Fallen Journalists Memorial

National Capital Planning Commission Review

02 October 2025

John Ronan Architects Chicago

Commission Action
October 3, 2024

The Commission **approves** the following comments:

Supports the design approach, which thoughtfully applies the use of glass in a unique way to convey the purpose of the memorial and the role of journalists.

Finds the design must balance memorial purpose, materiality, and functionality, while considering the site context and visitor experience; and therefore

Visitor Access and Circulation

Notes the memorial design includes a series of elements placed across the site that generally define circulation paths and gatherings spaces.

Finds circulation and access for visitors, particularly from the perimeter of the site, may be challenging to perceive or navigate, especially for those with mobility concerns or visual impairments.

Recommends the applicant continue to refine the access and circulation, with a focus on creating clear paths of movement that will help guide visitors of all abilities through the memorial.

Access and Circulation

Requests the applicant provide, as part of the next review, further information on the programming and interpretation and how they will be inclusive and accommodate visitors of all abilities.

Programming and Accessibility

Visitor Comfort

Finds that while the concept design includes a grove of trees, the site is proposed to be fully paved, which in combination with the glass elements, may impact visitor comfort particularly during the warmer months of the year.

Requests the applicant evaluate additional approaches to enhancing visitor comfort and reducing the urban heat island effect, including alternative ground treatments and tree wells, and additional trees and alternate species, and other landscaping.

Additional Planting
Tree Layout
Tree Species
Tree Wells and Ground Treatment

Viewsheds

Notes the site is located along Maryland Avenue, SW, which is identified as a preeminent view corridor with a linear view from the U.S. Capitol to the Tidal Basin.

Requests a viewshed analysis to understand the memorial's visual impacts to the U.S. Capitol and Maryland Avenue, SW preeminent view corridor. The viewshed analysis should include the relationship to curbs, buildings, trees, and other landscape features between 6th to 3rd Streets SW and the U.S. Capitol in all seasons and show the surrounding areas.

Viewshed Analysis
Seasonal Views

Notes the central Remembrance Hall is intended to provide a view toward the U.S. Capitol dome.

Requests the applicant continue to explore the overall height and design of the Remembrance Hall to better frame the view to the U.S. Capitol Dome.

Capitol View Study

Lighting

Notes the submission indicates the memorial lighting approach includes up-lit glass elements which would create a glow across the site.

Notes the lighting approach should respect the visual importance and hierarchy of memorials, monuments, and important civic buildings and spaces in the nation's capital, with the U.S. Capitol and Washington Monument the most prominent features in the nighttime skyline; and therefore

Recommends the applicant include a lighting study as part of the next review that demonstrates the proposed lighting levels and how they may impact the hierarchy of the U.S. Capitol and surroundings museums.

Light Level Analysis
Lighting Studies

Streetscape Design

Notes NCPC, along with the Monumental Core Interagency Working Group (IWG), recently completed the Monumental Core Streetscape Guidelines, which reinforces the hierarchy of streets and vistas of the L'Enfant Plan.

Notes NCPC and Smithsonian, in consultation with the District of Columbia and other local and federal stakeholders are preparing an urban design study on Independence Avenue to improve north-south and east-west connectivity for pedestrians and multi-modal transportation (physical and visual connectivity) and provide streetscape amenities to improve pedestrian accessibility and comfort.

Requests the applicant coordinate with NCPC and the Monumental Core IWG to evaluate how the proposed memorial design can align with the Monumental Core Streetscape Design Guidelines and improve the pedestrian experience along Independence Avenue.

Streetscape Design

Material Use and Durability

Commends the applicant's detailed exploration, symbolism, and proposed application of the glass material in a national memorial.

Notes the site is located in the 100-year floodplain.

Requests the applicant provide, as part of the next submission, further information about:

- The durability of the glass elements, and how they will be maintained and cleaned;
- How climbing and or skateboarding will be addressed;
- Whether the glass elements could withstand a vehicular crash and how the memorial is generally addressing security; and
- The flood mitigation approach.

Glass Durability and Maintenance
Climbability
Skateboarding Deterrence
Memorial Security

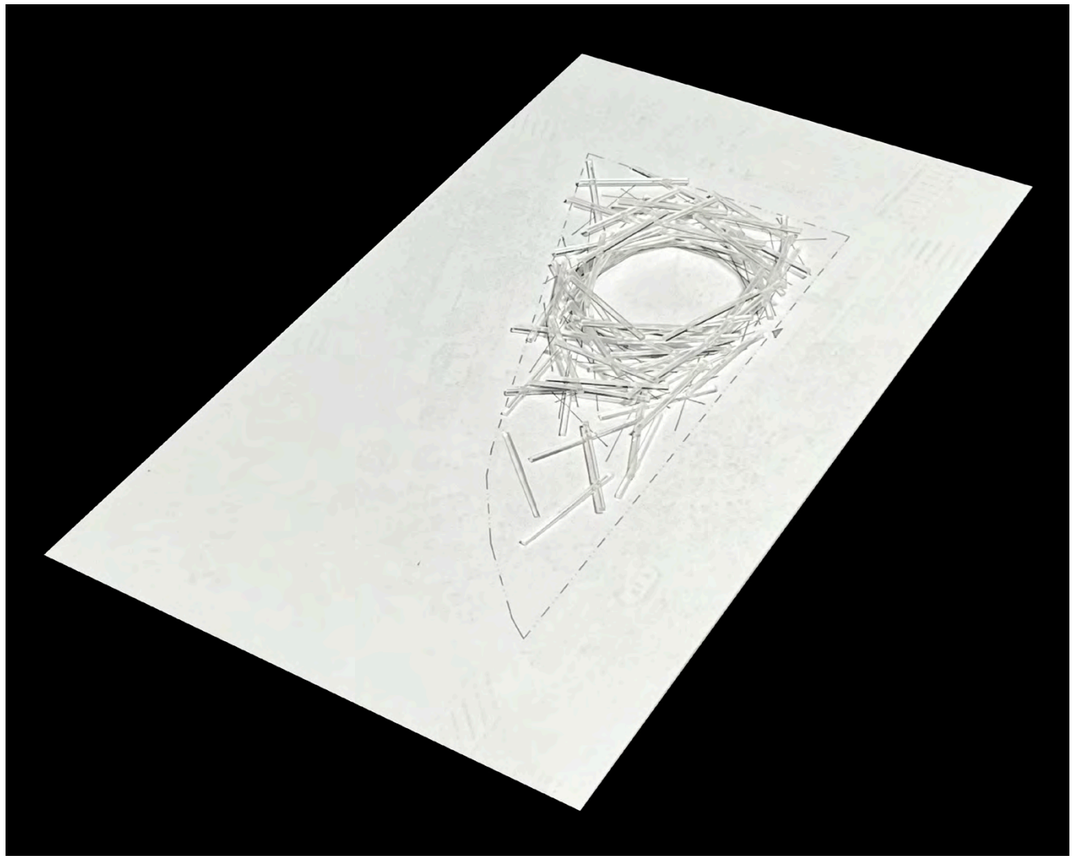
Equity Considerations

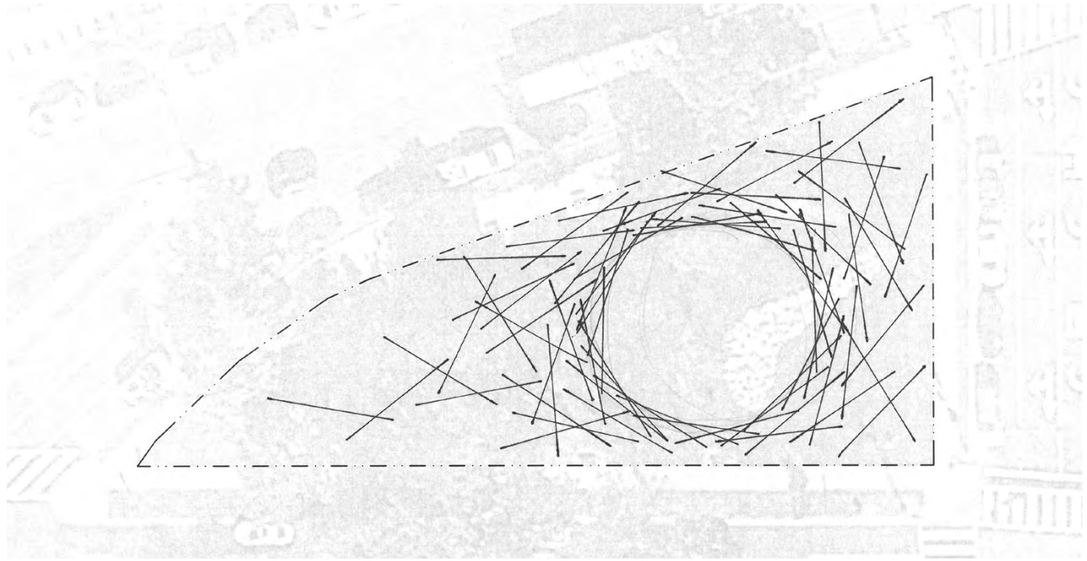
Requests the applicant provide as part of the next submission responses to the equity considerations outlined in the Submission Guidelines.

10/4/2024
Meghan Hottel-Cox
Secretary to the National Capital Planning Commission

Table of Contents

Concept





Memorial as Story

The memorial design consists of a collection of transparent, solid glass elements arranged on the site in a seemingly accidental manner which aggregate to form a pure cylindrical space at the heart of the site, suggesting the way ostensibly disconnected facts coalesce to form a journalist's story.

Experiencing the memorial is a **journey of discovery** that unfolds slowly, space by space like a story, and casts the visitor in the role of investigative journalist pursuing truth wherever it leads.

The design intent is to disclose the **dichotomies** that underly the memorial's subject matter and purpose:

opaque : transparent

distorted : clear

chaotic : ordered

hidden : exposed

falsity : truth

unsettled : calm

loud : quiet

commotion : repose

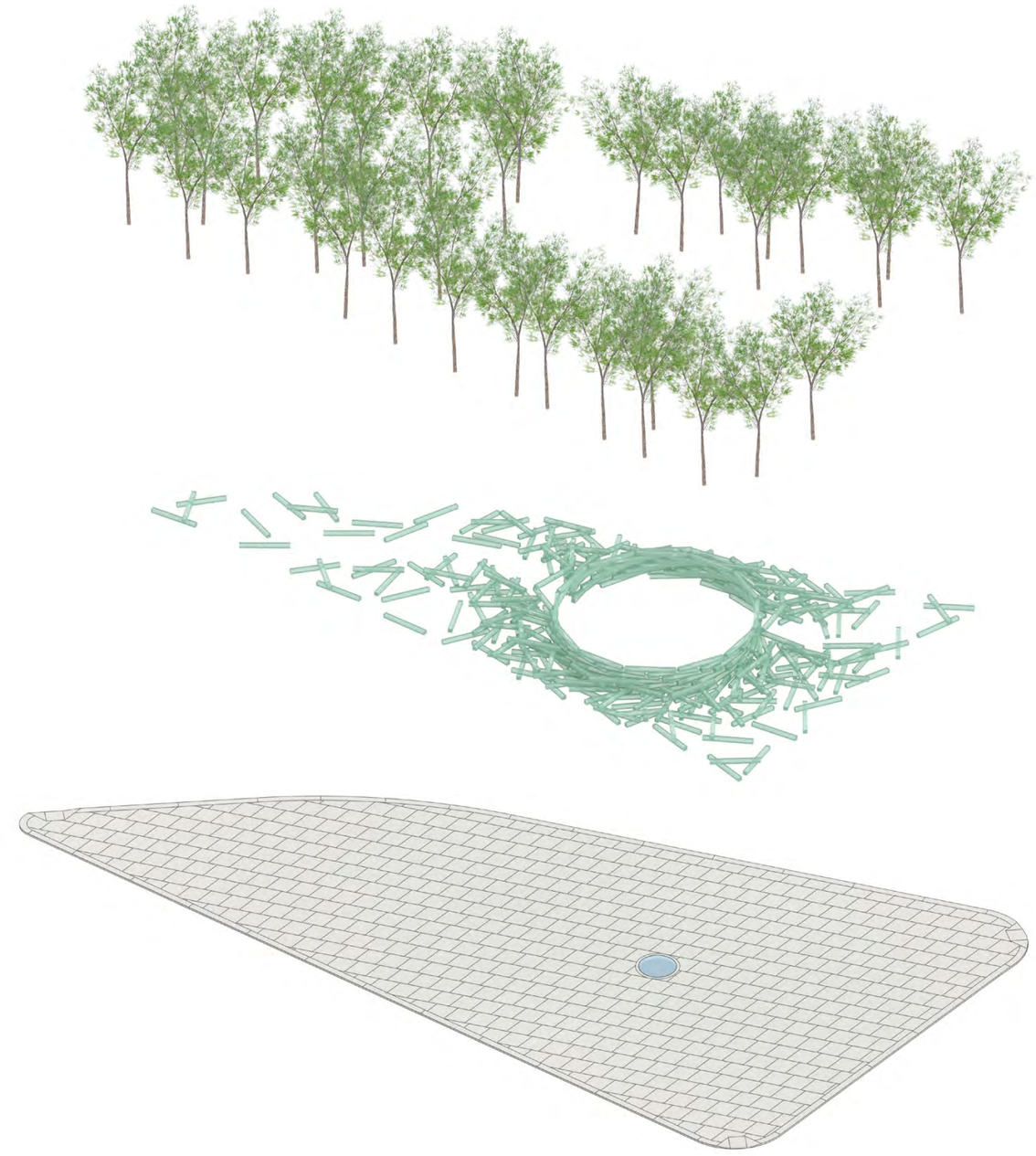
noisy : still

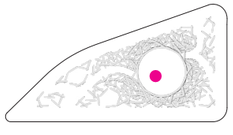
subjective : objective

forget : remember

02 october 2025 **aerial view** day

The memorial design consists of the interplay of three superimposed design elements – a hardscape stone plaza overlaid with a grove of trees that sidestep the array of cast glass elements which aggregate to form the memorial's circular Remembrance Hall at the heart of the site.





The circular Remembrance Hall is the memorials “home for truth.” Upon entering it, disorder yields to order, and things fall into place. The Capitol dome comes into view, signifying the watchdog role that journalists play in a democracy, and visitors are drawn to a circular glass “lens” in the center of the space bearing an important message: the text of the First Amendment to the U.S. Constitution.

Visitor Access and Circulation

Notes the memorial design includes a series of elements placed across the site that generally define circulation paths and gatherings spaces.

Finds circulation and access for visitors, particularly from the perimeter of the site, may be challenging to perceive or navigate, especially for those with mobility concerns or visual impairments.

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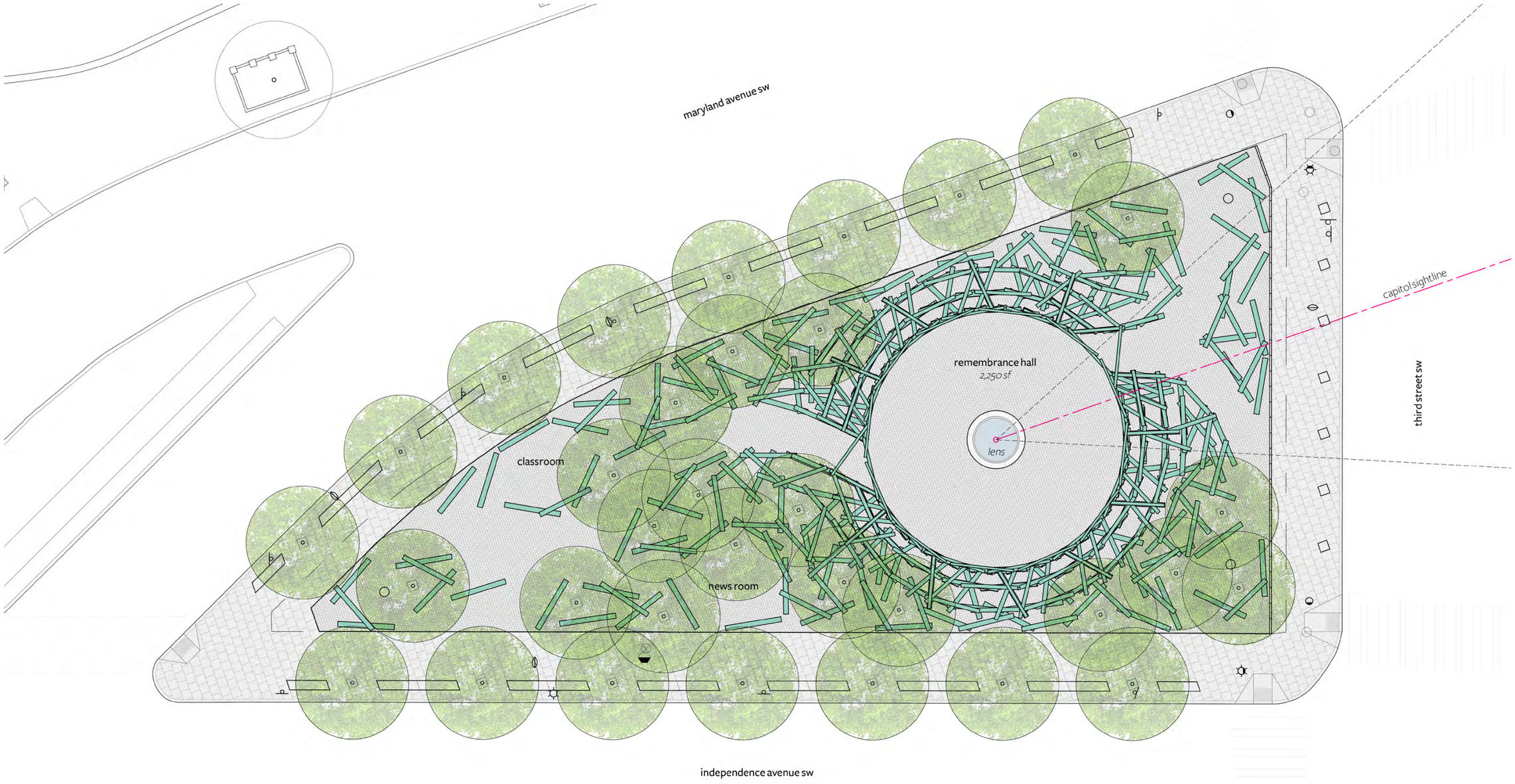
Visitor Access and Circulation

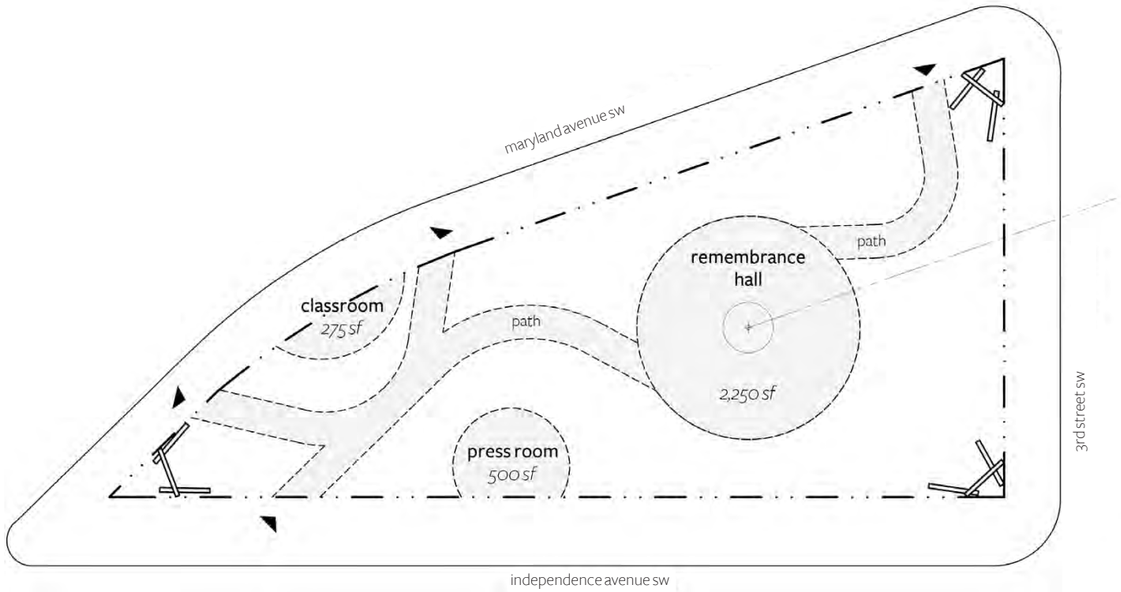


symbol key

- parking meter
- manhole
- sign
- traffic light
- water meter vault
- water valve vault
- light pole
- pylon

0 10′-8″ 21′-4″ 42′-8″

3/64″ = 1′-0″ scale



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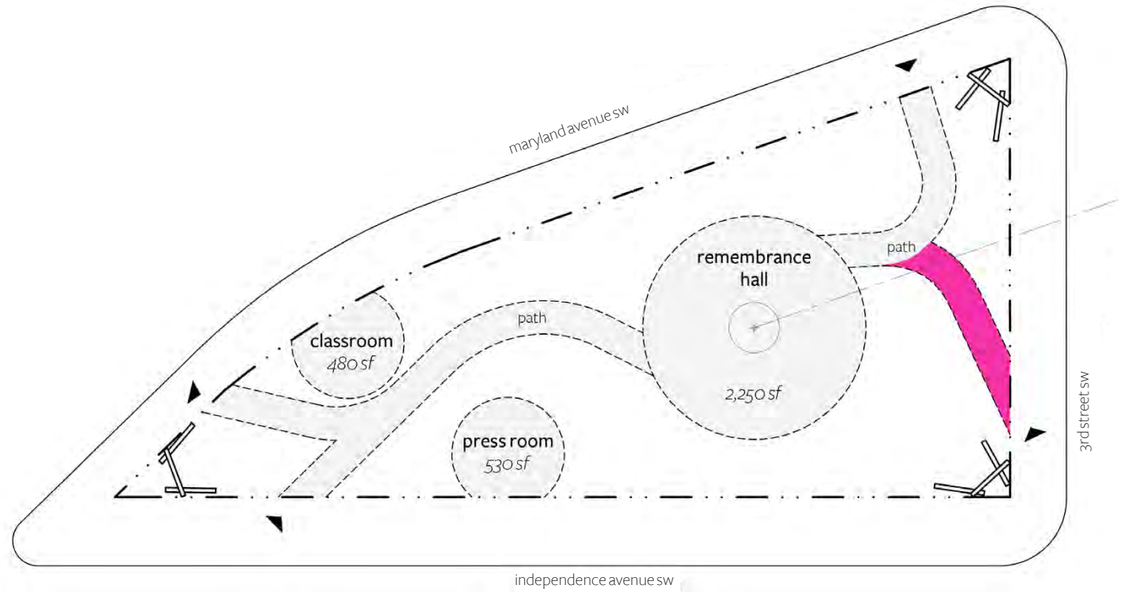

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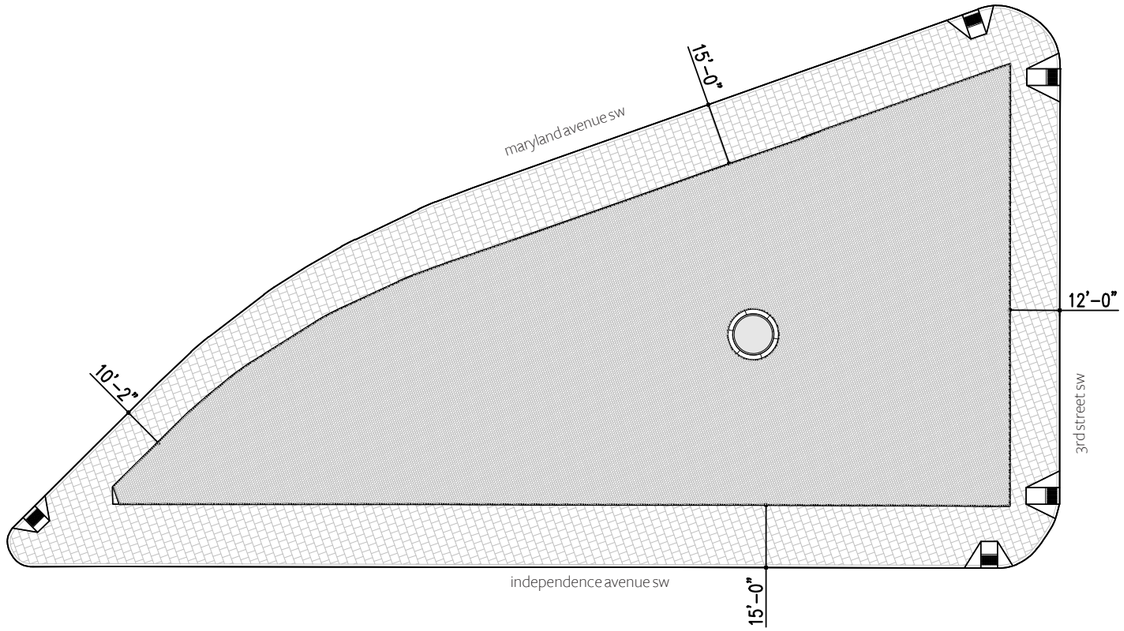

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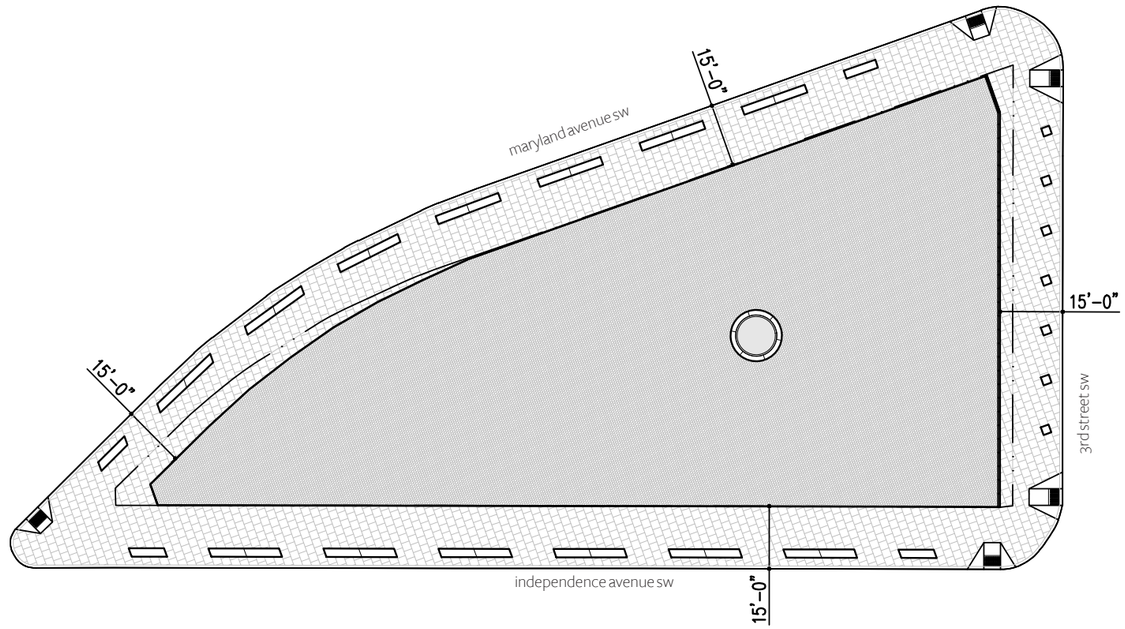

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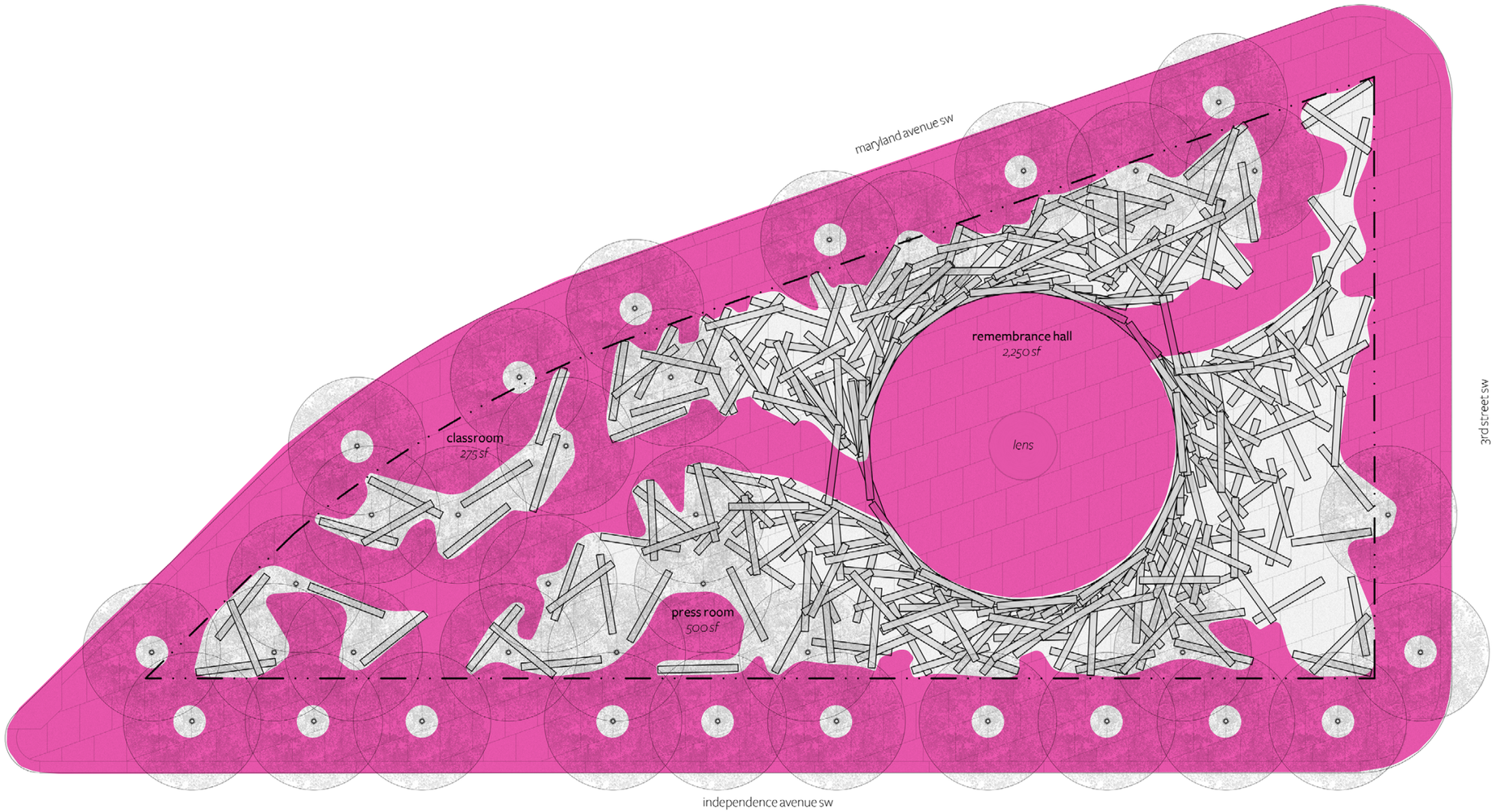

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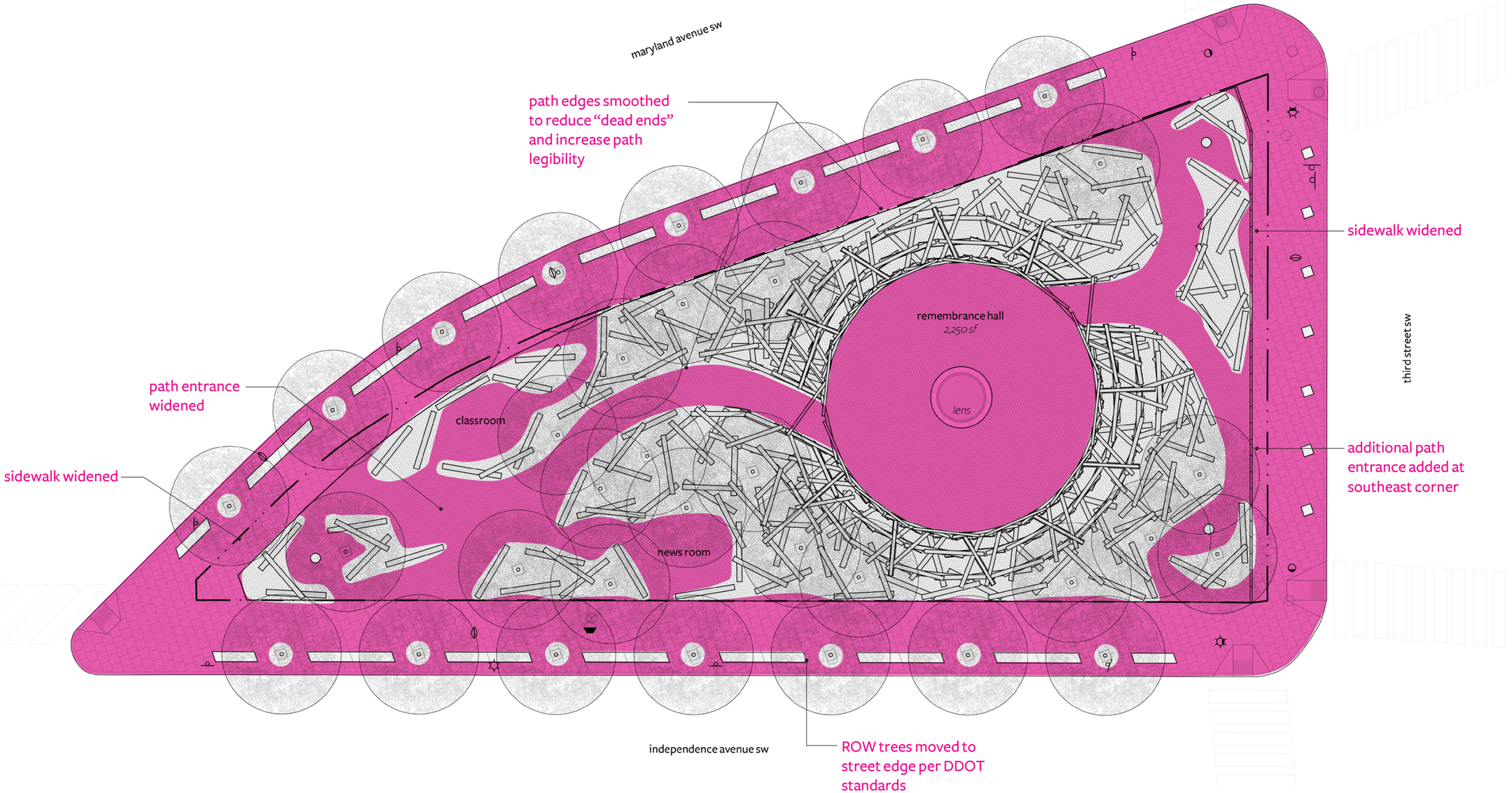

