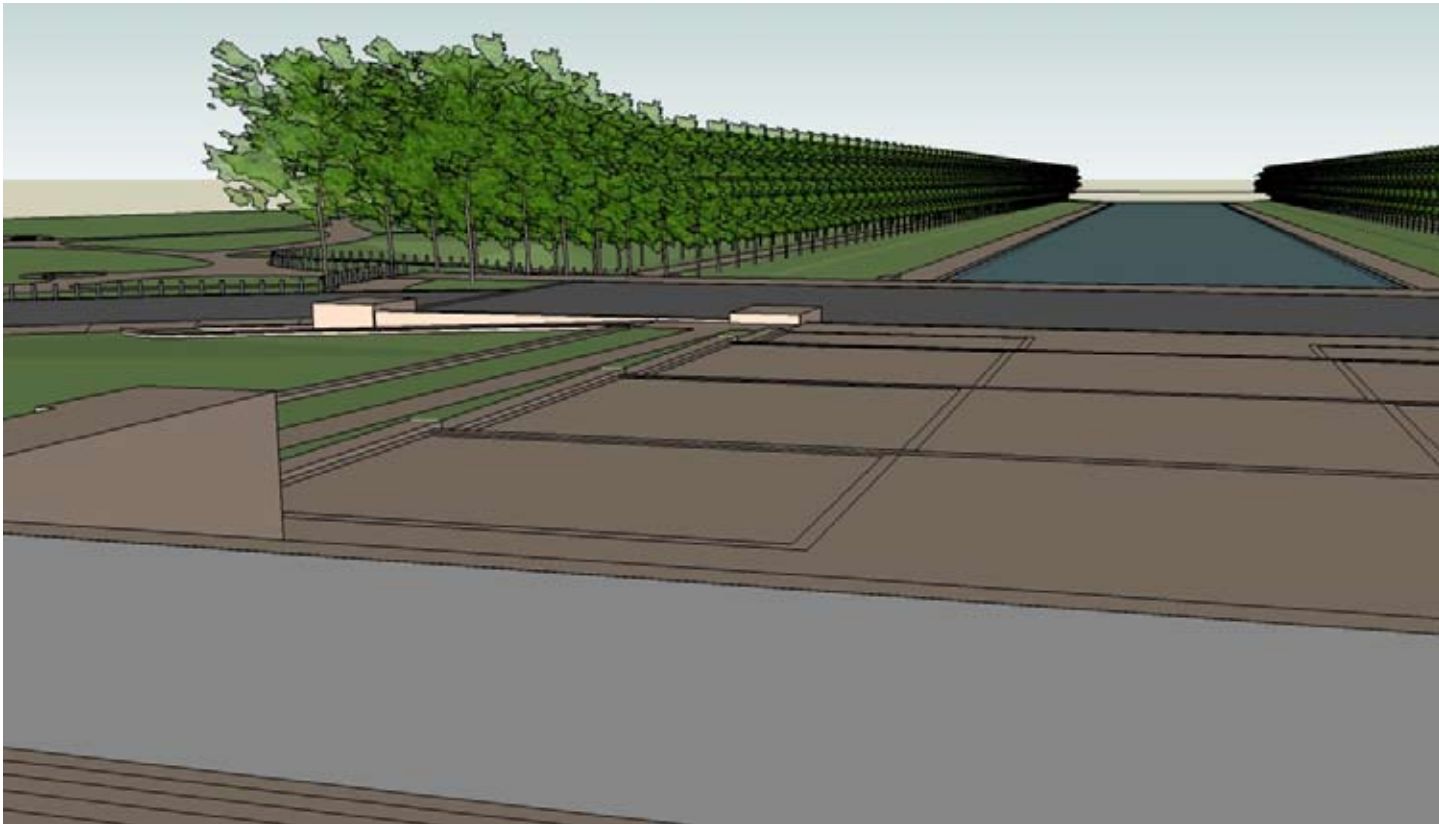




BIRD'S EYE VIEW OF PROPOSED CONCEPT 2



VIEW NORTH OF LOWER PLAZA



VIEW EAST FROM UPPER PLAZA



VIEW EAST ALONG SOUTH ELM WALK



## View Across the Lower Plaza looking South

- Proposed lower grade and walls are located in a transition zone between the reflecting pool topography and terraced landscape leading to the Lincoln Memorial.
- Wall shown at 36" high is divided into a 6" coping, 22" mid-section, and 8" curb.
- The wall may only need to be 30" tall based on security requirements.



30" WALL AT WASHINGTON MONUMENT





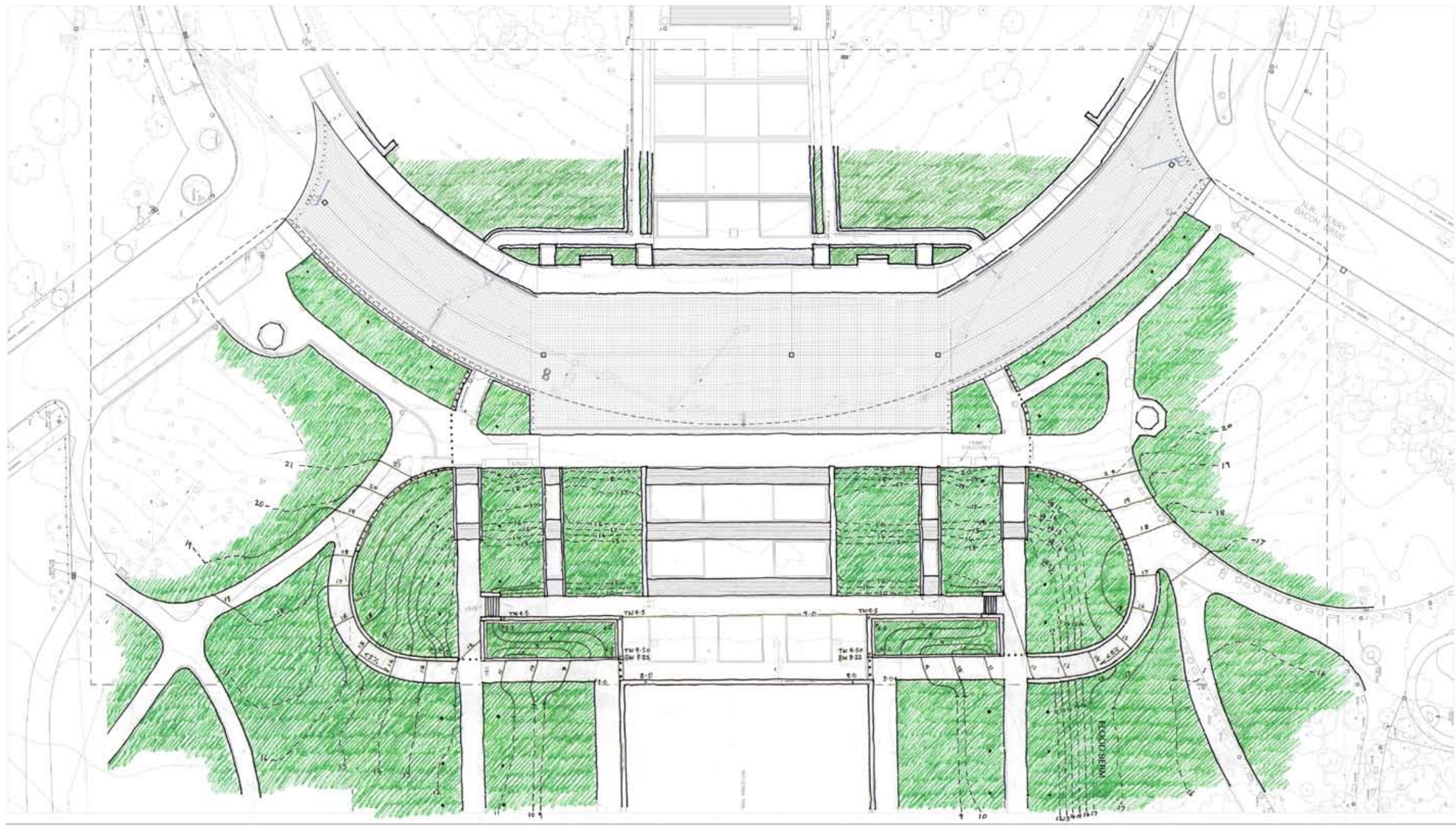


## Proposed Walks Along Edges of the Reflecting Pool at Coping

- The red lines in the sketches below illustrate a proposed 12 foot wide walk along the pool coping.