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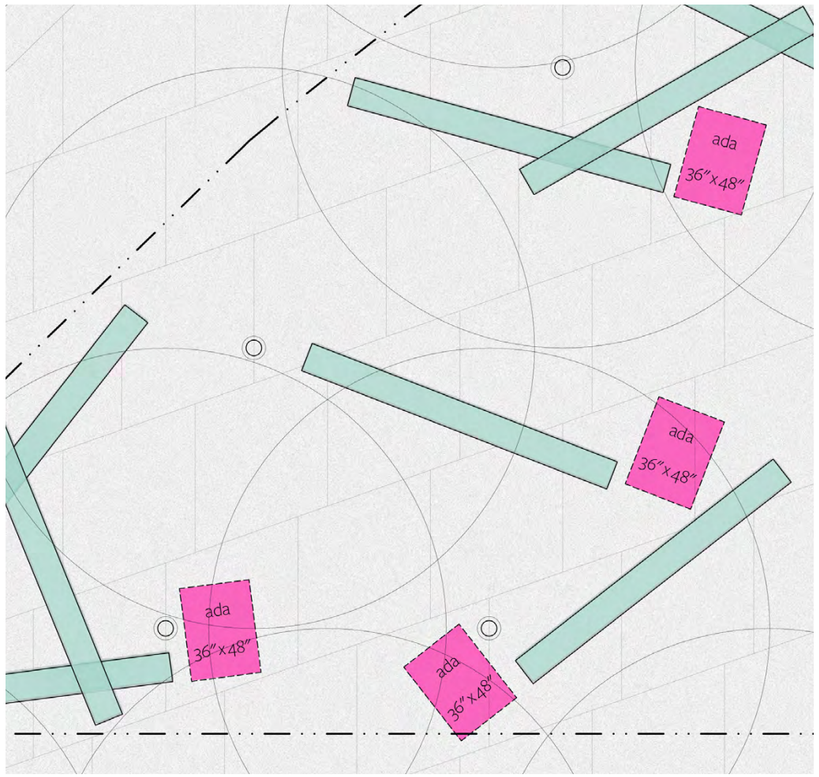
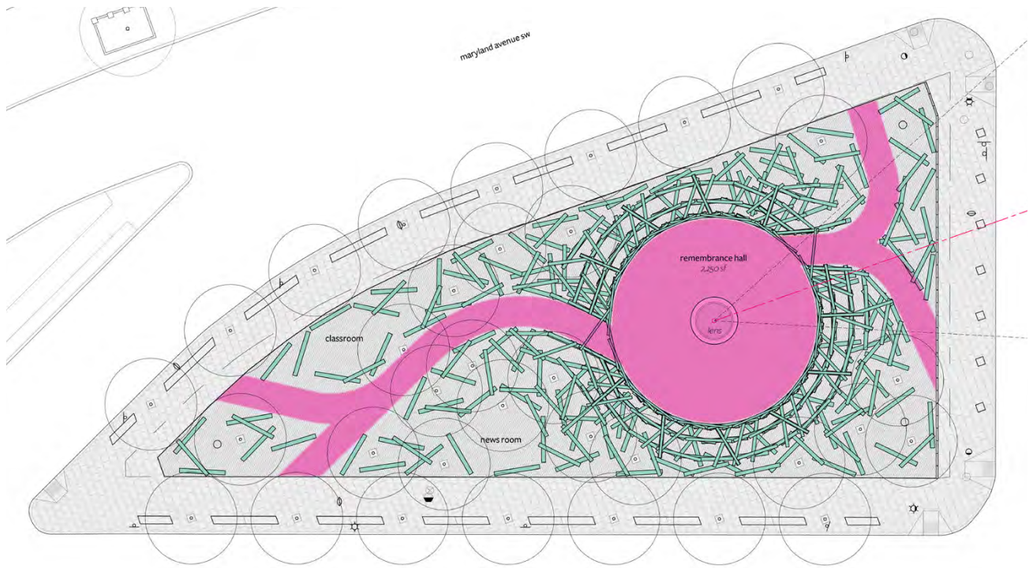
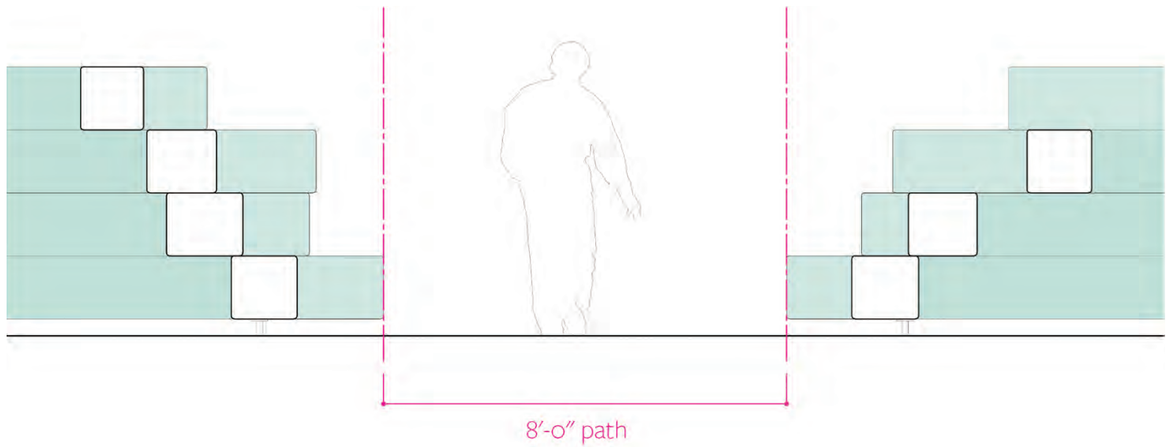
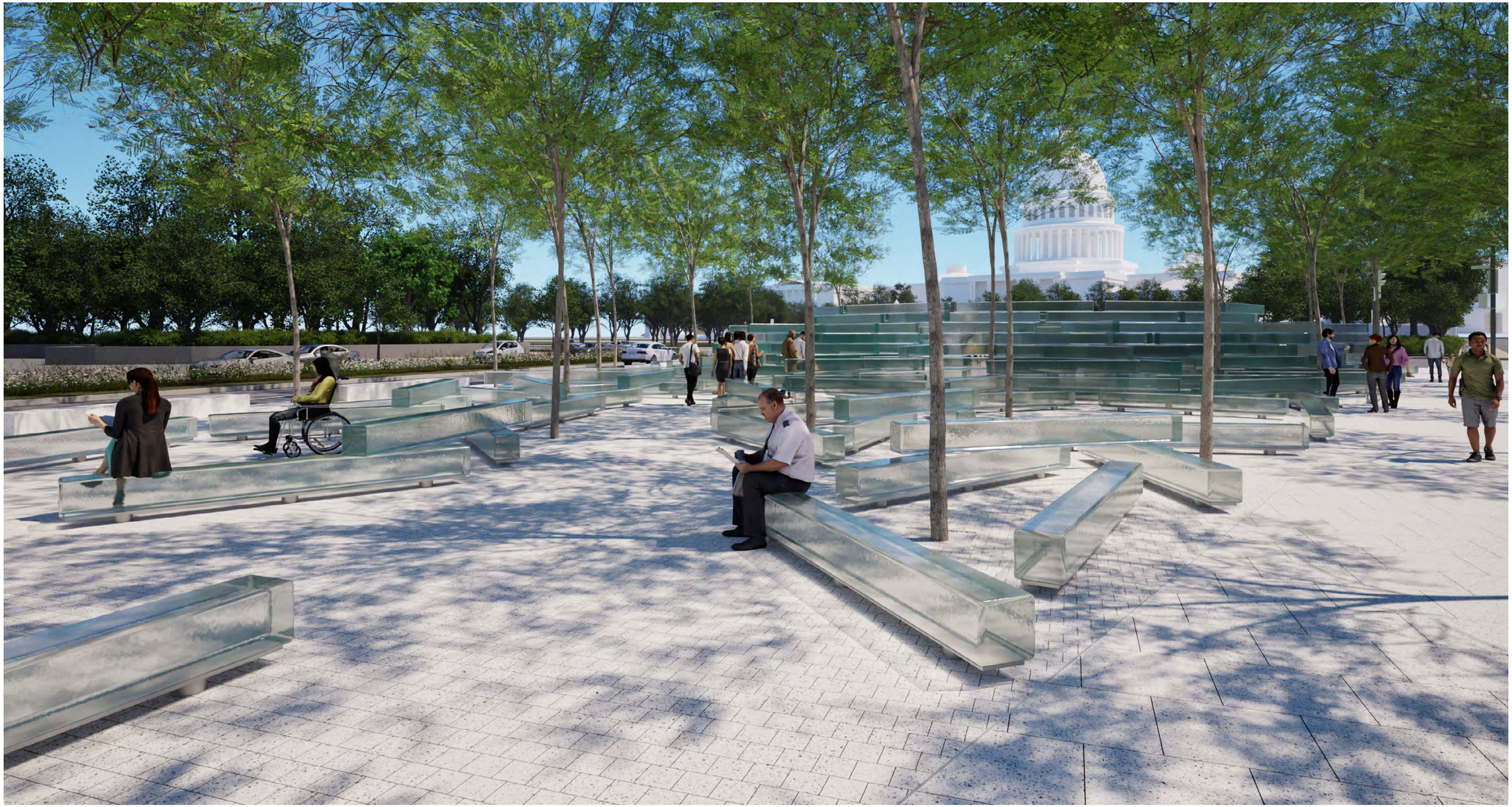


(above)
Per ABA and ADA requirements, ADA clear space is provided throughout the site alongside seat-height elements for wheelchair users.

(right)
The visitor path maintains an **8’** clear width throughout (3’ clear width is required per the ADA and ABA). The walls of the visitor path are stacked such that no elements project into the clear width of the path.







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Visitor Access and Circulation

Access and Circulation

Programming and Accessibility

The foundation is committed to ensuring accessibility and broad public engagement are embedded in all aspects of the memorial. Efforts to achieve this include:

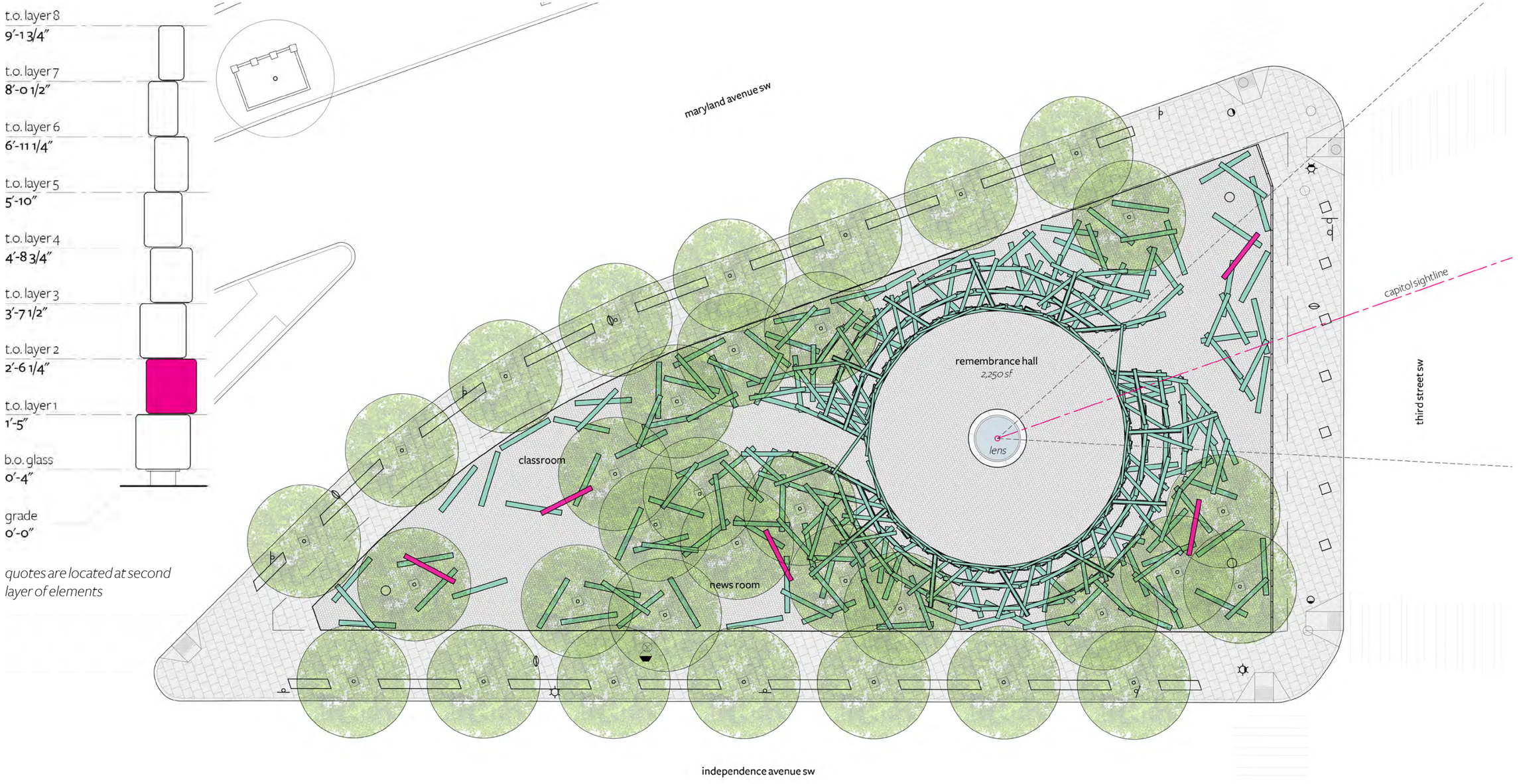
- **Educational Outreach:** The foundation is collaborating with the University of Pennsylvania's Annenberg Public Policy Center and National History Day to develop educational materials and strategies that integrate the topics of press freedom and the sacrifices of journalists into high school curricula. A key focus of this initiative includes ensuring that schools throughout the country can use our materials. To help make that possible, we will work directly with school districts across the U.S., including in underserved and rural communities, to shape materials and implementation approaches that meet various learning needs.

- **Stakeholder Engagement:** To inform the memorial's design and programming, the foundation commissioned Hart Research to conduct focus groups with professionals involved in public monuments, memorial education, and history interpretation. The resulting recommendations emphasize the importance of offering multiple perspectives and creating interactive, engaging ways to honor fallen journalists. These insights are incorporated into both the memorial's design and its visitor experience.

- **Accessible and Interactive Design:** To ensure the memorial provides a meaningful experience for all visitors, the foundation is also working with media design firm Cortina Productions to develop an interactive media component where accessibility is a core design principle. This includes:

    - Using state-of-the-art technology to enhance engagement.
    - Providing content in multiple languages to broaden audience reach.
    - Exceeding ADA accessibility standards to ensure a positive experience for individuals with varying abilities.
    - Incorporating resource-efficient materials, energy-conscious design elements, and landscape integration to minimize environmental impact while preserving the natural surroundings.

By integrating these elements, the memorial will serve not only as a place of remembrance but also as a dynamic learning space that deepens public understanding of press freedom and the risks journalists face.



symbol key

- parking meter
- manhole
- sign
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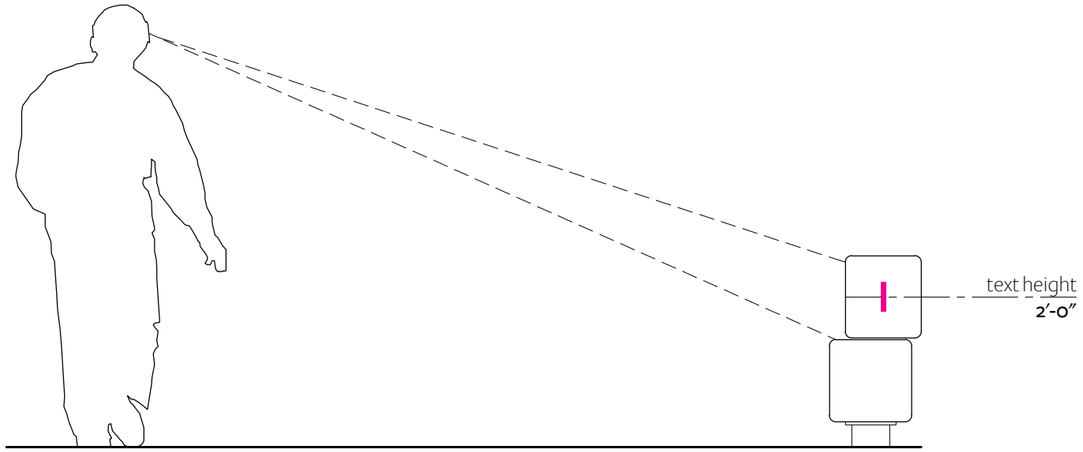
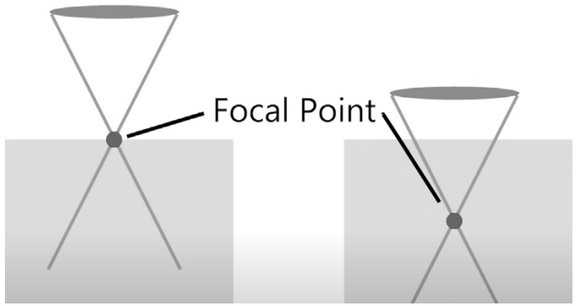
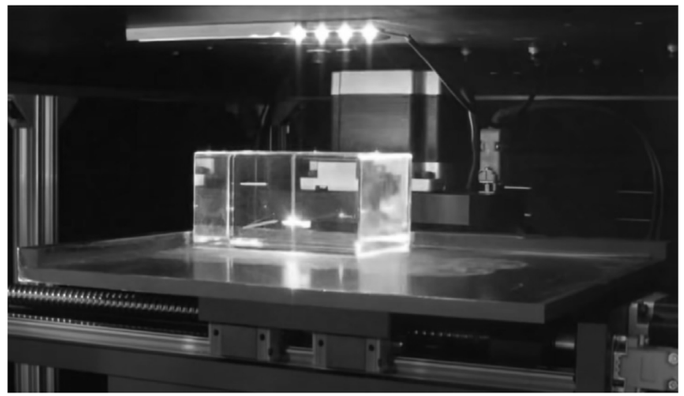
- light pole



0 1' 2' 4'
1/2" = 1'-0" scale

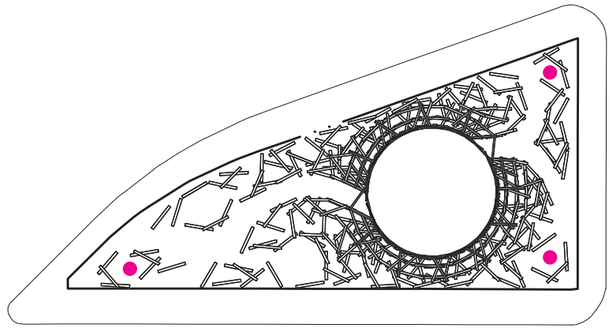


surface engraving ***subsurface engraving***

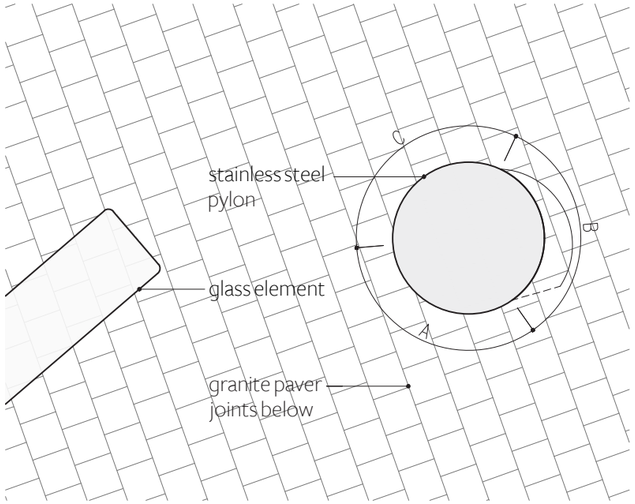


glass engraving process

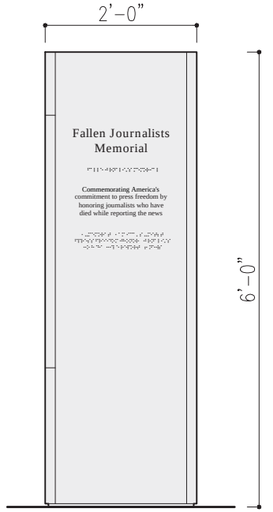
subsurface engraved glass award



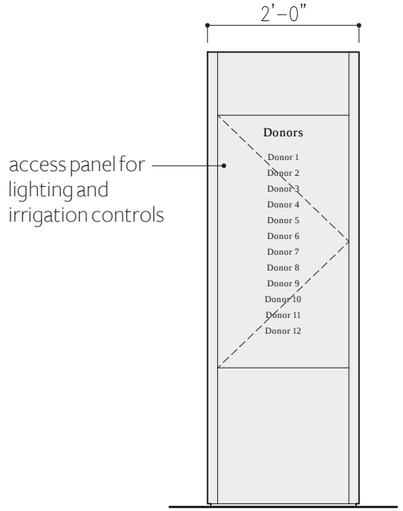
key plan



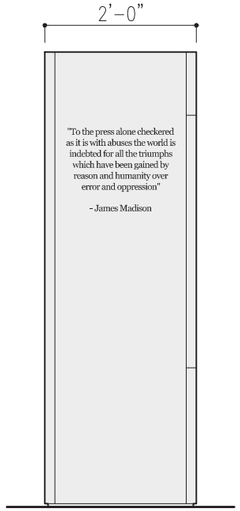
plan



elevation A
fallen journalists memorial



elevation B
donors



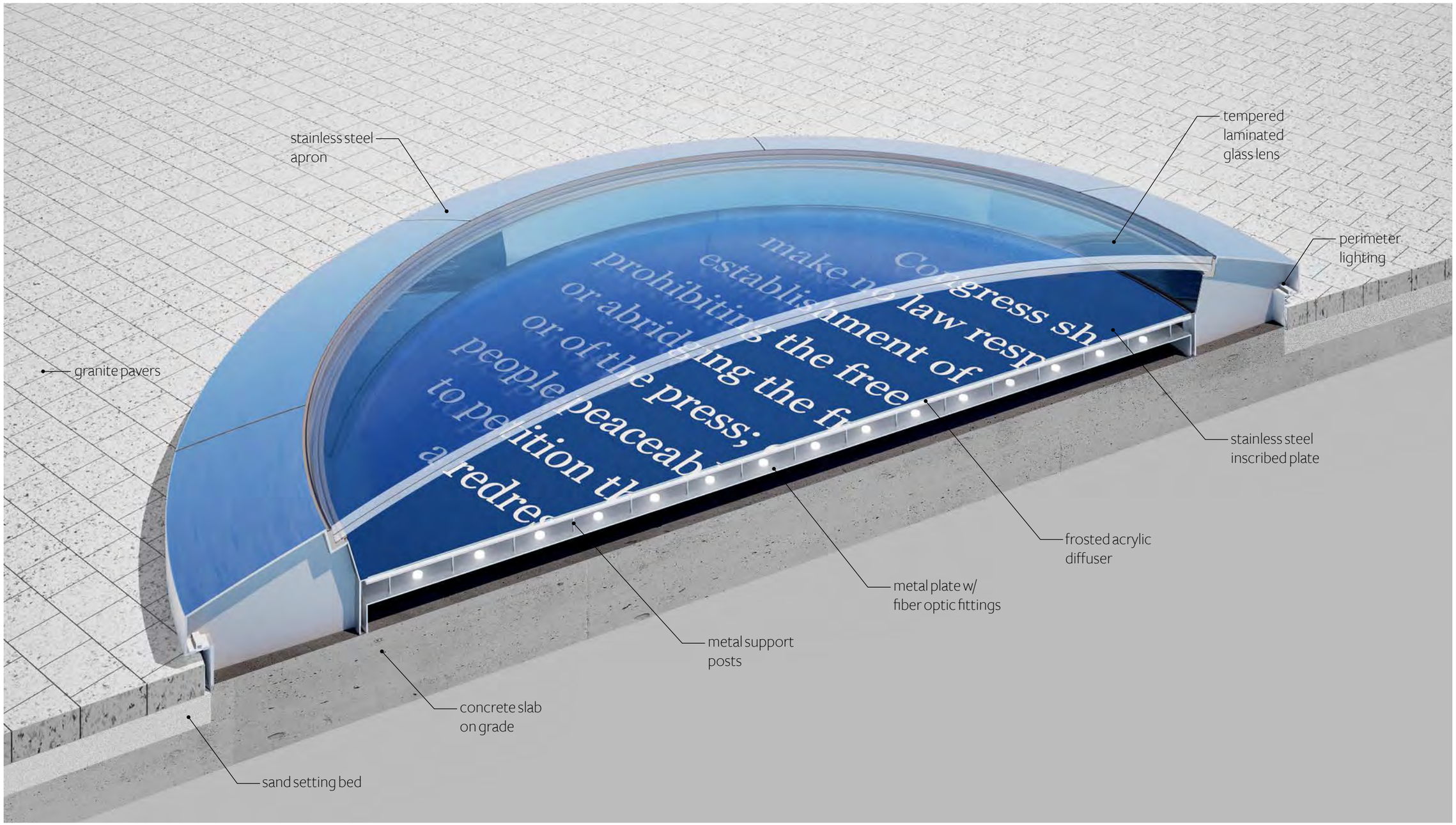
elevation C
quote

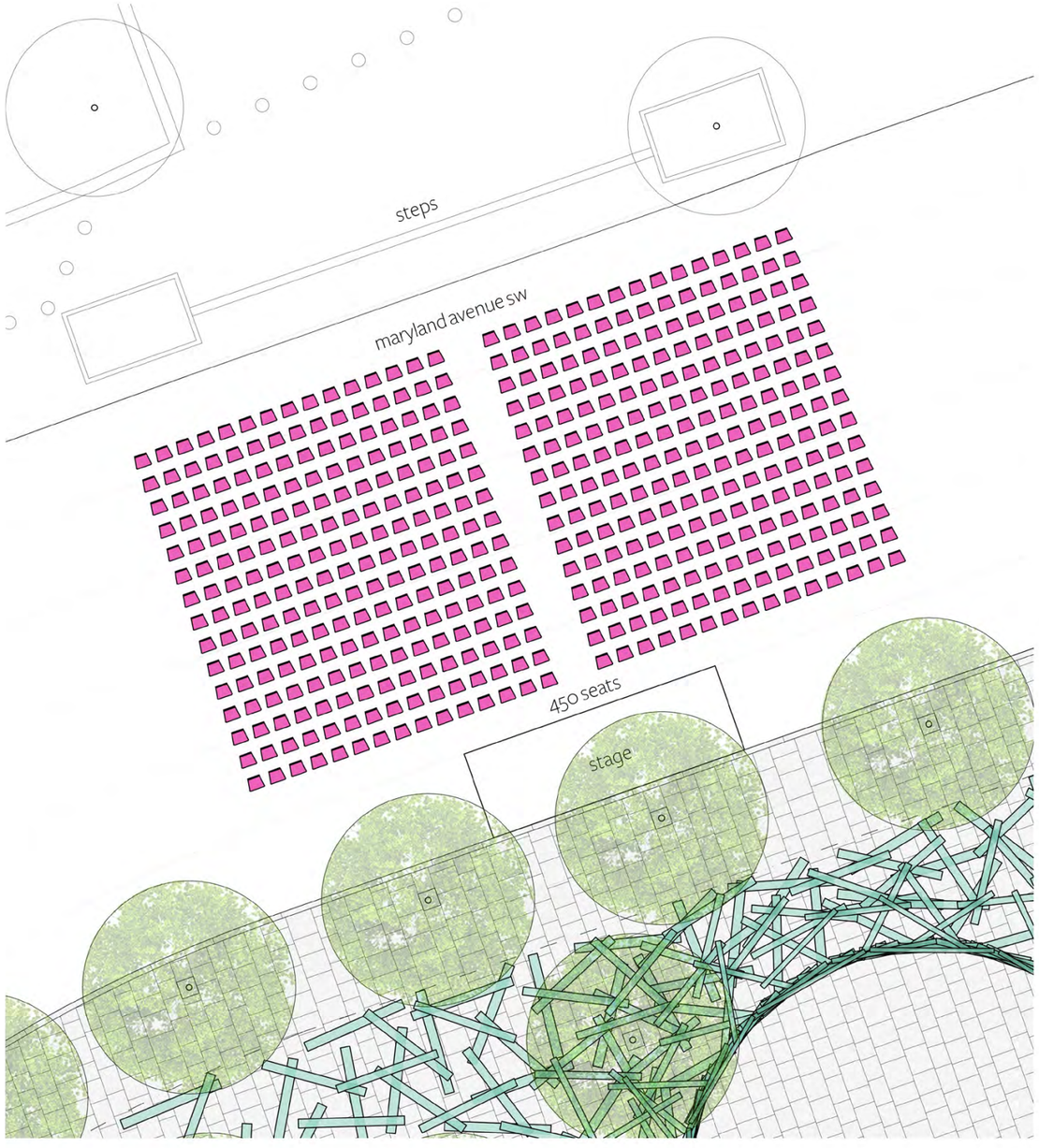
Textual signage and quotes will be supplemented with bralle tactile reading translations and audio content via web-based augmented reality.

previous

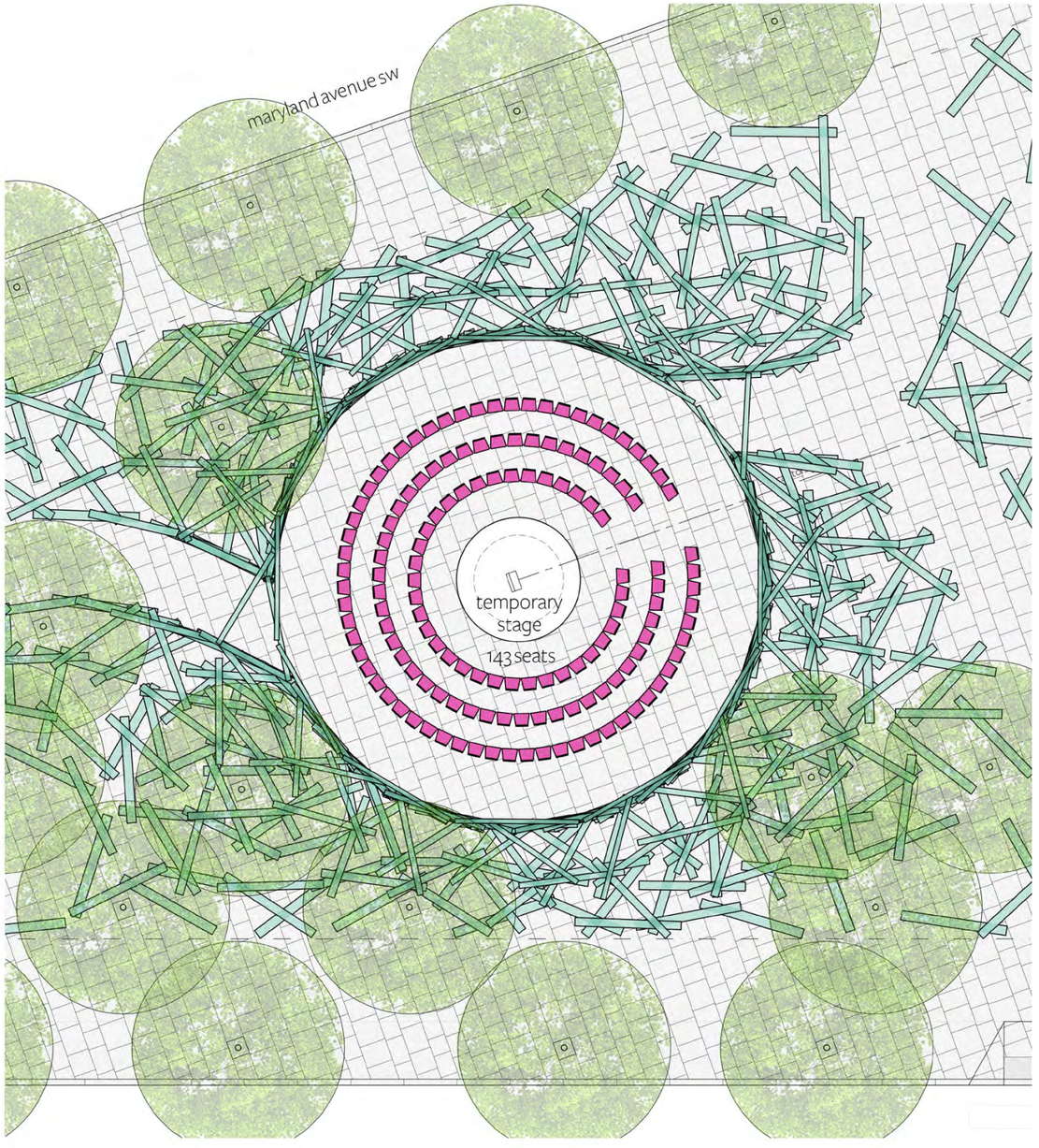
revised


Congress shall
make no law respecting an
establishment of religion, or
prohibiting the free exercise thereof;
or abridging the freedom of speech,
or of the press; or the right of the
people peaceably to assemble, and
to petition the Government for
a redress of grievances.


stainless steel apron
tempered laminated glass lens
perimeter lighting
granite pavers
stainless steel inscribed plate
frosted acrylic diffuser
metal plate w/ fiber optic fittings
metal support posts
concrete slab on grade
sand setting bed



maryland ave test fit **450 seats**



remembrance hall test fit **143 seats**

0 8′ 16′ 32′

Streetscape Design

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Notes NCPC and Smithsonian, in consultation with the District of Columbia and other local and federal stakeholders are preparing an urban design study on Independence Avenue to improve north-south and east-west connectivity for pedestrians and multi-modal transportation (physical and visual connectivity) and provide streetscape amenities to improve pedestrian accessibility and comfort.

Requests the applicant coordinate with NCPC and the Monumental Core IWG to evaluate how the proposed memorial design can align with the Monumental Core Streetscape Design Guidelines and improve the pedestrian experience along Independence Avenue.