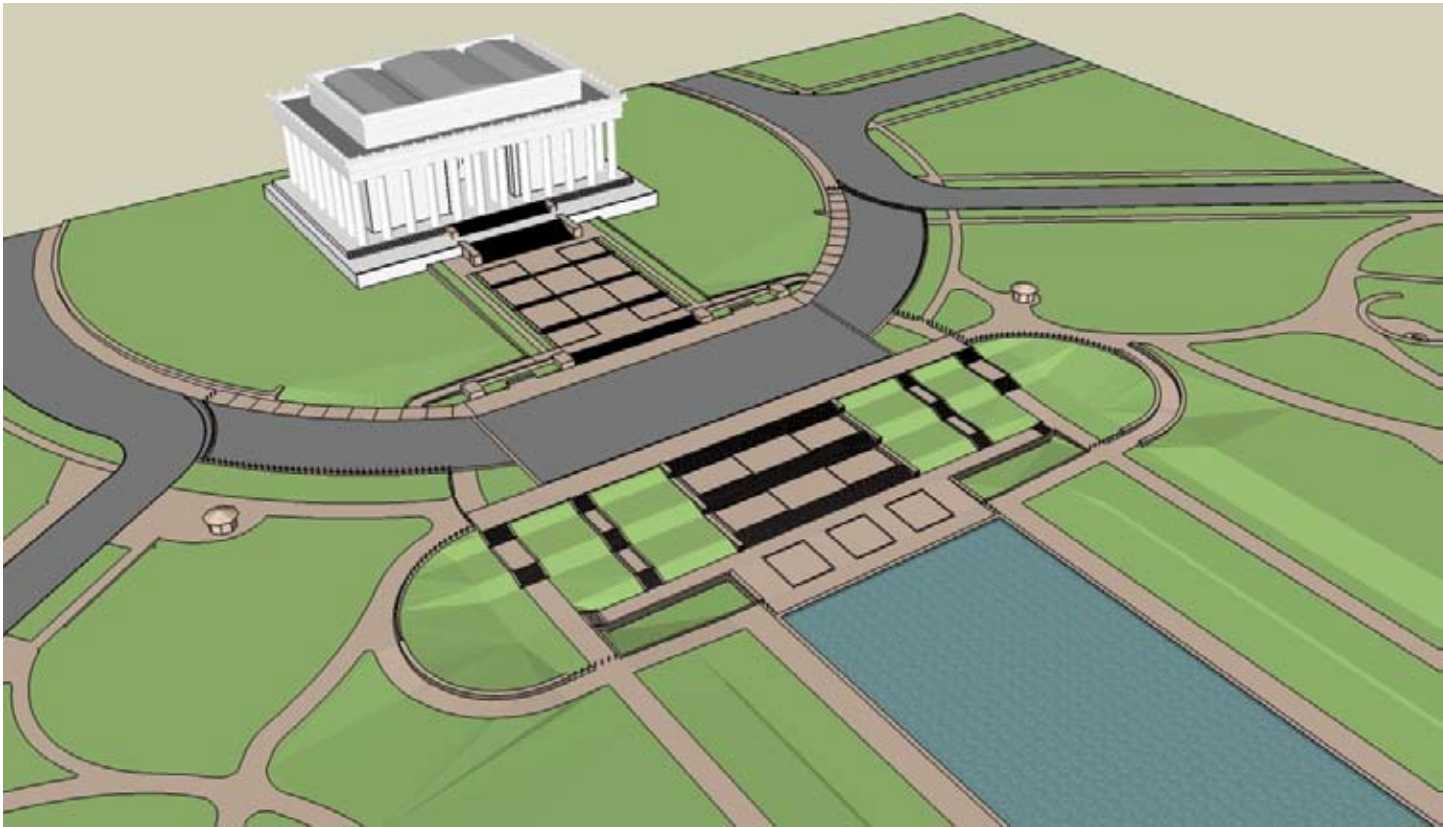




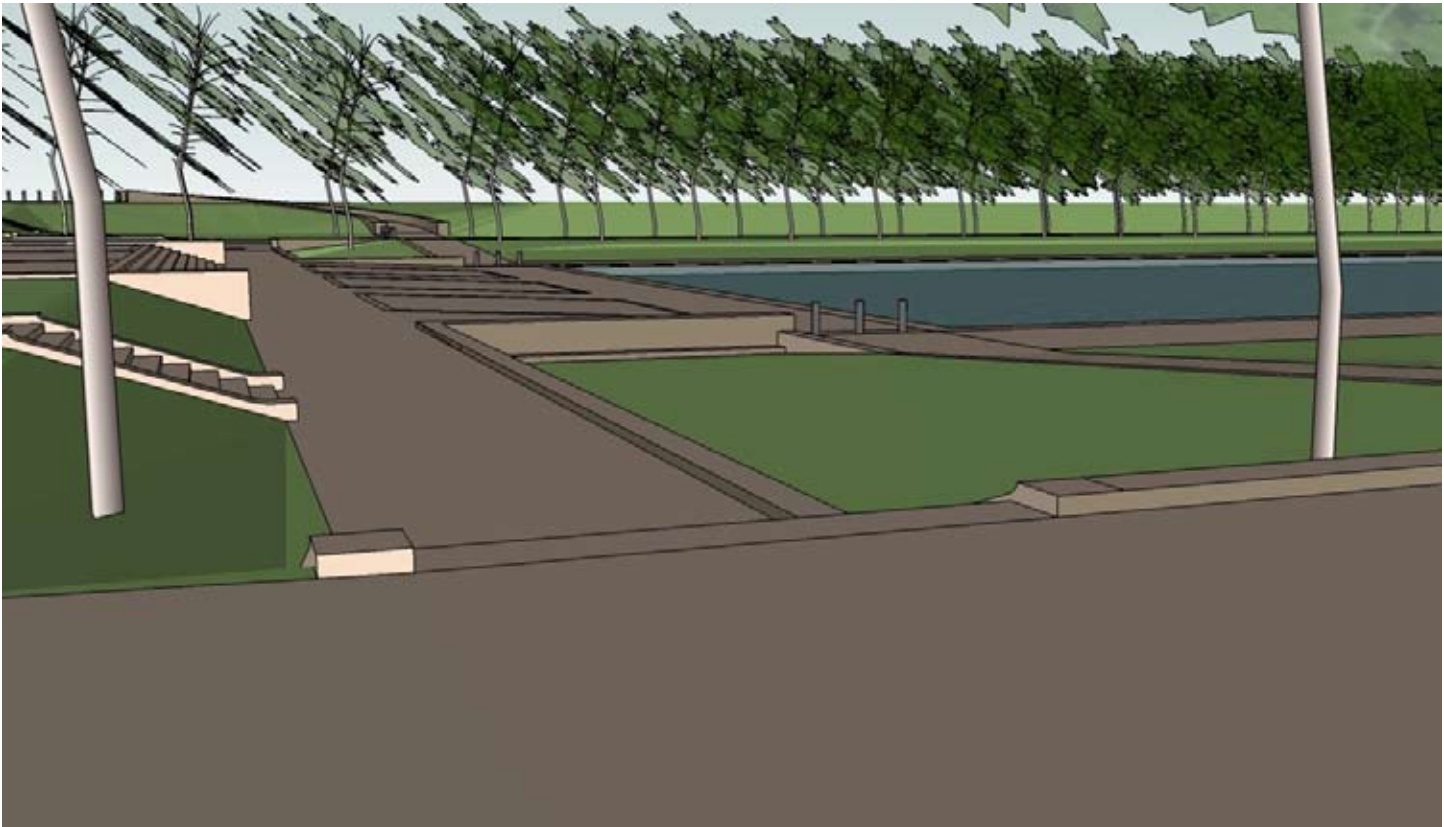
**CONCEPT 3** IN THIS NON-SYMMETRICAL SCHEME, RETAINING WALLS FOLLOW THE LARGE CURVED WALK AND SET IT INTO THE GRADE OF THE FLOOD BERM ON THE NORTH SIDE