Streetscape Design

glass element

stainless steel slot drain

granite paving

9'-7"

2'-0"

crushed stone

2'-0"

5'-6"

tree

8" granite curb

brick gutter

ROW 15'-0"

1.5% cross slope

independence avenue sw

granite pavers

0 2' 4' 8'

1/4" = 1'-0" scale

granite pavers

glass element

stainless steel profile

granite paving

granite bench

crushed stone

tree

8" granite curb

brick gutter

9'-7"

2'-0"

2'-0"

5'-6"

2'-0"

ROW 15'-0"

1.5% cross slope

17'

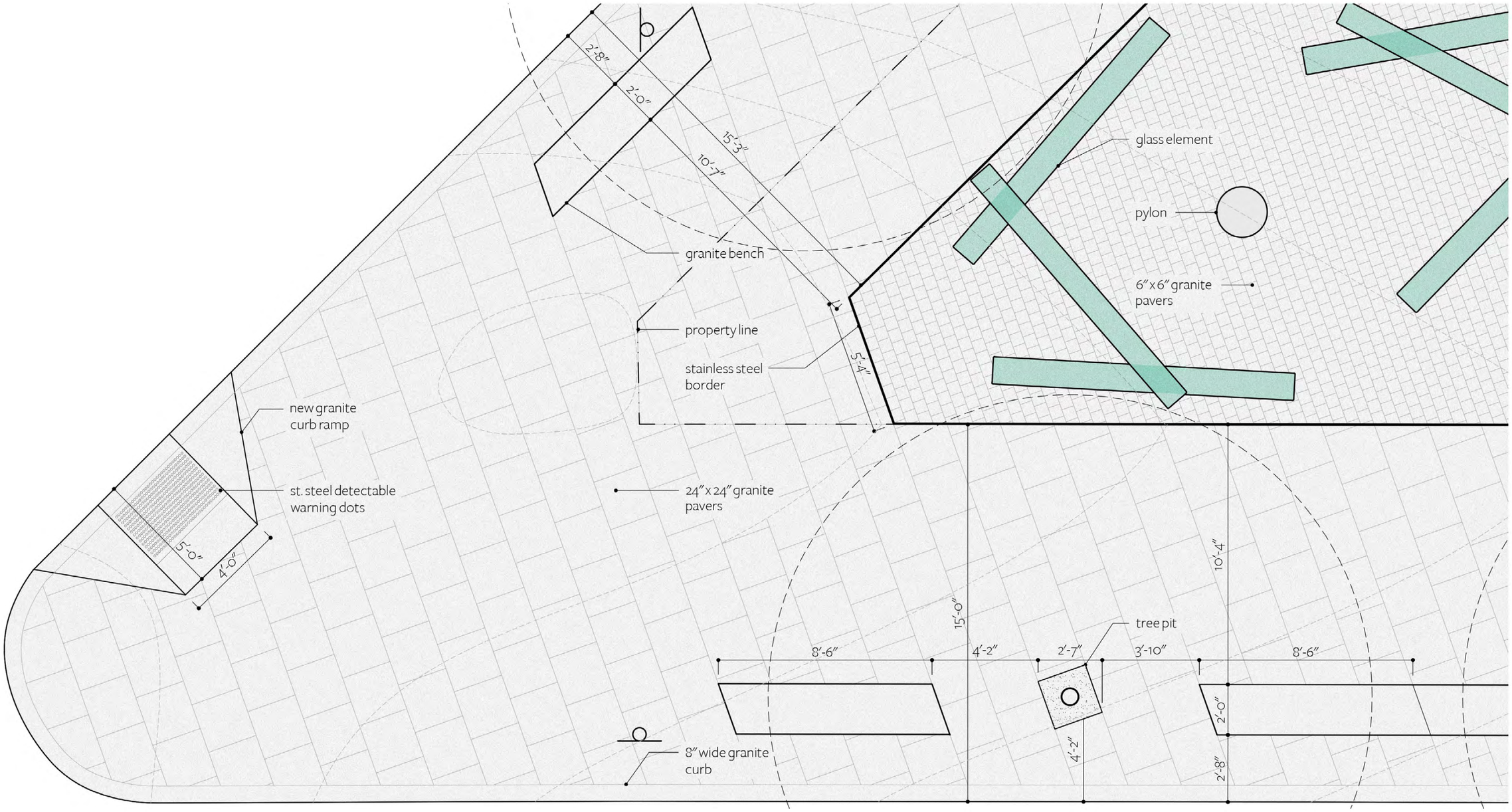
independence avenue sw

granite pavers

0 2' 4' 8'

1/4" = 1'-0" scale

granite pavers



symbol key

- parking meter
- manhole
- sign
- traffic light
- water meter vault
- water valve vault
- light pole

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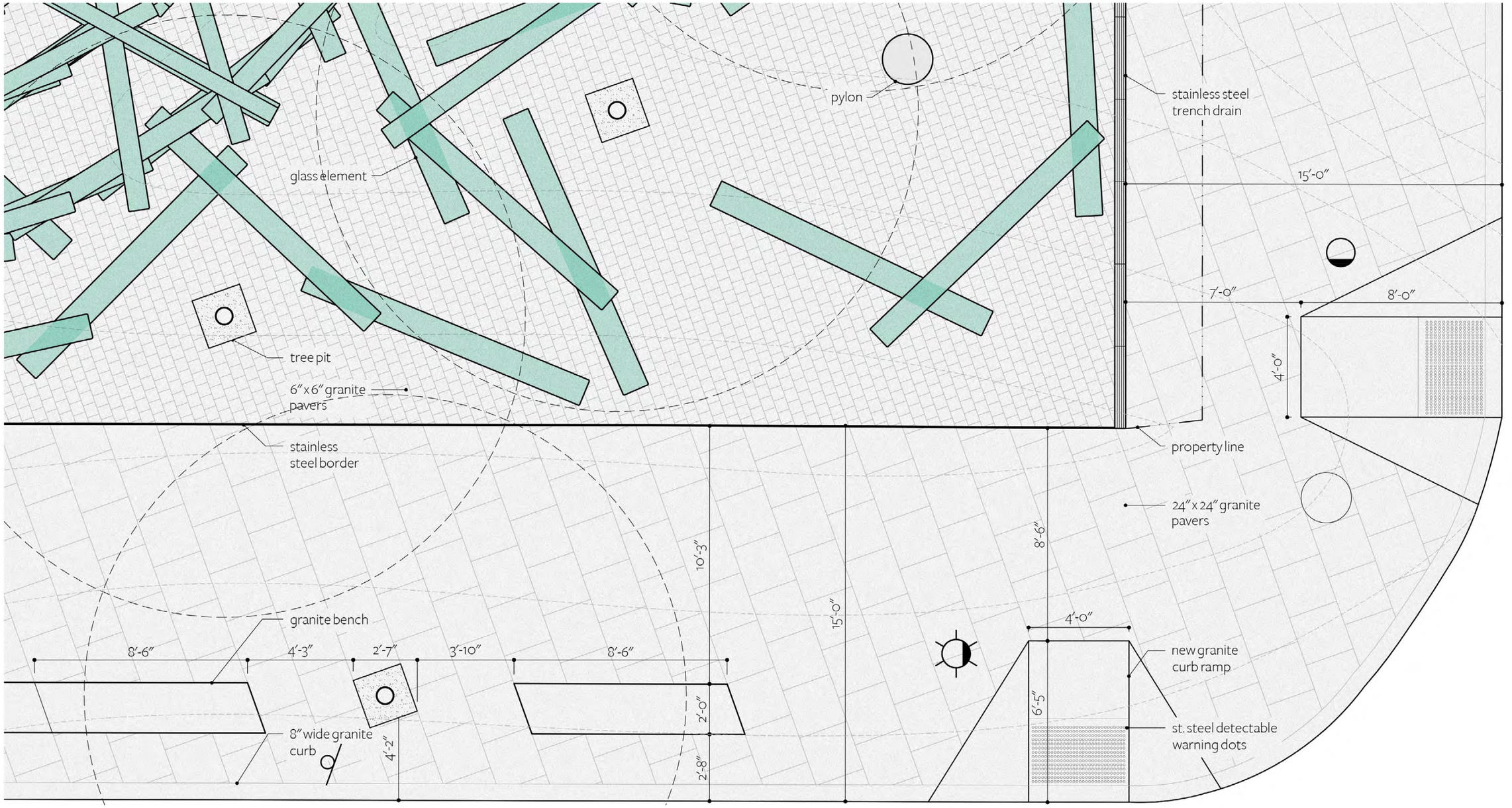

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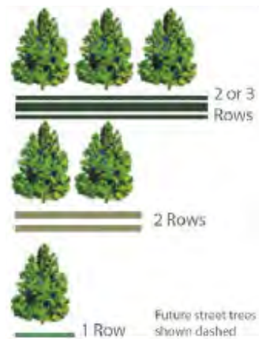
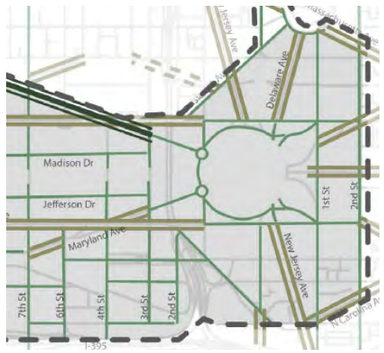
VASE & SPREADING
Medium (40-60 feet mature height)
Celtis occidentalis / Common Hackberry
Chionanthus retusus and cultivars
Eucommia ulmoides / Hardy Rubber Tree
Gleditsia triacanthos / Thornless Honeylocust
Gymnocladus dioicus / Kentucky Coffee Tree
Gymnocladus dioicus [Espresso-JFS] / Espresso Kentucky Coffee Tree
Ulmus [Morton Glossy] / Triumph Elm
Ulmus [Patriot] / Patriot Elm

a mix of **honey locust** cultivars cover the site. honey locusts are listed as an approved "vase and spreading" tree in the monumental core streetscape design guidelines.





2 rows of street trees are provided along independence avenue.

T-21. To the maximum extent practicable, tree box size and soil volume should meet recommended minimums. See DDOT's GIS (§47.7.1) and PRDM (§3.6).

Minimum Soil Volumes:

- Medium Trees (40 to 60 feet tall): 1,000 cubic feet of soil within a 22-foot radius

3,800 cu ft structural soil is provided within a 22ft radius of a typical tree.

T-24. Where possible and appropriate for the character and setting, prioritize enhanced tree growth with suspended pavement systems adjacent to tree box zones to deliver air and water to tree roots, and do the following:

structural soil is provided throughout the site. irrigation and aeration systems are provided to deliver air and water to tree roots.

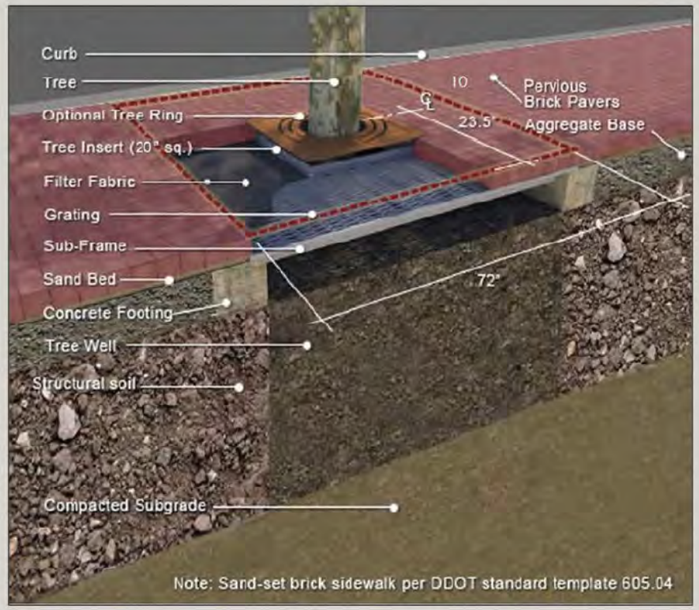
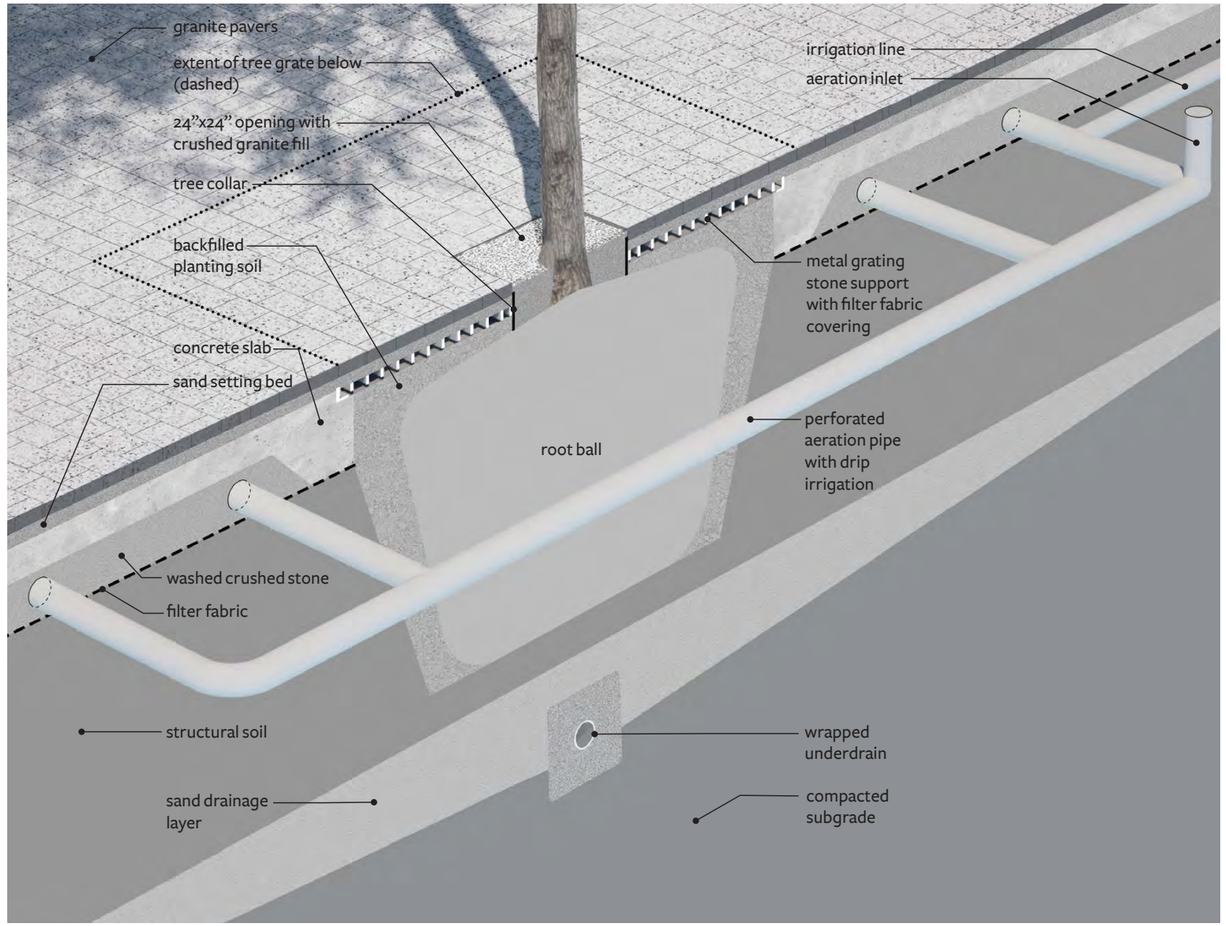


Figure T-4: The Dolley Madison House, part of the Howard T. Markey National Courts Building Complex, enhances tree growth with suspended sidewalk pavements, which create space beneath the sidewalk for tree root growth.



P-2. Use higher quality pavement to delineate special or notable spaces and streetscapes in and around the National Mall[32] including:

P-41. Where appropriate for the character and setting, use lighter color pavements with high albedo[35] or solar reflectance to mitigate the urban heat island effect.

light colored, high albedo granite pavers cover the site, mitigating urban heat island effect and delineating the memorial as a special space.

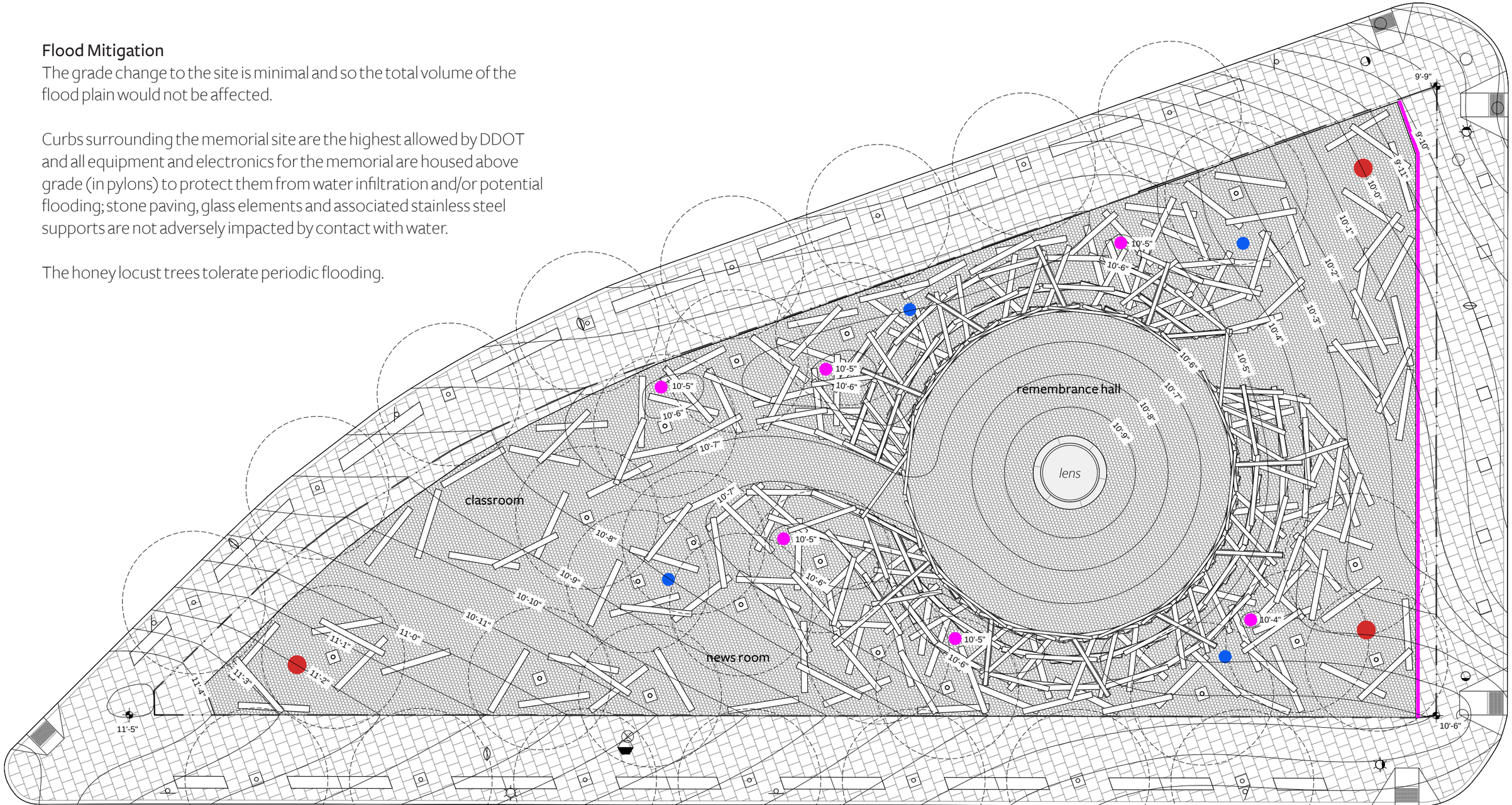
Site Drainage and Utilities

Flood Mitigation

The grade change to the site is minimal and so the total volume of the flood plain would not be affected.

Curbs surrounding the memorial site are the highest allowed by DDOT and all equipment and electronics for the memorial are housed above grade (in pylons) to protect them from water infiltration and/or potential flooding; stone paving, glass elements and associated stainless steel supports are not adversely impacted by contact with water.

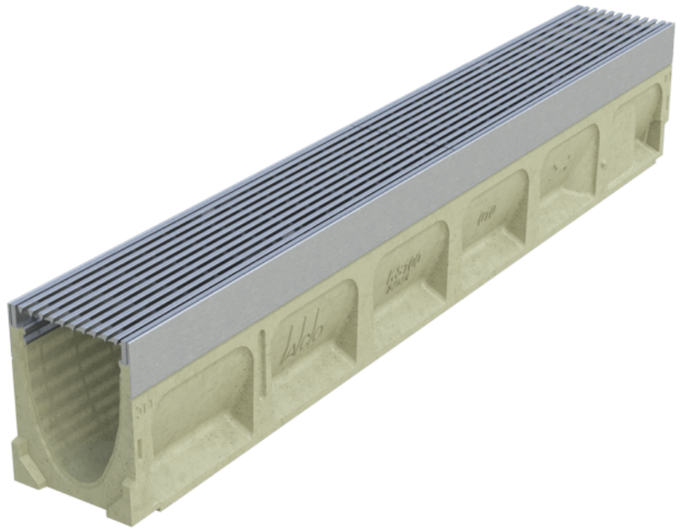
The honey locust trees tolerate periodic flooding.

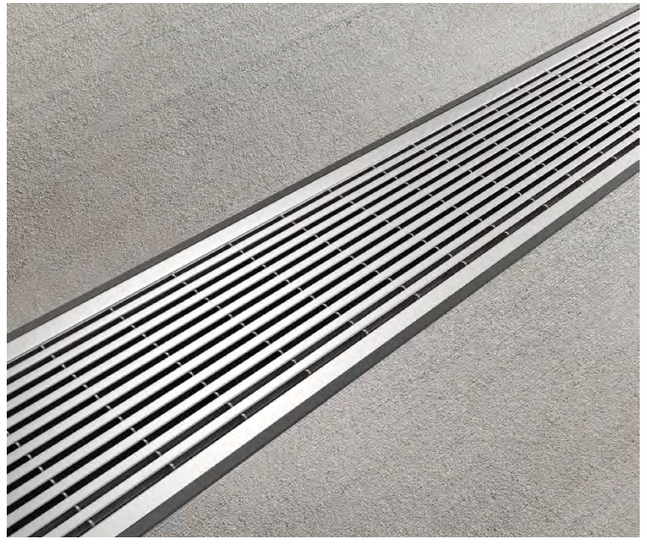


symbol key

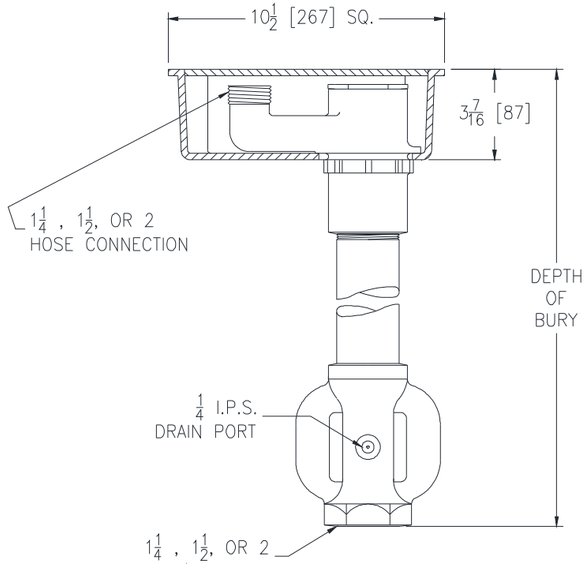
- parking meter
- manhole
- sign
- traffic light
- water meter vault
- water valve vault
- light pole
- tree
- pylon
- trench drain
- area drain
- hose bib

12”x12” stainless steel area drain (*vodaland 8370 basin + 335018 grate*)





stainless steel trench drain (*ACO KlassikDrain — K100/KS100*)



stainless steel hose bib (*zurn z1365*)

Visitor Comfort

Finds that while the concept design includes a grove of trees, the site is proposed to be fully paved, which in combination with the glass elements, may impact visitor comfort particularly during the warmer months of the year.

Requests the applicant evaluate additional approaches to enhancing visitor comfort and reducing the urban heat island effect, including alternative ground treatments and tree wells, and additional trees and alternate species, and other landscaping.

Visitor Comfort

Additional Planting
Tree Layout
Tree Species
Tree Wells and Ground Treatment

Schizachyrium scoparium
Little Blue Stem

Salvia lyrata
Lyre Leaf Sage

Fothergilla gardenii
Dwarf Fothergilla

Pycnanthemum tenuifolium
Mountain Mint

Rhus aromatica 'gro-low'
Aromatic Sumac

Carex flacca
Blue sedge

Symphiotrichum ericoides
Heath Aster

Liriope spicata
Creeping Liriope

Visitor Comfort

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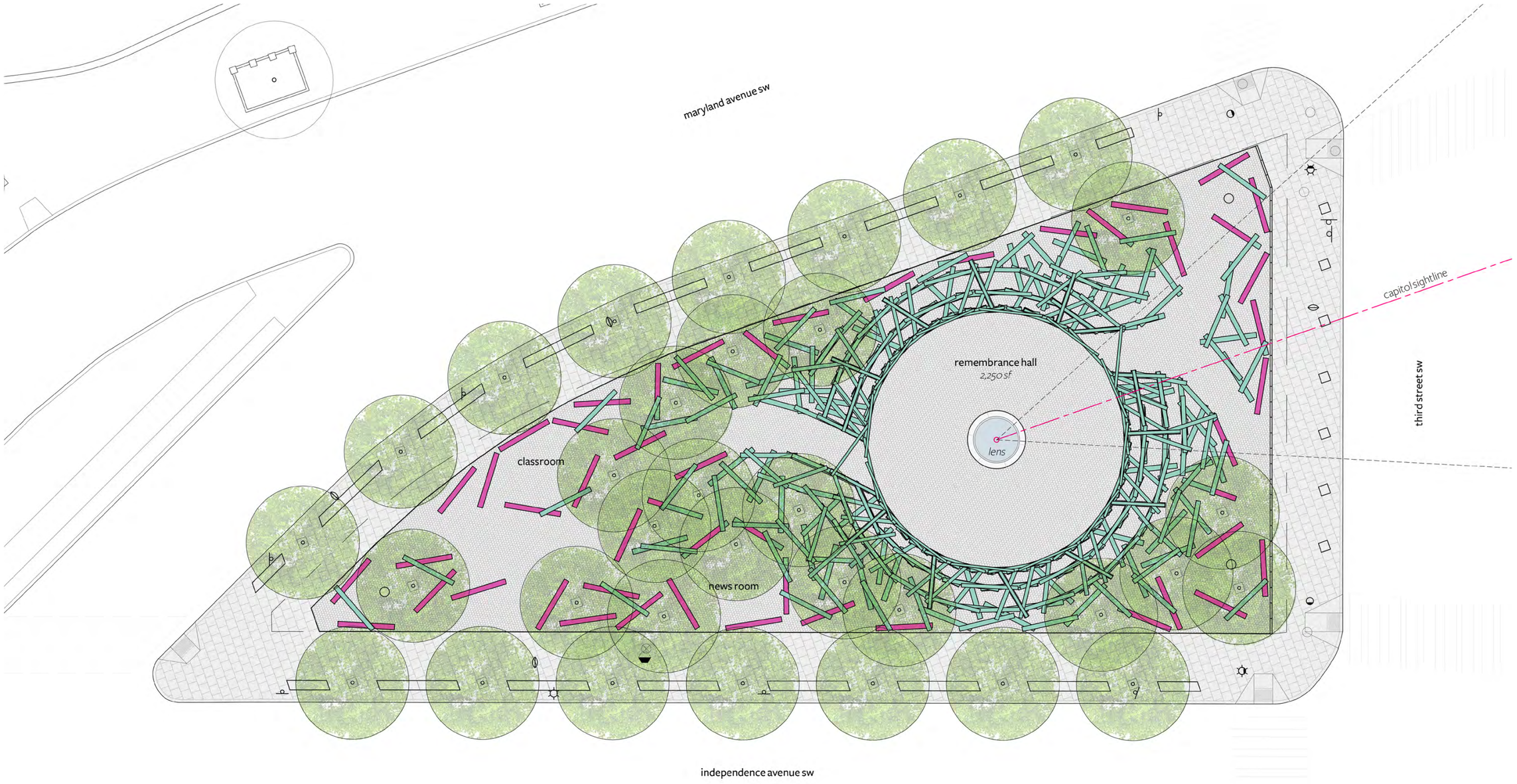
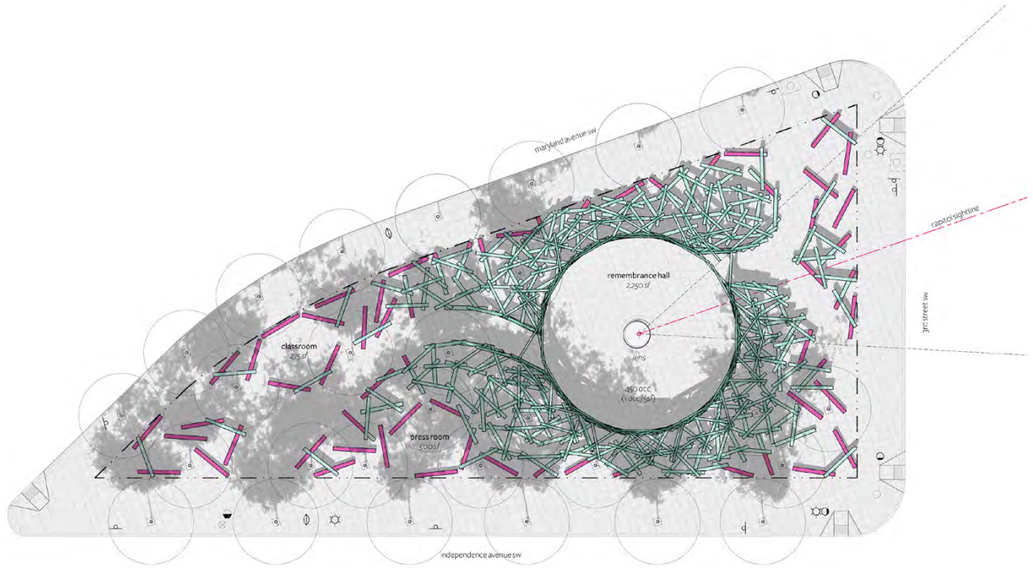
Visitor Comfort

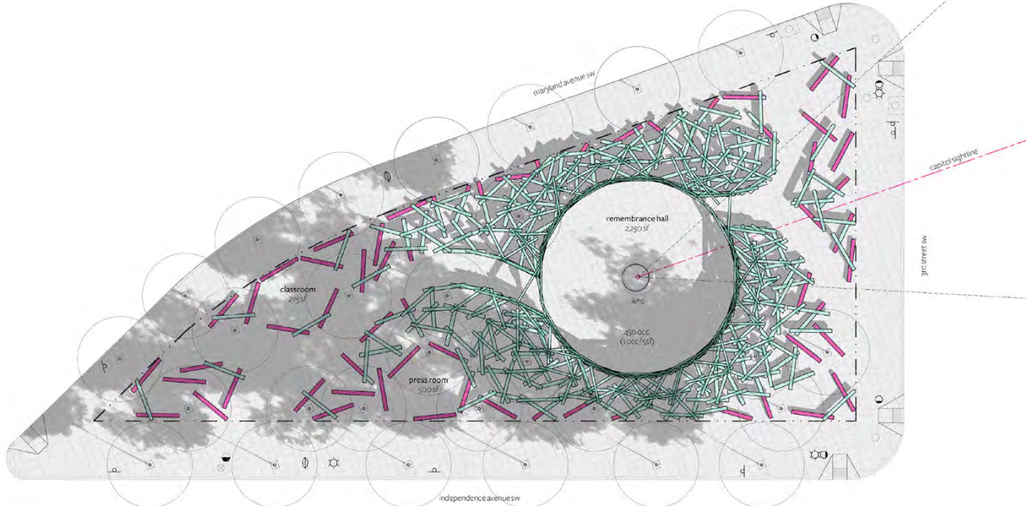
Additional Planting
Tree Layout
Tree Species
Tree Wells and Ground Treatment



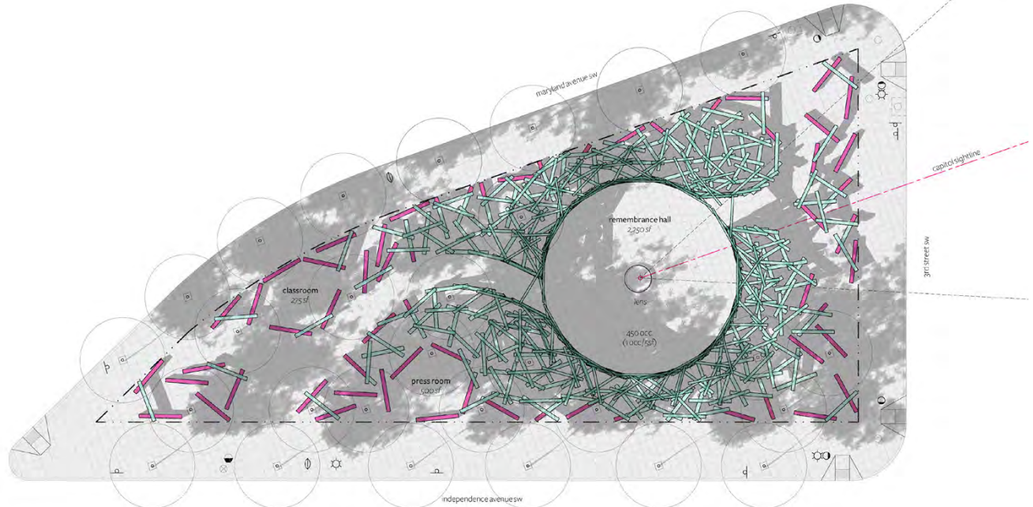
Seating is located throughout the tree-shaded areas of the site, where visitors can pause and reflect



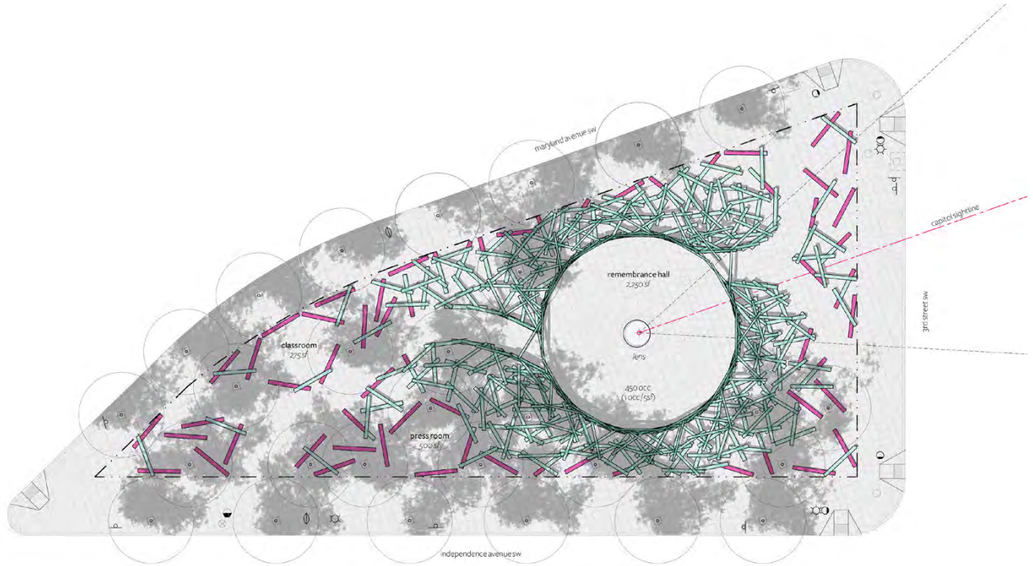
1:00 pm



10:00 am



4:00 pm



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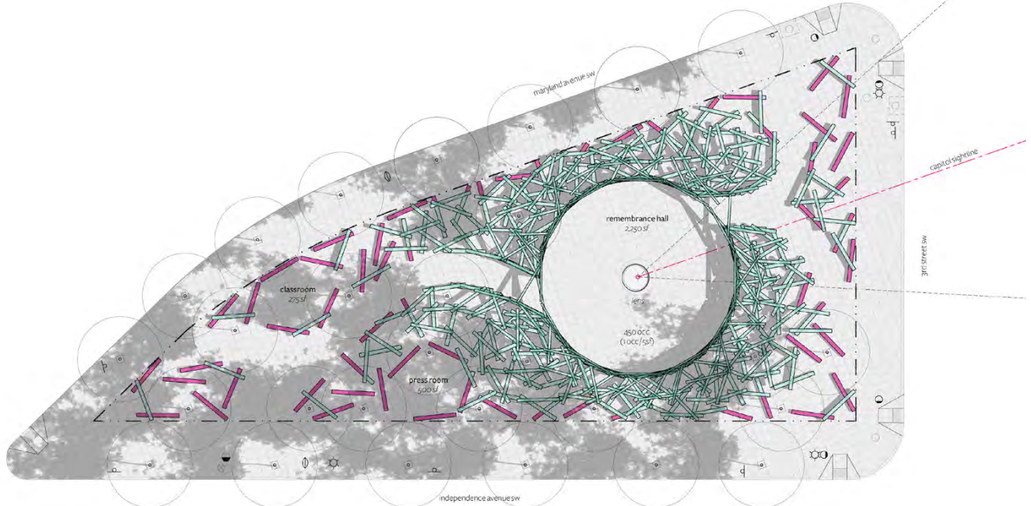
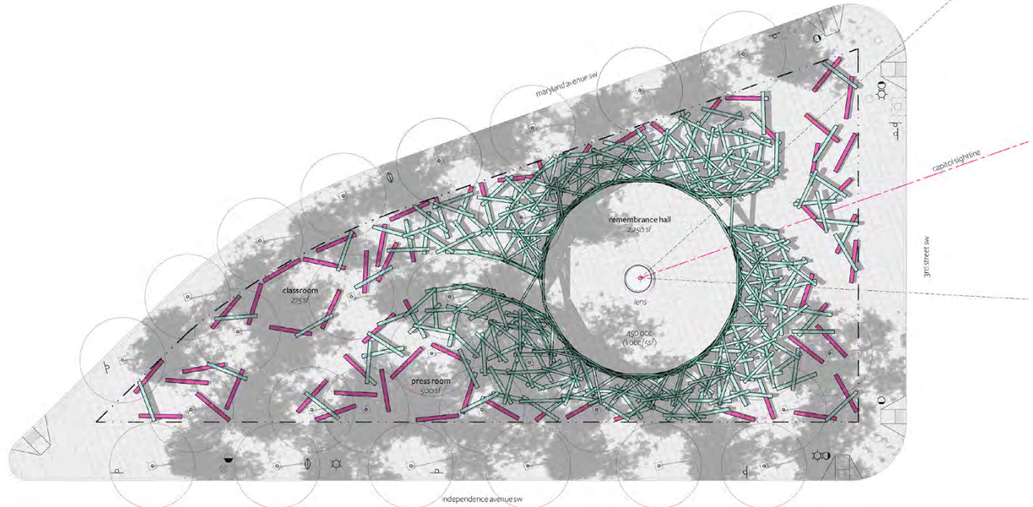


10:00 am



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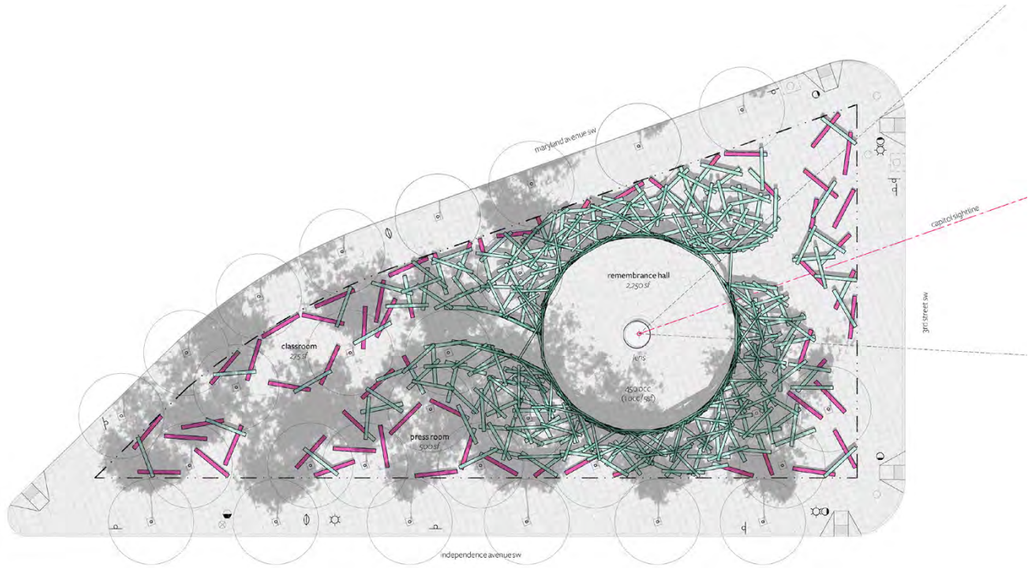