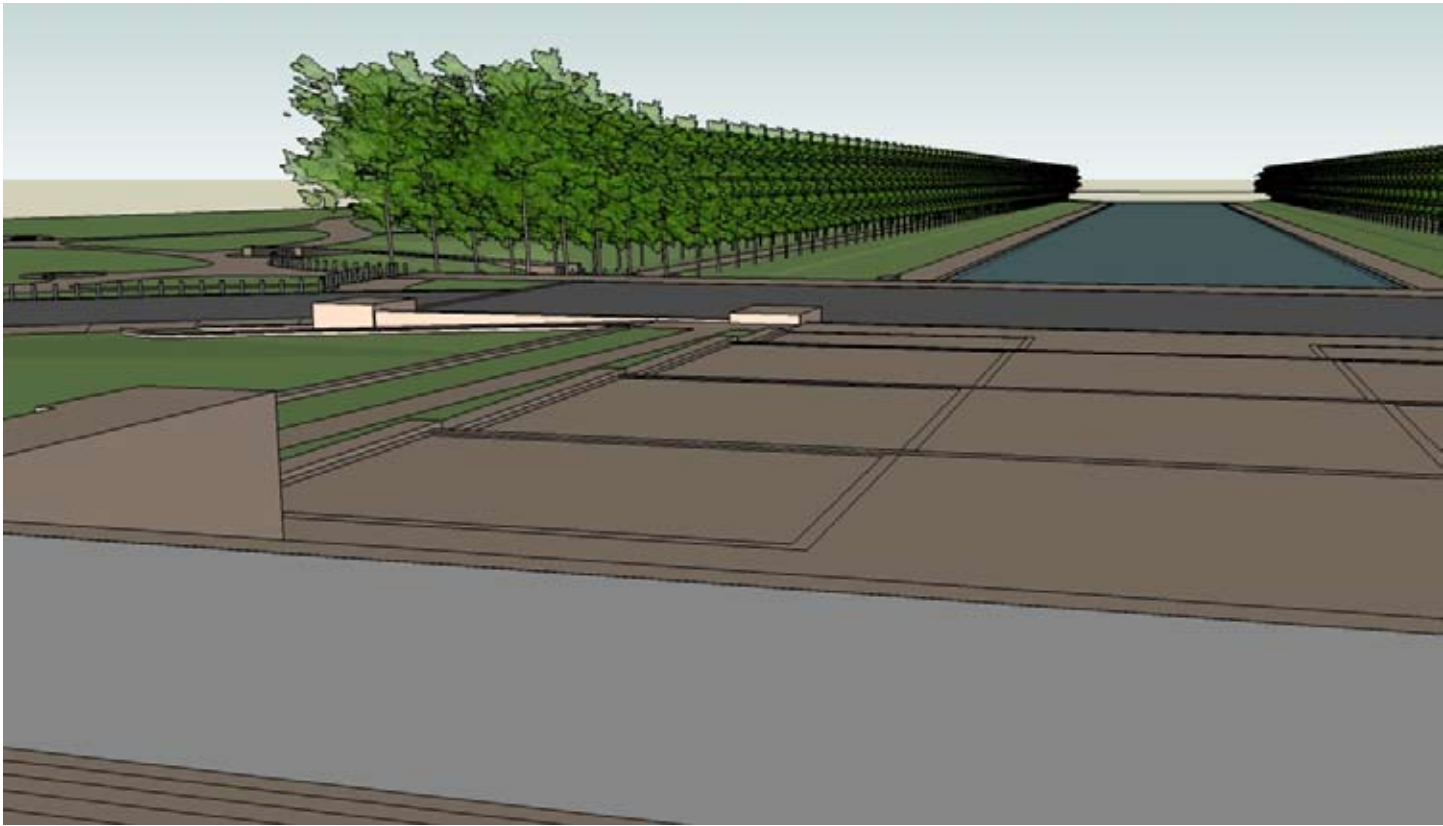




BIRD'S EYE VIEW OF PROPOSED CONCEPT 3



VIEW NORTH OF LOWER PLAZA



VIEW EAST FROM UPPER PLAZA



VIEW EAST ALONG SOUTH ELM WALK



New Curvilinear Walk South of the South Elm Walk



VIEW EAST TOWARD SOUTH ELM WALK - WITH BOLLARDS





NEW CURVILINEAR PATHS CONNECT WITH EXISTING CURVILINEAR WALKS LEADING TO NEARBY MEMORIALS

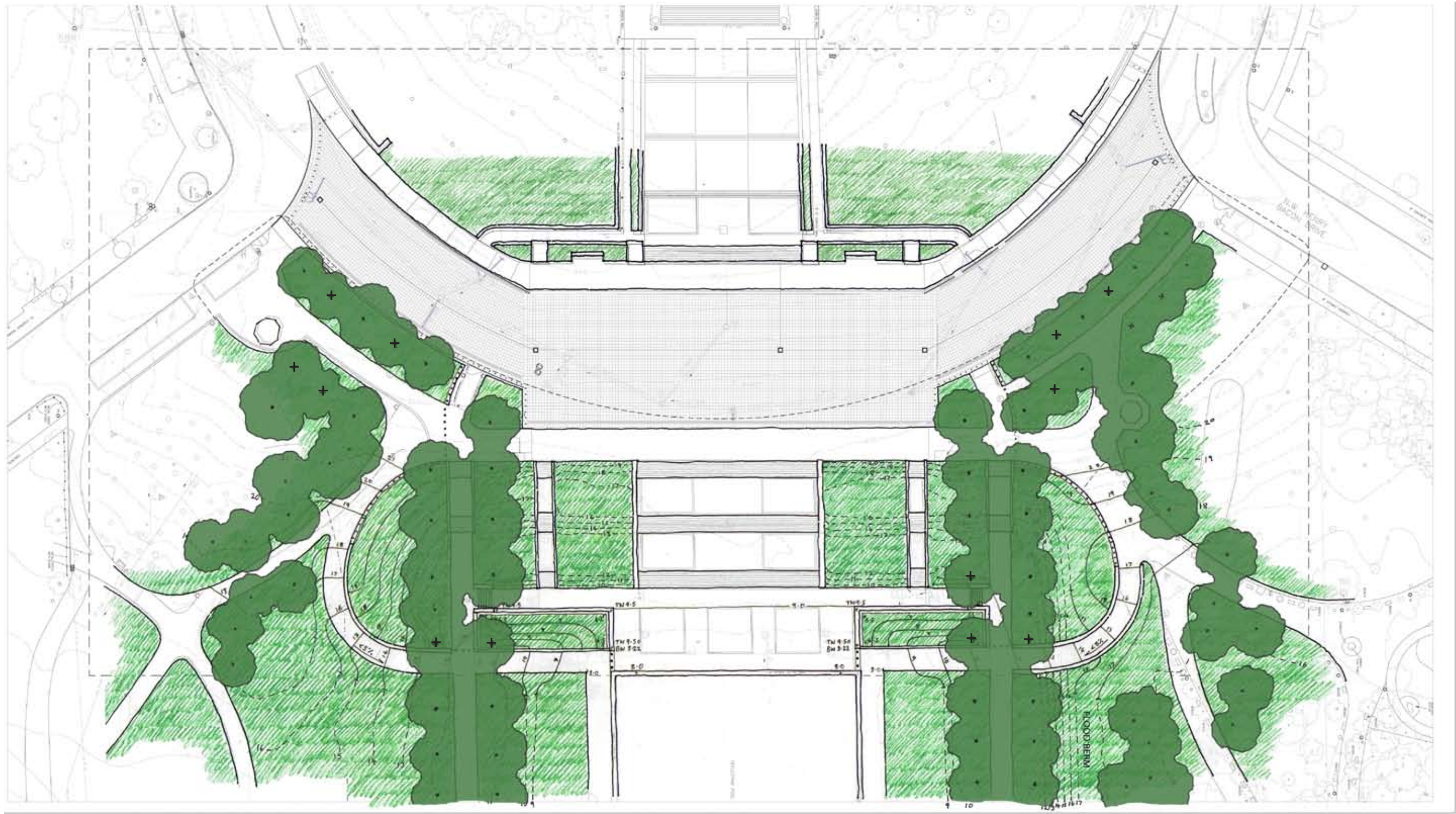


VIEW EAST TOWARD SOUTH ELM WALK - WITH WALL



EXISTING BOLLARDS CAN BE REMOVED FROM THIS AREA WITH LINE OF SECURITY MOVED NORTH AND SOUTH





### CONCEPT 3 - WITH TREE CANOPY SHOWN

THE EXISTING TREE CANOPY WILL REMAIN AS INTACT AS POSSIBLE. BASED ON AVAILABLE INFORMATION ABOUT THE EXISTING TREES, SOME OF WHICH ARE IN DECLINE, IT APPEARS THAT SEVEN TREES WILL BE REMOVED AND FOURTEEN NEW TREES COULD BE PLANTED AS INDICATED. NEW TREE LOCATIONS ARE INDICATED BY A + SYMBOL.







View Along North Elm Walk Toward Lincoln Memorial

- Proposed placement of lights, trash receptacles and benches facing the Reflecting Pool
- Concept for organizing site elements along Elm Walks. Light fixtures shown are conceptual only, further options to be explored.