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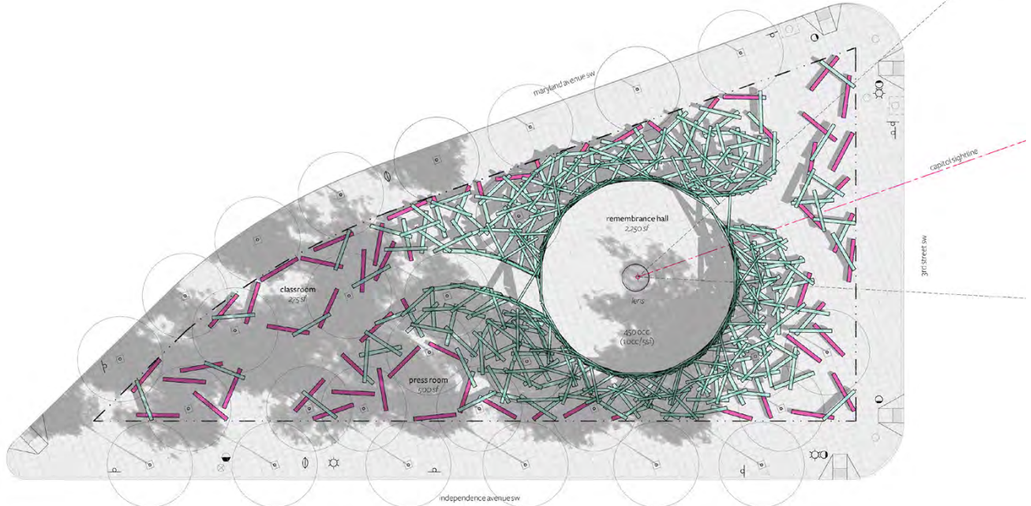

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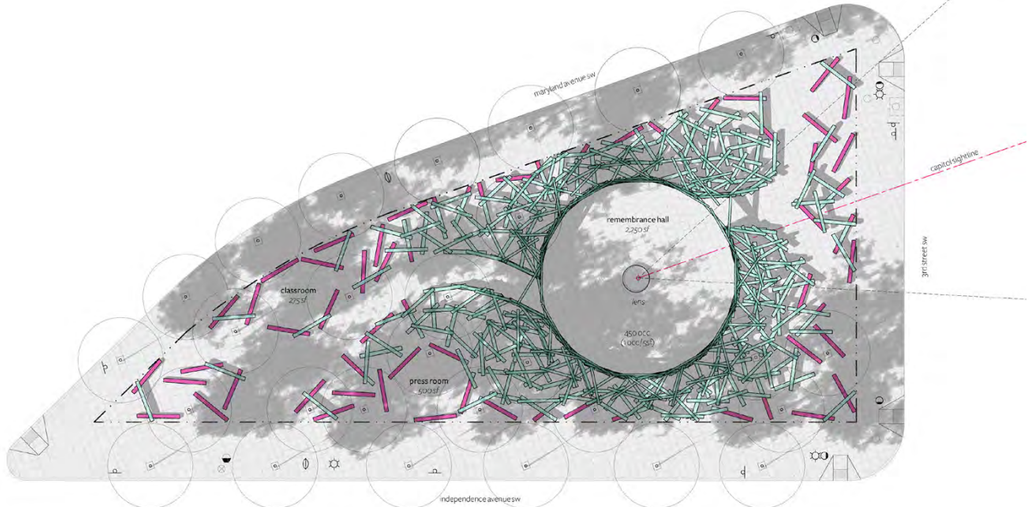

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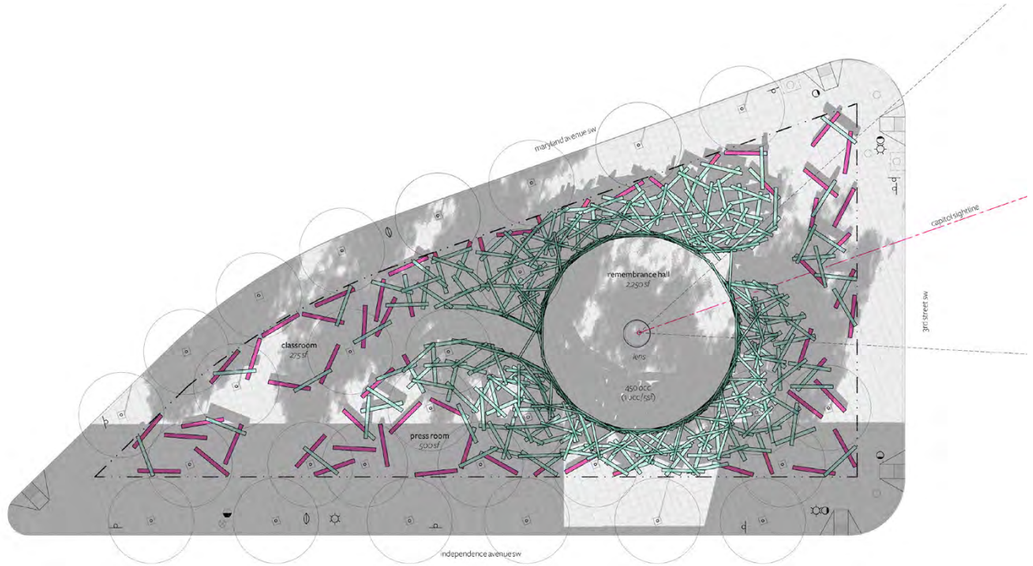

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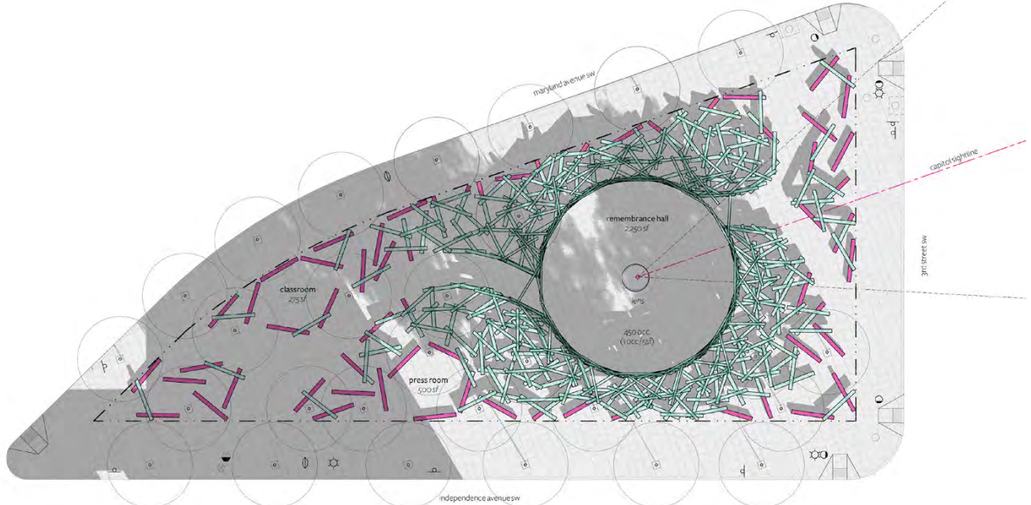
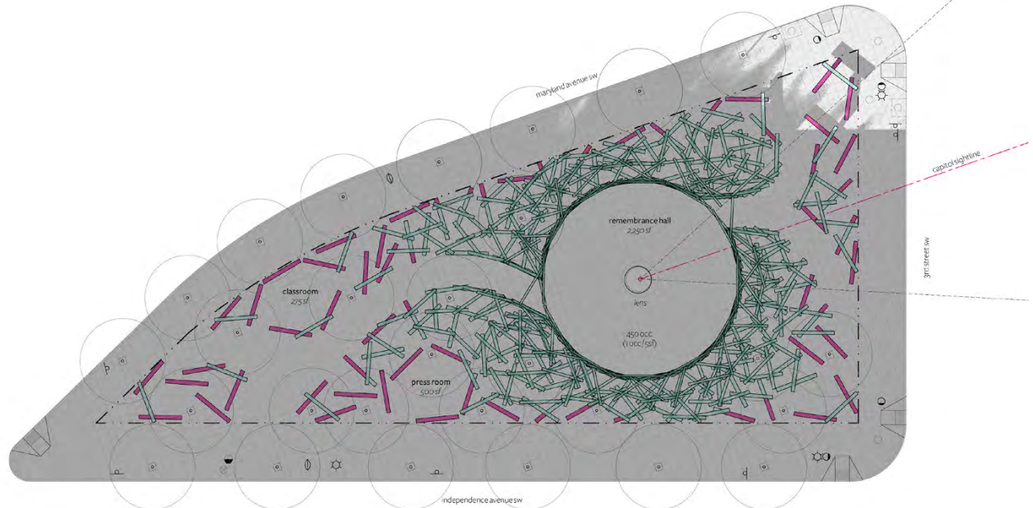


10:00 am



4:00 pm

Visitor Comfort

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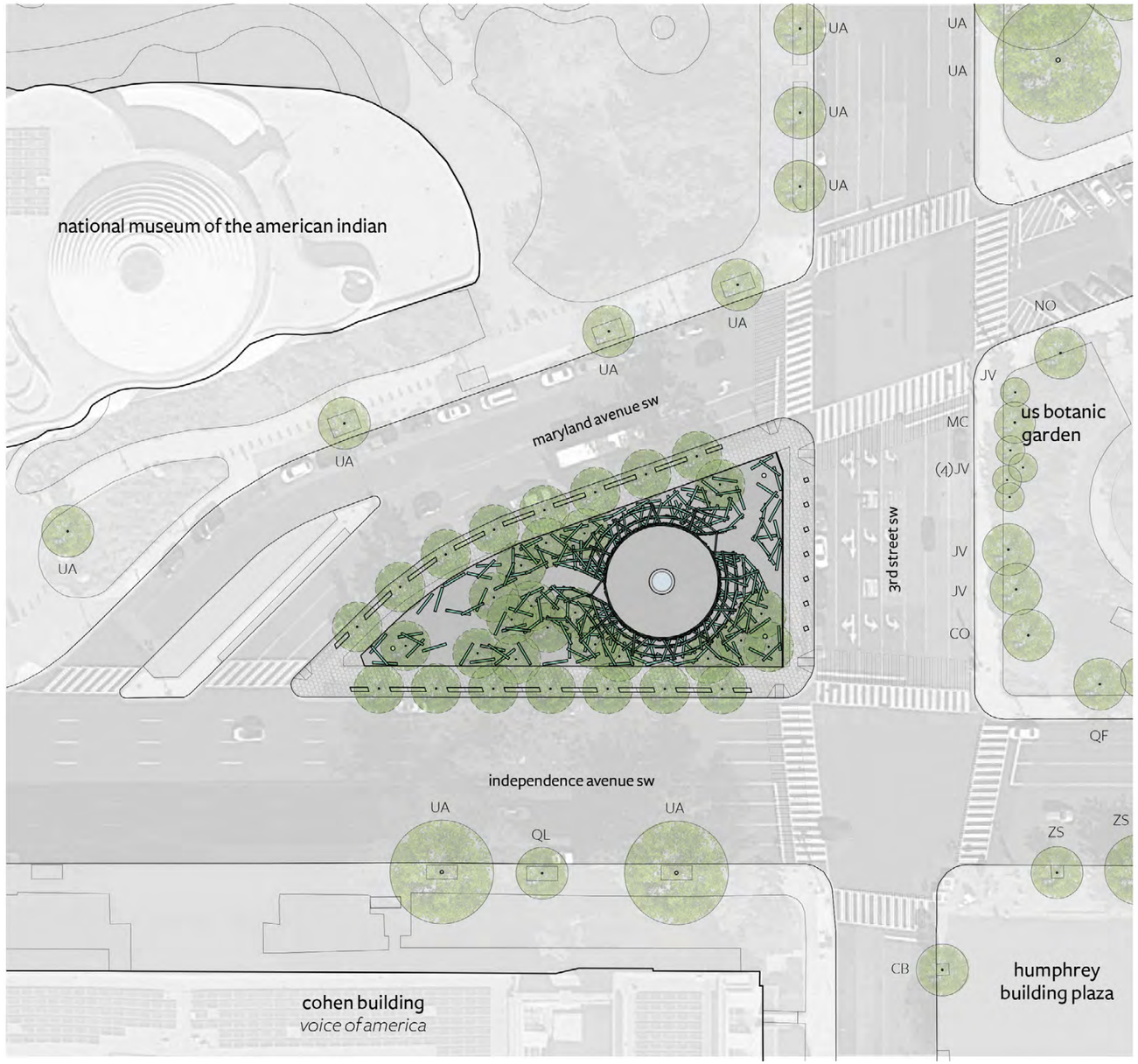
Visitor Comfort

Additional Planting
Tree Layout
Tree Species
Tree Wells and Ground Treatment

The project proposes a grove of honey locust trees to:

- Create a shade in the seating areas of the site for human comfort and mitigate the urban heat island effect.
- The tree's fine-textured leave provides filtered shade that allows dappled light to activate the glass elements.
- To identify the site from a distance and distinguish the site as a unique place amidst the variable surrounding public landscape and other memorials.
- Add to the diversity of trees in the immediately surrounding area (there are no other honey locust trees in the immediate vicinity).



tree species key

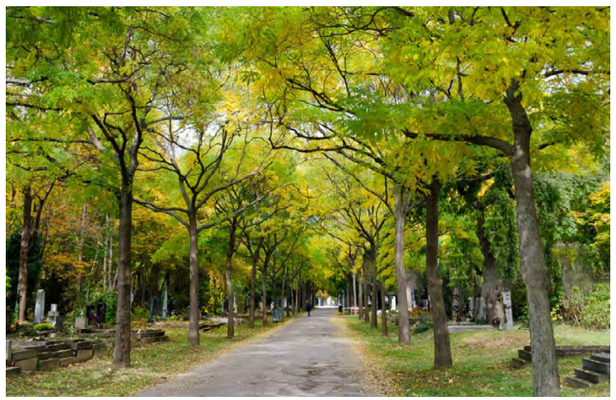
CB - carpinus betulus (european hornbeam)
MC - myrica cerifera (southern wax myrtle)
QL - quercus lyrata (overcup oak)
CO - cotinus obovatusa (american smoketree)
NO - nyssa ogeche (ogechee tupelo)
UA - ulmus americana (american elm)
JV - juniperus virginiana (virginia juniper)
QF - quercus floridianum (southern sugar maple)
ZS - zelkova serrata (japanese zelkova)

Thornless Honeylocust
Gleditsia triacanthos f. inermis

A popular lawn and street tree in the Midwest and East, the honey locust offers a graceful habit and fine-textured leaves. It usually develops a short trunk and an open, spreading crown with a delicate and sophisticated silhouette.[1]

The honey locust is heartily promoted by local DC urban tree agency Casey Trees.

tree type:	deciduous [2]
form:	rounded [2]
maximum width:	30-70 ft. wide[1][2][3]
maximum height:	30-70 ft. high[1][2][3]
growth zones:	zones 4 to 9 (Pennsylvania to Nebraska, south to Mississippi and Texas)[1]
growth rate in first 10 years:	fast [2][3]
light required:	full sun [2]
fall color:	golden yellow [3]
tolerance:	tolerates acidic soils, alkaline soils, salt spray, soil salt, drought [2]
	displays excellent tolerance to salt [1]
	tolerates periodic flooding



footnotes:

1. Michael A. Dirr. (1997). *Dirr's Hardy Trees and Shrubs*. Portland, OR: Timber Press
2. The Morton Arboretum. (2015). *Northern Illinois Tree Species List*. Lisle, IL: The Morton Arboretum.
3. David A. Sibley. (2009). *The Sibley Guide to Trees*. New York, NY: Alfred A. Knopf, Inc.

Foliage

The one-inch long leaflets of the honey locust are a handsome bright green in the summer and a rich golden yellow in autumn. The fallen leaflets sift through the understory and require little raking.[1]

Leaves are 6" long, and are typically pinnately compound with 15-30 leaflets on either side being about 1" long.[3]

The small, pinnate leaves tend to drift off in the wind, resulting in far less leaf litter and maintenance demands than most other urban shade trees and won't clog site drainage.

footnotes:

1. Michael A. Dirr. (1997). *Dirr's Hardy Trees and Shrubs*. Portland, OR: Timber Press
3. David A. Sibley. (2009). *The Sibley Guide to Trees*. New York, NY: Alfred A. Knopf, Inc.

Canopy

Honey locust trees create a broad and open crown with a delicate and sophisticated silhouette. Branches are distinctive and long, spreading away from the trunk in a twisted manner.[3][4]

Tree canopies will blend together over time to create a continuous canopy over the memorial space

footnotes:

3. David A. Sibley. (2009). *The Sibley Guide to Trees*. New York, NY: Alfred A. Knopf, Inc.
4. Michael A. Dirr. (2011). *Dirr's Encyclopedia of Trees and Shrubs*. Portland, OR: Timber Press.

Shade

The delicate foliage of the honey locust casts a light shade.[4]

Filtered shade will allow sunlight to activate the glass elements.

footnotes: **4**. Michael A. Dirr. (2011). *Dirr's Encyclopedia of Trees and Shrubs*. Portland, OR: Timber Press.

Trunk & Bark

Honey locust trees develop various shallow vertical spines along their trunk. The bark is a dark grey-brown with red and orange tones.[3][5]

The crooked branching of the tree limbs complements the bold rectilinearity of the glass elements.

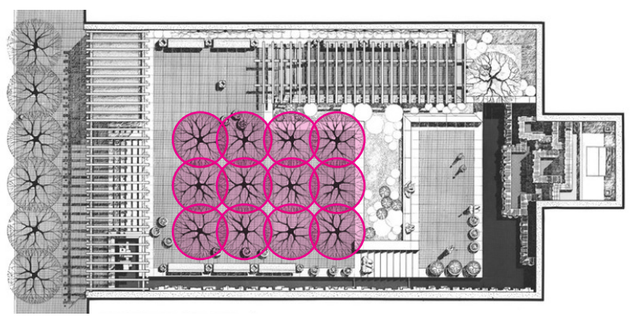
footnotes:

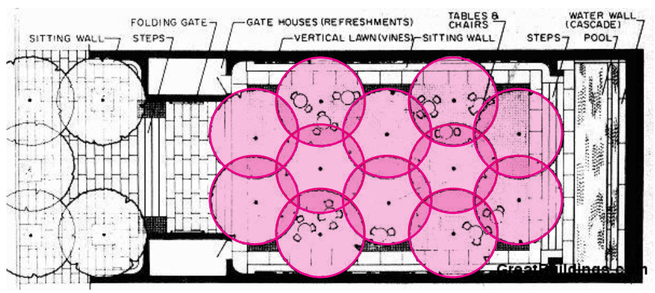
3. David A. Sibley. (2009). *The Sibley Guide to Trees.* New York, NY: Alfred A. Knopf, Inc.
5. Keith Rushforth, Charles Hollis. (2006). *Field Guide to the Trees of North America.* Washiginton, D.C.: National Geographic Society.

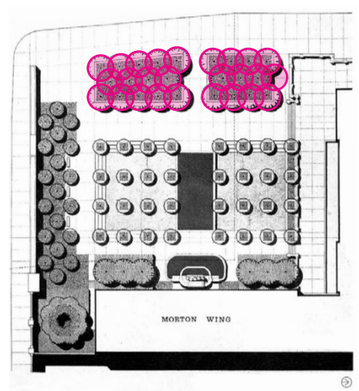
Greenacre Park
1971
Hideo Sasaki
New York, NY

Paley Park
1967
Robert Zion
New York, NY

Art Institute of Chicago South Garden
1967
Dan Kiley
Chicago, IL



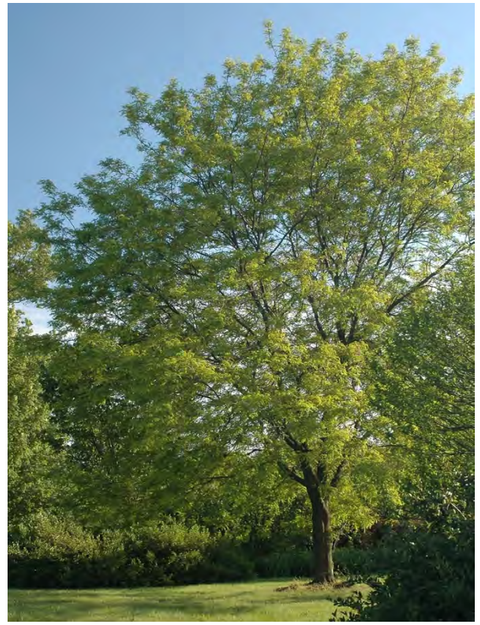




'Moraine'

'Imperial'

'Skyline'



'Shademaster'

'Moraine'

Moraine Honeylocust has dark green deciduous foliage on an open, rounded form. Very tolerant of adverse growing conditions, including a range of pH levels and environmental salt. Good yellow fall color; a seedless variety. This is a relatively low maintenance tree, and is best pruned in late winter once the threat of extreme cold has passed. It has no significant negative characteristics.

Moraine Honeylocust will grow to be about 50 feet tall at maturity, with a spread of 50 feet. It has a high canopy of foliage that sits well above the ground. As it matures, the lower branches of this tree can be strategically removed to create a high enough canopy to support unobstructed human traffic underneath. It grows at a fast rate, and under ideal conditions can be expected to live for 70 years or more. US Plant Patent granted 1949.

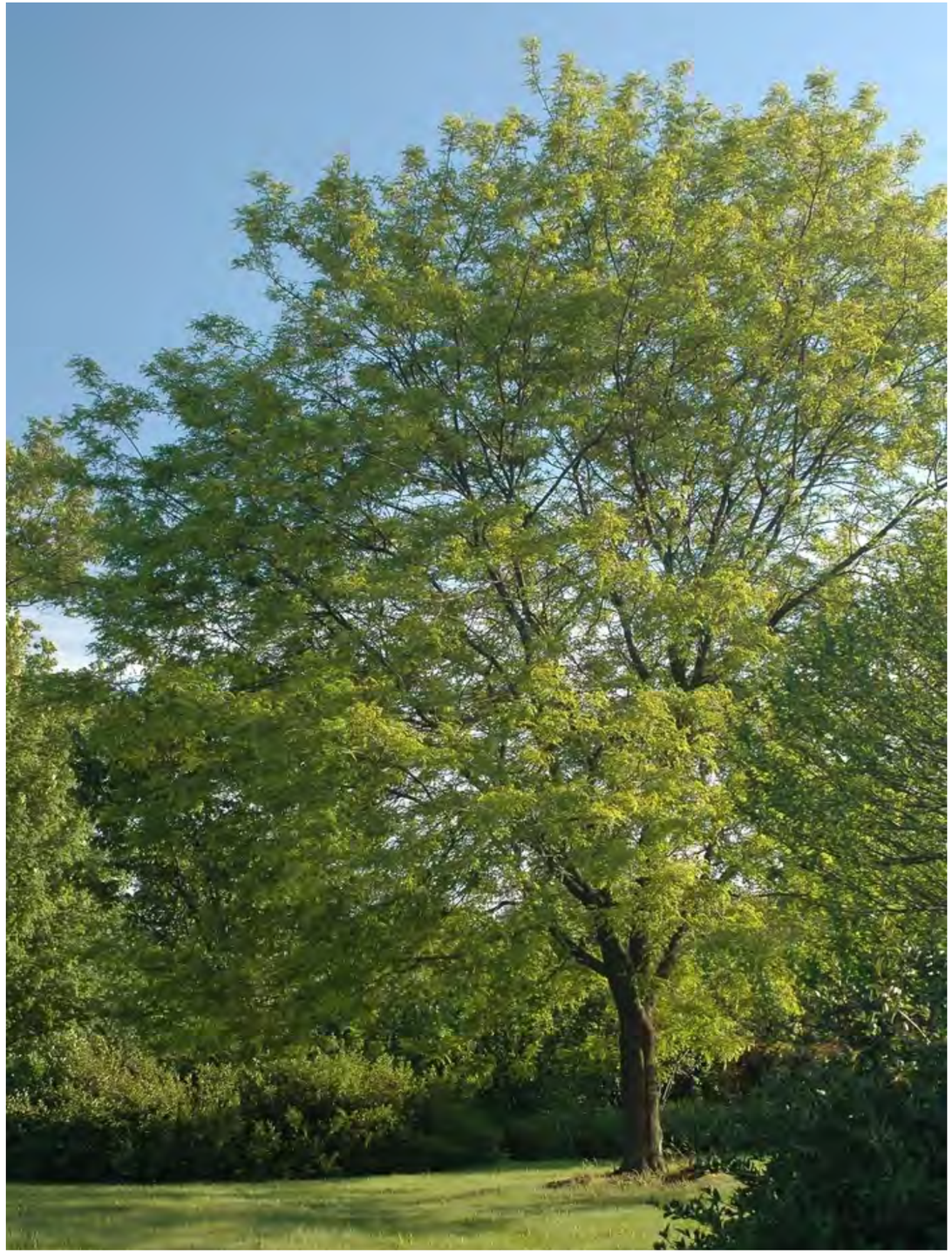
'Imperial'

A thornless variety that is found growing naturally. This honeylocust is one of the smaller cultivars available. It grows to a height of 30-40 feet and has a spread of 25-35 feet. It is also an almost seedless variety and grows in a compact vase-shaped form with a flat top. Leaves have a beautiful fine texture and a brilliant yellow foliage display in the fall.

This cultivar is not particular about the soil it grows in or its pH level. It is tolerant of many different environmental conditions such as heat and wind. It has exceptional resistance to urban pollution, as well as drought conditions, and thrives in city landscapes. It is, however, susceptible to branches breaking during ice storms.

'Skyline'

Features pyramidal growth with a central leader. It is a thornless and nearly seedless variety that typically grows to 40-45' tall. Pinnate to bipinnate dark green leaves with ovate leaflets (1/2” to 1 1/2” long) cast a sun-dappled shade. Leaves turn an attractive yellow in fall. US Plant Patent 1,619 was granted July 16, 1957.



'Shademaster'

Known for its dark green foliage throughout the year. Its pinnately compound leaves turn to a beautiful yellow hue during the fall. This tree does not produce any fruit or flowers.

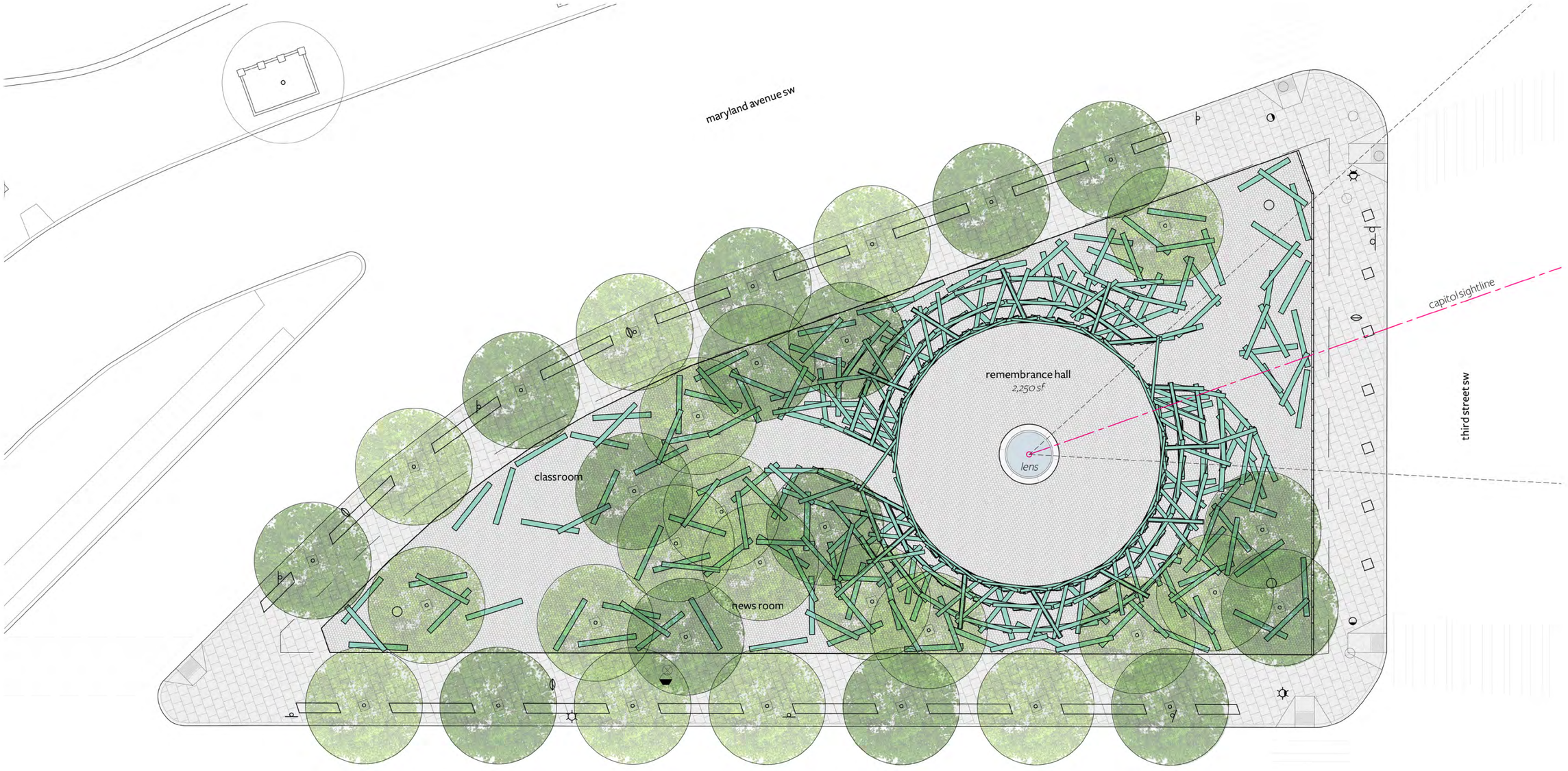
The Shademaster variety is hardier than most trees, and they do not have large seed pods or sharp thorns like other honeylocusts.

Gleditsia triacanthos var. inermis
Thornless Honey Locust

cultivar name	'Moraine'	'Imperial'	'Skyline'	'Shademaster'	'Sunburst'
mature height (feet)	40 - 50	30 - 40	35 - 45	40 - 50	35 - 45
mature spread (feet)	40 - 50	25 - 35	25 - 35	25 - 40	25 - 35
sun requirements	full sun	full sun, partial shade	full sun	full sun	full sun
soil preference	widely adaptable	widely adaptable	widely adaptable	widely adaptable	widely adaptable
moisture requirements	moderate	moderate to low	moderate	moderate to low	moderate
foliage	pinnately compound, very fine, dark green	pinnately compound, very fine, bright green	pinnately compound, very fine, green	pinnately compound, very fine, dark green	pinnately compound, very fine, green with bright yellow
leaflet size	1/2" - 1 1/2"	1/2" - 1 1/2"	1/2" - 1 1/2"	1/2" - 1 1/2"	1/2" - 1 1/2"
shade quality	light, lacy, dappled	light, lacy, dappled	light, lacy, dappled	light, lacy, dappled	light, lacy, dappled
fall color	yellow	yellow	yellow	yellow	yellow
flower	greenish white, inconspicuous	yellow, inconspicuous, fragrant	greenish white, conspicuous	yellow, inconspicuous, fragrant	greenish white, conspicuous
fruit	*seedless	*seedless	*seedless	*seedless	*seedless
mature trunk diameter	12" - 18"	12" - 18"	12" - 18"	12" - 18"	12" - 18"
form	rounded, vase-shaped	rounded	upright, pyramidal	upright, vase-shaped	upright, irregular
native range	eastern US	eastern US	eastern US	eastern US	eastern US
hardiness	zones 4-9	zones 4-7	zones 3-8	zones 4-9	zones 3-8
remarks	**first** patented shade tree cultivar (1949)	not entirely seedless, **extra hardy** and **tolerant** of urban conditions, one of the **smaller** cultivars	not entirely seedless, distinctive **pyramidal** form	**largest** cultivar	distinctive **bright yellow** new foliage

undesirable features

*all cultivars listed are "seedless", however, some seed pods can develop in mature trees.



honey locust cultivar 1

honey locust cultivar 2

0 10′-8″ 21′-4″ 42′-8″

3/64″ = 1′-0″ scale

16 may 2025 **tree species** 2 cultivars homogenous mix

Fallen Journalists Memorial **John Ronan Architects**

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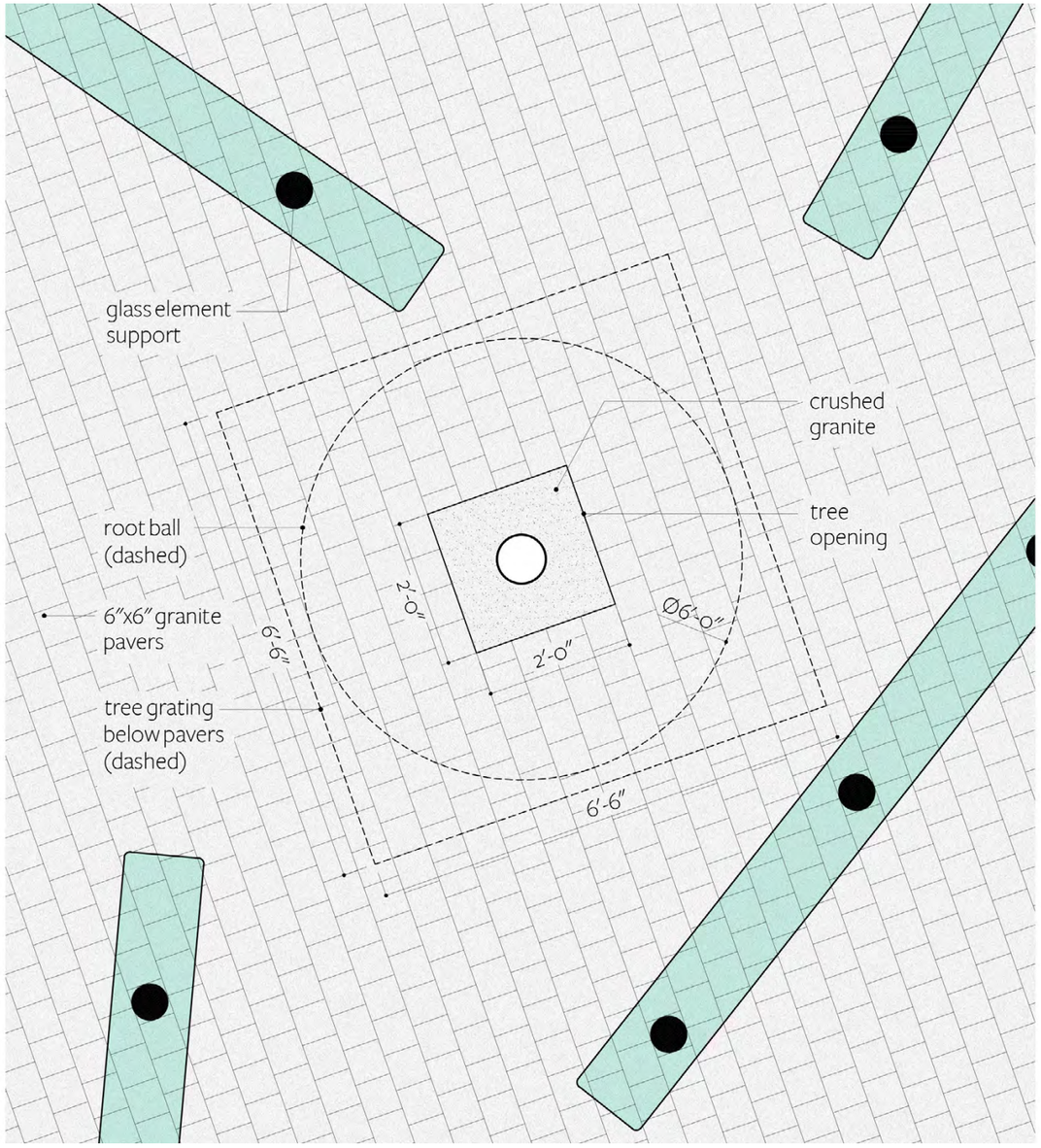
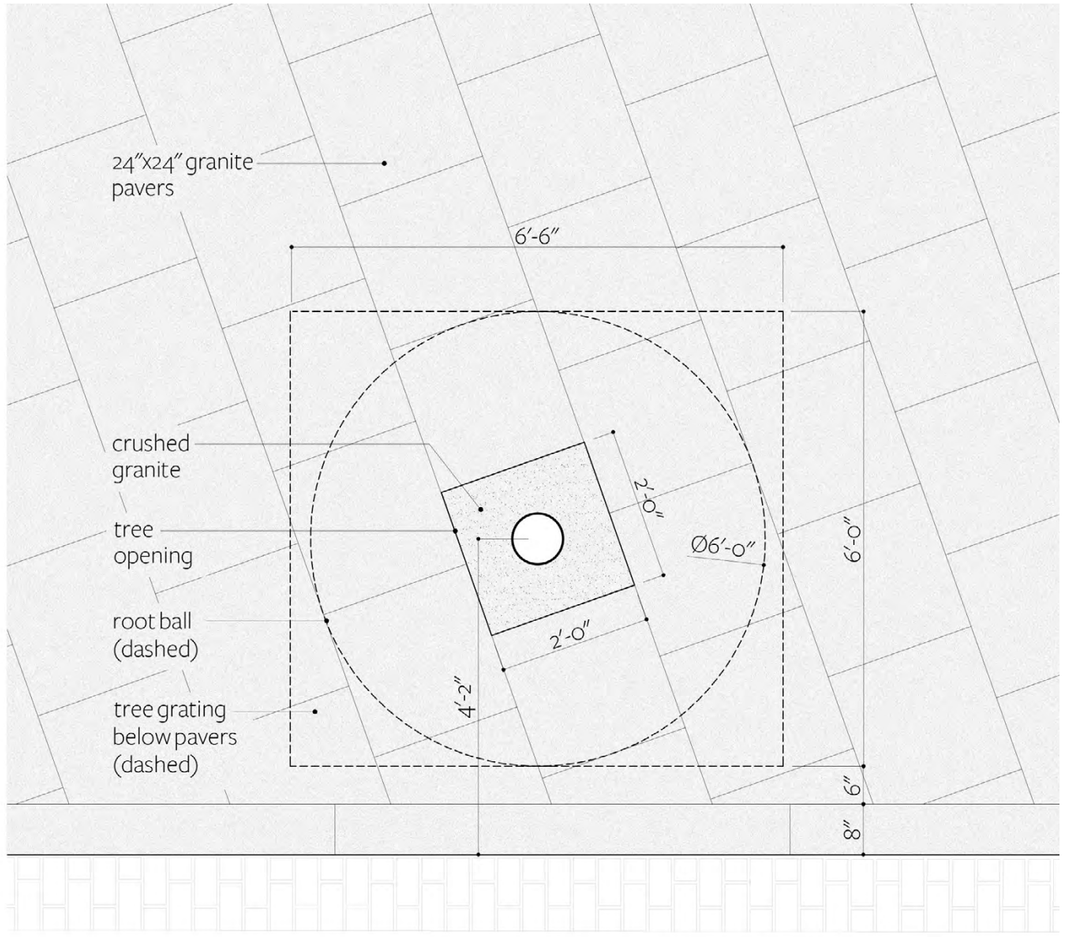
Visitor Comfort

Additional Planting
Tree Layout
Tree Species
Tree Wells and Ground Treatment

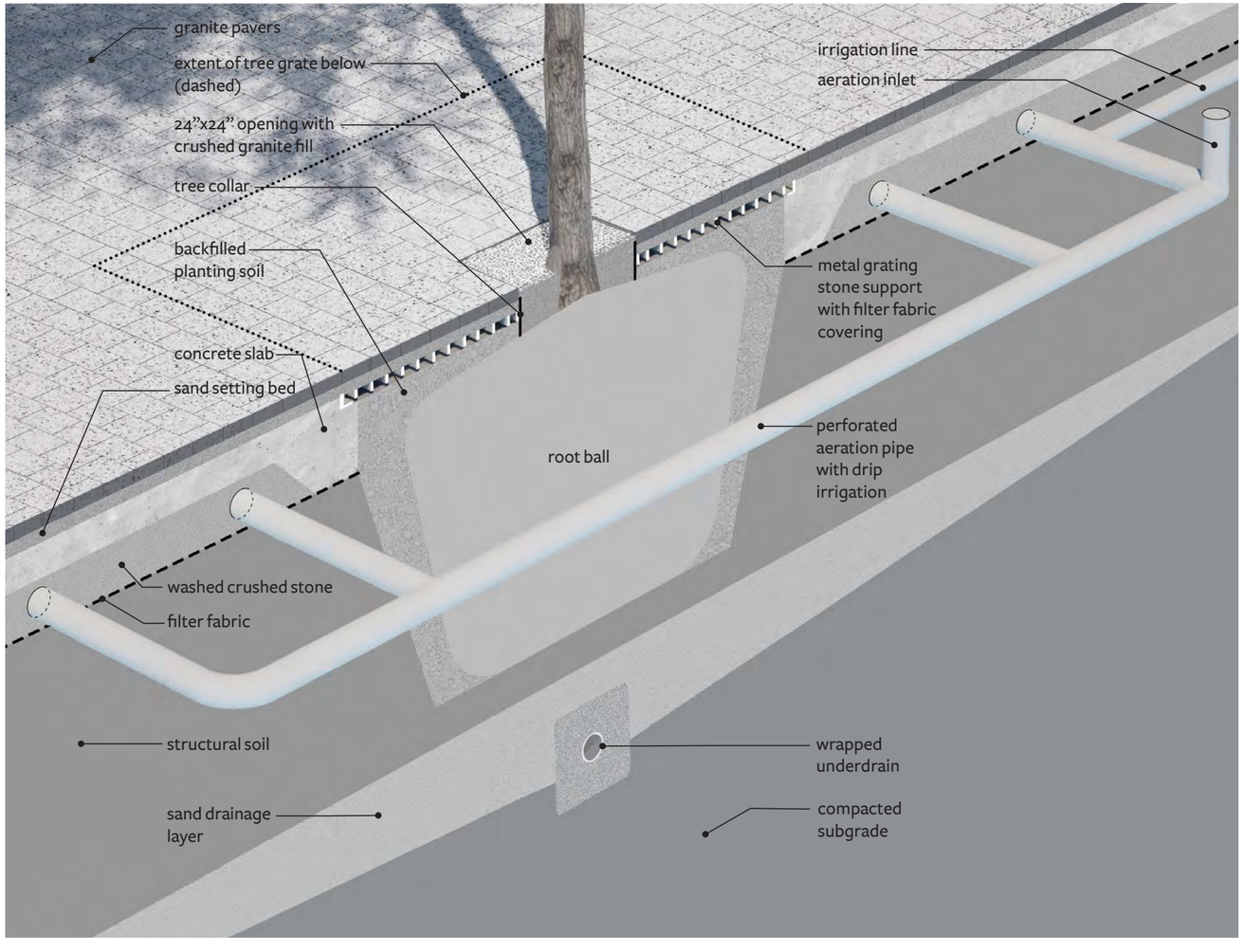


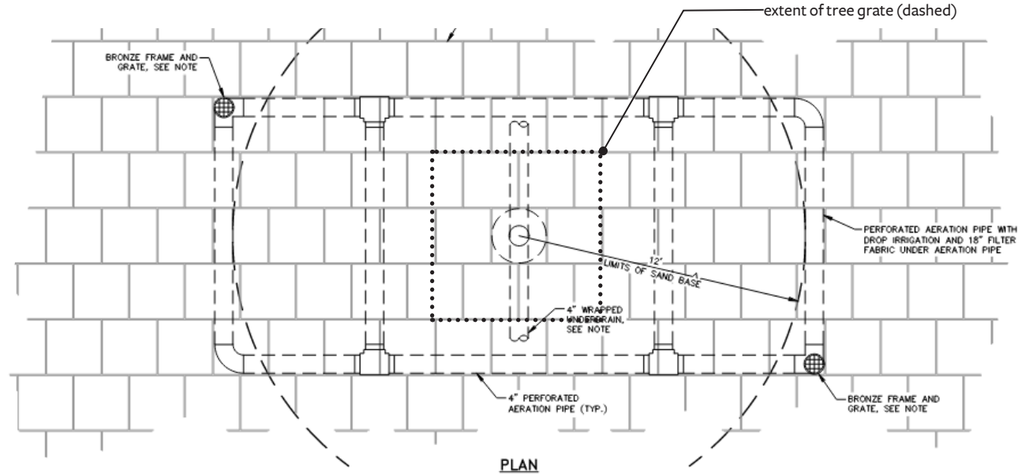
tree pit within site boundary



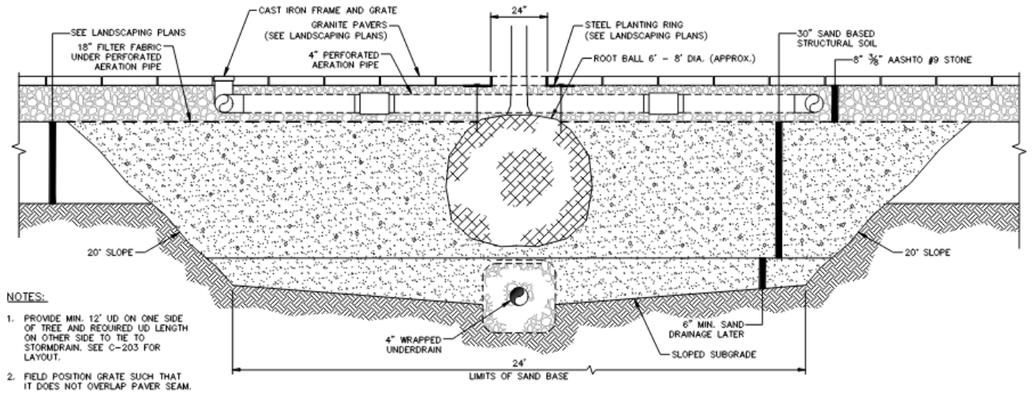
independence avenue sw

tree pit within right of way





PLAN



NOTES:

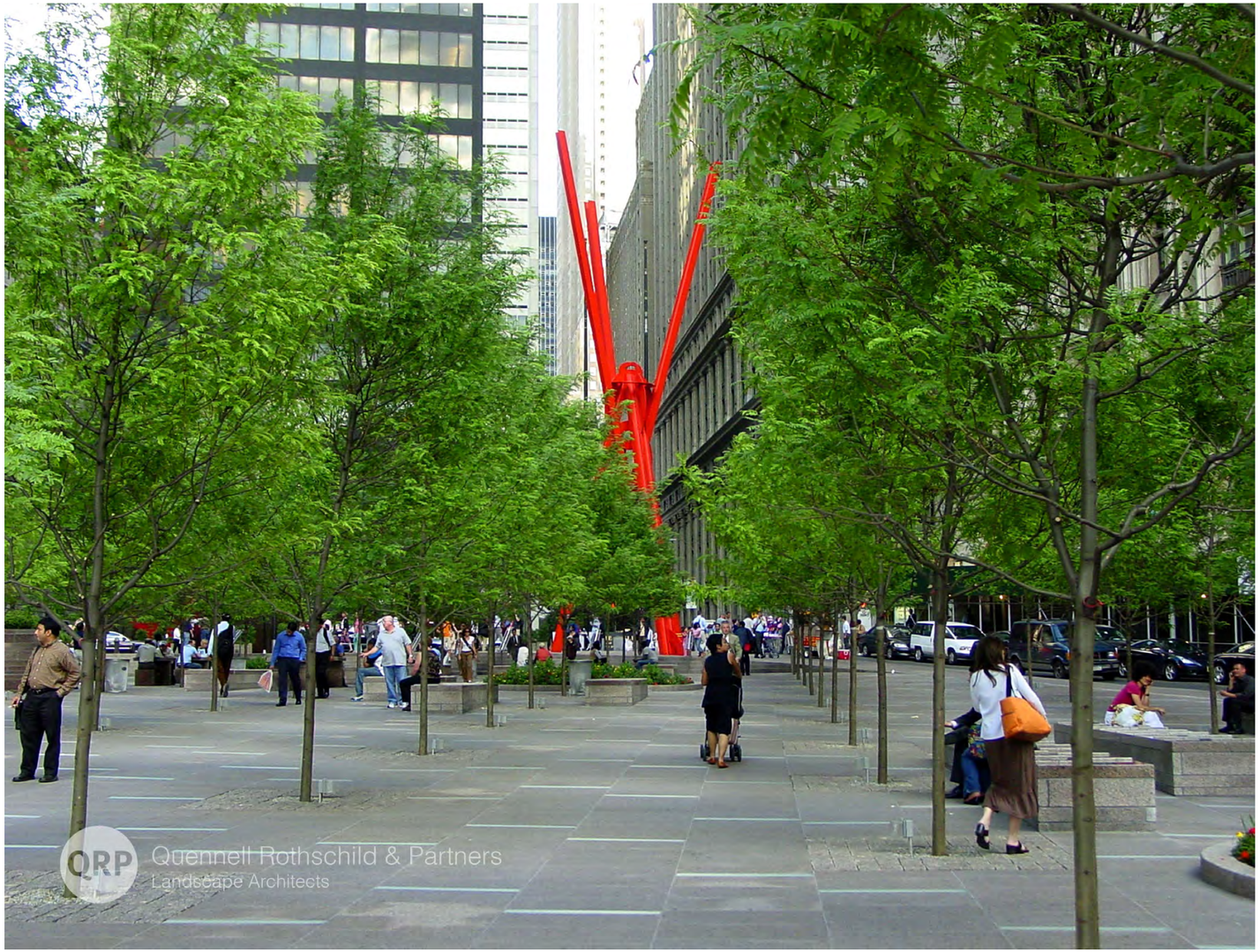
1. PROVIDE MIN. 12' UD ON ONE SIDE OF TREE AND REQUIRED UD LENGTH ON OTHER SIDE TO TIE TO STORMDRAIN. SEE C-203 FOR LAYOUT.
2. FIELD POSITION GRATE SUCH THAT IT DOES NOT OVERLAP PAVER SEAM.

SECTION

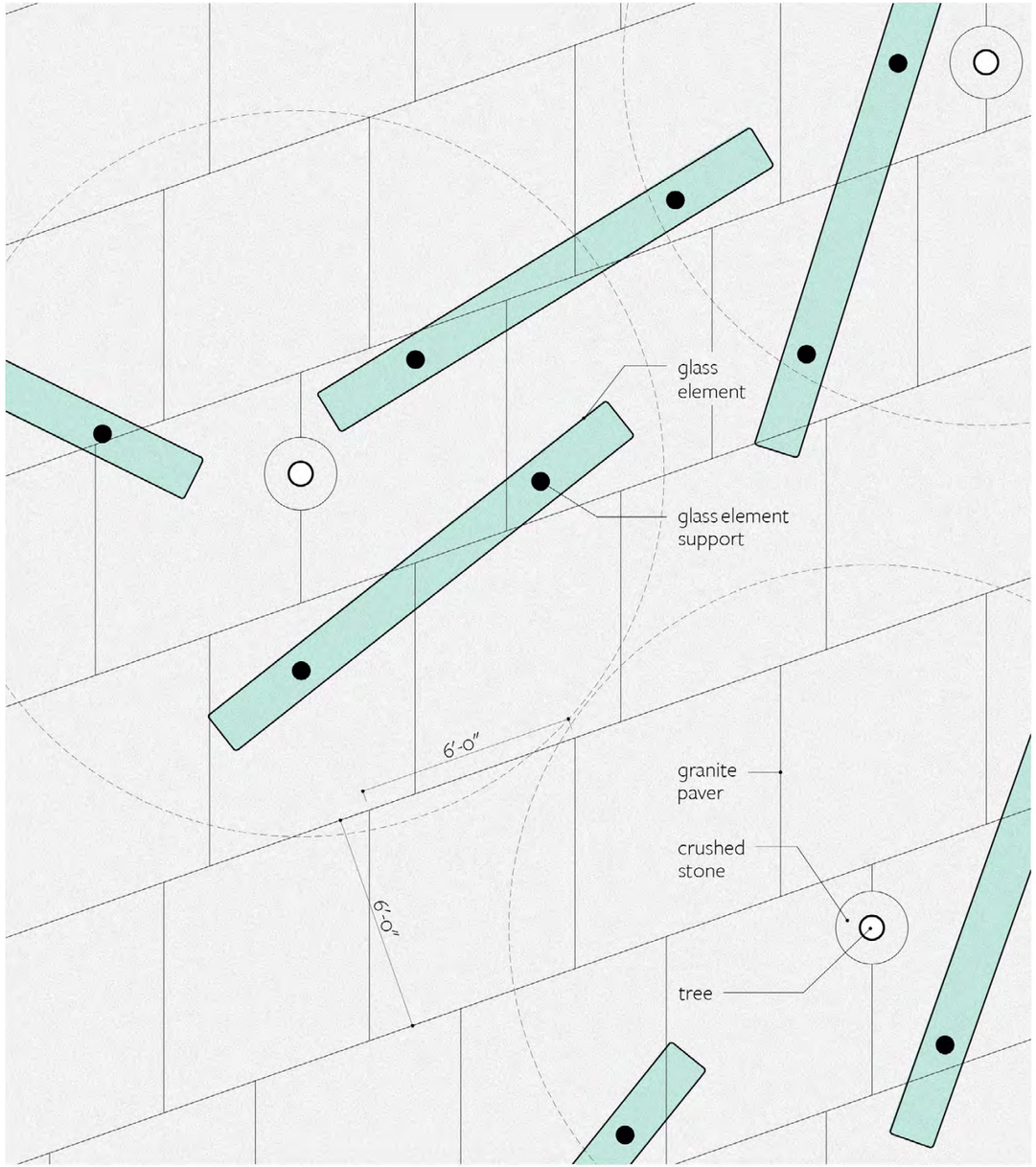
TREE DRAIN AND SAND BASED STRUCTURAL SOIL DETAIL

N.T.S.

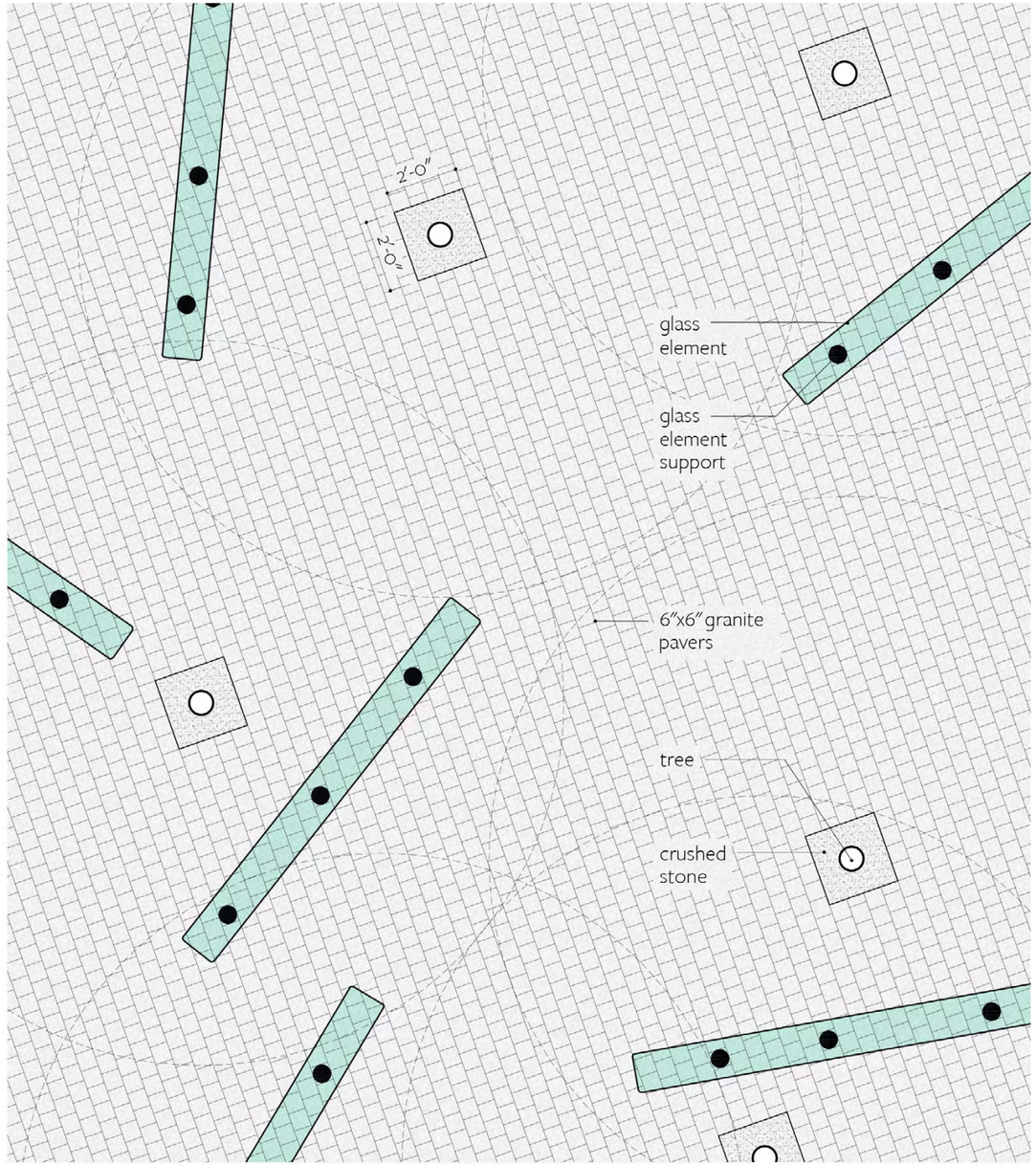
"They also advised considering how the openings in the granite paving would accommodate growth of the trees over time."



*An example of honey locust trees planted in structural soil is **Zucotti Park** in New York (2006)*



previous



revised

previous

revised

1	*luna pearl*	4	*barre gray*	7	*bethel white*	10	*sierra white*
2	*deer isle*	5	*silver cloud*	8 ●	*woodbury*	11	*iridian*
3	*freshwater pearl*	6	*white mountain airy*	9	*chelmsford*		

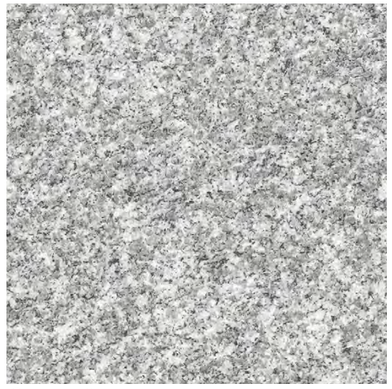
luna pearl

bethel white

freshwater pearl

deer isle

white mountain airy



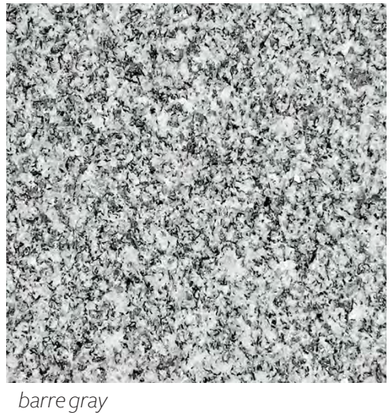
woodbury

sierra white

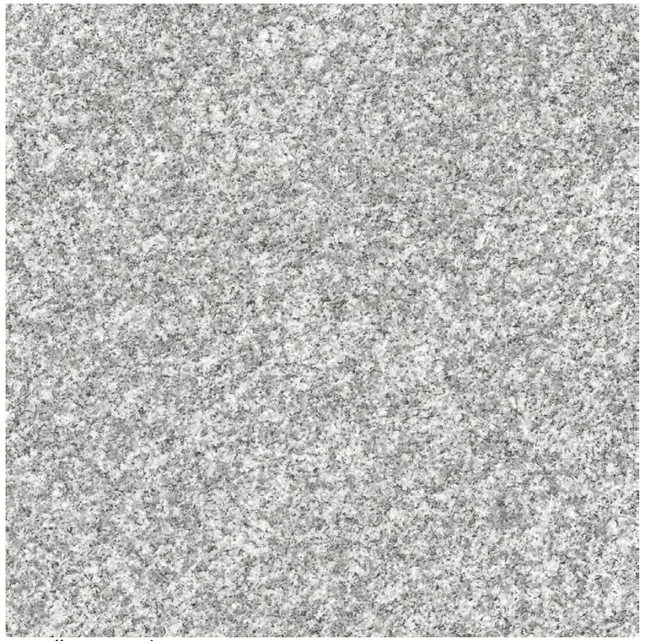
chelmsford

iridian

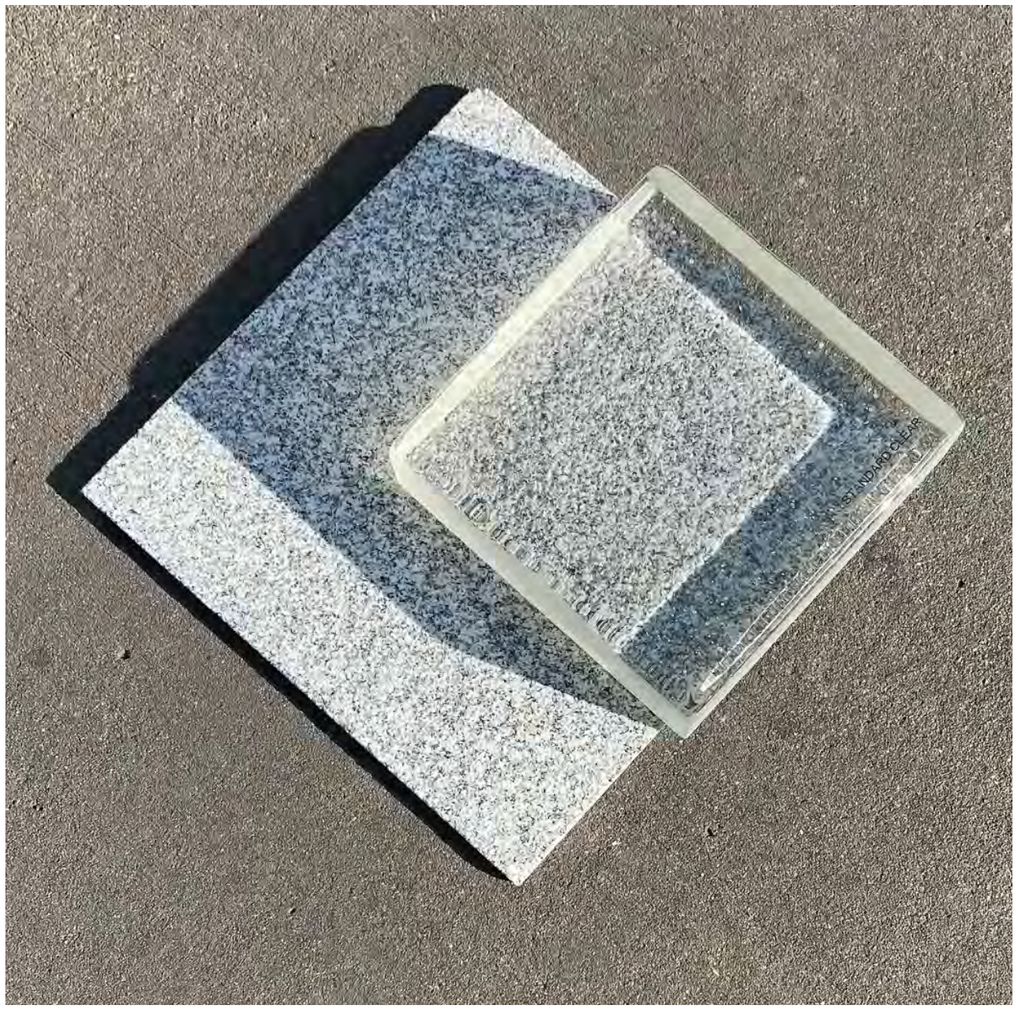
silver cloud

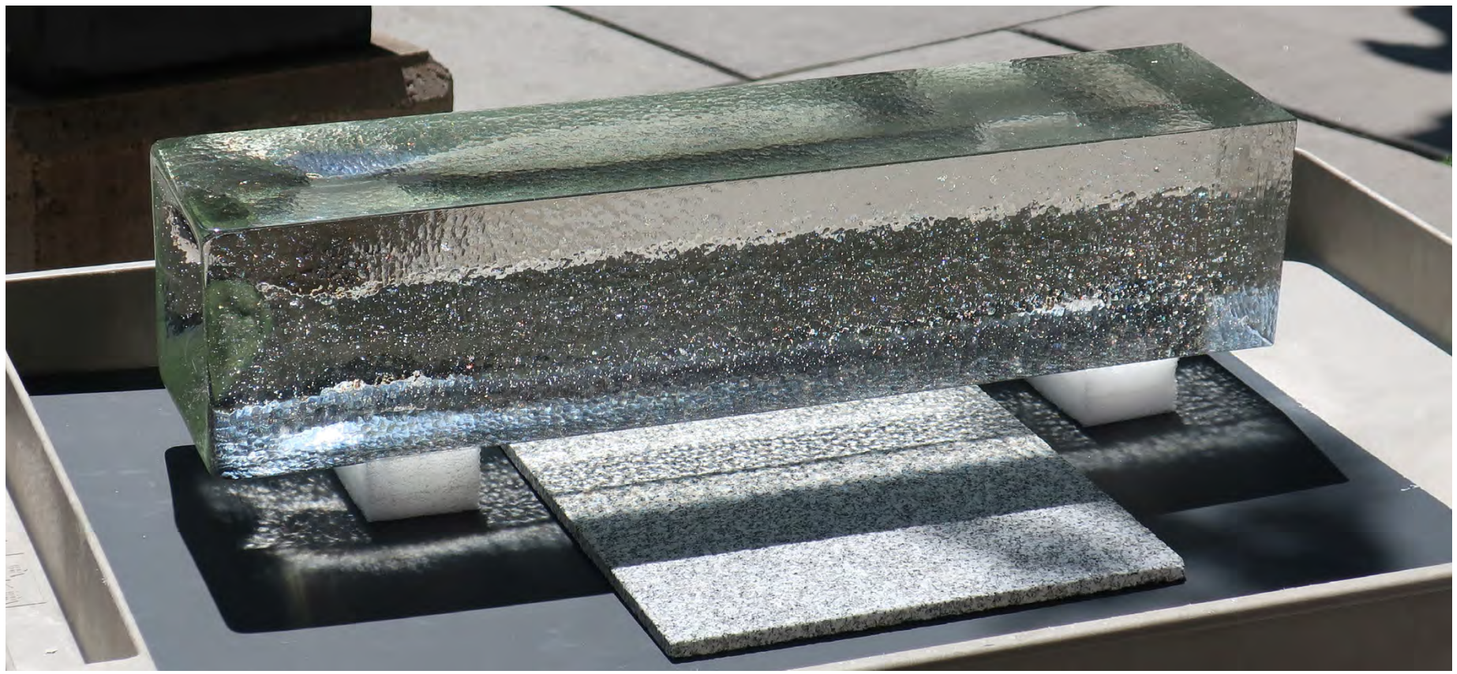


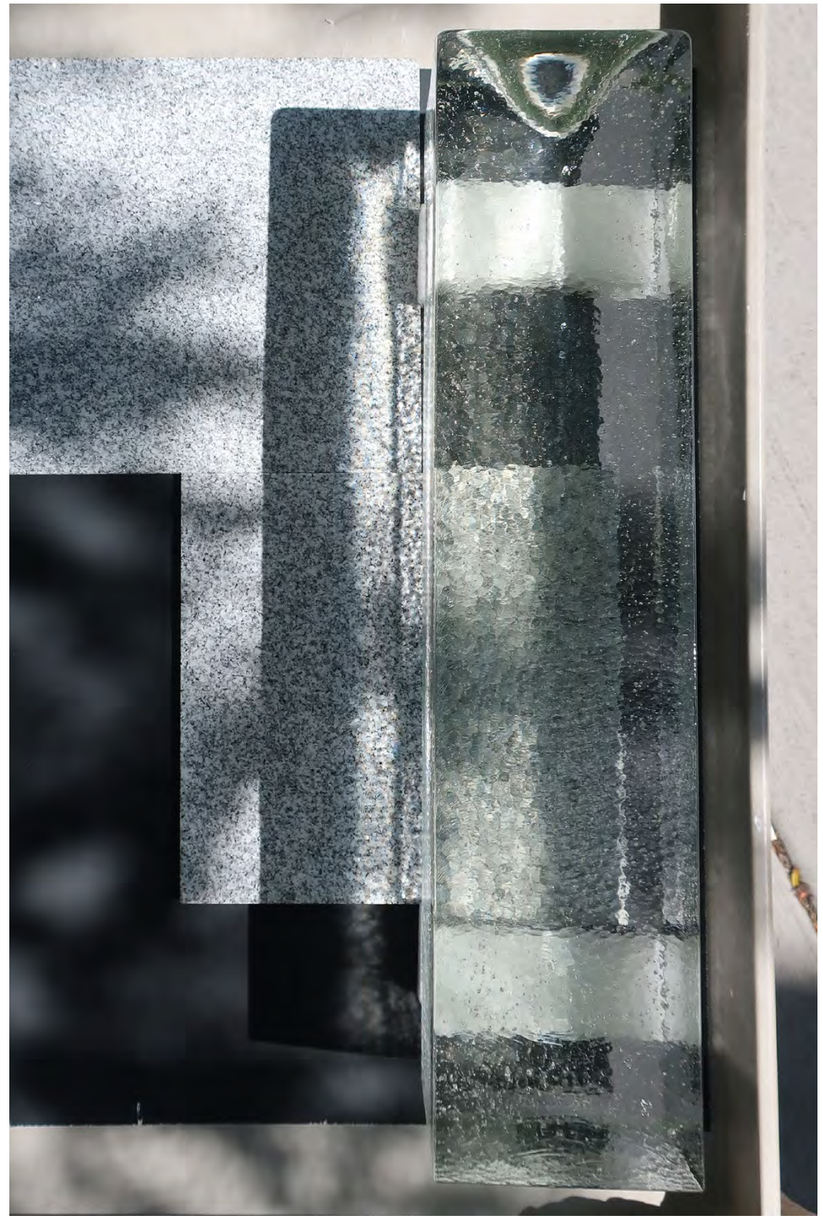
barre gray



woodbury granite







Viewsheds

Notes the site is located along Maryland Avenue, SW, which is identified as a preeminent view corridor with a linear view from the U.S. Capitol to the Tidal Basin.

Requests a viewshed analysis to understand the memorial's visual impacts to the U.S. Capitol and Maryland Avenue, SW preeminent view corridor. The viewshed analysis should include the relationship to curbs, buildings, trees, and other landscape features between 6th to 3rd Streets SW and the U.S. Capitol in all seasons and show the surrounding areas.

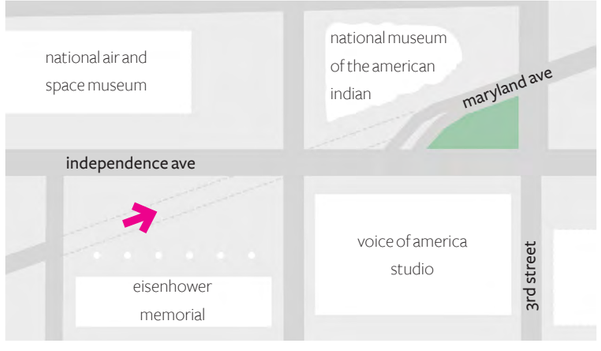
Notes the central Remembrance Hall is intended to provide a view toward the U.S. Capitol dome.

Requests the applicant continue to explore the overall height and design of the Remembrance Hall to better frame the view to the U.S. Capitol Dome.

Viewsheds

existing

proposed



existing

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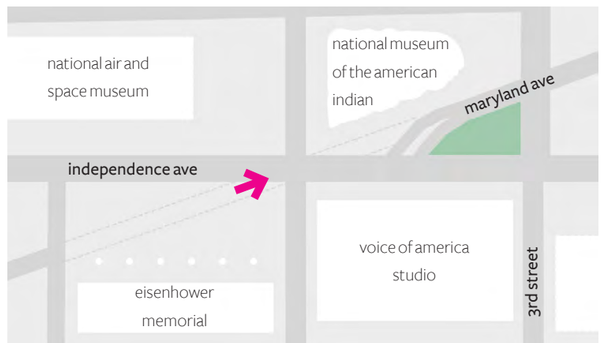

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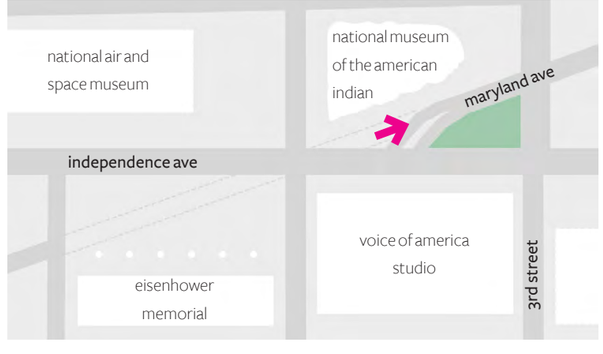

existing

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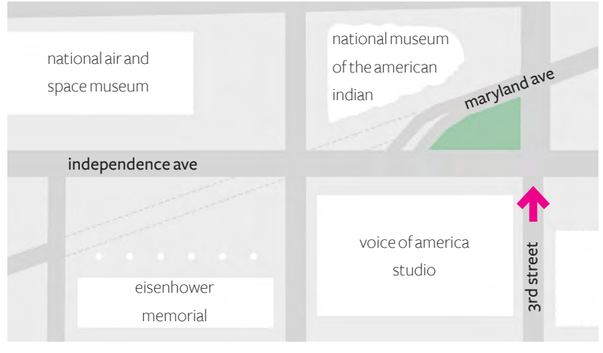

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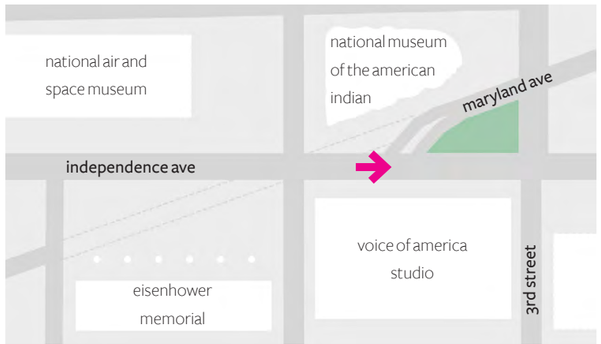

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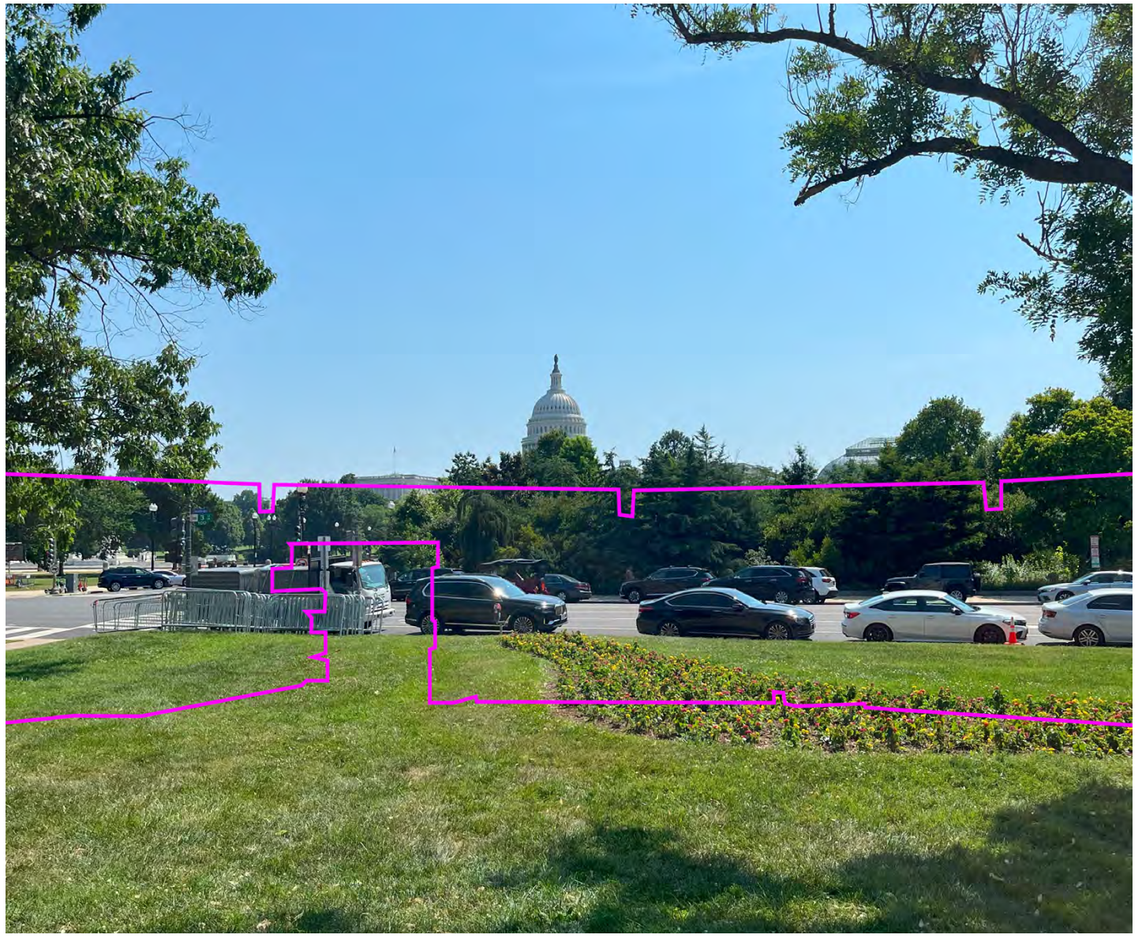
Viewsheds

Viewshed Analysis
Seasonal Views
Capitol View Study



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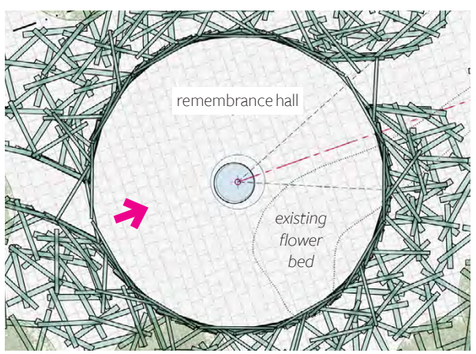

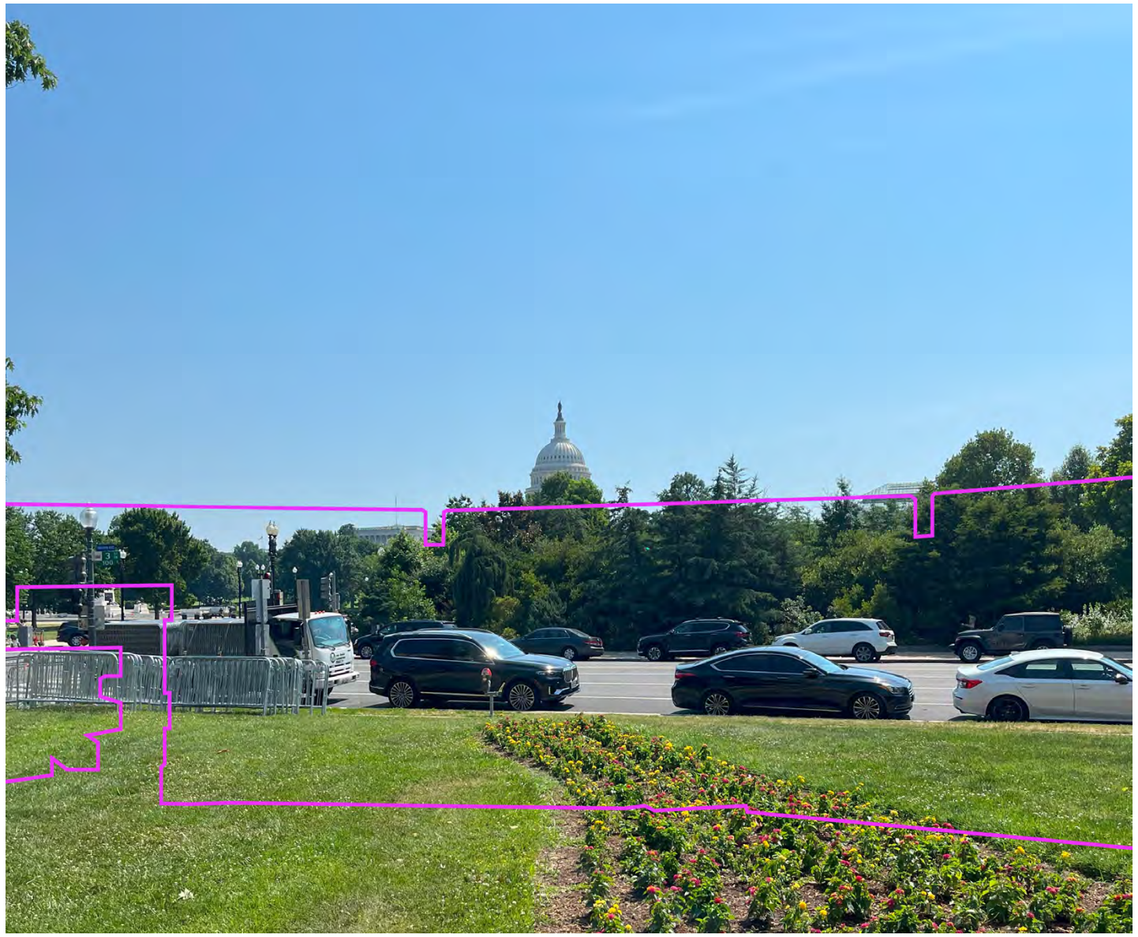

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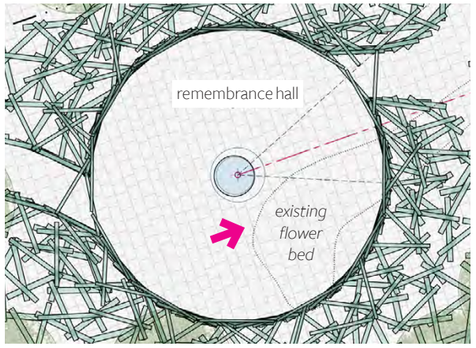

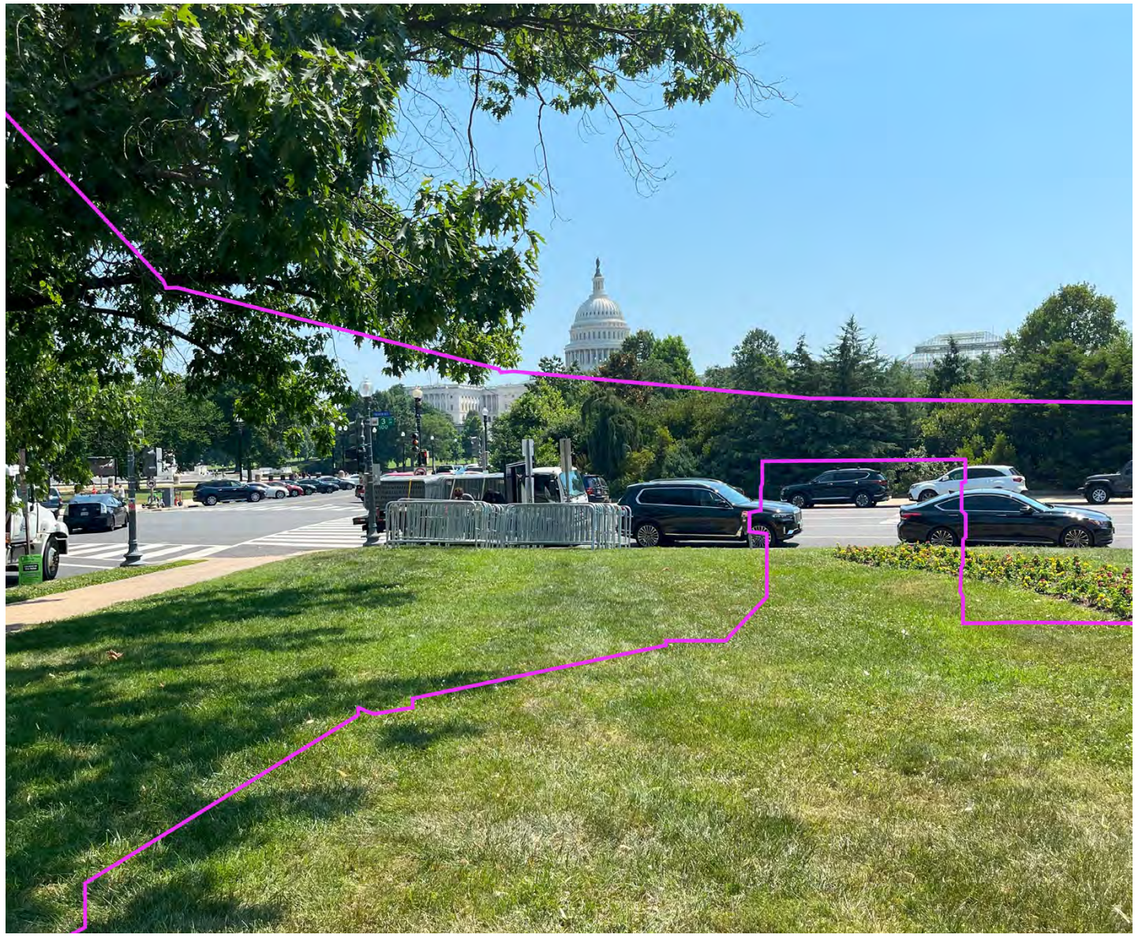

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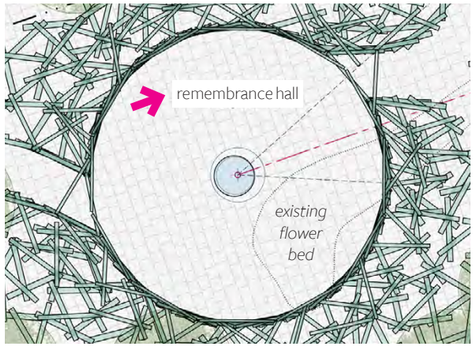

Lighting

Notes the submission indicates the memorial lighting approach includes up-lit glass elements which would create a glow across the site.

Notes the lighting approach should respect the visual importance and hierarchy of memorials, monuments, and important civic buildings and spaces in the nation's capital, with the U.S. Capitol and Washington Monument the most prominent features in the nighttime skyline; and therefore

Recommends the applicant include a lighting study as part of the next review that demonstrates the proposed lighting levels and how they may impact the hierarchy of the U.S. Capitol and surroundings museums.

Lighting

Light Level Analysis
Lighting Studies

Light Level Analysis George Sexton Associates

Capitol Dome	7.5 cd/m^2
Botanical Garden Penthouse	4.5 cd/m^2
National Museum of the American Indian (South Facade)	9.5 cd/m^2
Voice of America Headquarters (North Facade)	0.7 cd/m^2
Washington Monument	4.0 cd/m^2
Fallen Journalists Memorial Proposed Light Level	4.0 cd/m^2

"Lighting of the glass elements will be visually brighter than the surrounding illumination from the surrounding ambient light from the street lighting. The glass elements will glow and the glass will sparkle creating visual interest that is brighter than the homogeneity of the horizontal street lighting. At the same time the balance of brightness and sparkle will not compete with the Capitol Building."

- George Sexton (George Sexton Associates)

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Lighting

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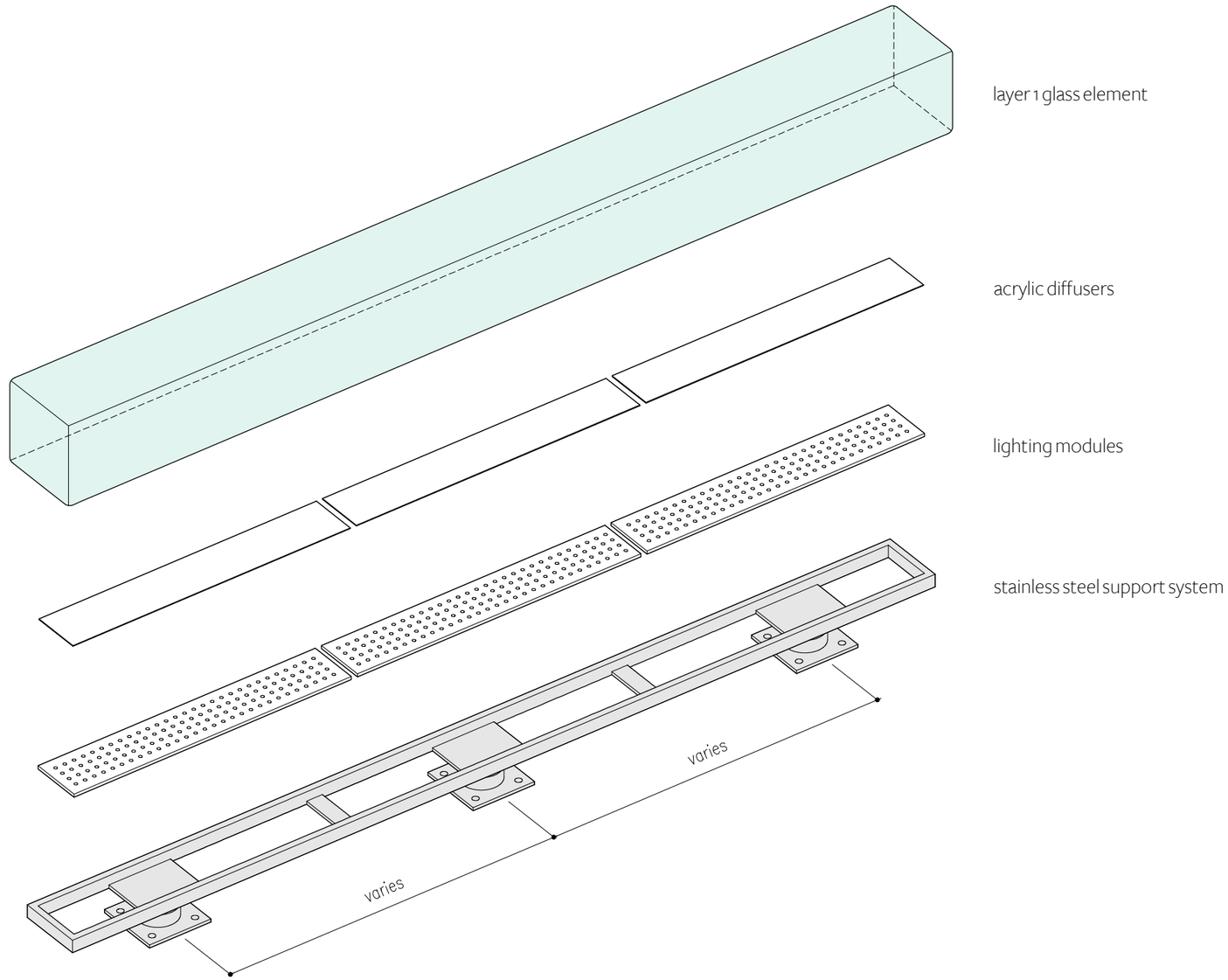


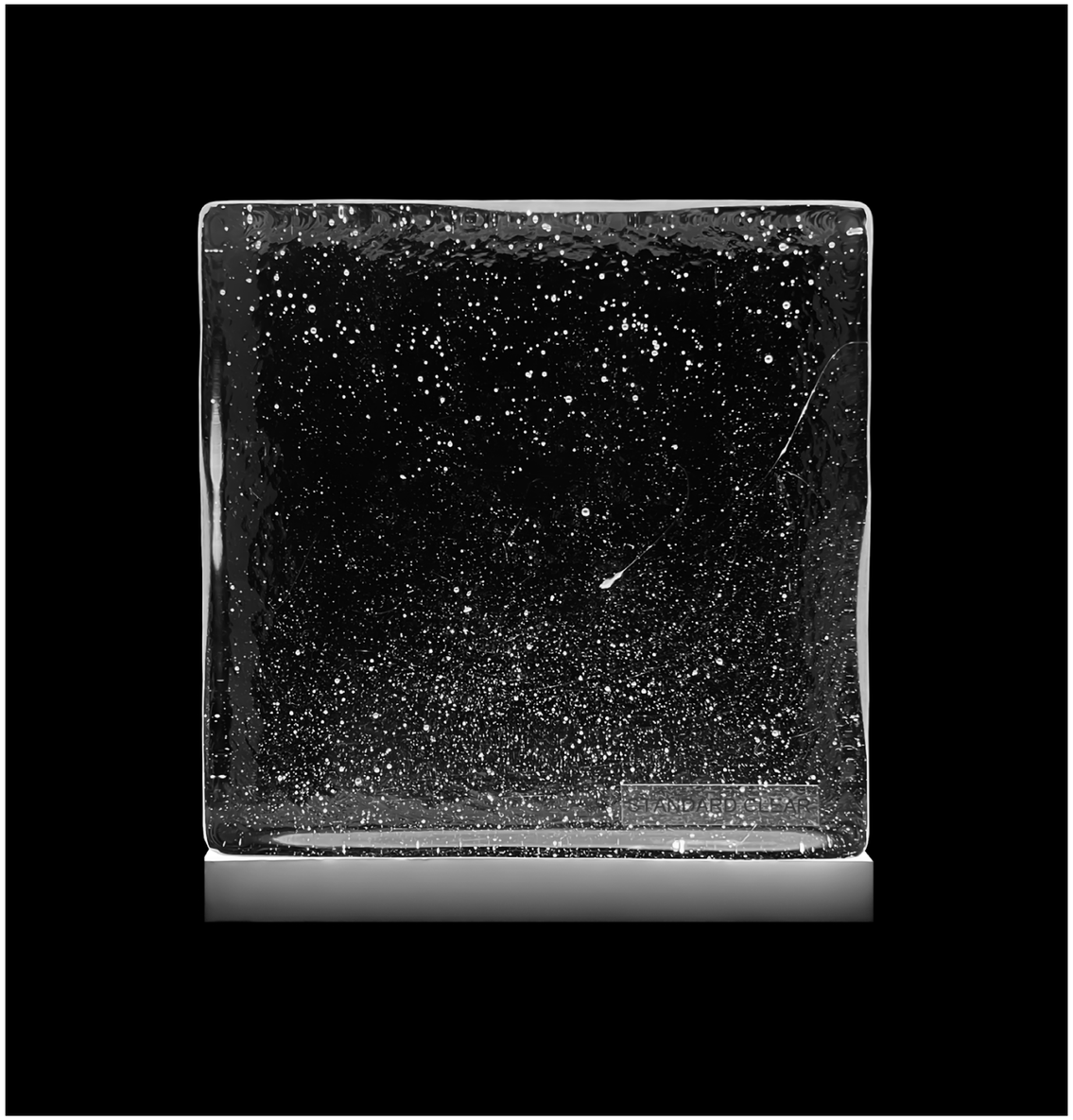
layer 1 glass element

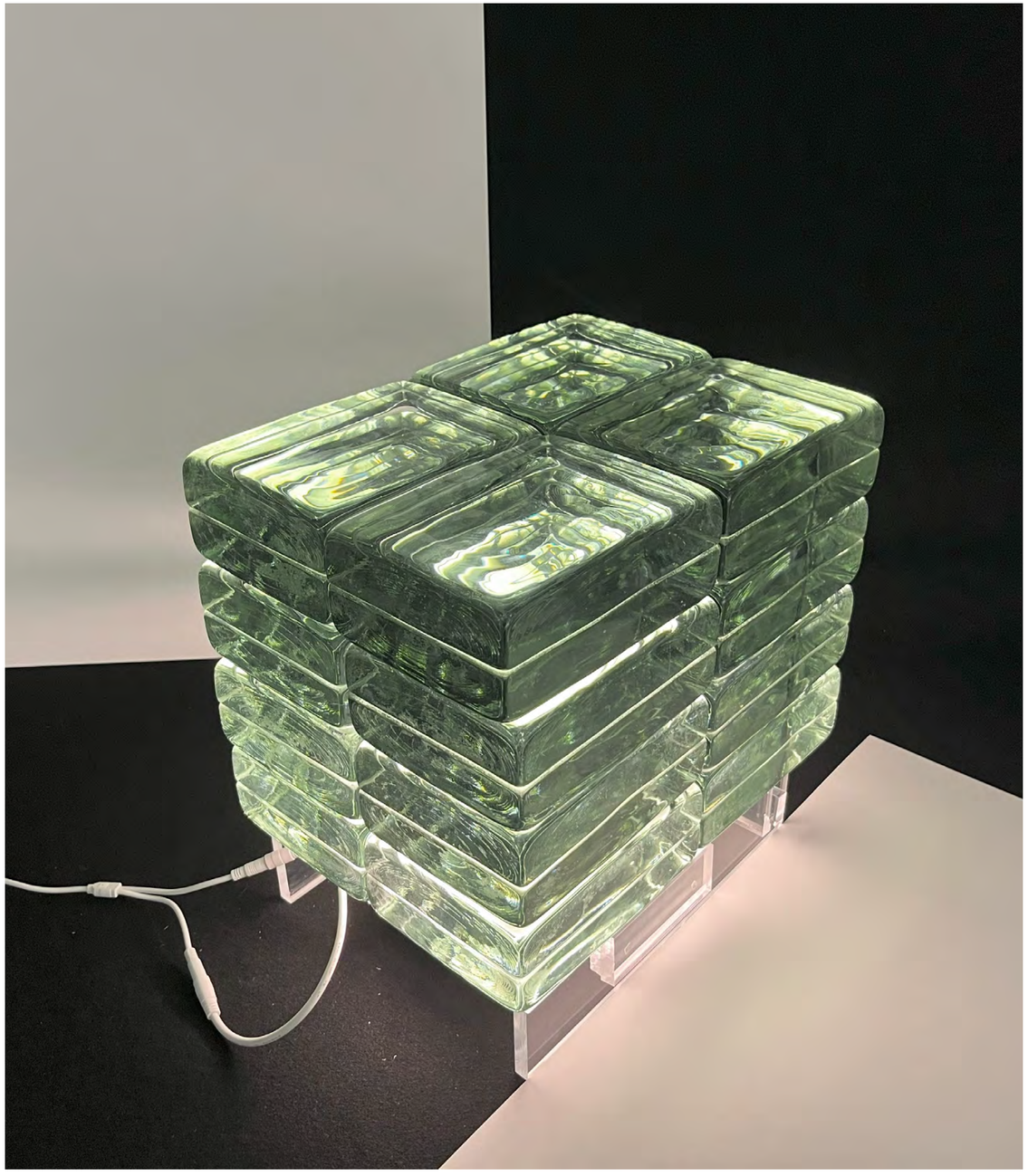
acrylic diffusers

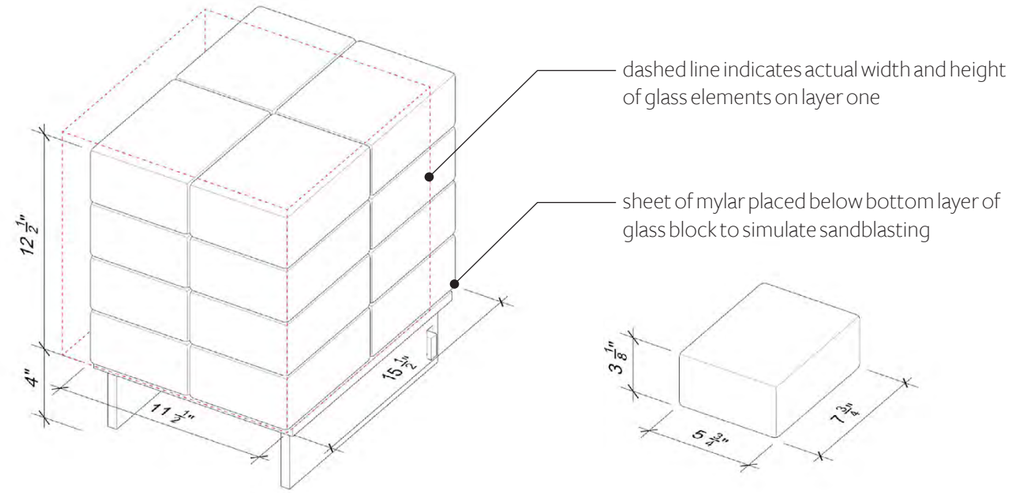
lighting modules

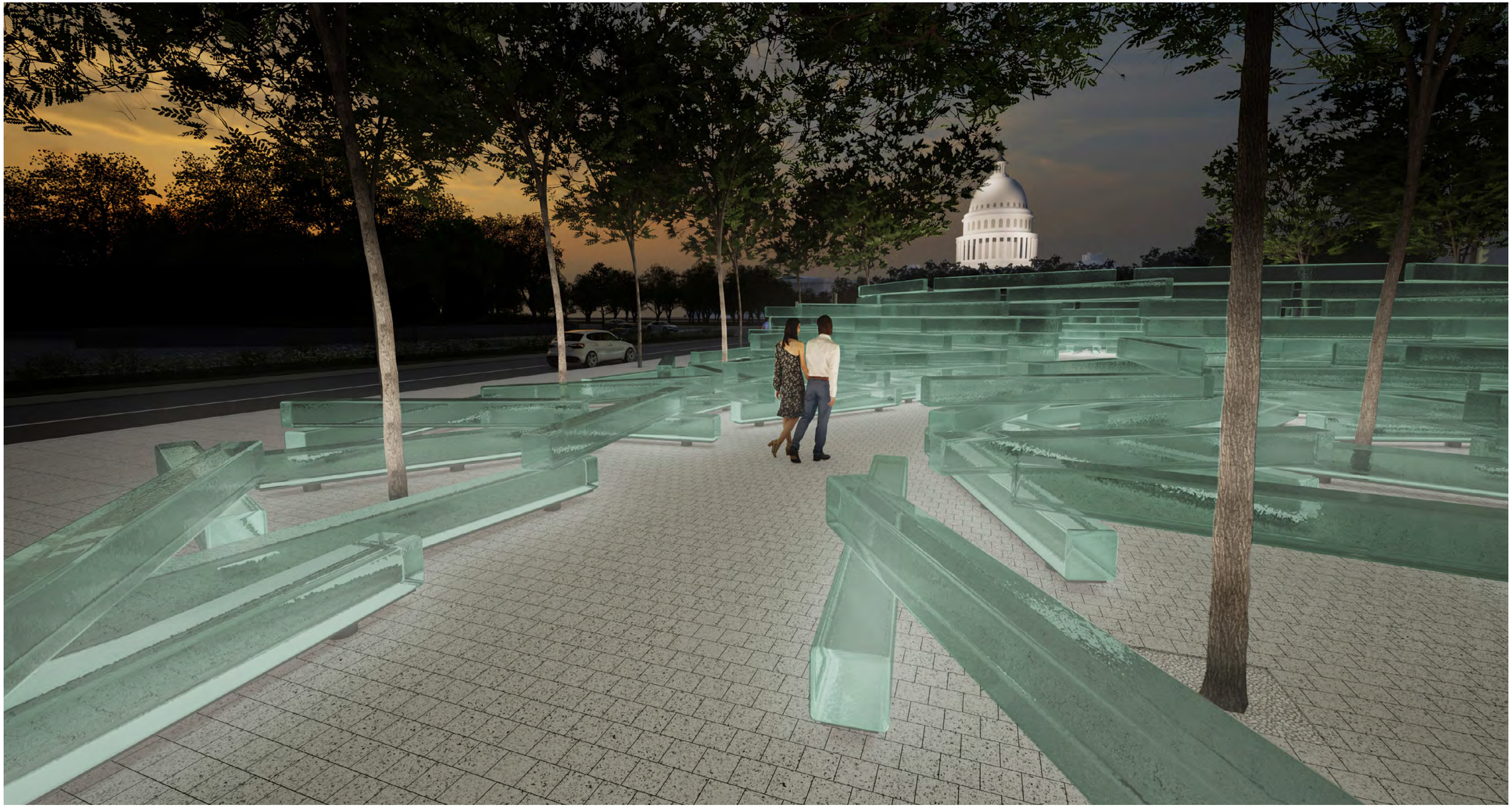
stainless steel support system


STANDARD CLEAR


STANDARD CLEAR




dashed line indicates actual width and height of glass elements on layer one
sheet of mylar placed below bottom layer of glass block to simulate sandblasting
12 1/2"
4"
11 1/2"
15 1/2"
3 1/8"
5 3/4"
7 3/4"



02 october 2025 **lighting studies** path night

At night, uplit glass elements light the pathway leading to the circular Remembrance Hall.

At night, a soft glow emanates from the up-lit glass elements, creating an atmosphere of quiet reflection where those who have sacrificed their life in pursuit of the truth are honored, and First Amendment rights are celebrated.

Material Use and Durability

Commends the applicant's detailed exploration, symbolism, and proposed application of the glass material in a national memorial.

Notes the site is located in the 100-year floodplain.

Requests the applicant provide, as part of the next submission, further information about:

- The durability of the glass elements, and how they will be maintained and cleaned;
- How climbing and or skateboarding will be addressed;
- Whether the glass elements could withstand a vehicular crash and how the memorial is generally addressing security; and
- The flood mitigation approach.

Material Use and Durability

What is the difference between soda-lime and borosilicate glass?

Soda-Lime glass is the most common type of glass due to its workability and affordability (over 90% of glass used in commercial applications is soda-lime glass). It consists of roughly 60-70% silica, 13% sodium dioxide (soda), and 9% calcium oxide (lime), along with other trace elements.[1][2][5]

Borosilicate glass is a specialty glass invented in the 1880's by Otto Schott, designed to withstand extreme thermal, chemical, and mechanical conditions.[3] It contains roughly 80% silica and 13% boron oxide.[2][4][5] The high concentration of both silica and boron oxide gives the borosilicate glass a number of benefits over traditional soda-lime glass, including:

- Toughness and Scratch Resistance

  borosilicate glass has significantly increased durability and surface hardness compared to soda-lime.[3]

- Thermal Expansion and Shock Resistance

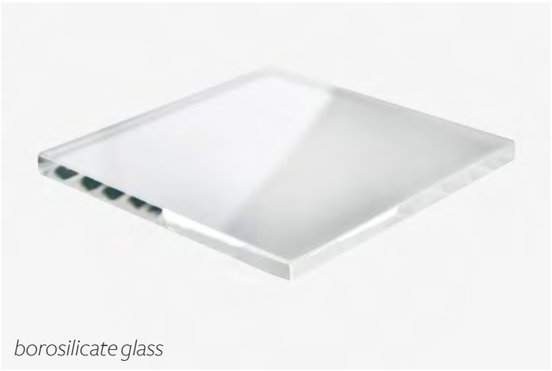
  borosilicate glass has less than half the thermal expansion and contraction rate of soda-lime glass, making it highly resistant to cracks and breakage as a result of thermal shock.[2][3]

- Chemical Stability

  borosilicate glass is very chemically stable, meaning it will resist attack by corrosive agents. [2][3]

- Optical Clarity

  borosilicate is used in optical applications due to its clarity and high light transmittance. (in comparison, soda-lime glass is less clear and often has a blue-green tint due to its high iron content.)[3]



borosilicate glass

Borosilicate glass is used in many different applications where high performance is required, including laboratory glassware, cookware and kitchen equipment, optics, medical devices, and electronic components.

telescope mirror blank

vacuum tube housing

kitchen cookware

laboratory glassware

optical lens

footnotes: **1.** Britannica, "soda-lime glass." *https://www.britannica.com/technology/soda-lime-glass* **2.** Wondrwood, "What is Borosilicate Glass." *https://wondrwood.com/blogs/what-were-working-with/what-is-borosilicate-glass-why-is-it-better-than-regular-soda-lime-glass* **3.** Schott, "Borosilicate Glass." *https://www.schott.com/en-dk/expertise/materials/borosilicate-glass* **4.** Schott, "Schott - Technical Glasses - Physical and Technical Properties." Mar. 2020 (*see appendix*) **5.** camlab, "Borosilicate glass vs Soda Lime glass vs Pyrex - what is the difference?" *https://www.camlab.co.uk/what-types-laboratory-glassware-should-you-use*

		definition	borosilicate glass	granite	marble	unreinforced concrete	stainless steel	remarks
mechanical properties	**density**	amount of mass per unit volume	**140** lb/cu ft [12]	**162** lb/cu ft [10]	**168** lb/cu ft [10]	**140** lb/cu ft [3]	**490** lb/cu ft [2]	borosilicate glass is a similar density to granite, marble, and concrete.
	compressive strength	resistance of a material to breaking under compression	**290** ksi [7]	**320** ksi [8]	**78** ksi [9]	**3** ksi [3]	**30** ksi [2]	borosilicate glass has **greater** compressive strength than marble, unreinforced concrete, and stainless steel. it is similar to granite.
	tensile strength	resistance of a material to breaking under tension	**41** ksi [7]	**5.1** ksi [8]	**1.3** ksi [9]	**0.3** ksi [3]	**74** ksi [2]	borosilicate glass has **greater** tensile strength than granite, marble, and unreinforced concrete
	flexural strength	resistance of a material to breaking under bending	**5** ksi [7]	**3.5** ksi [8]	**2.2** ksi [10]	**0.3** ksi [3]	**30** ksi [2]	borosilicate glass has **greater** flexural strength than granite, marble, and unreinforced concrete
	knoop hardness	measure of a material's surface hardness, or its resistance to scratching and abrasion.	**480** [12]	**550 - 650** [1]	**140 - 180** [1]	**550-850** [14]	**166** [6]	borosilicate glass is **harder** than marble and stainless steel, and is similar to granite.
thermal properties	**thermal expansion coefficient**	rate at which a material expands with increase in temperature	**3.3 x 10^{-6}** K [11]	**7.9 - 8.4 x 10^{-6}** K [5]	**5.5 - 14.1 x 10^{-6}** K [5]	**13 - 14 x 10^{-6}** K [5]	**16 x 10^{-6}** K [2]	borosilicate glass will be the **most stable** material when undergoing temperature changes.
	thermal conductivity	the ability of a material to transfer heat energy to and from its surroundings.	**1.2** W/m-K [12]	**1.7 - 4.0** W/m-K [4]	**2.0 -2.9** W/m-K [4]	**1.0 -1.8** w/m-K [4]	**16.2** W/m-k [6]	borosilicate glass will conduct over **10x less heat** than stainless steel, and is similar to concrete.
	specific heat capacity	the amount of energy required to raise the temperature of a material by 1 unit.	**0.83** [7]	**0.79** [13]	**0.88** [13]	**0.88** [13]	**0.50** [6]	borosilicate glass will gain **less hea**t than stainless steel, and a similar amount to granite, marble, and concrete.

footnotes: **1.** AutoDrill, "Knoop Material Hardness Scale." www.autodrill.com/wp-content/uploads/2012/06/HardnessScaleChart.pdf **2.** AZoM, "Properties: Stainless Steel - Grade 304." 11 June 2024, www.azom.com/properties.aspx?ArticleID=965 **3.** Engineeringtoolbox, "Concrete Properties." 8 Sept. 2023, www.engineeringtoolbox.com/concrete-properties-d_1223.html **4.** Engineeringtoolbox, "Solids, Liquids and Gases - Thermal Conductivities." 22 Apr. 2024, www.engineeringtoolbox.com/thermal-conductivity-d_429.html **5.** Engineeringtoolbox. "Thermal Expansion - Linear Expansion Coefficients." 2 Nov. 2023, www.engineeringtoolbox.com/linear-expansion-coefficients-d_95.html **6.** EZLOK, "316 Stainless Steel Mechanical Properties." www.ezlok.com/316-stainless-steel-properties **7.** Make It From. "Borosilicate Glass." https://www.makeitfrom.com/material-properties/Borosilicate-Glass **8.** Make It From. "Granite." https://www.makeitfrom.com/material-properties/Granite **9.** Make It From. "Marble." https://www.makeitfrom.com/material-properties/Marble **10.** Modul Marble, "Physical Mechanical Characteristics Natural Stone." modulmarble.com/wp-content/uploads/2019/05/Natural-Stone-Physical-Mechanical-Characteristics.pdf **11.** Schott, "Schott - Technical Glasses - Physical and Technical Properties." Mar. 2020 **12.** Schott, "Schott Borofloat 33 - Technical Data" **13.** Wikipedia, "Table of Specific Heat Capacities." 30 May 2024, en.wikipedia.org/wiki/Table_of_specific_heat_capacities. **14.** Becosan, "How to measure the hardness of concrete and why it is important." https://www.becosan.com/how-to-measure-the-hardness-of-concrete-and-why-it-is-important/

Mechanical Properties: *Provide data on the compressive, tensile, and flexural strength of borosilicate glass.*

Mechanical properties of borosilicate glass will differ slightly from manufacturer to manufacturer due to variations in chemical composition but are conservatively considered for design as follows:

Compressive Strength:	**290** ksi
Tensile Strength:	**41** ksi
Flexural Strength:	**5** ksi
Modulus of Elasticity:	**9,000** ksi

See **table A** (following page) for mechanical properties comparison of borosilicate glass to other materials commonly used in memorials.

footnotes: **1.** Make It From, "Borosilicate Glass." https://www.makeitfrom.com/material-properties/Borosilicate-Glass

Impact Resistance: *Information on how the glass performs under impacts, including any treatments or laminations that increase its toughness.*

Impact resistance is the measure of a material's ability to withstand intense force or shock.

While limited cast glass impact load test data is available, homogeneous borosilicate samples have demonstrated greater performance than other glass materials or fused specimens. Borosilicate glass has greater mechanical strength than stone and a higher Mohs Hardness, allowing it to absorb more energy before failing. If necessary, potential means to improve impact resistance include strengthening the glass surface with modified heating, cooling, or annealing processes.

Vehicle impact loads are derived from the building code requirements for passenger vehicle barriers, approximately equivalent to a moving 6,000 lb vehicle. Each glass element will weigh over **3,000 lbs.**

Load-Bearing Capacity: *Maximum weight the glass blocks can safely support, especially for benches.*

Structural design load considerations consist of criteria determined by the International Building Code to include occupant gravity loads, environmental wind, seismic and thermal loads

Gravity loads are based on the code's public assembly spaces requiring 100 psf applied to the top surface of the glass blocks, equivalent to 200 lb individuals spaced every 19" along its entire length. This fully loaded bench is only at **10% of its allowable load capacity.**

Wind and seismic loads are established based on exposure and site geotechnical conditions.

Lifespan: *Expected lifespan of the glass blocks under typical usage conditions?*

Essentially, the decomposition rate of glass is *none.* There are no microorganisms on planet earth able to break down glass materials, and since it takes thousands of years, **there is not a single glass bottle on the planet that has even come close to decomposing.**

The New Hampshire Department of Environmental Services estimates that it takes **1 million years** for a glass bottle to decompose. glass artifacts from glassmaking's beginnings , around 2000 B.C. in Egypt, still exist.[1]

Warranty: *What type of warranty (both material and workmanship) is available through the glass block manufacturer?*

Glass products typically come with a ten-year warranty but longer warranties are available at added cost.[3] (Note that other common building materials – including stone and concrete – typically come with a one-year warranty for material and workmanship).

Dow warrants structural adhesives and pads on a project-specific basis (weather seals typically come with a 20-year warranty).

(above)
'perfectly preserved' glass-ware recovered from a 2,000 year old shipwreck [2]

(left)
cast glass block after surviving a wildfire in California

footnotes: **1**. Seattle Pi Education. "How Long Does It Take for a Glass Bottle to Degrade in a Landfill?" 29 Sept. 2016, education.seattlepi.com/long-glass-bottle-degrade-landfill-5235.html **2.** Smithsonian Magazine. "Perfectly Preserved Glassware Recovered From 2,000-Year-Old Shipwreck. *https://www.smithsonianmag.com/smart-news/glassware-2000-year-old-roman-shipwreck-180982615/* **3**. Viracon. "Viracon's Standard Ten-Year Limited Warranty." (*see appendix*)

Weather Resistance: *How the glass withstands exposure to sun, rain, snow, and temperature variations.*

Borosilicate glass is resistant to water, saline, acidic solutions, iodine, chlorine, bromine, and organic substances, even over long periods and temperatures above 212°F. Consequently, it is commonly used in laboratory applications. [1]

See **precedents section** for borosilicate glass structures that have been exposed to the weather.

UV Resistance: Ability to resist degradation or discoloration due to UV exposure.

The majority of UV light passes through glass, but borosilicate glass has excellent thermal resistance, low UV radiation damage (low susceptibility towards solarization) and low degradation during high intensity radiation exposure. [2]

Thermal Stability: Performance under extreme temperatures, both hot and cold.

Borosilicate glass elements can withstand temperatures ranging from **-320°F** to **+842°F** for long periods of time. [3]

They can withstand a temperature differential *within the element* of approximately 225°F before fracturing. [4]

footnotes: **1.** Präzisions Glas & Optik GmbH, "BOROFLOAT® 33 High-quality borosilicate glass from SCHOTT." May 2024. https://www.pgo-online.com/intl/borofloat.html **2.** Schott, "BOROFLOAT ® & Functional Coatings: A Union of Inspiration & Quality." (*see appendix*) **3.** Continental Trade, "Information Sheet: Borosilicate Glass 3.3 - DIN 7080". https://www.continentaltrade.com.pl/en/our-offer/technical-glass/types-of-materials/borosilicate-glass **4.** Schott, "BOROFLOAT® 33 Data Sheet." (*see appendix*)

Cleaning Protocols: Recommended cleaning methods and products that won't damage the glass or its coatings.

Periodic cleanings (every 4-6 weeks) using ordinary water from the municipal supply will supplement the natural cleaning provided by rain water. Glass elements are scratch resistant, they change little over time and will not rust or fade. In addition, graffiti can be removed easily from glass without special tools or chemicals that might stain or change the appearance of other materials. [3]

A mild cleaning agent (dish soap) is recommended by cast glass fabricators to remove stains that don't come off via water spray cleaning. It is recommended to apply cleaning agent with a soft sponge and to dry with a squeegee or microfiber towel to prevent streaks caused from the cleaning solution drying on glass. Thus, textured surfaces do not adversely affect the cleanability of the glass.

Surface Coatings: *Any coatings applied to resist graffiti, scratches, and other surface damages.*

To supplement periodic water spray cleaning or to minimize their required frequency, **hydrophilic coatings** can be applied to the surface of glass elements. Hydrophilic coatings are wettable, low-friction coatings that attract water and promote its absorption and distribution. When applied to a surface, hydrophilic coatings reduce surface tension, causing water to spread out evenly and form a thin layer, which helps to carry away dirt and impurities as the water runs off the surface. Some coatings that use metal oxides can even break down complex dirt and impurities using sunlight. The coating needs to be re-applied every 10 years. [1]

Vindico is an example of a hydrophilic coating.[2]

(Note: none of the glass fabricators in consideration deem these coatings necessary.)

footnotes: **1.** TU Delft, "Unveiling the third dimension of glass." *section 6.3.8 Maintenance*, https://journals.open.tudelft.nl/abe/article/view/4088
2. Vindico, "Vindico HP Product Specification." April 2011 (*see appendix*) **3.** Vitro, "Glass Technical Document TD-107." January 2018 (*see appendix*)
4. JHB Arts Consultants, "Qwalala General Care and Maintenance." (*see appendix*)

Repairability: *Procedures for repairing or replacing damaged glass blocks?*

The glass elements are 15" thick and will be highly resistant to damage. Should a hairline crack occur, clear epoxy can be injected into the crack to prevent water and dirt from entering.

Scratches, chips or cracks in the cast glass elements can be repaired with epoxy resin cured with ultraviolet light (similar to the way scratches, chips or cracks in a windshield are repaired). See example here. The selected glass fabricator will create a video showing how scratches, chips, and cracks can be repaired and a locally-based glass technichian will be identified prior to installation of the memorial.

In the rare instance of a glass element needing replacement, the elements can be mechanically removed and replaced by locally applying high temperature to the adhesive. [1] A procedure for replacing a glass element will be included as part of the design process.

The glass fabricator, working under a maintenance agreement with the Foundation, would perform the scope of work in the event a repair is required. The memorial would have regular inspections (every 1-2 years) as part of this agreement.


windsheild repair kit example

footnotes:

1. TU Delft, "Unveiling the third dimension of glass." *section 5.6.5 Impact and vandalism test*, https://journals.open.tudelft.nl/abe/article/view/4088

Fallen Journalists Memorial: R&D of the cast glass structure

Prepared by: Dr. ir Faidra Oikonomopoulou and dr. ir. Telesilla Bristogianni, Architectural Technology Section, TU Delft, The Netherlands (Consultant)

TU Delft Scope of Work

Small scale testing stage (8-12 months):
This is the main R&D stage, including numerous prototypes and experimental tests at the TU Delft lab facilities aiming on (i) the initial quality control and validation of the mechanical properties of glass components made by the selected foundry(s), including advising on the further improvement of their fabrication; (ii) the development of the assembly method/connection system between the glass elements.

(i) Assessing the quality and properties of the glass components:
- Quality control of 10 glass samples produced by the selected foundry, in respect to internal stresses, defects, surface quality, and dimensional tolerances. Control conducted by visual inspection, microscopy, measuring and cross polarization (Fig. 4). Based on the results, the TU Delft team can advise on the further improvement of the glass components' fabrication method.
- Thermal shock test of 5 glass samples (200mm cube) produced by the selected foundry, evaluating the resistance of the cast glass to a down-shock of 60oC, relevant to outdoor applications. The specimens will be homogeneously heated to 80oC, and then immersed into a water bath of 20oC for 15 minutes. The specimens will be inspected directly after the test while a second inspection will take place a week later, to investigate the occurrence of slow-crack growth.
- 4-point bending tests of small-scale glass beams produced by the foundry using an Instron 1251 Universal Testing machine, with the aim to determine the design strength and stiffness of the glass (Fig. 5). The testing of two series of 12 samples each is recommended, using specimens of two different sizes (e.g. 500mm and 1000mm beam length), so we can determine the scale effect (in glass, the larger the component, the lower the strength, as the higher content of defects increases the probability of failure). Digital Image Correlation (DIC) measurements will be taken for the calculation of the E-modulus. Statistical analysis of glass strength data will be performed to establish the characteristic design values for strength. Post-breakage fractographic analysis will be conducted with the use of a digital Keyence VHX-7000 microscope to determine the critical flaws (Fig. 6).

(ii) Development and evaluation of the connection system
- Development of small-scale visual prototypes at TU Delft glass lab facilities of (max. 8) variations of the different proposed connections in consultation with EOC, assessing their ease-of-assembly and demountability (also for maintenance), and ability to absorb dimensional deviations.
- Experimental testing to validate the mechanical and long-term performance of the explored connections, such as:
- Cyclic compressive testing of connections with various (max. 5) dry-interlayers/adhesives (e.g. interlock, mechanical key, see Fig. 7) to validate their creep resistance.
- Shear testing with specimens at room temperature and upon freezing them for a day at -20oC of the selected glass to glass connecting interface. 5 specimens per connection type (max.5), using an Instron 1251 Universal Testing machine.
- Hard-body impact testing on prototypes of the (max.5) different proposed connections to assess their resistance against accidental impact.
- Accelerated ageing test of (max. 5) selected adhesives and/or sealants, by simulating the ultraviolet (UV) radiation and heat of the sunlight in a LY-605A UV testing machine (Fig. 8). Five samples of different adhesives recommended to be tested.
- Development and assessment of safety strategies to improve the structure's redundancy (e.g. lamination, segmentation)
- Development (where applicable) of a replacement method.

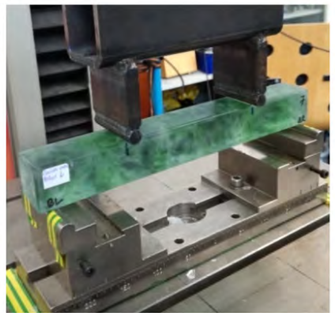
Detailed design stage (6 months):
This stage can run in parallel with the small-scale testing.
- Consultancy on the design based on the findings of the small-scale testing.
- Consultation with manufacturer and visit(s) to the selected foundry(s). Adjustment of the casting/slumping process and moulds used where needed, in order to improve the quality of the product and match the architectural requirements.
- Development of a quality control protocol, including the definition of acceptable dimensional tolerances, the cross-polarization inspection process for identifying residual stresses in the glass, and the inspection methodology for locating critical defects and rejecting cast glass components whose size/population/location of defects leads to an unacceptable strength.

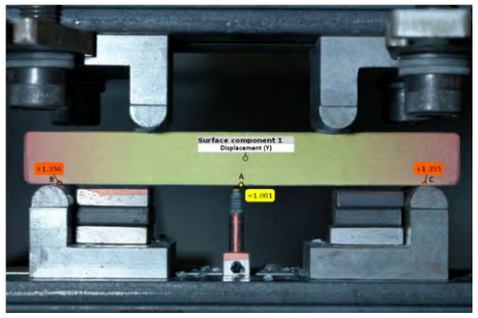
Tender stage (2 months):
- Consultancy on the technical aspects of the project.

Large scale testing in US stage (3 months):
The tests proposed below are to take place at a US facility assuming the local production of the full-scale prototypes. Testing at TU Delft of soft and hard body impact tests and/or of a full-scale bending test (testing of 3 samples, full-scale size, Fig. 9) is possible at an additional fee.
- Consultancy and on-site supervision of soft and hard body impact test (testing of 3-5 samples, full-scale size). Correlation of the breaking mode with the associated surface and bulk defects in the tested components.

Permitting stage (4 months):
- Support EOC with required input for completing the permitting process

Fabrication and construction stage (15 months):
- Technical inspection of the final product on-site.
- Development of a maintenance protocol (Fig. 10).





PROJECT REFERENCE: FALLEN JOURNALISTS MEMORIAL

Eckersley O'Callaghan Scope of Work

Schematic Design
- Collaborate with the architect and other stakeholders to coordinate the design of the elements.
- Studies of how the elements could be made, considering fabrication feasibility following guidance from the TU DELFT research. This could range from singular large-piece elements to singular elements made of smaller modular components (for example glass bricks tied together with integrated ties).
- Investigate and develop conceptual solutions for the interfaces between the glass elements, considering strength, durability, robustness and assembly feasibility. The interfaces may range from adhesives to glass interlock systems or even embedded mechanical restraints.
- Investigate and develop conceptual solutions for the interface of the glass to subgrade elements
- Establish the design criteria according to the local codes and any other client-specific requirements
- Produce preliminary analysis models using finite elements to understand the behavior of the elements.
- Attend bi-weekly VC meetings
- Produce conceptual sketches of the interfaces to be developed. Where necessary these could be sketched in Rhino 3D.
- Produce a Concept Design report considering all the work undertaken at concept stage.
- Finalize requirements of the testing specification for the small-scale testing phase.

Small-scale Testing
- Review the testing results and provide commentary on how these may affect the design.

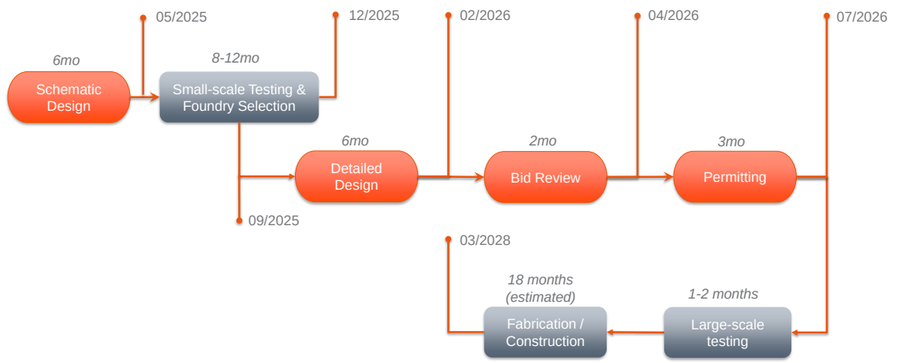
Detailed Design
- Coordinate with the architect to consider any evolutions of the design that might need to be considered following the testing phase.
- Identify the codes and standards with which the element design and construction will need to comply.
- Define the critical loadings for and design the system against set performance criteria:
  - Seismic, Wind and Snow
  - Crowd and/or Live loads
  - Thermal shock
- Detailed finite element analysis (FEA) of the global structure and check for stresses and deflections, considering findings from previous testing phase.
- Develop, analyze and size the interface details between glass elements accounting for the findings of the previous stage testing.
- Produce Detailed drawings (PDF, DWG, scales TBD).
- Develop 3D model (Rhino file)
- Produce Basis of Design calculation report with analysis, diagrams, studies, calculations, etc. (PDF).
- Coordinate with the Project Team to consider architectural and maintenance aspects that may affect the design
- Attend bi-weekly VC meetings
- Consider outline installation / replacement strategy with respect to detailing (note that detailed strategy will be developed by contractor, and we may need early input from specialist contractors)
- Review fabrication feasibility with fabricators, installers and/or contractors
- Assist in providing information for costing development and constructibility evaluation

Bid Review
- Review and comment on technical aspects of bid returns to assist in helping the most competent specialist subcontractor to do the works.
- Respond to technical queries during bid period
- Assist in the technical evaluation of the specialist contractors' bid returns, and provide report on findings regarding the submissions and suitability

Permitting
- Work with the EOR (Engineer of Record) to produce the permit set including Basis of Design calculations and relevant drawings.
- Assist in responding to queries that may arise from the permitting authority

Large-Scale Testing
- Witness the large-scale testing and provide commentary
- Review results from large scale testing and impact on design assumptions

Fabrication & Contract Administration
- Participate in VC monthly progress meetings (assume 8 No.)
- Review and comment on shop drawings, technical submittals and samples provided by the appointed Contractor for conformance with the specifications. Note this review does not meet the requirements of special inspections which is not included in this scope of work.
- Review and comment on the installation (include off-site fabrication yard and factory), submitted by the appointed contractor.
- Assist appointed contractor in interpreting design into detailed drawings through RFI process
- Review contractor's proposals for visual and performance mock-ups, providing comment
- 1 No. visit manufacturer's facilities / foundry to assist the Owner with selection of appropriate benchmark panel for the production elements
- Undertake site visits during construction to provide general review of progress along with summary report (assume 3 No.). This does not qualify as special inspections as this is understood to be provided by an independent third party.
- Mock-up Review and summary report (assume 1 No.)



Material Use and Durability

Commends the applicant's detailed exploration, symbolism, and proposed application of the glass material in a national memorial.

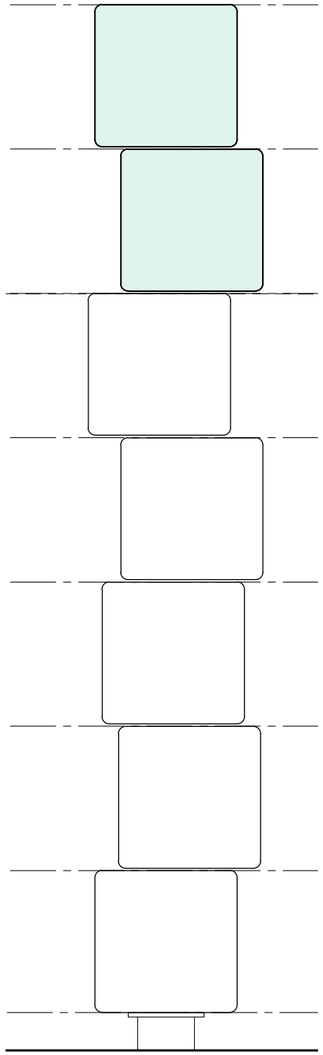
Notes the site is located in the 100-year floodplain.

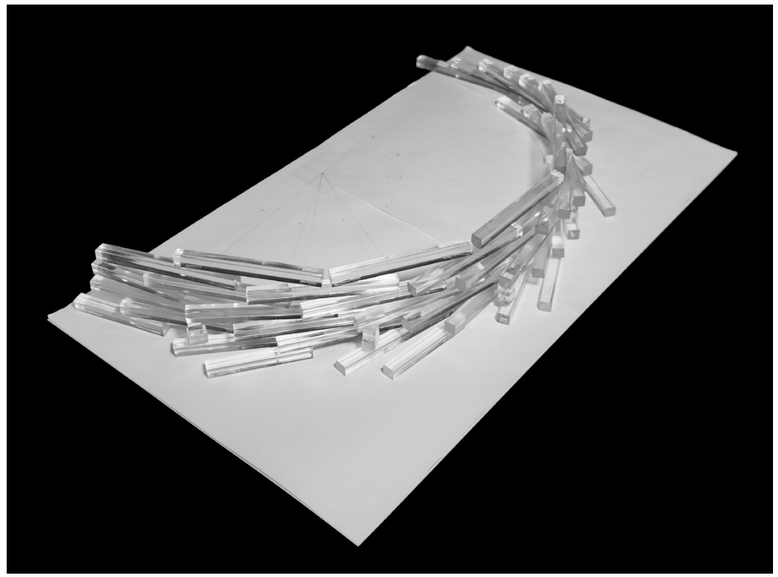
Requests the applicant provide, as part of the next submission, further information about:

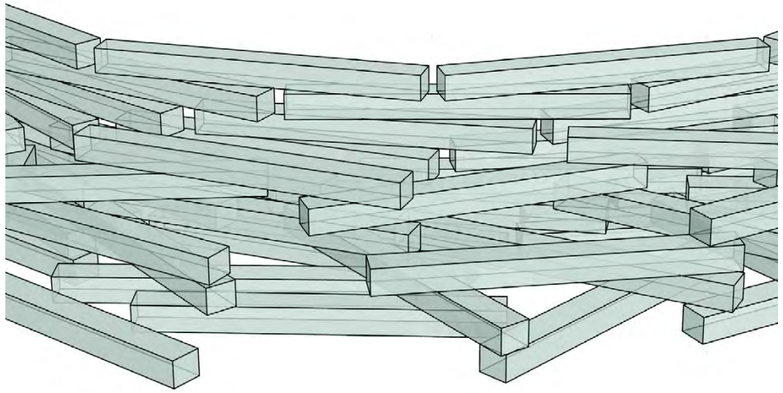
- The durability of the glass elements, and how they will be maintained and cleaned;
- How climbing and or skateboarding will be addressed;
- Whether the glass elements could withstand a vehicular crash and how the memorial is generally addressing security; and
- The flood mitigation approach.

Material Use and Durability

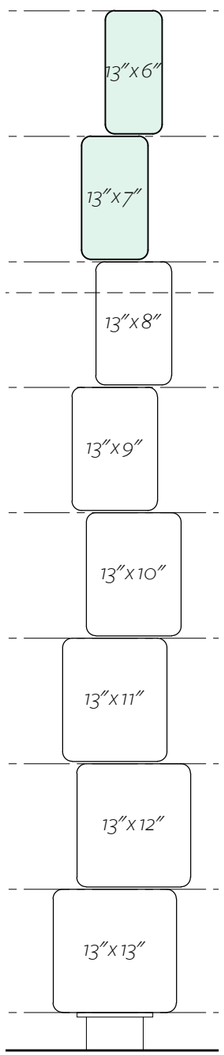
Glass Durability and Maintenance
Climbability
Skateboarding Deterrence
Memorial Security

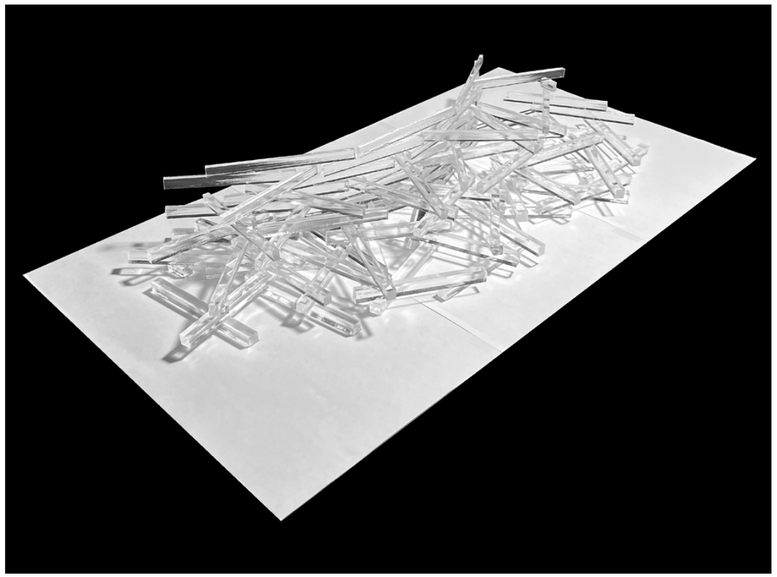


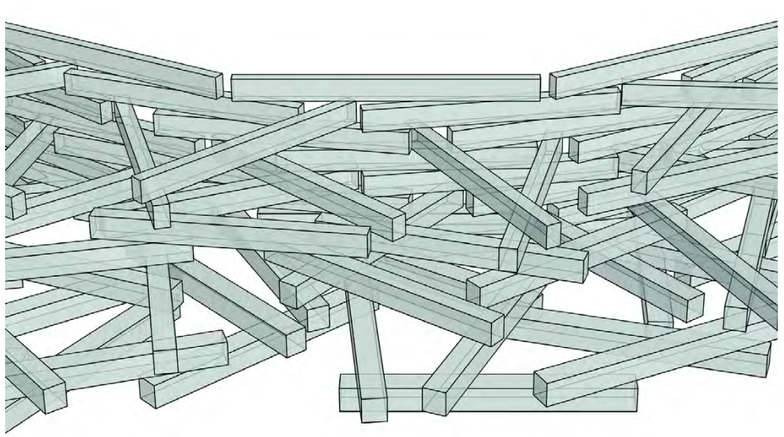




previous







revised

elements **taper** in width to reduce ledges and footholds on upper layers

elements near remembrance hall are arranged **perpendicular** to the wall and stacked more **loosely**, eliminating the “stair-step” conditions of the previous iteration

Material Use and Durability

Commends the applicant's detailed exploration, symbolism, and proposed application of the glass material in a national memorial.

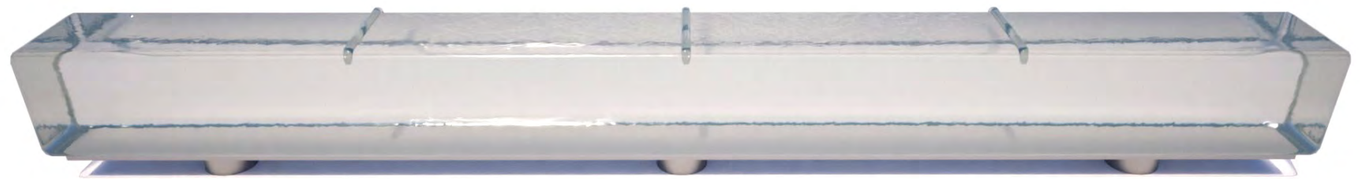
Notes the site is located in the 100-year floodplain.

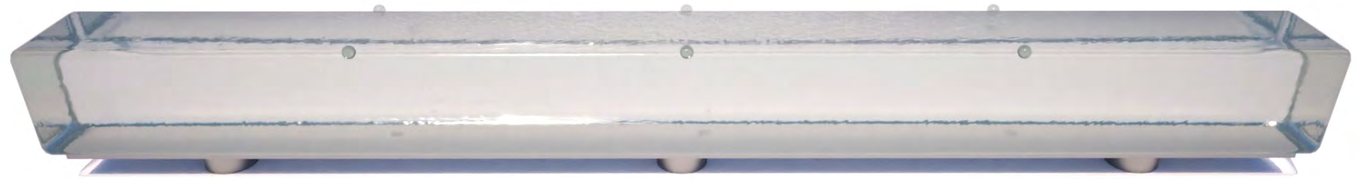
Requests the applicant provide, as part of the next submission, further information about:

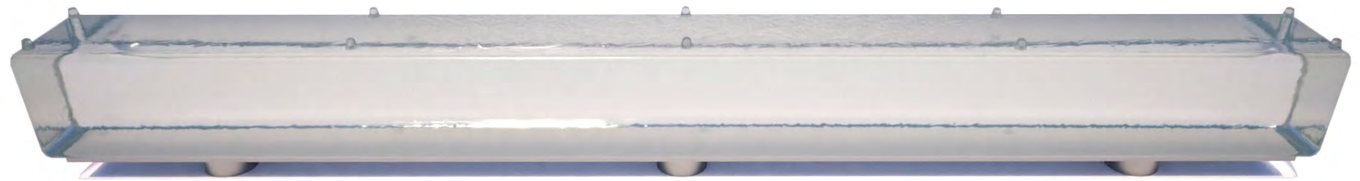
- The durability of the glass elements, and how they will be maintained and cleaned;
- How climbing and or skateboarding will be addressed;
- Whether the glass elements could withstand a vehicular crash and how the memorial is generally addressing security; and
- The flood mitigation approach.

Material Use and Durability

Glass Durability and Maintenance
Climbability
Skateboarding Deterrence
Memorial Security







02 october 2025 **skateboard deterrence**

Skateboard deterrent ridges similar to those commonly added to benches can be cast into the top surface of the glass, and skateboard deterrant strategies will be developed as part of the design process and tested on mockups prior to installation of the memorial.

Material Use and Durability

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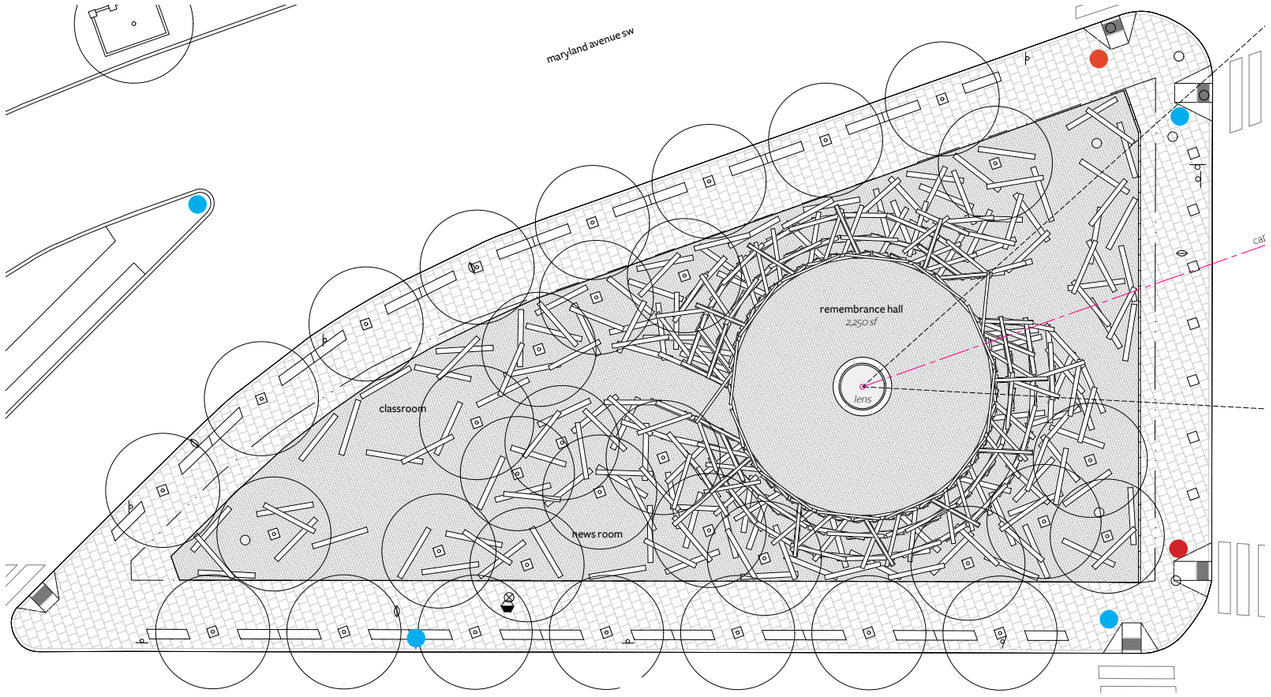
- The flood mitigation approach.

Material Use and Durability

Glass Durability and Maintenance
Climbability
Skateboarding Deterrence
Memorial Security

granite pavers



potential security camera locations at existing street light posts

potential security camera locations at existing traffic light posts

american veterans disabled for life memorial
total security cameras: 3

dwight d eisenhower memorial
total security cameras: 8

korean war veterans memorial
total security cameras: 3

vietnam veterans memorial
total security cameras: 1

martin luther king jr. memorial
total security cameras: 7

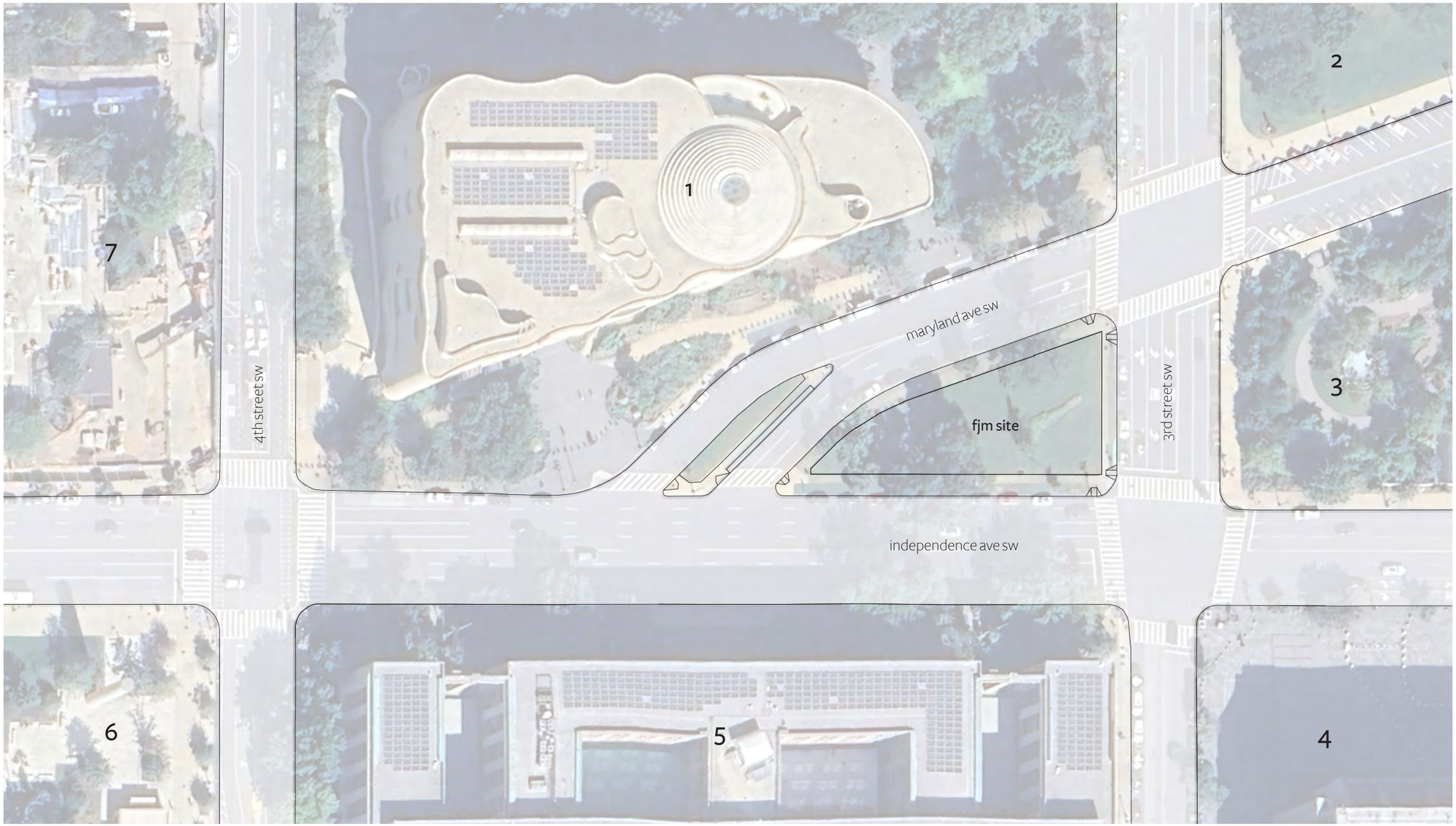
world war I memorial
total security cameras: 6

Appendix Streetscape Analysis

independence avenue looking west

maryland avenue looking southwest

third street looking north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2
3
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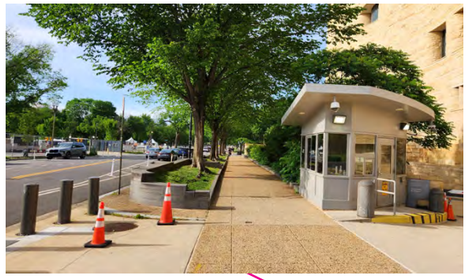
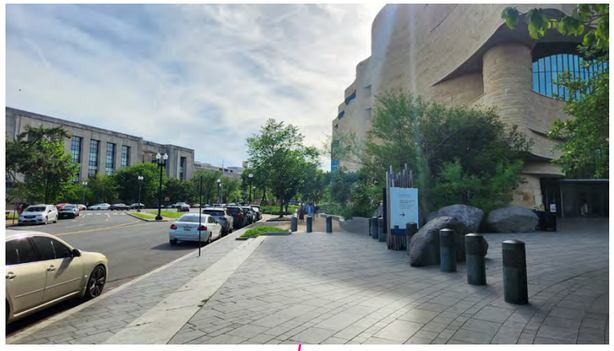
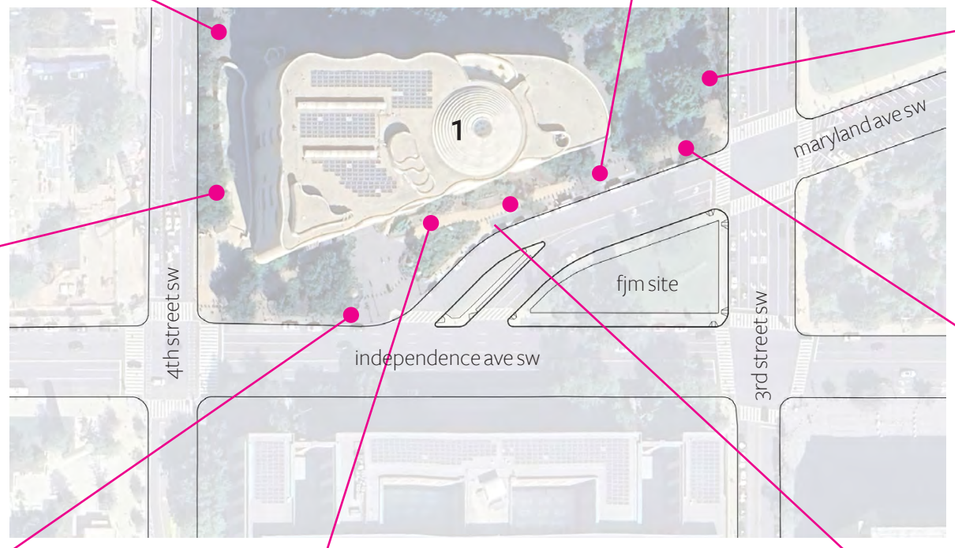
7
4th street sw
maryland ave sw
3rd street sw
fjm site
independence ave sw



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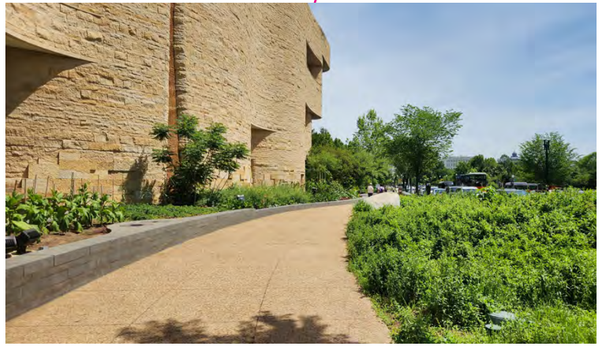
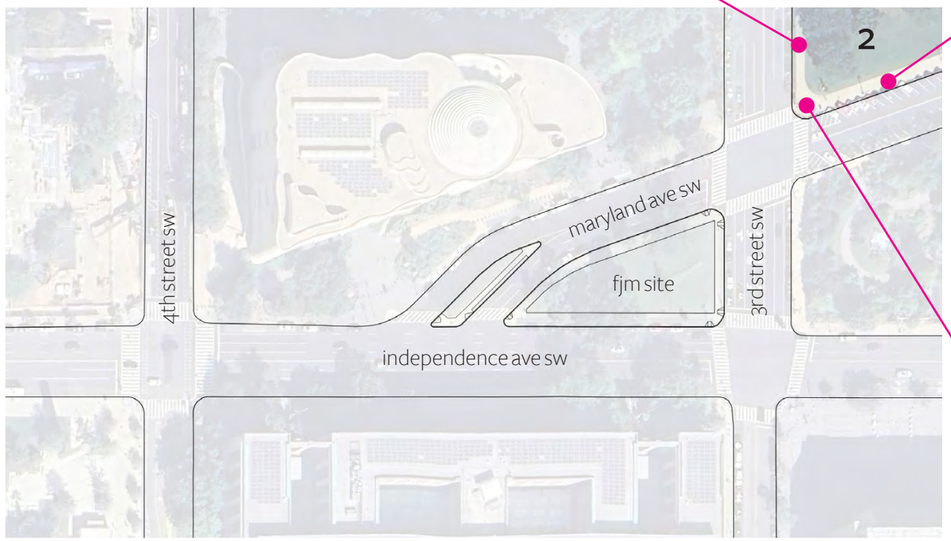
maryland ave sw
fjm site
4th street sw
3rd street sw
independence ave sw


NATIONAL MUSEUM OF THE AMERICAN I




2
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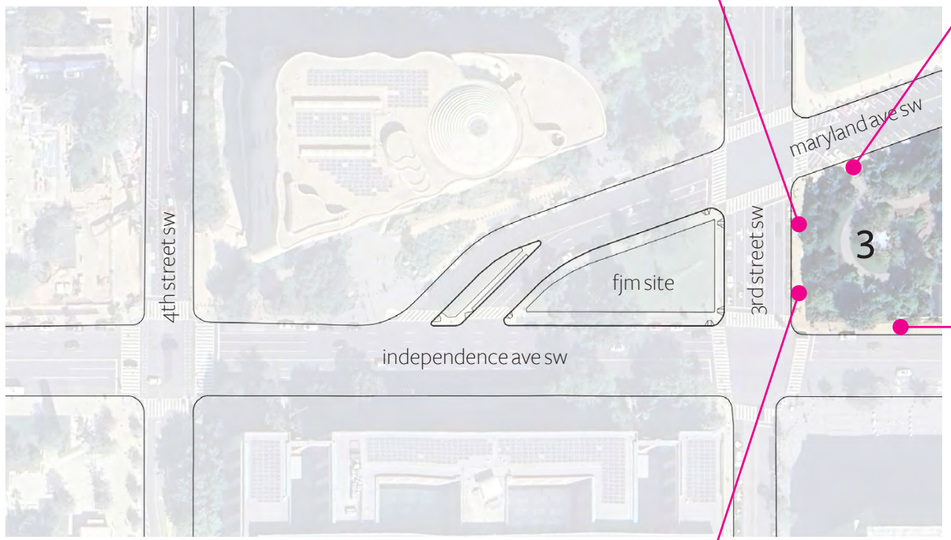
fjm site
4th street sw
3rd street sw
independence ave sw


MARYLAND
200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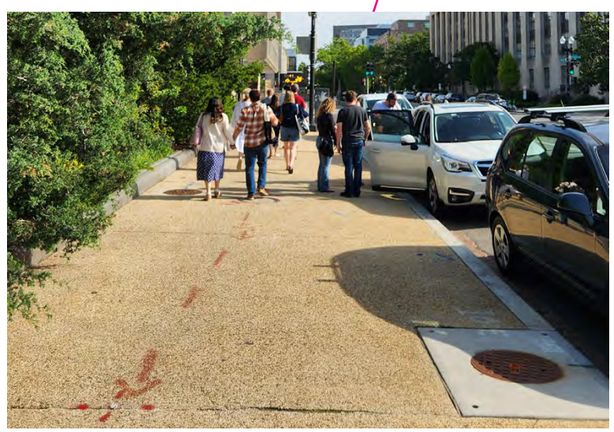

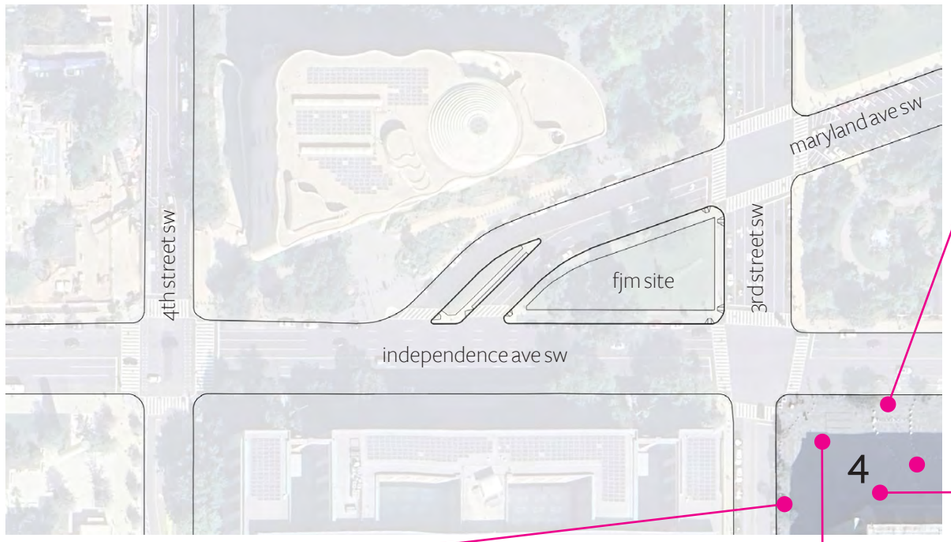
maryland ave sw
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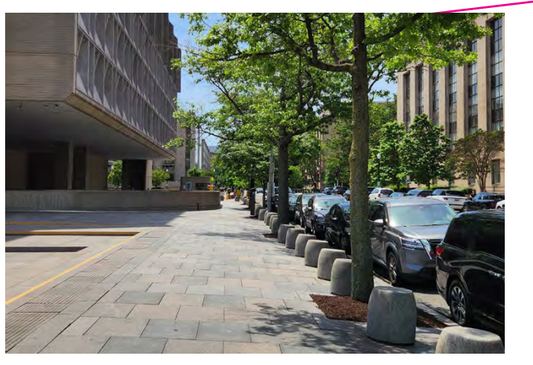
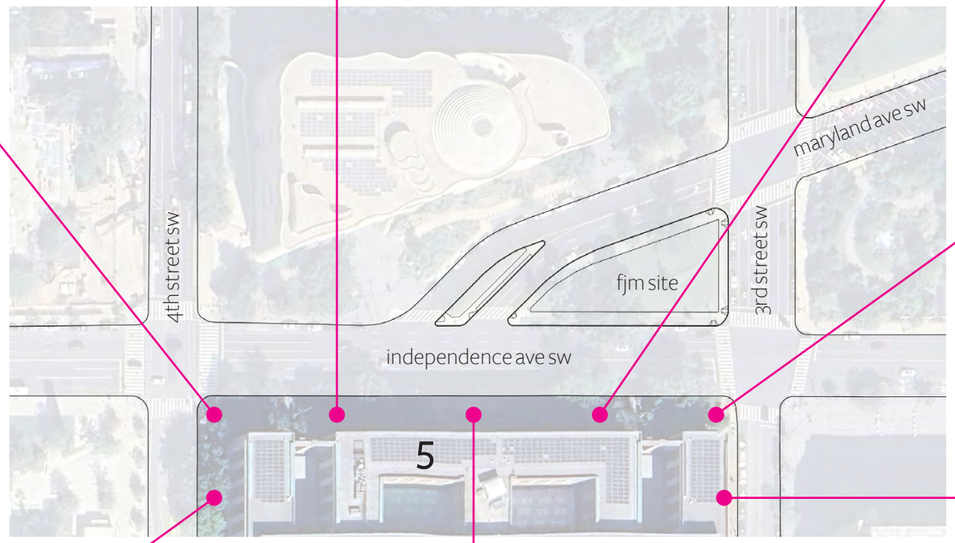
3rd street sw
fjm site
independence ave sw
4


CLINE TOURS
ALL TRUCKS

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fjm site
3rd street sw
maryland ave sw
independence ave sw
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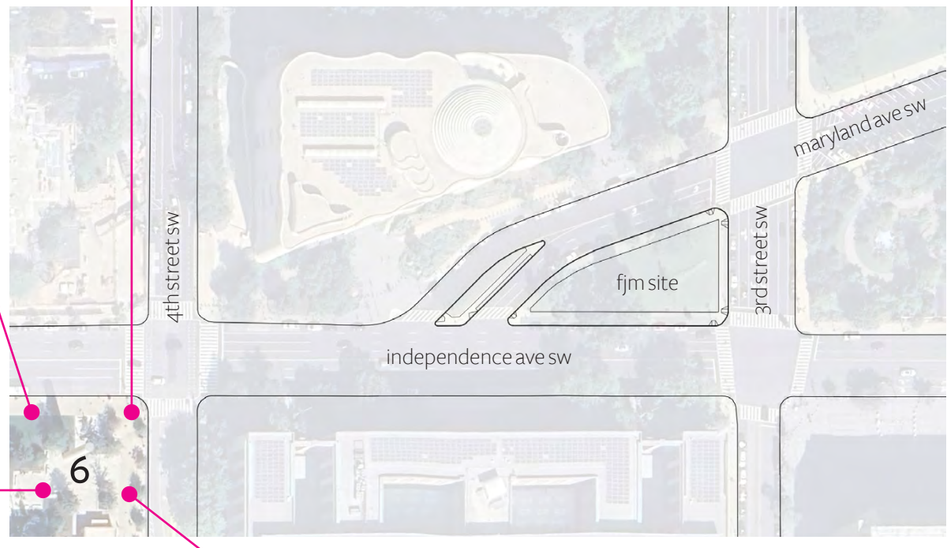
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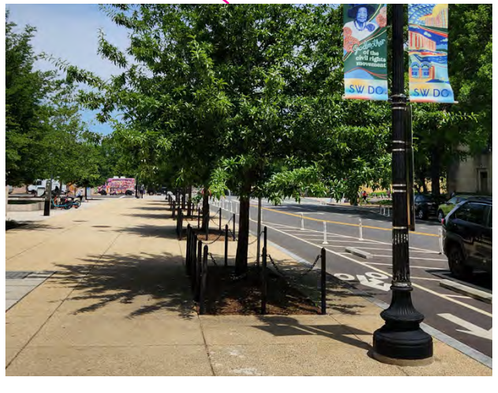
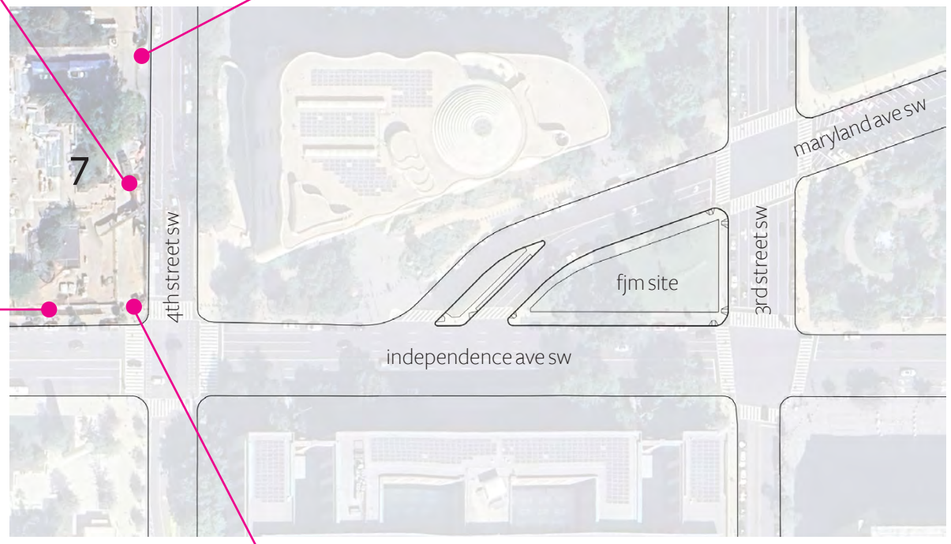
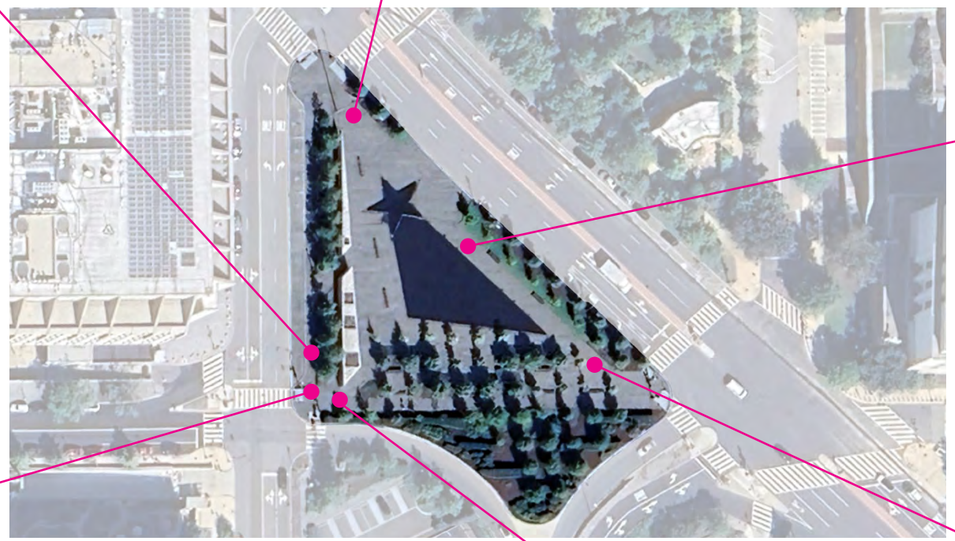
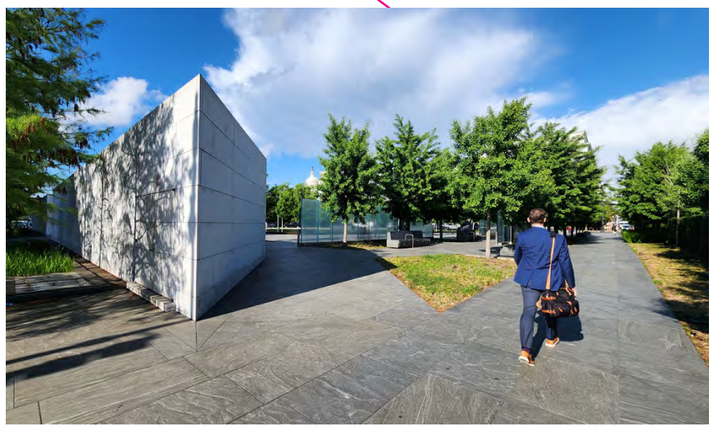


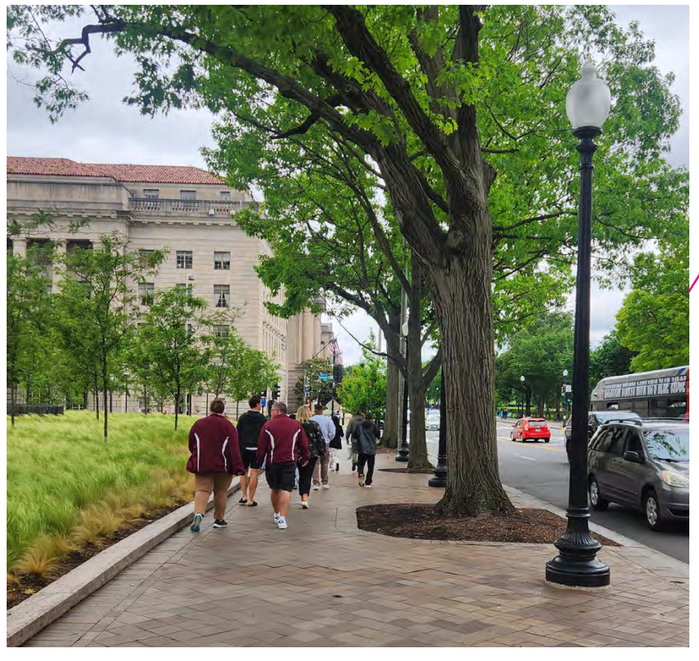

7
4th street sw
fjm site
3rd street sw
maryland ave sw
independence ave sw

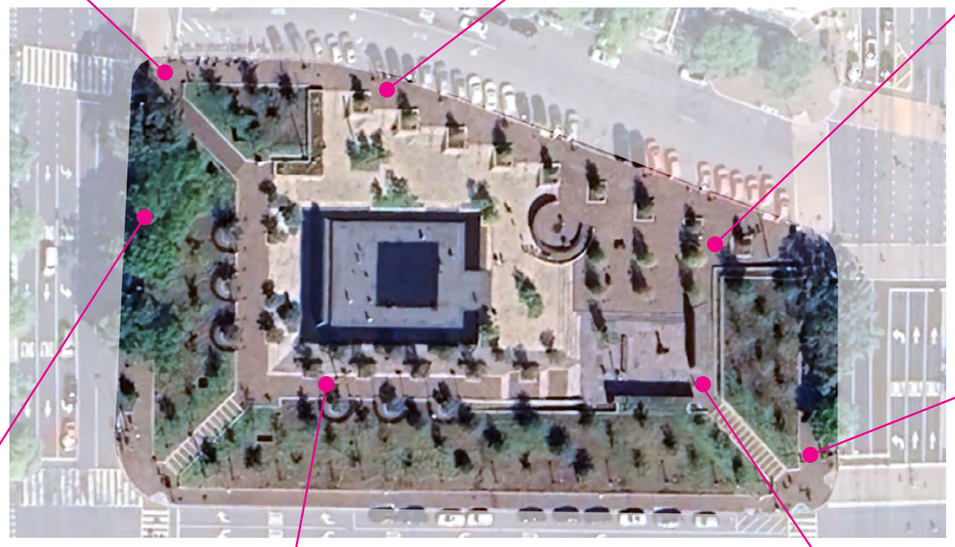
Appendix Memorial Precedents

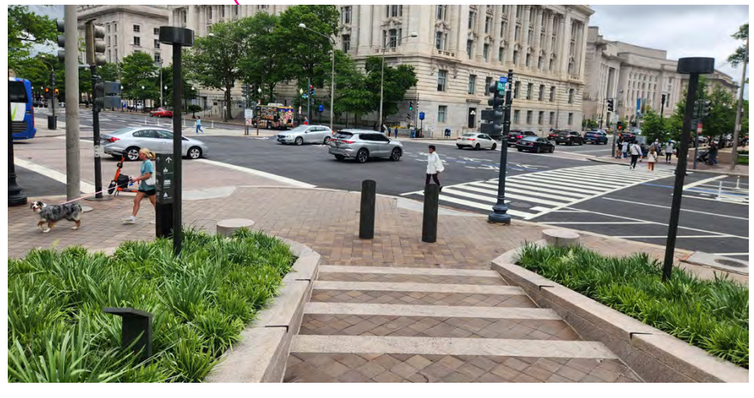

world war I memorial
us navy memorial plaza
law enforcement officers memorial
world war II memorial
7th st sw
4th st sw
3rd st sw
pennsylvania ave
jefferson dr sw
maryland ave
fjm site
independence ave
d st sw
american veterans disabled for life memorial
washington ave

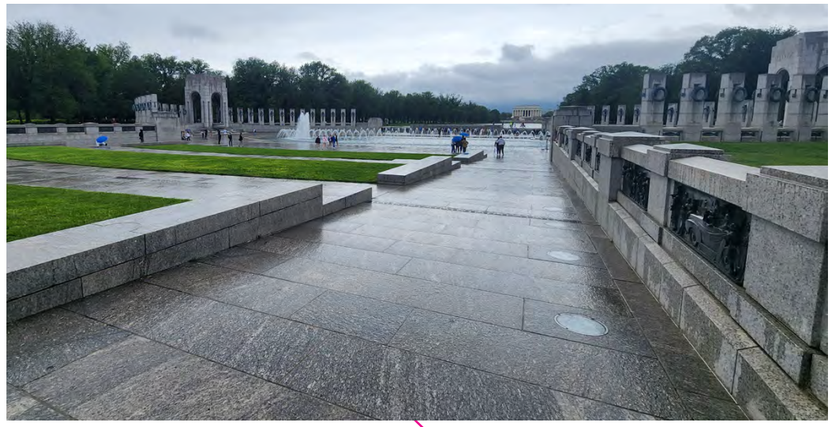


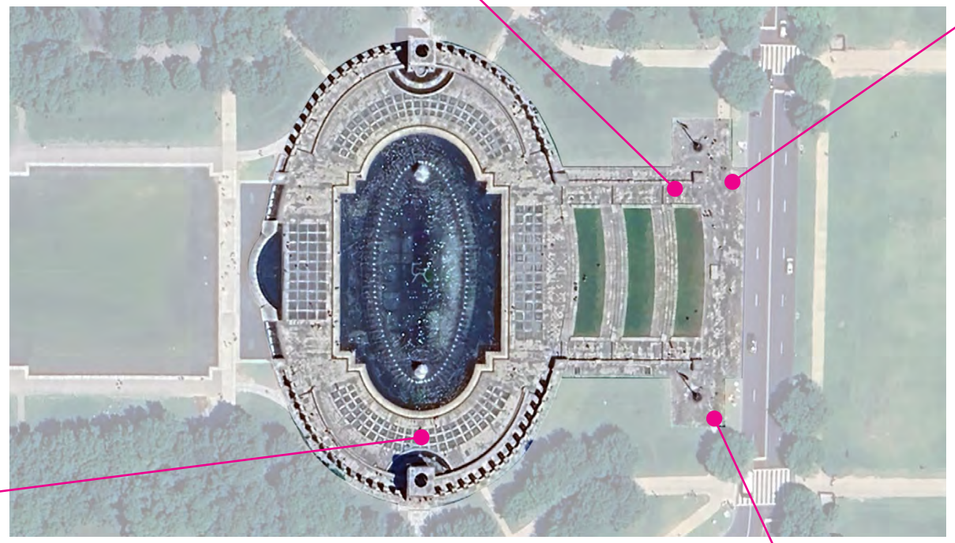


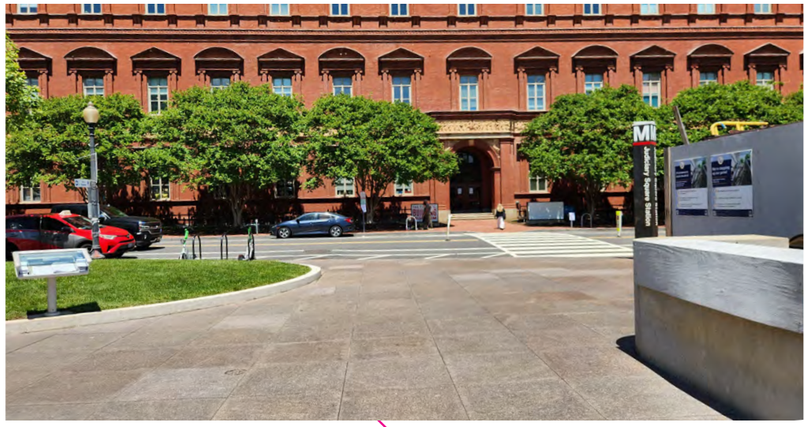


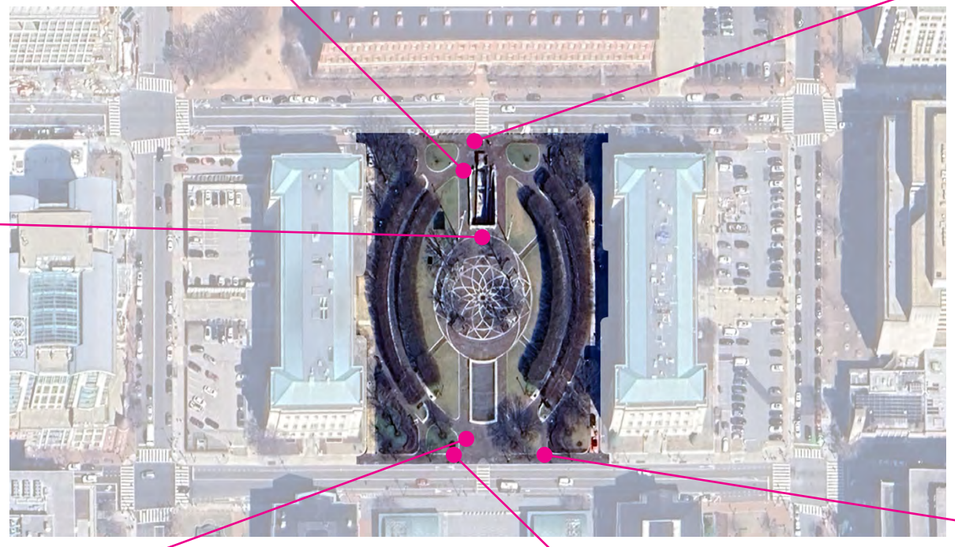


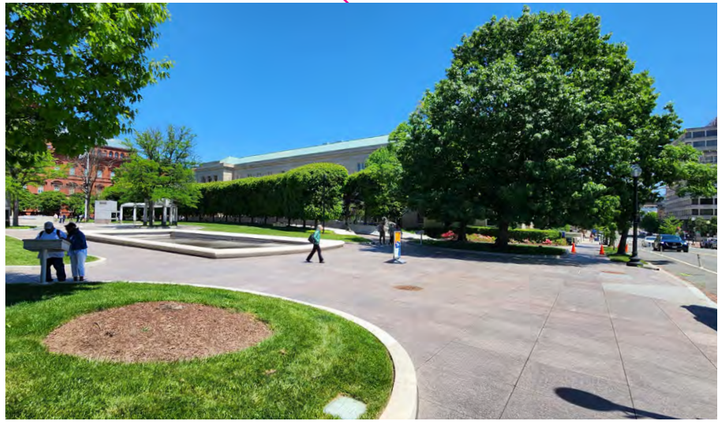


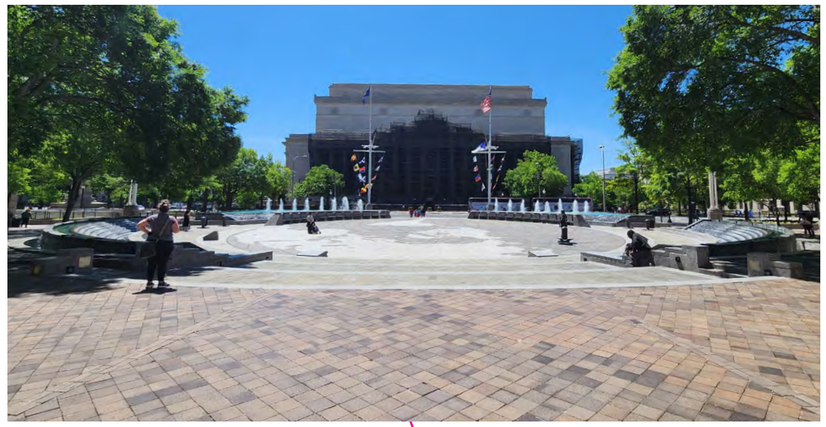


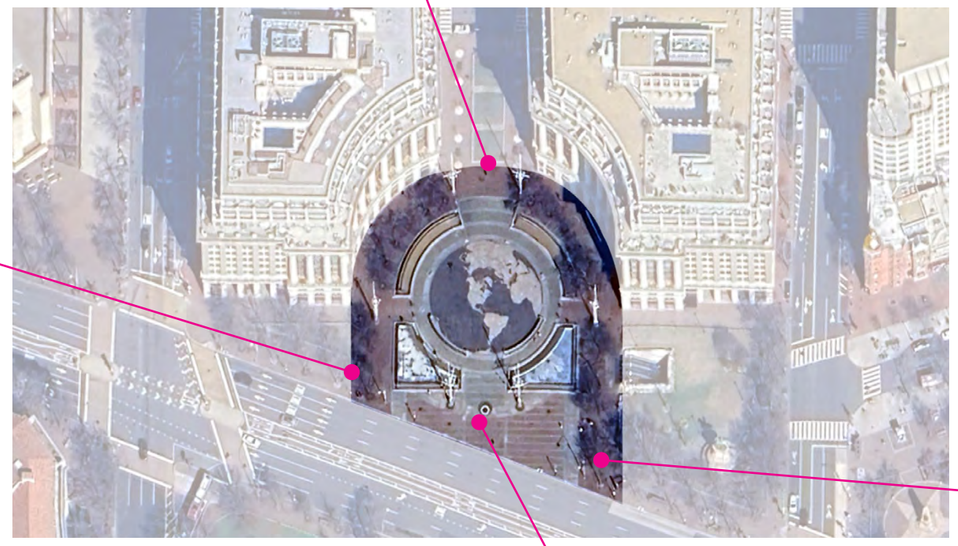



Judiciary Square Station









02 october 2025 **memorial analysis** us navy memorial plaza

Fallen Journalists Memorial **John Ronan Architects**